KNOWLEDGE MANAGEMENT FOR PROCESSING OF GREEN LIBRARY : A CASE STUDY OF SUAN SUNANDHA RAJABHAT UNIVERSITY

[1]KRIDSANA YOOPUANG, [2]NITIMA KAEWMANEE,[3]PIJITRA JOMSRI, [4]SUPAYOTINNA SONGKHLA

[1,2,3,4] Academic Resource and Information Technology, Suan Sunandha Rajabhat University, Thailand
Email:, [1]gitsana.yo@ssru.ac.th,[2] nitima.ka@ssru.ac.th,[3]pijitra.jo@ssru.ac.th,supayotin.na@ssru.ac.th

Abstract— Knowledge management for processing of Green Library is important approach for furtherance the library to environment-friendly.This research studied and produced the processing green library that is suitable with context of Library University.The data sets of this research were collected information from 30 library staffs by using interview. The result of the study found out the processing of Green Library that is suitable with Academic Resource Center, Suan Sunandha Rajabhat University, have 3 parts: Energy, Resource, and Creating awareness.Therefore Green Libraries can serve in the way libraries have always servedas landmarks in their communities. Green Libraries give pleasant environment to the usercommunity.

Keywords— Green library, eco-friendly library, saving energy, knowledge management, the processing of library, Technology.

I. INTRODUCTION

Library is the source of learning that is support education in both of the curriculum and extra-curricular teaching. To emphasize indoctrination and promote the reading habit, the pursuit of knowledge and research. Library in University is mainly of support studying, teaching, research, cultural preservation, and academic services to all personal of universities and society throughout continuous and lifelong self-learning. In according to the progress of information technology and communication include the changing into Knowledge Based Economy era, it causes library have been adjusted the concepts, the operations of libraries, the managements, and the services. The improvements aim to the living library and continue to be environmentally friendly by operating in form of the library which is environmentally friendly. In English use Eco Library or Green Library. Moreover, the government has seen the solutions of The problem of global warming as important by setting policies in the Eleventh National Economic and Social Development Plan (2012-2016) by determining natural resources and environmental management sustainable strategy in order to be practical way to decrease global warming of country. Therefore, many departments have been watchful and have practiced along this strategy.

It's necessary for library to adapt its role in dissemination of concept of being environmentally friendly for social acknowledgment and execution. Besides, library is foremost place to community and society. In particularly, enhancing knowledge by stimulate and promote more friendly ideas about environment. Library's role: To emphasize in spending library's area for holding useful activities, To provide information resources about environment in order to be community learning center, Up-to-date technology, Equality to access information resources, To bring innovations in operation for building quality of potential community by creative method. Academic Resource Center, Suan Sunandha Rajabhat University is realizing the importance of environment and collaborated with library department from institutions for the purpose of setting a network of green library that is the development of educational collaboration about developing a network of green library. According to this collaboration, it has advantages to develop knowledge services about energy and environmental conservation via library defined cooperation as follow,

(1) Cooperation in the development of information services about energy and environmental conservation.

(2) Cooperation in the exchange of information services about energy and environmental conservation for cooperative network.

(3) Cooperation in the activities to learning promote about energy and environmental conservation for cooperative network.

(4) Cooperation in the exchange of information in managing green library.

(5) Any related activities emphasizing to creativity energy saving and environmental conservation, stimulating ideas and realizations in energy saving to students and staff as well as library users. It will lead understanding and cooperation in energy and environmental conservation.

The importance of the process of green library was adjusted to library activities but has lacked of cognizance in explicit procedure of Green library include the processes to apply in library properly with the context of Suan Sunandha Rajabhat University. Sevenknowledge management processes brought to find information which is necessary to manage the Green library: knowledge indication,

knowledge seeking, systematic knowledge management, knowledge process and considering, knowledge access, learning exchange and learning to extract the essential knowledge and apply in library process of Academic Resource Center.

According to these problems, researcher has studied knowledge management for Processing of Green Library : A Case Study of Suan Sunandha Rajabhat University in order to apply the development to an approach in dissemination of energy and environmental conservation knowledge as well as supported the process of Green library, developed library as the main learning center of organization and nearby community, raised awareness about environment to user for sustained development of community and nation.

II. LITERATURE REVIEW

Library is an office which has a tendency in increasing energy steadily as seen from the cost of public utilities such as electricity bill, water bill etc. Energy saving measures has been brought to use by many library to decrease wasteful energy using and save energy together. Environmental library was established in purpose of providing information resources and services to staff of U.S. Environmental Protection Agency (EPA) and the public. In 1990, Task Force on the Environment (TFOE) held the annual meeting at Chicago in the topic: How Green is Your Library: Environmentalists at Work. Environmental issue related to library and eco-friendly initiative was focused on in the meeting [1] In 1995 later, there was the big change when architects used "Green" and "Environmentally friendly" to describe architecture and gave an opportunity to other people to know and understand more the meaning of "Green" and "Environmentally friendly" [2] In 1990, Board of the U.S. Green Building has developed Leadership in Energy and Environmental Design (LEED) for standardization and Approval environmentally friendly document to green buildings beneath 5 defined standard: Sustain Location, water and climate conservation, materials and materials sources, environmental quality inside building. LEED extremely renovated was called LEED 3.0 in 2009, considered more 5 defined standards to 6: Innovation and design. In 2010, The Thai Green Building had provided Thailand's sustained energy and environment evaluation manual: For building and improving a new project based on LEED's evaluation of United State as a model. Therefore, it can state that the concept of Green building that are principles in evaluation and approval green building to manage the buildings lead to reduction of the global warming[3].It was a model of Eco Friendly Library or Green Library in nowadays [4].

Green library based on sustainable architecture is knowledge integration in architecture, engineering, building planning science, construction management. The concept of sustainable architecture occurred due to the environmental problem and energy using from original energy sources releasing carbon dioxide to world's atmosphere. It causes Greenhouse Effect that effect to global warming. Library building use plenty energy in part of user's services and Librarians and library staff's working part. The reason of library built green building or improve the interior building's structure in order to reduce long-term costs since it take costs to build green building in primary but it can save electricity costs in long time. It is necessary to Library budget and lower releasing carbon dioxide from library that impact to have plenty greenhouse gases. Designing or improving normal library to green library have different standard in each country. For Thailand, 2009, The Association of Siamese Architects under the Royal Patronage of His Majesty the King (ASA) and The Engineering Institute of Thailand under H.M. The King's Patronage has singed cooperation in establishing Thai Green Building Institute in order to be a starting point of developing and processing activities. Thanks to eco building concept in Thailand to be concrete by green building evaluate standard "TREES – NC" (Thai's Rating of Energy and Environmental Sustainability for New Construction and Major Renovation), is similar to LEED but had been changed more properly with context of Thai social.

According to overall related foreign literatures, we found out there have subjects that related to the role of library and the concept of eco-friendly library design. The role of eco-friendly library, the library have necessity to adapt its role in dissemination the concept of being eco-friendly to society for realizing, acknowledging, real practicing because library is very important to the community and society in particularly, social role to being eco-friendly by stimulating and promoting in more eco-friendly concept . To emphasize of using library's area that is useful for eco-friendly activities, to provide information resources about environment to be environmental educational sources of community, to be learning center in diverse side of community, advanced technologies, equality to access information resources, innovations that link with education, art, business and other public libraries to build the capacity of community strong and quality by creative method. Additionally, most policy and process of eco-friendly library is the policies that practice in only organization without dissemination to society. Library should determine policy to promote more concentration in social responsibility, should make strategic plan in 3 factors: society, economy, environment. In the design of create Green library or Eco-friendly library is a design that have identity in architecture and interior design. It have important role in enhancing the eco-friendly emphasized re-use concept. The utilization of library's areas to be useful in activities that can draw more people's attention in order to access, visit and take part in the activities of

library. It can stimulate conscious mind inenvironmental conservation according to library's services that match with demand in social context. Each library gives the significant for being the center of community.Nitinarth Charoenpokaraj studied in participation behavior of environmental conservation at Dusit,Bangkok community. The important thing is to develop in environmental consciousness and to everyone's participation in community to exchange knowledge together [5]. The design of eco-friendly building began with changing and demand of library that wanted to renovate or build library in accordance with concept and principle of LEED. The design of eco-friendly building began with changing and demand of the library that wanted to renovate or build library in accordance with concept and principle of LEED, helping library to reduce energy usage. Natural light and environmental consideration within the building make people who living in here get good health according to weather atmosphere and lower budgets. It will be the sustainable library in the future.

III. DETAILS EXPERIMENTAL

3.1. Concept of Knowledge Management

Knowledge management in organizations means accumulation the knowledge from personal or document. Organize it and make it can access easy. Encourage a personal to use the knowledge for develop ability and good performance. Knowledge Management Process has seven steps, First, Indications of knowledge, such as consider that the vision, mission and goals. What's a knowledge we need to know. What's kind of knowledge. Where's knowledge. Second, Creation and acquisition of knowledge, such as the creation of new knowledge, finding from the outside, keeping the old knowledge, get rid of the knowledge that is no longer valid. Third, Organize the knowledge, structured the knowledge to prepare for the retention of knowledge in the future. Fourth, Processing and refinement of knowledge, such as improved document format as standard, using the same language, content up-to-date. Fifth, Access to knowledge, easy to access the knowledge they need by information technology. Sixth, Knowledge Sharing, By documented, knowledge database, Cross-functional teams, quality and innovation events, communities of learning, the mentor, the switching task, etc. Seventh, Learning, We should make learning a part of the job. Such as, create the knowledge, use the knowledge, new experiences from using the knowledge, and turnover to continue.

3.2. Objectives

1. To study the concepts of Green Library processes.

2. To develop the process of Green Library that suit with the context of Academic Resource Center, Suan Sunandha Rajabhat University.

3.3. Scopes of Research

This research is the phenomenon about the changing of world's environment and Thailand's that have an effect on the current economy and society. According to the Eleventh National Economic and Social Development Plan (2012-2016)defined sustained natural and environment management strategy in order to use it as a practical concept to reduce global warming in the country. Many departments have had wakefulness and bought the policy to define as objective plan. Academic Resource Center, Office of Academic Resource and Information Technology, Suan Sunandha Rajabhat University is the department to support teaching and research include disseminate knowledges to nearby communities, Government agency that respond to government policy. Thus, it need to find knowledge about energy and environmental conservation in order to define the processing plan of library and disseminate energy and environmental conservation knowledge to nearby communities to raise awareness of energy conservation and environment conservation and the way in eco-friendly operation with neighboring communities.

Main informants are staffs of Academic Resource Center, Office of Academic Resource and Information Technology, Suan Sunandha Rajabhat University.The data set were collected During May - August 2015.

3.4. The Green Library Framework

In this section, Fig.1 is illustrates the framework of this study. In this conceptual framework show the relation idea about green library, the operation of Academic Resource Center, design the operation for the university and the final operation model.

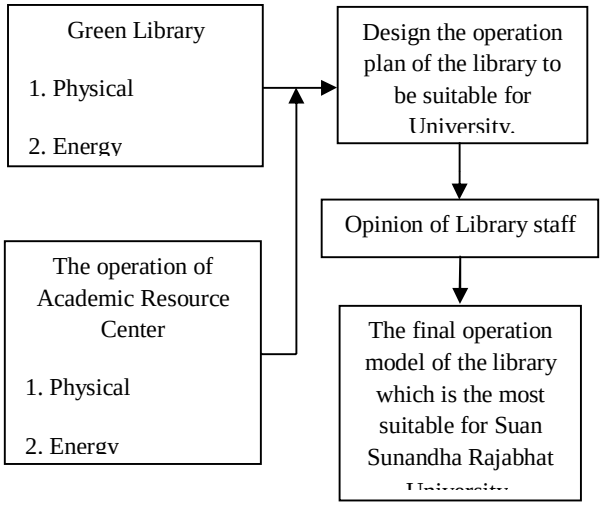


Fig.1. The Framework of Green Library

3.5. Research Methodology

Qualitative research methods were used in this research, by analysis documents in group meetings and interviews follow in 4 steps:

1. The research process

First, To study related documents, literatures and researches about green library or eco-friendly processing library. The knowledge share activities was held in member of knowledge management group, green library group in order to study basic information in the process of green library. The knowledge share activities was held in member of knowledge management group, green library group in order to study basic information in the process of green library by study visiting in processing green library or eco-friendly library at Kasetsart university Library, Khon Kaen University Library and Suranaree University of Technology Library.Focus group meeting to analyze and synthesis the process green library that suit with context of Academic Resource Center, Suan Sunandha Rajabhat University by the seven steps in Knowledge Management implementation.

Second, To make guideline, the process of green library, was has brought knowledge that analyzed and synthesized documents for the theme of Green Library. The study of process of energy and environmental conservation library, Knowledge Share, Focus Group are the way to operate, Green Library to focus on four main factors.

- Physical factor, this factor emphasized the basic structure or physical feature contributing to reduce energy usage and environmental impact. Eco-friendly technology was used in services and library management, energy management, waste management, greenhouse gas reduction. Green Library gave the importance in increasing green spaces to building, area including improving library systems, reducing the discharge of gas that cause greenhouse effect contributing to global warming. The living area and the area surrounding the building were designed accordingly to Leadership in Energy and Environmental Design (LEED), international standard for constructing eco-friendly building.
- Energy management factor, green library have to define measure energy and resource usage in efficiency. Campaigning and raising awareness in resource appreciation. To reduce waste and avoid activities that cause effect to environment both inside and outside the library building including other control departments that come to use the area in library. To define policies, plans, to campaigning to staff and service user, purchasing goods and services by consider to energy saving and environmental impact, machine and equipment maintenance in proper way.
- Creating awareness factor, creating awareness to environmental conservation causing love, cherishes the environment. Feeling concern and worry in what happens to the environment Leading to aggressive behave in environmental conservation, as well as avoiding activities that may affect the environment by giving knowledge or teaching to get in principle and saving method. The ethicsraise awareness and to participation in natural resource and environment conservation. Technology is decrease environmental impact or cause minimal environmental impact.
- Staff factor, Being green library not only consider to designing and decorating building but also give knowledge to staff in environmental responsibility because the acknowledge of staff in green library is going to apply knowledge to procedures of the Library.

Third, Test / verifying the validity of the established guidelines. The tools used in test / verifying the validity of the established guidelines include Interview of staff's Academic Resources Center, Office of Academic Resource and Information Technology, Suan Sunandha Rajabhat University, to the process of the green library. Green library guidelines from the study were created to be the questions

Last, Conclusions, by analysing and synthesizing staff's opinion to process plan of library that suit with the context of Academic Resources Center, Suan Sunandha Rajabhat University.

The process of a study and data collection in Fig.2

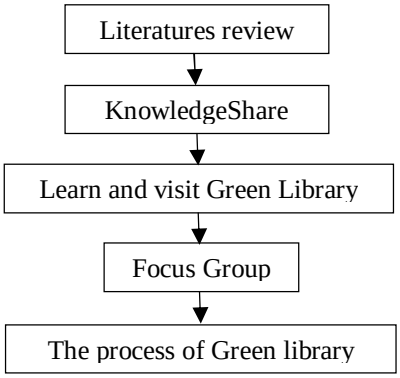


Fig.2. The process of study and data collection

2. Data sets

30personsfrom Office of Academic Resource and Information Technology were asked for evaluate the model.

3. Tools and Development process

In the study of the process of green library, we used focus group of green library knowledge management method, 30persons.

In the development of the process of green library that suit with the context of Academic Resources Center, Suan Sunandha Rajabhat University. We provided staff's library interview in physical factor, energy management factor, creating awareness factor and staff factor. There are 3 parts in the interview: 1. general information of answerer, 2. the opinion to the process of green library of Suan Sunandha Rajabhat University, 3. Comments and suggestions to the way to develop living library, Suan Sunandha Rajabhat University.

4. Collection of data method.

To study document, literature and research that related to green library. And to hold knowledge share

activity of knowledge management member, green library member include to study in 3 libraries: to studying visit in processing green library or eco-friendly library at Kasetsart university Library, Khon Kaen University Library and Suranaree University of Technology Library. Focus group meeting to analyze and synthesis the process green library that suit with context of Academic Resource Center, Suan Sunandha Rajabhat University.

To create the interview by the process of green library to be tools in the survey of library staff to the Green Library by collecting data from 30 staff and processing the data to find the way of process of Suan Sunandha Rajabhat University's green library.

3.6. Analysis

This research analyzed the data as follow:

1. To study the process of green library, we has analyzed to the composition.
2. The development of process of green library that suit with the context of Academic Resource Center, Suan Sunandha Rajabhat University, we has analyzed to the composition.

IV. RESULTS AND DISCUSSION

Knowledge is the process of green library "Academic Resource Center, Suan Sunandha Rajabhat University" From finding knowledges until get the composition of the Green Library that divide to four factors: (1) Physical factor, this factor emphasized the basic structure or physical feature contributing to reduce energy usage and environmental impact. Eco-friendly technology was used in services and library management, energy management, waste management, greenhouse gas reduction. Green Library gave the importance in increasing green spaces to building, area including improving library systems, reducing the discharge of gas that cause greenhouse effect contributing to global warming. The living area and the area surrounding the building were designed accordingly to Leadership in Energy and Environmental Design (LEED), international standard for constructing eco-friendly building. (2) Energy management factor, green library have to define measure energy and resource usage in efficiency. Campaigning and raising awareness in resource appreciation. To reduce waste and avoid activities that cause effect to environment both inside and outside the library building including other control departments that come to use the area in library. To define policies, plans, to campaigning to staff and service user, purchasing goods and services by consider to energy saving and environmental impact, machine and equipment maintenance in proper way. (3) Creating awareness factor, Creating awareness to environmental conservation, cherish the environment. Feeling concern and worry in what happens to the environment Leading to aggressive behave in environmental conservation, as well as avoiding activities that may affect the environment by giving knowledge or teaching to get in principle and saving method. The ethics raise awareness and to participation in natural resource and environment conservation. Technology is decrease environmental impact or cause minimal environmental impact. (4) Staff factor, Being green library not only consider to designing and decorating building but also give knowledge to staff in environmental responsibility because the acknowledge of staff in green library is going to apply knowledge to procedures of the Library. The analyzing to find forms and guidelines of the process of green library that can be used for real and suitable for the context of Suan Sunandha Rajabhat University. Can divided to 3 parts: energy part, resource part, creating awareness part. The details are as follows:

4.1. Energy part, emphasized in electrical energy.

The first is rope jerking switch, Installation of rope jerking switch in lamp in office space that the staff can take part in controlling the use of electric lighting in specific areas. It is not underlined budget reduction but underlined in creating awareness and energy conservation behavior.

The second is Open-close control switch, air conditioner system. Only authorized staff can open-close control switch.

The third is installation of LED light instead of Halogen bulb, size 50 watts; it used high energy and heat, power consumption.

The fourth is to use energy saving fluorescent lamp. To change a fluorescent light bulb (T8) 36 watts with 5.5 watts iron core ballast to T5 fluorescent light bulb with electronic ballast.

The fifth is to use insulation. As the heat that enters the building through the roof that was heavy load of air conditioning systems and power consumption. To protected disturbance sound when raining. Connected way building 32 with building 33 is going to be built urgently.

The sixth is installing Motion sensor, it have the light when someone use that is the equipment working by infrared radiation (heat wave) from the human body. The equipment open the light when someone in detection area and can delay from 10 seconds to 7 minutes. It can specify working in day and night mode which if it will reduce the heat generated by the bulb to some degree.

4.2. Resource part, emphasized in using 3R in resource management.

Reduce

1. To reduce using paper cup in the library, students bring their own water bottles with lids.
2. To reduce using documents in paper form in library by making Google document system.
3. To reduce using the electric power consumption and change to use energy-saving bulbs.

4. To reduce the hour of air conditioner during 12 p.m. to 1 p.m. by the preparation of a smear campaign closing the air conditioning during the period.

5. To manage garbage before tossing in the trash in order to make the dry trash and to reduce using garbage bags.

6. To design and provide the symbolic mark to remind users' toilet, use tissue paper economically and appropriately.

Reuse

1. To reuse paper that has not been used in the paper used a single page.

2. To take a piece of paper or cloth to reuse by cutting to note paper of Online Public Access Catalog to services users in library.

3. To reuse beautiful waste paper or cloth to be book cover.

Recycle

1. To recycle empty bottle to be a vase with floral motifs, decorated in library.

2. To recycle waste paper to be tablet.

4.3. Creating awareness part.

The model creates awareness about energy and environmental conservationby emphasizing dissemination knowledge through exhibitions, competition. Energy saving of library's staff that defined all party open-close electrical equipment on scheduled. The inspectors are every people which check in their own area.

CONCLUSIONS

From studying the process of green library, we found that the most important factors to make it happen involve Physical, Energy management, Creating awareness and library's staff. We choose 3 factors to create the process of green library that can be used for Suan Sunandha Rajabhat University. The model can divided to 3 parts: energy part, resource part, creating awareness part.The detail of factor is changes according to environment library and users' need.The process of green library is important for operation living library and other library can adapt to your library.

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