

The Potential of Applying Green Technology for the Open University of Sri Lanka

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1 INTRODUCTION

Green technology is a modern technique that is in line with sustainable development policies in the modern world (Hasper, 2009), and it is the application of products, equipment and systems used to conserve the natural environment and resources, which minimizes and reduces the negative impact of human activities (www.gpnm.org). As public concerns have grown about degradation of the environment and scarcity of natural resources, government and co-operations have embraced the trend towards green technology concept (Silberglitt, 2009). Various features that are included in green technology concept are sustainable landscape management, the 'green building', green manufacturing, green publishing, biodiversity protection, waste management, water management and energy management (Das Soni, 2015). Green technology is more beneficial for a developing country like Sri Lanka and can be applied in various sectors. This can be practiced effectively in higher education systems like universities with the involvement of their partners i.e. students, academic and non-academic staff. Students represent the majority in a university and they can influence the public, the staff and themselves to initiate and practice this concept with their strengths and intellectual capabilities. The Open University of Sri Lanka (OUSL) has

one of the highest student enrolments among Sri Lankan Universities. Such a large number of students consume more resources than a simple community, institution or enterprise. Eventually, a large amount of wastes, chemicals and poisonous substances are produced during the operation of a university, causing environmental problems for the campus and its neighbourhood (www.oecd.org). The OUSL is situated in a highly populated area of the country, which may affect the environment and the people during its day-to-day operations. The initial purpose of green university concept is to reduce the bad influence on the environment, campus and the community by managing its discharges and wastes (<http://green.dyu.edu.tw>). The green technology will shape the university's capacity for the betterment of the environment and the people. Therefore, with the view of encouraging the university management towards green technology, this study examines the potential of applying green concept mainly through the students of the OUSL.

2 METHODOLOGY

2.1 Research Area

The OUSL is in the capital city of Sri Lanka, precisely in Nawala, Nugegoda. The premises are densely populated with



buildings and the Kirillapone canal is also flowing through the university. Apart from the buildings, there are few parking

areas and reservations. Printing wastage and improper garbage disposal sites are observed in the university premises.



Figure 1: Kirillapone canal (b) printing wastage (c) improper garbage disposal sites

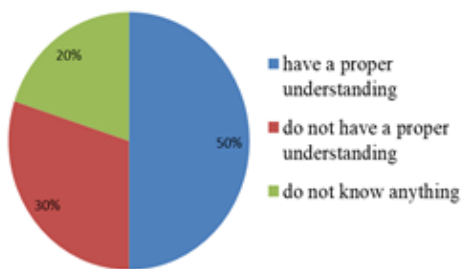


Figure 2: Awareness of the green concept

2.2 Data Collection (2016.06.01-2017.06.15)

This study was based on a primary questionnaire survey conducted with a total sample size of 40 students which was distributed randomly in the university premises and visits were done inside the university premises. Focus was mainly on students since they represent the majority of the university community and their ability to promote this concept in the university. The main variables included are the awareness about green university concept, garbage disposal method, dinning services, biodiversity protection, energy system, water management system, green publishing and the improvements needed to be done in the future. The questionnaire comprised of 15 items related to the potential of applying green technology in the OUSL.

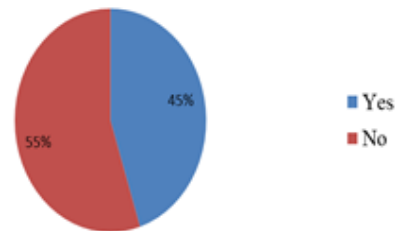


Figure 3: Awareness of applying green technology in OUSL

3 RESULTS AND DISCUSSION

3.1 Awareness of the Green Concept

According to the results of the survey, 50% of the respondents have a clear idea while 30% have heard about the green technology concept but do not have a proper understanding about it and 20% do not know anything about the concept (Figure 2).

Students do have a slight idea of applying green technology, but more than half of the respondents do not have any idea about applying the concept to the OUSL (Figure 3).

3.2 Waste Disposal

Per the respondents, the majority were not aware about the waste disposal and they were not satisfied with the way the waste/garbage is disposed of at the university. Currently, the green waste and printing materials are burnt and the rest of the wastage is transported to another dump site. In addition, there is a method to categorize the garbage at the OUSL. The food wastage, polythene/plastic, glass, paper are collected in separate bins. The bins are clearly marked to reduce incidents of cross contamination and bins are easily accessed. But the students were not aware of the system very much and they tend to put all kinds of waste into one bin. Furthermore, in line with the government's banning of bringing in and disposing/ burning of all products containing high density polythene, a notice has been displayed on 15th of September 2017 by the management of the OUSL regarding the ban on polythene with effect from 1st of October 2017 which is a timely decision. With the view of increasing the students perception on ecological literacy, Florida Gulf State University has focused on a course called 'The Colloquium: A sustainable Future' which is a graduation requirement for all undergraduates (Uhl and Anderson, 2001).

3.3 Dining System

Dining system includes the canteen and the food provided by them. Currently, the diet consists of different types of snacks, curries and desserts. The food is offered on plastic plates, and take away food is wrapped in lunch sheets and a paper. The OUSL students are not satisfied with the dining system of the university. Per the results of the survey, 40% of the respondents like the method of disposing of the food wastes as organic composting and to prefer to continue with the menu based diet. Hendrix College, Arkansas USA addressed such drawbacks in their canteen diets by providing a model to fortify the local farm economy while promoting sustainable agriculture and a

healthy diet. It is essential that the food served in the cafeterias is locally produced using sustainable agricultural methods and follow strict rules on animal welfare (Uhl and Anderson, 2001).

3.4 Water Management System

The water management system consists of how the water is supplied to the university, water consumption, the way how the waste water is treated, drainage system and the cleanliness of the canals. Most of the students (55%) were not aware of the water management system. The students do not have a clear idea what a water management system meant under the topic of green technology. Currently, a waste water treatment plant is not installed in the OUSL. Waste water is treated and reused in the Penn State University, USA in an environmental friendly way. Wastewater is filtered, broken down, sprayed onto fields and crops and the effluent is sprayed onto fields (Uhl and Anderson, 2001).

3.5 Bio Diversity Protection

Most of students (90%) were not aware of the potential of bio diversity protection in the university.

The university owns a vast area of land and various types of native and non-native flora and fauna. Among them perennials, shrubs, insects, reptiles, amphibians are prominent. Uhl and Anderson (2001) stated that the Penn State University, USA owns 18,000 acres of land but half of the woody plants are non-natives. As a result, they applied hundreds of gallon herbicides and pesticides to the campus grounds each year which are harmful for the environment. To develop a regional identity of biodiversity, Connecticut College, USA, is maintaining an arboretum.

3.6 Energy System

The majority of the students (80%) do not have any idea regarding the energy management system which can be

implemented in the university. In the university, the main source of energy is supplied in the form of electricity through the national grid. The renewable energy sources like solar power systems are not implemented which might reduce the fossil fuel burnt electricity consumption. Many states of the USA have been promoting solar energy with consumer subsidies in the form of tax rebates or renewable energy credits (Cohen et al., 2016). Electricity is consumed for lighting, air conditioning, refrigeration, ventilation, lift operations, computers and other lab equipment. Students are advised about the energy saving tips through notices in class rooms and other public areas. It was observed that students sometimes do not follow the above instructions.

3.7 Green Publishing

According to the results of the survey, 75% of the respondents are interested in receiving their course materials in electronic form. Electronic access to scholarly resources has become a standard tool where energy could be saved with the help of energy efficient servers and computers (Metz and Seadle, 2012). Currently, the students receive course materials in the printed form at the OUSL. As per the Figure 1b, a large amount of printing wastage is accumulated inside the university premises which require extra resources for disposing.

4 CONCLUSIONS

Awareness of the students about green technology concept and its applications which is relevant to the OUSL is not satisfactory. Even though some positive steps were taken by the university management for some areas like waste management and energy saving, the students were not fully aware of them.

5 RECOMMENDATIONS

Universities bear a responsibility for visioning and realizing a more sustainable future as they educate the future leaders of our society. Therefore, necessary steps should be taken to implement concepts like green technology which enhance the environmental and social well-being. The OUSL may analyze the requirement of training on students and the staff to disseminate the concept of green technology and some training programmes like demonstrations and workshops are recommended. The university management may take necessary steps to overcome the existing drawbacks of waste disposal system. Furthermore, replacing conventional low efficient lights and other electrical equipment with high efficient appliances; optimizing more natural lighting to interior of the buildings and installing of roof top solar power systems are recommended. Electronic publishing and recycling of papers in the OUSL are recommended to minimize the printing wastage which may eventually conserve trees.

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