

Environmental education and awareness among students in India, Japan and Thailand for sustainable development

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Abstract

Introduction: Societies throughout the world establish educational systems in order to develop students, the future citizens, to behave in ways following the norms of the society so that we can all have a better world. Environmental education is one key which is important for the development of environmental knowledge in students. Sustainability is its main aim in order to shape human behavior, so as to improve the environment in a number of ways. **Methods:** The article is based on the review of literatures available from various sources, both printed and electronic. **Objectives:** The article aims to establish the background and importance of environmental education for sustainability. It also aims to review the various environmental education practices or strategies adopted at present in the education system of different countries. The countries included in this article were India, Japan and Thailand. Finally the review aims to discover the drawbacks in the environmental education in these countries. **Results and Discussion:** Environmental education has existed in the countries that were studied since the remote past and was rooted in their ancient tradition for the preservation of nature. When environmental education is included in the curriculum, students are expected to become increasingly aware of environmental issues, learn to take care of the environment and acquire skills and motivation to lessen current environmental problems. It was found that integration of environmental education into the school curriculum in India and Thailand is lacking behind in terms of available resources and techniques of education when compared to Japan. **Conclusion:** The article concluded that environmental education heightens awareness among students, which brings behavioral changes and practice, thereby leading them towards environmental protection for sustainable development.

Keywords: environmental education; Awareness; sustainability, sustainable development

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1. Introduction

There is an ever increasing awareness of environmental issues and their related problems. The impact of climate change can be felt through increasing global temperatures, increasing pollution and reduction of usable non-renewable natural resources [1]. In addition to these issues, many developing countries are increasing their energy consumption in continuing development activities which are leading to further environmental degradation [2]. Modern technologies and changing life style patterns amongst humans is a serious threat to the environment. The levels of pollution in developing countries are increasing on a daily basis. As a result, there is a growing need for environmental education in order to improve the quality of the environment and to drive sustainable development. Edu-

cation can bring knowledge and awareness to the students and this can lead to behavioral change which is helpful for maintaining a sustainable environment [3]. Due to environmental education and awareness, students are expected to demonstrate practices that care for the environment. It is worth mentioning, perhaps the most important global issue of our time, that is, the reduction of greenhouse gas emission and the wider impacts of global climate change. [4, 5]. This has led mankind to focus on alternative solutions to development, to bring sustainable development, through policies and approaches which safeguard nature. In order to achieve sustainable and equitable developments, there needs to be environmental awareness through education. Therefore, environmental education is important to motivate student's perceptions so that they support policies and programs that support efficient use of resources and implement actions, which reduce environmental damage, thus resulting in sustainable devel-

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opment [6].

The article uses various concepts as: *sustainable development*, *environmental education* and *environmental awareness*. The following describes these concepts.

According to Kates et al (2005) [7], *sustainable development is defined as the ability of humans to make development sustainable so as to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs*. The concept emerged in 1970s available in the Brundtland Report, (2002) published in 1987 [8].

Environmental education (EE) is considered to be very important in this decade for enhancing environmental awareness of the common people. It is considered helpful for developing a good quality life and for developing ideas and practices for maintaining a sustainable environment. As a development of this, *environmental education for sustainable development* (EESD), aims to enhance people's awareness through education and training. This aims to empower people of all ages, to take on their responsibilities for maintaining a sustainable future [9]. Environmental education further aims to establish a caring ethic towards the natural environment through developing knowledge and behavioral practices of environmental care. This process has resulted in the development of action plan as "*United Nations Decade of Education for Sustainable Development*" and "*Education for a Sustainable Future*" which aimed to help to promote environmentally sustainable societies.

Environmental education is interdisciplinary as it aims to develop knowledge, create skills and to change attitudes and lifestyles of students, the future citizens, in order to conserve the environment [24]. Environmental Education can be arranged into many stages in its progress. The first step is *environmental awareness* [10].

Environmental awareness includes understanding the main relationships between natures and human beings along with initiatives for protecting the natural and future environment. Many studies have pointed out that environmental awareness is closely related with factors such as; human's perception of environmental problems, inter-dependence and relations between human and nature, people's behavior and attitude towards the environment [11-14].

1.1. Importance and approach

This article aims to integrate the approach of Environmental Education for Sustainable Development (EESD) into the school's curriculum in order to make the students gain awareness, knowledge, skills and values for overcoming environmental problems. It also aims to make them care about the present and future environment for sustainability, thereby ensuring environmental quality and management for a sustainable and greener earth in the future. It is hoped

that by providing knowledge to students, there will be enhancement in helping to bring awareness to the students for environment and other related practices, which will further develop positive attitude towards the environment. As a result of environmental education, it is further expected that students will implement practices of environmental care for sustainability [15]. In addition, it is also hoped that it will help to develop a sustainable collective society through building partnerships among citizens, governmental and non-governmental organizations, and adopting participatory activities of environmental care and protection in daily life, at work, offices and in educational institutions. This learning process, through environmental education, will further help to increase student's knowledge about the environment, develop attitudes, motivations, commitment to take steps for responsible behavioral action as well as changes and practices they can carry out in their lives to reduce CO₂ and other greenhouse gas emissions [9].

1.2. Aims and objectives

The aims and objectives of this article are:

1. To find out the background and importance of environmental education for sustainability
2. To review the various environmental education practices or strategies adopted at present in the educational institutions in India, Japan and Thailand
3. To review the drawbacks in the present environmental education in educational institutions
4. To highlight the appropriate approach for implementation of environmental education from theory into practice for sustainable development from the review of different environmental education systems and strategies adopted in India, Japan and Thailand

2. Methods

This article is descriptive. It aims to describe the importance of environmental education of students so as to increase their awareness of the environment and its related problems and look for solutions to sustainable development. Secondary data is obtained through a literature study. Textbooks, journal articles and from internet sources were all researched with a focus on the environment education and awareness among students in India, Thailand and Japan. The article is based on the theoretical framework, of Environmental Education, through the definition of its concepts and its importance among students. The theoretical frameworks are the Theory of Planned Behaviour (TPB) and Theory of Reasoned Action (TRA). These theories are useful for designing intervention strategies to maintain or change students' attitude and behaviors towards the environment for environmental care and sustainability. The theory of reasoned action views an individual's intention to perform or not to perform an action as an immediate determinant of the action [31]. Both models

are based on the premise that individuals make logical and reasoned decisions to engage in specific behaviors by evaluating the information available to them. An individual decision is influenced not only by the person making the decision but also by the prevailing culture and the biophysical environment. Environmental awareness can be heightened by education at different levels to improve people's knowledge and attitudes. It is hoped that this will enhance their readiness to take individual and collective action, to alleviate environmental problems and to promote environmental conservation [32]. These theories are considered to be suitable for environmental education and awareness among students as they have the power to influence a student's decision to participate in a specific behavior in maintaining a sustainable environment. The authors have confined the review to only three countries. The reasons are in consideration of convenience, limited knowledge, time and economy. Two of the authors of this article are based in Thailand, while the other is based in India. Japan is a popular role model country of environmental awareness for sustainability. The authors aim to continue further research on environmental education and awareness in Japanese Schools in future. The article is organized into the following parts: Introduction, Methods, Results and Discussion and lastly, it is summarized and concluded.

3. Results and Discussion

3.1. *Environmental education in India*

Environmental Education for Sustainable Development (EESD) in India is rooted in ancient tradition and vision of life in balance with the elements of nature. A Conference in Ahmedabad, India on Environmental Education in 2004 aimed to highlight this vision by assembling experts together on a common platform to gather knowledge from all over the world. India's environmental activities, policies and programs give priorities to environmental education for sustainable development.

In order to solve environmental problems, it is important firstly, to describe in brief the environmental problems present in the current India. Some common problems frequently happening in India are land and forest degradation, pollution of water, air, soil, and deficiencies in biodiversity conservation and solid waste management [16]. In the current school curriculum in India there is no formal inclusion of environmental education relating to environmental problems and care. It is important for education policy makers, while formulating school curriculum structures, to educate students from primary age onwards, to motivate them and provide behavioral change to reduce home and school environmental problems. Other challenges to the integration of environmental education in the current curriculum of India's formal education system is due to its rigid course structure, conventional

way of teaching, limited time, and overloaded subjects [17]. In addition to these problems, there are also limited funds at the schools, leading to difficulties in recruiting qualified teachers, staffs and maintaining well equipped infrastructure. Even though there are many challenges in India's Education System, the Government of India remodeled the national policy on education. They collaborated with NGOs and other organizations to include Environmental Education in the school curriculum. Thus, India's school curriculum already addresses many socio economic problems along with environmental education to bring about awareness and behavioral change to the students, the future citizens of India, for sustainable development [18]. India is also cooperating and taking assistance for implementation of environmental education program from various international organizations. These include the United Nations Educational, Scientific and Cultural organization (UNESCO), United Nations Environment Program (UNEP), Ministry of Environment and Forestry (MoEF) and the Centre for Environmental Education (CEE). Therefore, it can be said on the whole that the current Indian education system gives high importance to environmental education and it has been implemented in many schools and colleges [19]. Environmental education has been made a compulsory subject since 1991 in all schools in India, thus giving it the status of top priority subject. In addition further efforts have been made by various councils and education departments of India to integrate environmental concepts into other subject curricula. In addition, India's planning process has integrated sustainable development as the goal in many dimensions, not only environmental but social and economic too. India's Five Year Plans shows India's initiatives and commitment to sustainable and inclusive growth. With this, India adopted a modern and practical environmental education for sustainable development approach with aims to bring attitude and behavioral change by enhancing awareness through conceptual understanding of the students. For example, taking students for field-trips to natural areas is an important strategy for sustainable futures and bringing awareness to students because it enables students to experience the local natural environment. It also provides opportunities to enhance students' cognition, knowledge and interest in science. Projects such as travelling to ecological parks to investigate the effect of pollutants are more beneficial and interesting to the students than the rote classroom lectures. This is because they gain first hand observations, which will have a lasting impact on the students and will encourage them to gain more knowledge about ecology and environmental issues [20 – 23].

3.2. *Environmental education in Japan*

Environmental Education in Japan has been long established and is thought to have started with the

establishment of the National Park System. It was initiated during the time of high economic growth in Japan in the 1960s and it delivered education for anti-pollution and nature preservation. Initially, the policy of Japan was directed mainly on the protection of the landscape. It started with the foundation of a nonprofit organization in 1950 named the National Park Association of Japan. Since then, many parks were developed as bases for education. Along with this, the importance of environmental education in Japan was increasingly recognized by policy makers and educators in the late 1980s with the global recognition of environmental threats and needs of conservation [24]. In 1986, the Environment Agency of Japan was set up by the Environment Education Council and in 2001 it became the Ministry of Environment. This ministry handles all planning and formulation of all government environmental policy, all waste and recycling measures and promotion of Environment Education through the Environmental Policy Bureau [25]. This measure led to the heightening of environmental awareness in Japan. An academic organization, the Japanese Society of Environmental Education', was founded in 1990 in cooperation with other associations to help in many kinds of environmental education programs and projects in Japan. As a result, environmental education extended throughout Japan. The Environment Basic Law and the Environment Basic Plan were enacted in 1993 and 1994 for environmental education and learning related to the conservation of the environment in Japan. At the same time, the Government organizations of Japan, such as the Ministry of Education, Science and Culture (MESC) changed their policies, books and teaching programs for high school education. The new curriculum in Japan that was developed contained the purpose, needs and methods for environmental education. It was categorized into six core categories, considered to be important, to solve environmental problems. These were; awareness, attitudes, skills, knowledge, ability and participation [26].

The "Kyoto Protocol", was an international treaty for preventing global warming. It was adopted in Japan along with a large number of other countries with a mission to reduce greenhouse gas emissions. This resulted in increased environmental care and consciousness among the people of Japan. In Japan, it is common to ask shoppers environmental friendly questions as: "Do you need a bag?" In daily life, it is common to use the derivatives of the word "eko," from the English word ecology, such as "Eko sutairu" or eco-style, "eko baggu" or ecobag, a reusable bag to carry groceries or other purchases in place of store-provided bags [27]. In brief, the main purposes of environmental education in Japan are to raise awareness of environmental problems and to help people to take care of the environment in daily life through behavioral changes and improved practices.

The aims for environmental education in Japan were:

1. To provide education in families, schools, and at regional levels.
2. To provide education to all ages.
3. To provide education not only to gain knowledge, but also learn skills and develop attitudes.
4. To motivate people to change their lifestyle and practices to those which are beneficial to the environment.
5. To make people aware that local environmental problems are responsible for global environmental problems.

The education strategy of school education in Japan aims to expose children in elementary and junior high school to get close to nature. It is hoped that this will enhance children's abilities and skills to understand cause-effect relationships for problem solving based on their own observations, daily practices, life style changes, fieldwork and research. Environmental education in the higher stages of elementary education in Japan is structured in the following way:

1. Awareness- the students are trained to develop skills to solve problem on their own
2. Knowledge- the students are trained to review intra-human relationship and also with nature
3. Acquisition of skills- the students acquire skills to solve environmental problems
4. Attitudes and Participation- the student develop participatory attitudes to develop behavioral changes [26].

Along with this, environmental in-service training programs for teachers are delivered at centers for interdisciplinary environmental education and are considered as important priorities. As a result, there is an increasing public awareness of environmental problems and the roles of the public for conservation [24]. Therefore, the importance of environmental education is considered to be high. There are three main purposes of Japan's environmental education. These are:

- To develop environmental problem awareness in each individual and organization in the country.
- To understand individual responsibilities and roles for the conservation of the environment.
- To develop a participatory approach through attitude changing in order to reduce environmental problems

3.3. Environmental education in Thailand

In common with India, environmental education is embedded in Thai culture and tradition. Despite this, at the basic primary level, environmental education is not a stand-alone subject but is delivered in science lessons. The Ministry of Education in Thailand provides guidelines for providing environmental education in the school curriculum. The structure of the curriculum is as follows; 1) school and environment;

2) personal relationships; 3) activities about environmental conservation; 4) environmental management in school; and 5) environmental collaboration between schools and their communities [28]. However, there is a wide gap between theory and practice in environmental education in Thailand. Some of the problems that lead to this gap are a lack of interesting activities or field trips and a lack of qualified teachers. Teaching is often delivered in the form of routine classroom lectures, which were boring to the students and, therefore find hard to develop students' awareness and care for the environment. In addition, the course content of Environmental Science for Teachers course needs improvement. This requires academicians to conduct research on the problems and needs in order to develop a strategy for environmental education. Thathong [30] conducted research in Thailand in three provinces on environmental education through the use of action research. It had the following aims; 1) to find a way to include environmental problems and care education in the school curriculum; 2) to study the associated problems with integrating environmental education in the school curriculum; 3) to study planning, policy, strategies and other related activities for the successful implementation of environmental education in the school curriculum; and 4) to give suggestions and guidelines for successful integration in the Thai school curriculum. The data was collected from a sample of 20 schools through the employment of different techniques as: documentary review, survey, participatory workshop, participant observation, interviewing, questionnaires, photographs, and video tapes. The findings of his study revealed the following: 1) The environmental subject was not included as a separate subject in the school curriculum but it was found in the content of some other subjects; 2) There was no students' environmental project work. Only teacher's projects and activities were found; 3) There were insufficient funds, tools, qualified teachers with environmental knowledge, awareness, and collaborative activities. Finally, he concluded with the formulations of some suggestions or guidelines for its successful implementation in the school curriculum. These were as follows: 1) To integrate environmental education in school-based curriculum; 2) Environmental education should be included in school policy making and planning; 3) The method of teaching should be student - centered; 4) Recruitment of qualified environmental science teachers is required; 5) Periodic training, workshop and projects should be delivered to environmental educationists; 6) Teachers should use available learning resources such as using the school's lawn to grow flowers, trees and other plants; and 7) There should be a recruitment of a school superintendent, with assignment or responsibility for continuous improvement of projects with aims to provide quality environmental education through participatory research and collaborative work for sustainable develop-

ment .

4. Summary and Conclusion

The review of the literature has highlighted the importance, problems and need for improvement in school curriculum and infrastructure for environmental education in Thailand and India. Problems of environmental education cannot be neglected. It is now globally accepted and recognized that conservation and care for the environment are the route to sustainable development. Environmental education has been there in Japan for many years. It started with the establishment of the National Park System in the 1950s which delivered anti-pollution education and education for nature preservation. In India it has been rooted in their ancient tradition and vision of living in balance with nature and all its elements. India recognizes environmental education as a major drive of change and its commitment to sustainable development is reflected in its policies, programs and other Government and NGO led activities. In Thailand too, environment education was traditionally a part of the culture. Despite this there is currently no environmental education subject at the primary level. Instead it is included in science or other subjects. All of the countries that were studied have highlighted the importance of integrating environmental education in the school curriculum.

In the contemporary school text books of India and Thailand, the socio-economic explanation of environmental degradation has not been addressed properly. In addition, the current education curricula of India and Thailand is not well organized, overloaded, inflexible and time limited. Teachers are not sufficiently qualified to deliver a quality environmental education. Inadequate school infra-structures and the use of conventional teaching approaches make integration of environmental education in formal education system difficult. In contrast, Japan has more practical awareness of how to teach environmental education. It provides instruction or educational guidance which can be used to drive behavioral change in school children. This is not the case in India and Thailand. The importance of integrating environmental education into the school curriculum cannot be ignored as it trains the students to adapt to a changing society and develop skills and motivation to solve problems independently. However, in the recent decades, there are many changes and development in Japan, Thailand and India, including inclusion of environmental education in the school's curriculum. As a result, students are expected to becoming increasingly aware, take care and possess skills and motivation to solve individually current environmental problems. Thus, it can be concluded that environmental education heightens awareness among students and this can lead to attitude and behavioral changes, thereby leading towards environmental protection for sustainable development.

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