

Embedding Concepts of Sustainable Development in Environmental Education

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Abstract

Humans evolved in the realm of nature. During evolution, anthropogenic activities led to an imbalance of natural ecosystems thereby causing environmental disasters. An increase in population, rapid industrialization, urban development, and changes in food consumption patterns are major drivers of environmental degradation. Though these are inevitable as a part of development, the nexus of environmental degradation and economic growth are directly linked with the conservation of various environmental compartments including soil, water, air, and biodiversity. Hence, sustainable development is considered the ultimate goal of the interrelationship of Man and the environment. In this context, environmental education is the need of the hour in educating society about the rational use of natural resources and the importance of Sustainable Development. To build a responsible society, the idea of including environmental education in the broader scope of education for development is imperative. Therefore, to assess the importance of environmental education for sustainable development, a perspective on Sustainable Development Goals (SDGs) from college students is attempted. The major objective of the paper was to assess the sensitization and dissemination of skills, attitudes, and behavior of the students with respect to Sustainable Development of Goals in Environmental Education. Methods of environmental education for sustainable development were imparted to the experimental and control group of students. Results indicated a significant difference between the groups in terms of environmental education, perception, and skills of the students from both groups. Further, students who imparted the knowledge on SDGs in Environmental Education showed more sensitization and perception with respect to SDGs, especially on water, biodiversity, climate change, poverty & hunger when compared to the students who were exposed to the conventional teaching methods of environmental education. Outcomes of the study contribute to the development of new methods of environmental education for sustainable development among college students.

Keywords

Sustainable development; Environmental education; Sustainable development goals; Teaching methods

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Introduction

India has been a country of progression and the economic growth in India is one of the fastest in the world. The rapid expansion and development of India have led to increased demands on resources, which have resulted in various issues like pollution. With over 1,417 crores of people living in India, there are immense demands on resources. Currently, 70% of the population lives in the cities which has also led to a rapid increase in the number of toxic emissions. In addition to this, deforestation and other kinds of environmental pollution are also on a rise. The greenhouse effect and unexpectedly heavy snow, rain, or fire in mountains are the results of pollution released into the atmosphere. This relates to how the ecological environment has suffered significant harm with no chance for recovery (Chen et al., 2022). Due to such factors, India is facing various challenges like global climate change. The increasing levels of pollution caused by industries and automobiles have led to several diseases and health problems among people. It is undeniable that the world's potential for regeneration is exhausted and that natural capital is starting to limit both current and future human activities (Wackernagel et al., 2017).

To reduce the impact of such issues, the UN-GA (United Nations General Assembly) along with 193 countries has set up 17 rules for sustainable living commonly known as the SDG (Sustainable development goals). The most major worldwide initiative to date to improve global sustainable development is the UN's Sustainable Development Goals (SDGs) (Wackernagel et al., 2017). The commitment to address the political, economic, and environmental difficulties faced by humans is known as sustainable development goals (Mohanty, 2018). The interconnectedness and integrated character of the SDGs are emphasized as being vital for ensuring that sustainable development is achieved on the UN agenda (Barbier & Burgess, 2017). A lot of guidelines have been implemented by the government of India such that the people can follow a sustainable living. However, people still face a lot of problems due to polluted air, water, and the depletion of natural resources. Expectations toward society (job, education, and the community that respondents reside in) in relation to the implementation of the SDGs are statistically much higher among younger generations (Yamane & Kaneko, 2021). According to the Islam, H. 2025 study analysis, the relationship between economic and environmental factors and SDGs is positively moderated by technological advancements. However, the moderation of green innovation results in a positive correlation between social factors and SDGs and a negative correlation between economic factors and SDGs, underscoring the difficulties in attaining sustainable development. All things considered, this study offers insightful information about the intricate dynamics of sustainable development, highlighting the necessity of comprehensive approaches to successfully address global issues. According to Muhammad, I. Y. 2023 a child's development and educational background are greatly impacted by early childhood education and is ultimately a necessary instrument for accomplishing the global sustainable development agenda. An overhaul of childhood education is essential given the state of early childhood education today in relation to the 2030 global agenda for sustainable development.

Hence it is a major necessity of the present situation that the people inhabiting the urban areas which include students, official employees, other workers, and retired officials as well as the people who are not involved in any kind of official work are made aware of SDGs. Uncoordinated action may lead to internal conflicts, such as subsidies for both renewable and non-renewable fuel

sources, and missed synergies, such as when properly targeted investment in renewable energy reduces emissions while also lowering pollution, enhancing human health, and promoting equality (Stafford-Smith, M., Griggs, D., Gaffney, O. et al. 2017). In 2030, the younger generation will be the central working force in society and is expected to make real efforts to create a sustainable future and likely play a substantial role in achieving the SDGs (Yamane & Kaneko, 2021). India has a large population which majorly includes the youngsters, they should be made aware of SDG's such that they are involved from an early age to create and sustain the long-term momentum that will help India reach its goals and drive the implementation of its Sustainable Development Goals.

The universities are crucial in educating students about the significance of the aims of sustainable development. The ability of the universities to educate students about sustainable development objectives fosters awareness and a strong perception among them. A major role is played by the educational institutions in educating an individual about the SDG. Any country's sustainable growth can benefit greatly from higher education (Jadhav A. S., 2014). Higher education is required for every student as higher education helps to understand SDGs (Krishna, S. H., et al., (2022). This implies that there is a need for the educational systems to launch a course on sustainability development.

Older adults are among the groups most at risk of social exclusion, ill health, poverty, and unstable income around the world (Duffy et al., 2015). It is equally important that the older age groups are made aware of the SDG's as they also come under the vulnerability of not following sustainable living.

Pollution is a significant hazard to long-term growth. Although India is the world's second most polluted country, problems with air, water, noise, and soil pollution are on the rise. This is putting humanity's survival at risk. One well-known example of such a catastrophic occurrence is seen in the city's capital, Delhi, where air pollution levels have risen to a dangerous level, resulting in a variety of health complications. Not only Delhi, but also states such as Hyderabad, are suffering from severe pollution consequences. Another troubling problem is energy consumption. Most people are quickly moving toward the use of machines and smart devices that consume a lot of energy.

India ranks 5th most vulnerable to climatic changes, this implies towards a need for sustainable living. Poverty, loss of biodiversity, waste production are other events which is greatly related to lack of sustainable living. Adopting a sustainable development pathway, which involves switching to environmentally friendly technologies and promoting energy efficiency, renewable energy, forest conservation, reforestation, water conservation, etc., is the most effective strategy to combat climate change (Sathaye et al., 2006).

Even though individuals and organizations all over the world have widely identified, implemented, and used natural resources, developing countries throughout the world have showed low levels of knowledge and action when it comes to conserving and sustaining environmental resources (Aziah et al., 2022). On the other hand, few people are aware of these challenges or the targets that have been developed to eliminate the effects of sustainable development. As a result, such issues are passed down from generation to generation.

The main concern henceforth is that very few youngsters are aware of sustainable development. Only those youngsters who have taken a prior course have indicated to be sensitive and aware about sustainable living.

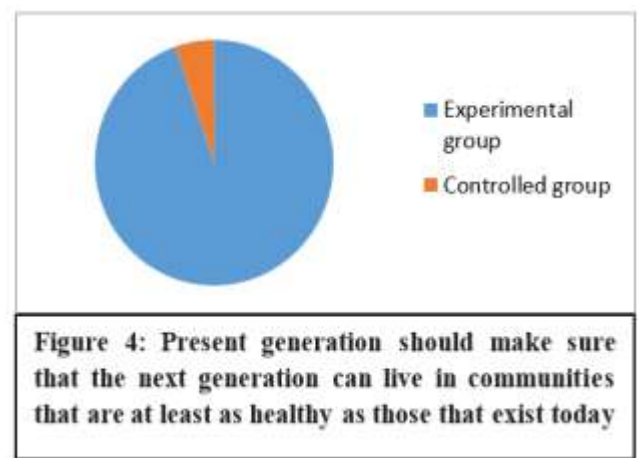
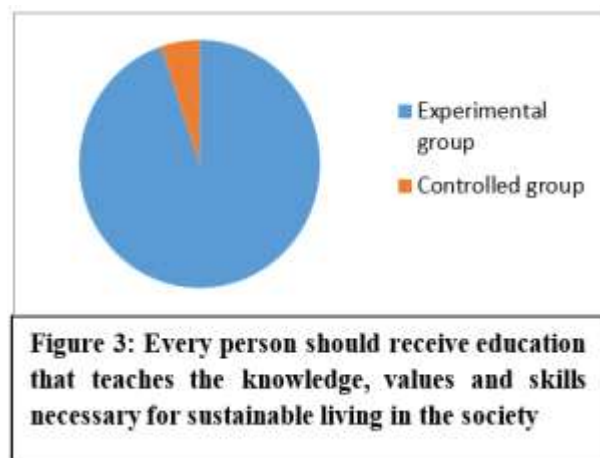
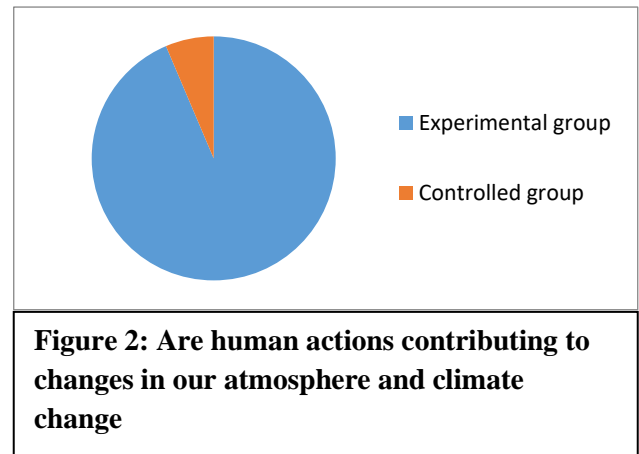
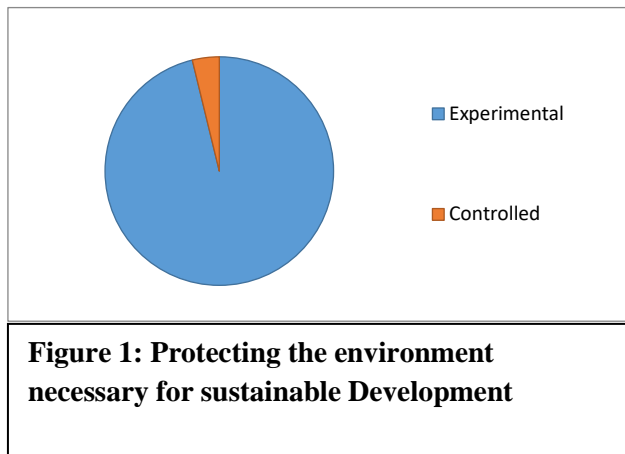
Methodology

A survey was conducted to assess perspective of students on sustainable development and environmental education, with an emphasis on: analyze the individual's knowledge of sustainability development (section A), understanding the concept and the factors that affect sustainability development (section B), and sustainable thinking and living that integrates composting, recycling, walking etc. in their daily life (section C). These questions were primarily designed to determine how many of these individuals adopted sustainable living where a major focus was given towards the youngsters (Age 18-25) to evaluate how aware they were of sustainable living and the role they play towards a better living. The questionnaire involved several multiple-choice questions linked to their knowledge and practice of sustainable development, as the purpose of this study is to examine how many people of various age groups are aware of the phrase sustainability development. This questionnaire was distributed through both offline and online channels to the students across Indian states. The results of this poll were later compiled for inferences.

Results and Discussion

Feedback was taken for experimental and control group students which involved three sections A, B, and C that comprised of various questions linked to the concept of sustainable development and sustainable living to examine the status, skills, attitudes, behavior, and awareness with respect to Sustainable Development of Goals in Environmental Education among both the group of students. This poll was performed both online and offline, with people of all ages and from all across the country filling out the questionnaire. Following the effective distribution of the questionnaire, 320 replies from experimental and control group students' data was taken, for a reasonable conclusion.

The analysis of the data that was gathered in section A gives information that 96.2% experimental students agreed that protecting the environment is necessary for sustainable development while 3.8% of controlled group students were marked aware of the necessity of protecting the environment. (Figure 1). In another response collected in section A we can notice that 93.6% of the experimental group students agreed that human actions are contributing to changes in our atmosphere and climate systems while 6.4% agreed that the contrary is true (Figure 2). Similarly in section B it was observed that the younger generation strongly agreed that every person should receive education that imparts knowledge, values, and skills necessary for sustainable living in society (94.8%) (Figure 3). Another question which positively shows the awareness of the individuals is the one in which they strongly agree that the present generation should make sure that the next generation can live in communities that are at least as healthy as those that exist today (Figure 4).



Few questions from the section C which analyzes behavior of both experimental and control group were assessed. From the table given below, we can conclude that the experimental group is aware and follows the sustainable development methods whereas we can bring more awareness amongst the control group students on sustainable living style.

Table 1: analysis of data collected from Section C related to their behavior towards sustainable living

S.No.	Section C questionnaire	Experimental group Agreed %	Controlled group Agreed %
1.	At home, I recycle as much as I can	77.3%	22.7%
2.	Awareness on healthy lifestyle choices	56.6%	43.4%

3.	I pick up litter when I see it in a park or natural area	64.9%	35.1%
4.	Awareness on composting	42.1%	57.9%

The data was collected from various cities of India like Hyderabad, Kolkata, Ranchi, Gurgaon, Gandhinagar, Sachar, and Dehradun, through the questionnaire. The results indicated that residents of developed cities showed more acquaintance with the skills and attitude towards sustainable development and environmental education when compared to those students from developing cities. The study found that college students between the ages of 18 to 22 who were more sensitized about the sustainable development as part of their curriculum.

These individuals were aware of the different environmental concerns that were impeding sustainability, such as climate change, pollution, resource exploitation and biodiversity loss. These students were noted to be extremely environmental conscious. A bigger proportion of students felt that sustainable construction is essential for long-term growth. They also agreed that human activities are causing changes in the atmosphere and climatic circumstances, which are causing environmental depletion. The responses obtained from the students aged 18 to 25 indicates that they have taken a prior course on sustainability development. The responses from the participants pointed towards necessity for the construction of an educational curriculum in schools and colleges that attempts to educate students on the growing consequences of a lack of sustainable living and the urgent need to cultivate sustainable development. As a result, the goal of implementing the UN-17 GA's Sustainable Development Goals, which is to practice sustainable living for everyone by 2030, will be managed to meet.

India is a densely populated country with approximately 1,417 crores of people who are constantly pushing toward urbanization while failing to recognize the necessity to sustain resources for future generations. The consequences of such urbanization have been severe, notwithstanding the fact that natural resources are gradually depleting. The loss of natural resources is having serious consequences for humanity. The effects of climatic variability and change, climate policy responses, and concomitant socioeconomic growth will all have an impact on nations' ability to achieve sustainable development goals (Sathaye et al., 2006). The human race is currently dealing with serious environmental issues like climate change, the greenhouse effect, the energy crisis, the depletion of natural resources, the loss of biodiversity, and pollution of the air, water, and soil (Jadhav A. S., 2014). Climate change, pollution, biodiversity loss, and poverty are just a few of the challenges to establishing sustainable living. The Sustainable Development Goals (SDGs) are a collection of 17 Goals endorsed by 193 United Nations member countries at the historic Summit held in New York on September 25, 2015 (Division & Secretariat, n.d.). In this context, the UN-GA (United Nations General Assembly) issued a list of 17 regulations that must be followed by 2030 in order to conserve resources from depletion. As a result, it is imperative that individuals practice sustainable development approaches. Because it is increasingly recognized that sustainability is a global issue that requires a global response, all organizations are engaged in accomplishing the goals at the local, national, regional, and international levels (Sanchita, M., & Goel, M 2012).

Another key issue that exists in the current situation is a lack of understanding among the youth about the concept of sustainable living and their part in ensuring a better future. One of the

most feasible answers to such a problem is to educate people about the concept of sustainable development and the ways for implementing it. From 2005 to 2014, the United Nations decade of "Education for Sustainable Development" (UNDEAD) emphasized the critical role that education can and must play in the global drive toward sustainable development and the preservation of our planet (Mohanty, 2018). The majority of India's population is made up of youthful people. The younger generation of today, defined here as the older Generation Z cohort (18-23) and the younger millennial cohort (24-30), is a critical player in constructing a sustainable future (Yamane & Kaneko, 2021). Many academics and professionals believe that education will help us move toward sustainability (Jadhav A. S., 2014). This suggests that they should be taught about the challenges surrounding the lack of sustainable living so that they can come forward and play their individual roles toward a better way of life. The sharing economy can help achieve the necessary goals since it has the potential to significantly contribute to sustainable development progress (Boar et al., 2020).

Conclusion

In the era of environment protection and sustainable development, there is a need for appropriate methods to sensitize students on emerging concepts of environmental sustainability. It is the need of hour to develop environmental education system to motivate human responsiveness towards conserving natural resources for sustainability and environmental security. Further, study indicated that students who imparted the knowledge on SDGs in Environmental Education showed more sensitization and perception with respect to SDGs, especially on water, biodiversity, climate change, poverty & hunger when compared to the students who were exposed to the conventional teaching methods of environmental education. Thus, present study sheds a light on the significant role of environmental education in imparting skills, knowledge and awareness on sustainable development. Outcomes of the study contribute to the development of new methods of analysis for imparting environmental education to sensitize various community groups on sustainable development.

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