



Scope and Feasibility of Student-friendly Environmental Sustainability Measures in Educational Institutes: Our Experience in MGM Institute of Health Sciences, Navi Mumbai Campus, Maharashtra, India

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ABSTRACT

Introduction: Environmental sustainability is an important component for transforming higher education for a sustainable tomorrow hence, there is a pressing need to step up initiatives for environmental sustainability. Institutes of higher education play a key role in imparting environmental awareness and in employing eco-friendly measures. While institutes have several academic and administrative audits, environmental audit is comparatively neglected. Environmental sustainability includes protecting and restoring ecological systems, optimal utilization of resources, enhancing the well-being of all people, and motivating students to take up environmental educational projects as part of their curriculum.

Objectives: To evaluate environmental initiatives currently being practiced for environmental sustainability in MGM Institute of Health Sciences (MGMIHS) and to assess the scope and feasibility of their implementation and evaluation in educational institutes in a developing country.

Materials and methods: The key components of eco-friendly initiatives include carbon footprint reduction, water management, waste recycling, sustainable buildings, energy conservation, and environmental hygiene. Methods to achieve environmental sustainability also include using academic resources, such as faculty and students for campus education initiatives in order to produce awareness, motivation, and behavioral change. These methods are studied and assessed with a view to implementation in our local setting. In addition, environmental indicators for auditing the beneficial effects of these methods are examined.

Results: A campus score measuring physical qualities of university campuses like Urbanism, Greenness, and On-Campus Living is suggested to be included in accreditation process like National Assessment and Accreditation Council (NAAC). Various student- and faculty-friendly environmental initiatives were taken by MGMIHS to make the campus eco-friendly. At

policy level the Institute became committed to a plastic bag-free zone. Pooling of cars and vehicles was promoted. There was a felt need to test the feasibility of implementing a completely paperless system of functioning for university and constituent institutions. The recently introduced enterprise resource planning (ERP) software can be considered as a starting point for going paperless. Energy conservation by using renewable energy in order to reduce carbon footprints was promoted along with water conservation efforts. Increasing the green cover of MGMIHS university campuses was given highest priority. Advocacy, communication, and social mobilization for environmental awareness was achieved by arranging regular lectures for motivation of students and faculties to maintain eco-friendly campus. Constitution of a Campus Environmental and Sanitation Committee was a step in the right direction.

Conclusion: This article discusses the measures that can be easily and effectively adopted in educational institutes in a developing country for contributing toward environmental preservation. In addition the article discusses the importance of auditing environmental sustainability in educational institutes using various indicators like the campus index. United Nations Environmental Programme (UNEP) Greening Universities Toolkit in 2013 can be a starting point to make MGMIHS more environmental friendly.

Keywords: Environmental audit, Environmental indicators, Environmental sustainability, Student-friendly environmental initiatives.

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INTRODUCTION

Environmental sustainability is an important component for transforming higher education for a sustainable tomorrow. Beginning with the Stockholm Declaration of 1972, there has been a steady development of national and international sustainability declarations relevant to higher education.¹ There is, therefore, a pressing need to step up initiatives for environmental sustainability and include the same in the accreditation process. With the rise of nontraditional governance methods, the third

party audit has become a critical part of governing.² Institutes of higher education play a key role in imparting awareness about the problem and its solutions, and are in themselves centers of high population density and turnover which need to employ eco-friendly measures. Although institutes have several academic and administrative audits, environmental audit is comparatively neglected. Environmental sustainability includes protecting and restoring ecological systems, optimal utilization of resources, enhancing the well-being of all people, and motivating students to take up environmental educational projects as part of their curriculum.

OBJECTIVES

- To evaluate environmental initiatives currently being practiced for environmental sustainability in MGMIHS.
- To assess the scope and feasibility of environmental initiatives implementation and evaluation in educational institutes in a developing country.

MATERIALS AND METHODS

The key components of eco-friendly initiatives include carbon footprint reduction, water management, waste recycling, sustainable buildings, energy conservation, and environmental hygiene. The current initiatives undertaken at MGMIHS, Navi Mumbai Campus, are studied in our research.

Methods to achieve environmental sustainability also include using academic resources, such as faculty and students for campus education initiatives in order to produce awareness, motivation, and behavioral change. These methods are studied and assessed with a view to implementation in our local setting. In addition environmental indicators for auditing the beneficial effects of these methods are examined.

DISCUSSION

Environmental sustainability is an important component for transforming higher education for a sustainable tomorrow. Velazquez et al³ define a sustainable university as "a higher educational institution, as a whole or as a part, that addresses, involves and promotes, on a regional or a global level, the minimization of negative environmental, economic, societal, and health effects generated in the use of their resources in order to fulfill its functions of teaching, research, outreach and partnership, and stewardship in ways to help society make the transition to sustainable lifestyles."

Various student- and faculty-friendly environmental initiatives were taken by MGMIHS university to make the campus eco-friendly. At policy level the Institute

became committed to a plastic bag-free zone. It was also recommended that the ban should be strictly enforced and canteen/shop vendors should be sensitized regarding the same. Tobacco and alcohol-free zones were actively advocated. The university encouraged faculty and students to use pooling of cars and vehicles and to follow no vehicle days to reduce emission of toxic gases. Studies in certain international universities show that the most obvious barriers to environmental sustainability were financial and that leadership, incentive, and demand are required to move forward with improving sustainability at universities.⁴

An important environmental-friendly initiative is the move toward paperless functioning of Departments. A recently published study in IOSR Journal of Environmental Science, Toxicology and Food Technology⁵ states that paperless campus is a new pedagogical approach where most of the pedagogic activities are dependent on electronic gadgets. Electronic books, an e-learning campus, digital libraries, computer-based learning, database management systems, video conferences, distance learning, smart card applications, web mail, teleconference, and web-based applications are common components of a paperless campus.

There was a felt need to test the feasibility of implementing a completely paperless system of functioning for MGMIHS university and constituent institutions in general and Internal Quality Assurance Cell in particular. Once achieved with the help of an electronic Management Information System (e-MIS), the initiative will go a long way for environmental conservation. The recently implemented ERP system at MGMIHS can be considered as a first step toward achieving a paperless system of functioning.

Sustainability issues in higher educational institutions have attracted increasing levels of attention from both the public and policy makers in recent decades.⁶ For the purpose of energy conservation, use of renewable energy in order to reduce carbon footprints was promoted at MGMIHS. Solar energy utilization is being actively promoted in the campuses. Solar heaters were installed for water heating at hospital, college, and hostel. The campus buildings were constructed in such a way that ample natural light and ventilation is made available. This resulted in the conservation of electricity. Special awareness programs were carried out for the stakeholders to conserve energy. For achieving efficiency in energy consumption, process has been initiated to replace fluorescent tube lights and compact fluorescent lamp (CFL) bulbs with light-emitting diode (LED) lights only. Use of energy-efficient appliances is actively advocated. Use of four-star rating low energy consumption equipments/machinery including star-rated refrigerators and air

conditioners are promoted. Unit settings for all air conditioners are usually kept at 22 to 24°C to conserve power. Staff and students are inspired and encouraged to conserve energy, by placing reminders placards (switch off artificial lighting and unplug electrical and electronic devices) in various departments, lecture halls, and corridors.

An interesting research by Hajrasouliha⁷ proposes an index, called Campus Score, which measures the main physical qualities of university campuses. Campus Score is composed of three latent variables representing Urbanism, Greenness, and On-Campus Living, with 10 indicators. This index has been calculated for 103 research-intensive universities in the United States. The study states that physical campus characteristics can impact student satisfaction, academic performance, and graduation rates. A similar score can be thought of for purpose of conducting environmental audit and can be included in accreditation process like NAAC.

Rational use of water can be a powerful tool to promote sustainability on university campuses. Other than resource and financial savings, it aims to support technological and behavior innovation toward a more balanced relationship between human activities and nature.⁸ In order to promote water conservation, an artificial pond with check dam is constructed in the MGMIHS campus and water from the same is used for gardening purpose. Sewage treatment plant is installed for treatment of waste water and this treated water is reused for gardening and plantation purpose at the university campus.

Carbon neutrality is promoted at MGMIHS by sending laboratory waste to an outsourced authorized biological waste disposal agency. The biodegradable wastes are used for compost making and for in-house gardening purpose. Recycling of waste paper is promoted. The MGMIHS can take ideas from universities in Malaysia which have been working toward implementing Green Initiatives as outlined in the UNEP Greening Universities Toolkit in 2013 to become sustainable Green Campuses.⁹

Increasing the green cover of MGMIHS university campuses is given highest priority. For the purpose of promoting this MGMIHS conducts a green audit of its campuses. Tree plantation drives on a periodic basis are conducted by the university to keep the campus green and to provide fresh oxygen; this also helps to sequester carbon dioxide emitted in the atmosphere. Garden, lawn, and plant nurseries in the campus are well maintained. Census of plants and trees in campus is maintained.

Advocacy, Communication, and Social Mobilization (ACSM) for environmental awareness was achieved at MGMIHS by arranging regular lectures for motivation of students and faculties to maintain eco-friendly campus. Awareness talks regarding Swachata Abhiyan and Swachata Mobile Application (developed by the Ministry

of Urban Development) was conducted for stakeholders like Dean, Medical Superintendent, and Students.

Inspection and supervision of campus and facilities was done within the institution by Head of Institution and site office in-charge on a regular basis. A special Health Inspector was appointed under Department of Community Medicine, Navi Mumbai who with the guidance of Dean, Medical Superintendent, and Professor and Head of the Department (Community Medicine) contributed to environmental protection steps. Regular water surveillance and testing for bacteriological examination is done to promote water quality. Biomedical waste management rules are strictly followed as part of environmental sustainability measures. Supervision over disposal of condemned materials for all building and structures in order to prevent fire hazard and checking for mosquito breeding sites and taking appropriate preventive measures are given priority. The constitution of a Campus Environmental and Sanitation Committee headed by the Medical Superintendent of the hospital was a move toward significantly improving the environmental sustainability of MGM teaching hospital. As a future initiative, MGMIHS can go for environmental audit and implement ISO 14001 environmental standards.

RECOMMENDATIONS

Environmental sustainability measures like plastic-free zones, car pooling, tobacco/alcohol-free zones, paperless administration, energy conservation, water conservation, measures for ensuring carbon neutrality, increasing green cover with tree plantation, biomedical waste management, e-waste management, formation of campus environmental and sanitation committee, and ACSM activities for promoting environmental sustainability can be easily and effectively adopted in educational institutes in a developing country for contributing toward environmental preservation. Further auditing of environmental sustainability is of vital importance in educational institutes using various indicators like number of departments implementing e-MIS and promoting paperless functioning. For energy conservation, indicators, such as percentage of CFL lights/bulbs replaced by energy-efficient LED lights and percentage of equipments having either four star or five star energy ratings can be implemented. In the area of water conservation, one can use indicators like percentage of buildings having rain water harvesting systems in place and facilities for reusing Sewage Treatment Plant treated water for nondrinking purposes. For the purpose of increasing green cover, indicators like percentage of land area which is designated as open green places and periodicity of conducting tree audit can be developed. Policy-level indicators which could be developed can be Adoption of Policy level initiatives like polythene-free

zones, tobacco/alcohol-free zone, and car pools. The ACSM indicators for environmental sustainability could include a number of sensitization meetings, lectures, and training sessions done for promoting environmental awareness. Once these environmental indicators are developed, the institution needs to formulate a data collection and surveillance system to know the progress made in these areas. Periodic environmental audit can then be conducted. Campus Score, which measures the main physical qualities of universities like Urbanism, Greenness, and On-Campus Living, can be implemented at MGMIHS. The time is also right for implementing ISO 14001 environmental standards so that MGMIHS can show the way to other universities of developing countries that Environmental Sustainability can become a reality and not just remain an utopian dream.

CONCLUSION

Environmental sustainability measures can be easily and effectively adopted in educational institutes in a developing country for contributing toward environmental preservation. Further auditing of environmental sustainability is of vital importance in educational institutes using various environmental indicators. Once these environmental indicators are developed, the institution needs to formulate a data collection and surveillance system to know the progress made in these areas. Periodic environmental audit can then be conducted based on these parameters. Once found effective, environmental

indicators and environmental audit as a process can be suggested to NAAC for inclusion as a criteria for assessment, appraisal, and as part of their Annual Quality Assurance Reporting System.

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