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EDUCATING FOR SUSTAINABILITY: ENVIRONMENTAL EDUCATION AND INTEGRATION OF ESD IN EDUCATION

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Abstract

Education for Sustainable Development (ESD) is vital in fostering quality education that enables stakeholders to work collaboratively and address complex problems related to sustainable development. ESD is a process for developing awareness, necessary skills, and values so that the learners can take responsibility in society for the future's sustainable development. The paper discusses two aspects of ESD, i.e., Environmental Education (EE) as the subset of ESD and the integration of ESD in educational institutions. The paper utilized a rigorous literature review to understand these aspects of ESD. It was seen that student-centric approaches, such as hands-on experiences and working with nature, can make learners aware of environmental sustainability issues. Further, ESD can transform education to inculcate sustainable development values and can be integrated into educational institutions by developing sustainability-related competencies and moving towards transdisciplinarity.

***Keywords**: Education for Sustainable Development, Environmental Education, Sustainable Development*

Introduction

Our environment comprises biotic and abiotic components interacting in various ways to sustain life on the earth. As we see, the sustenance of life depends on the various resources the earth provides. But, human greed and over-exploitation of these resources are leading our world to a future of scarcity for the coming generations. Even today, many third-world nations lack basic resources like clean drinking water, air, and nutritious food. The indiscriminate use of earth's resources has forced us to think of using them judiciously; hence, the concept of

sustainability comes into play. World Commission on Environment and Development (WECD) Report (1987), also known as "Our Common Future," published by the United Nations, defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Environmental problems like pollution, global warming, waste disposal, acidification of water bodies, loss of biodiversity, deforestation, ozone layer depletion, and so on have led to ecological imbalance, severely affecting human societies and the environment. These effects can be seen on social, economic, and cultural levels. UNESCO has identified four dimensions of sustainable development: society, environment, and economy, which are intertwined.

To attain this social, cultural, environmental, and economic sustainability, it is crucial to educate all the stakeholders about sustainable development and how to achieve it. Education for sustainable development (ESD) is a dynamic concept with a vision to empower people to assume responsibility for sustainable development. The Tallories Declaration (1992) was the very first statement made by university leaders regarding the commitment of higher education towards environmental sustainability. Agenda 21, adopted in 1992, was the first international document to recognize the importance of education for achieving sustainable development. Later, the United Nations (2005) declared 2005-2014 as the Decade of Education for Sustainable Development (DESD), which sought to incorporate sustainable development practices in the education system by mobilizing resources to achieve a sustainable future. It put forward an international implementation scheme that identified strategies, practices, and infrastructure support, as well as a scheme for mobilizing resources for ESD. Further, the Global Education First Initiative (GEFI) launched in 2012, led by the United Nations Secretary-General, included the slogan "Sustainable Development Begins with Education" and insisted on its importance for achieving the 17 sustainable development goals (SDG). ESD further finds mentioned in Sustainable Development Goals (SDGs) target 4.7, which aims to ensure that

"*By 2030, all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through ESD and sustainable lifestyles, human rights, gender equality, promotion of the culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and culture's contribution to sustainable development."*

A policy analysis of the status of ESD in the United Kingdom done under the United Kingdom National Commission for UNESCO (2013) reported that best practices related to ESD exist at all levels characterized by teaching practices, enhanced learning outcomes, and professional standards of teachers but still, developments in ESD are primarily on a smaller

scale, in the form of small projects. No coherent policy and practices exist that promote ESD experiences to the learners. The report further called for a clear vision and adoption of an overall ESD policy framework.

Since ESD is a subject for developing awareness, necessary skills, and values so that the learners can take responsibility in society for the future's sustainable development, it is essential to understand different aspects of ESD. Environmental Education (EE) adopts a multi and interdisciplinary framework for lifelong learning, emphasizing solving regional, national, and global issues, which is also a significant objective of ESD (Permanasari et al., 2021). It aims to produce learners with caring and responsible attitudes and behaviors towards behaviors toward the environment (Rahmawati et al., 2020). Environmental concerns are a subset of ESD; hence, we consider environmental education a subset of ESD. Hence, the paper discusses aspects related to environmental education, an essential subset of ESD, and the integration of ESD in educational institutions.

Environmental Education (EE) as a subset of Education for Sustainable Development (ESD)

Education for sustainable development is a concept that aims to educate and empower to assume a sustainable future that involves various stakeholders like students, corporations, and communities. Environmental education is essential to ESD because it gives students the knowledge, skills, and experiences they need to become successful community leaders and make informed decisions about managing their natural resources. Students are the future leaders, and educational institutions prepare them for the challenges yet to come and take part in decisions and policy-making. Palmer (1998) said that it is vital for students to have a suitable amount of knowledge and awareness about the environment while they are at school. Educational institutions are the premiere in inculcating sustainable values and care for the environment by creating positive awareness and attitudes. Appropriate methods must be utilized to inculcate these values and care for the environment.

Wilson (2011) opined that to enhance the effectiveness of contact between nature and children, it is essential to focus on their environment, involve their families and peers, and develop enjoyable learning experiences that are age-appropriate, child-centric, and innovative. This develops a love for nature in students and environmentally responsible behavior. In a case study to develop teaching material for biodiversity and sustainable education by Erten (2015) on pre-service teachers enrolled in general biology courses found that when the participants were closely involved in the developmental process of frogs, it changed their attitude toward

living beings and made them more aware of the significance of biodiversity and sustainable use of living beings. An experimental study conducted by Kostova and Atasoy (2008) to find out the dominant methods of successful learning in environmental education concluded that high achievement was obtained by students when innovative student-centric methods like studying problems and preparing presentations, followed by fieldwork, caring for plants and animals were used. Most effective was the case study method, where students analyzed the problems through role-playing followed by brainstorming and discussion, which increased their thinking abilities.

Baratz and Hazeria (2012) opined that children's literature is valuable for assimilating values and providing ideological infrastructure. Hence, the abundance of environment-related themes in literature contributes to introducing environmental conservation using literary experience. Tarmin (2017), in her interpretive analysis of famous children's books depicting green literature, concluded that such literature could raise eco-consciousness in children. Aslan and Bas (2020), while examining children's literary work 'I am a Hornbeam Branch', viewed that images, texts, and ideologies represented in the children's literature should allow the reader to inculcate individual ecological identity and values of the environmental movement.

It is essential to develop a positive attitude and inculcate sustainable values toward the environment in teachers and learners, and this can be done by enhancing the learning experiences. It can be seen that student-centric approaches like role-playing, case studies, and fieldwork involve working with nature, brainstorming and discussions, and story-telling.

Integration of Education for Sustainable Development (ESD) in educational institutions

There have been studies that suggest that ESD, with its sustainability content, can transform education. Tilbury (2011), in an expert review of processes and learning on ESD, opined that ESD aims to educational shifts from passing of knowledge to understanding and getting to the root of the issue, from seeing people as a problem to seeing people as facilitators of change, from sending a message to dialogue, negotiation and, action, raising awareness to change mental models that influence decision making and actions. It was further viewed that active and participatory learning, which is core to ESD, motivates the learners to visualize positive futures, think systematically, apply what is learned, and traverse the debate between tradition and innovation. In another study, Laurie *et al.* (2016) reported a synthesis of studies conducted in 18 countries with high scores in the Programme for International Student Assessment (PISA) to determine ESD's contribution toward quality education. The result showed that when the sustainability concepts are included in the curriculum, teaching, and

learning transform primary and secondary education in all aspects, and ESD-related pedagogies accelerate the knowledge gaining and promote the learning of skills and values and develop perspectives necessary to nurture sustainable societies. Hence, ESD pedagogies have a more substantial transformative effect on primary and secondary education than merely introducing sustainability content in the curriculum. In a quasi-experimental study conducted by Padmanabhan and Singh (2016) where, class VII students who were taught with a curriculum integrated with ESD content had a higher mean knowledge score on sustainable development as compared to the students who were not taught with ESD content integrated into the curriculum. Further, Padmanabhan (2016) found that the integration of sustainability content into the school curriculum improved the critical thinking of the students on sustainable development. This indicates that the integration of ESD content increases the student's knowledge as well as their critical thinking on sustainable development, and it is crucial to work in the direction of better inculcation of sustainability content in the school curriculum.

Jeronen, *et al*, (2016) in their study found that there was an emphasis on teaching methods that involved students in working groups that had active participation in the learning process, improved sustainability education. In an attempt to understand how to better integrate ESD, Zowada, *et al*. (2019) in their study found that the inclusion of geographical perspectives in Chemistry that combines social perspectives with natural science finds positive views with chemistry teachers in promoting ESD. Nousheen and Kalsoom (2022) in their mixed method study found that sustainability pedagogies including case studies, discussions, debates, critical incidents, and problem-based teaching improved the sustainability consciousness of pre-service teachers.

Obrecht, *et al.* (2022) studied the level of integration of environmental sustainability content in B.Sc., M.Sc., and Ph.D. programs in Slovenian universities and found that most of the programs had an intermedial inclusion of environmental sustainability content which was mainly about environmental protection, ecology, and "greening" but less about the social aspect of sustainability. Further, most of this content was integrated into Ph.D. and Master's levels in natural sciences, computer sciences, and mathematics programs. Further, Sendall, *et al.* (2011) in their survey study found that a very small number of colleges or universities offered Green IT (Information Technology) or Green computing courses and most participants stated that the administrators should be responsible for inculcating sustainability into the curricula.

While talking about the inculcation of ESD into educational institutions, research studies indicate that it is essential to integrate it with a cross-border approach among different disciplines. Yarime *et al*. (2012) believe that sustainability-related problems require an interdisciplinary and trans-disciplinary approach involving an active collaboration from various stakeholders in higher education. The institutional level will require Significant changes and adjustments to transition from traditional sciences to sustainability sciences. Amadon and Oliveira (2013), while reviewing the past, present, and future scenarios of integrating sustainability into higher education institutions, found that universities face difficulties in transforming general sets of statements about sustainability into tangible practices. They further opined that sustainability in education needs to be treated as a cyclic process of implementation, evaluation, and readjustment. There is a need to move towards inter and trans-disciplinary approaches.

ESD and Teachers/Academicians' perceptions and competencies

United Nations Economic Commission for Europe (2012) has identified core competencies under four ESD categories: learning to know, learning to do, learning to be, and learning to live together. Scherak and Rieckmann (2020) at the University of Vechta, Germany, conducted a study to understand the competencies university teachers need to work with ESD while taking the Rounder Sense of Purpose (RSP) framework as a guide. They found that 12 competencies mentioned in the RSP framework (systems, futures, participation, attentiveness, empathy, values, transdisciplinarity, creativity, action, criticality, responsibility, and decisiveness) were relevant to ESD in higher education, but developing these competencies in teachers require a better framework and, guidance to the staff. Sims and Falkenberg (2013), in their case study of Canadian faculties of education, described the importance of experiential learning, building partnerships with colleagues, students, and communities, and problem-solving around real-life problems in developing competencies in ESD. Karaarslan and Teksöz (2016) believe that the mere integration of sustainable development concepts in the curriculum is not enough, and there is a need to develop ESD-related competencies in science teachers. Their study found that the competencies of science teachers do not include systems thinking skills with affective aspects that develop the intention to act sustainably. Muller *et al*. (2021) tried to understand the perspectives of School Principals in Germany, Macau, and the USA. They reported that due to their responsibility, school principals are significant actors in fastening ESD with schools. They also identified a broad variety of competencies required by the school principals for the same, namely, the need to be a visionary and a practitioner and

possess good knowledge of ESD to introduce it in the school. Further, in their study, Tasci (2022) tried to understand the perceptions of academicians in administrative positions in HEIs regarding sustainability in terms of metaphors. The metaphors produced by these administrators were classified into five groups: ecological, social, educational, managerial, and economic. These showcase how they comprehend the concept of sustainability in higher education.

ESD can transform education to inculcate sustainable development values and involve action-based and experiential teaching-learning, which also requires the education system to move towards transdisciplinarity. It is also necessary to build related competencies in the teachers to further the integration of ESD in educational institutions.

Conclusion

ESD is a tool to achieve a sustainable future, and it is necessary to consider different aspects of ESD so that it can be integrated into the education system. Environmental education is an integral part of ESD. Environmental content included in the curriculum through student-centric approaches such as stories, hands-on experiences, and working closely with nature can make learners aware of environmental sustainability issues. It can also positively shift their attitude towards nature. Hence, there is a need to increase the learners' awareness by using better environmental education programs that motivate them to participate in environment-related activities. Another aspect related to ESD is its integration into educational institutions. It is seen that sustainability content can transform education, but it requires a set of competencies to be built and requires institutional leaders to work in the direction that promotes the inculcation of sustainability content in the curriculum. Apart from this, there is a need to shift to a trans-disciplinary approach essential to an educational institution's overall sustainability for complete integration of ESD.

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