

The Engagement of Activities promote the Environmental Sustainability Awareness: A Review of literature

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ABSTRACT

This paper aims to explore the engagement of the activities that enhance the environmental sustainability awareness by looking at literature review. It has been demonstrated within literature that the engagement of activities is significantly associated with environmental sustainability awareness but the types of activities and their effect towards environmental sustainability awareness is underexplored. The United Nations Decade of Education for Sustainable Development articulation approaches all countries to introduce environmental sustainability into the education systems in order to add to students' learning, to create an environmentally sustainable future. According to many researchers, among the main activities highlighted in literatures are the participatory activities like experimental activities, workshop style public events, experiential real-world activities, role plays, debates, solving problems and discussions. By looking at the environmental sustainability scope learning experiences and resources can be categorized as mediums to influence the awareness of environmental sustainability. Apart from this justification, among other approaches, the potentials of these two components are yet to be optimized. In short, the critical discussion provided in this paper would help to strengthen the body of knowledge on environmental sustainability awareness. Findings from this review shed some lights on the potential of engagement of activities for the enhancement of environmental sustainability awareness. Also, the types of learning experiences and resources that engage the students to promote the environmental sustainability awareness.

Keywords

Environmental sustainability awareness, Engagement of activities, Learning experiences and resources.

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Introduction

Over the years, human activities have adversely affected the ecosystem which leads to depletion of natural resources, extinction of wildlife and pollution (Prabawania, et al., 2017). Emissions are increasing, global temperature is rising and climate is changing and if these issues are not promptly addressed, it could cause millions of people to tumble into poverty during the next ten years (United Nations, 2020).

Sustainability is the universal call of the United Nations (Avisar, et al., 2018). According to UNESCO, education changes an individual in significant ways. Hence, education for environmental sustainability with heightened ecological awareness is very important to raise ecological concerns among the general public. The goal of environmental education should be to develop an absolute populace that thinks about, and are concerned about, the environment and its related issues, and which has the data, aptitudes, mentalities, inspirations, and pledge to follow the direction of the courses of action of current issues and the anticipation of new ones (UNESCO, 2018).

Educational institutes play a crucial role in preparing responsible and knowledgeable students to respond to

the environmental challenges that the world face. Schools are places where the present and tomorrow's pioneers are readied. Institutes of secondary education are relied upon to deliver answers for these worldwide issues. To implement education for environmental sustainability successfully, key steps, such as school commitment and the development of policies, need to be taken into consideration (Hay and Eagle, 2019). All over the world, many educational institutes have been struggling to manage the environment and incorporate the aspect of sustainability in their curriculum (Avisar, et al., 2018). According to literature, involvement of everyone in the community and setting examples to meet the changing needs of the environment are of utmost importance. All the staff in the schools (principals, supervisors, teachers, administrators) are like the students and they are the first people who will implement the environment friendly attitude and behavior in their daily lives; which is promoted in the school (Moura, et al., 2019). Companies, NGOs and educational institutes are expected to take the initiative in protecting the environment (Hajj, et al., 2017).

The environmental education goals include giving students the chance to increase awareness of the earth,

knowledge and experience of the environmental issues, qualities and inspirational dispositions, aptitudes required to take care of environmental problems and, the motivation and capacity to contribute (Raniga & Andamon, 2016). Environmental education provides the opportunity for the students to explore environmental issues, get involved in solving the environmental problems, and make decisions to protect the environment. Consequently, students will have a good understanding and required skills to take responsible actions.

As per Ekantini & Wilujeng (2018), a definitive objective of education is to transform human behavior. This change needs different measures and tools to change the attitude and way of life. It is contended that the attainment of information and better insight into different aspects of the environment, allows students not to merely hold a collection of information, statistical data, but to actively assess issues and situations in the light of educated understandings (Thongma, et al., 2017). This is a fundamental necessity for resolving national and worldwide environmental issues and for dealing with the environment responsibly. In the light of this examination, gaining information about sustainable development issues makes students more aware of their environment. The more a student becomes aware of his/her environment, the more s/he can develop to value it and hence utilize its resources in a sustainable manner.

Literature Review

Environmental education involves the development of an educated child into a motivated, responsible, thoughtful citizen, who tries to take responsible actions that help to maintain a sustainable environment for present and future generations (Berchin, 2017). The objective of environmental education is to make the students think about environmental issues and build environmental awareness for the present and future. Pretorius, et al., (2019) contended that education for sustainable development should be built on pedagogical standards that are focused on active involvement. Essentially, Iqbal, et al., (2018) noticed that education for the environment is a blend of radical environmentalism and education, which paves the way for a greener environment. Education for the environment also urges students to reflect on their learning and to build up the abilities to follow up on what they have realized, just as to utilize problem-solving and decision-making skills to help bring about a positive change (Ekantini & Wilujeng, 2018). This is connected to the development of attitude, values, and behavior essential for environmental sustainability.

Soltani, et al., (2019) also believes that these values are a necessary aspect of education for environmental sustainability. Understanding one's own values, the values of the society they live in, and the value of others around the globe, is an integral part of education for sustainability. Subsequently, educational programme developers need to consider the integration of new values that will enable communities to reach their sustainability goals.

A few scholars, including (Cogut, et al., 2019; Eppinga et. al, 2019) consider education for the environment as the main segment that can be connected to education for environmental sustainability, not education about and through the environment. To incorporate successfully education for environmental sustainability into the school educational modules, it should be as education about, through, and for the environment. Therefore, the purpose of this paper is to study the engagement of activities that promote environmental sustainability awareness.

Methodology

Systematic literature review and analysis is a form of secondary study of identifying, assessing and deciphering accessible research related to a specific extent (Thorisdottir and Johannsdottir, 2019). Important features of the systematic literature review include planning, conducting the review, analysis and findings reporting. It helps researchers to select, analyze and report previously conducted research on a particular topic (Yang *et al.*, 2017).

To collect the data, the researcher firstly developed the article inclusion and exclusion criteria. The time span of 2015 to 2020 was selected as it is justified by the large body of academic literature published on this topic. The journals in this span provide information with variety of topics adequate for achieving the research objectives and peer-review confirms a high level of quality. Different keywords such as "Environmental sustainability awareness", "Engagement of activities", "Learning experiences" and "resources" were used to find the articles. Logical operators (i.e. OR, AND), and synonyms of "engagement", "learning", "resources" were used to guarantee an expansive inclusion of significant papers for inclusion. Journal articles were taken from the databases: Emerald and Ebscohost, which resulted 1149 articles.

Titles and abstracts were carefully read and assessed. Article inclusion and exclusion criteria was established to reduce bias and increase the quality and relevance of the study. Journals belonging to Emerald were selected for inclusion and non-relevant articles were excepted on the basis of proper justification. This cycle brought

about the last choice of 41 exceptionally significant publications for the study. To manage the data, a table was created and entered all necessary information for the reference. The references were not restricted to any country but considered the whole world. Therefore, the limitation of this paper could be due to the limitation of the online resources.

Findings

In this section, how engagement of activities enhance environmental sustainability awareness with the help of Burns model of sustainability pedagogy is discussed. After that how learning experiences engage the students and the type of activities that engage the students in promoting environmental sustainability awareness. The type of resources that engage the students are also included in this section.

Engagement of activities – Burns model of sustainability pedagogy

The Burns Model of Sustainability Pedagogy is a flexible model for making the students aware of environmental sustainability in different settings. This model purports to increase students' motivation and inspire them towards environmental sustainability. The five key measurements of Burns model are Content, Perspectives, Process, Context and design

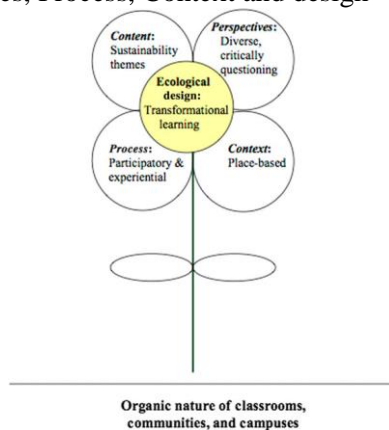


Figure 1: Transformational Learning (Adapted from Sherman and Burns, 2015).

Sustainability pedagogy can transform the learning process by making the students aware about environmental sustainability through their active involvement (Burns, 2013). Various pedagogies can be adopted by teachers to engage the students, like participatory methods and experiential methods (Burns, 2011). Transformational learning helps the students to take responsible actions for environmental sustainability. The sustainability pedagogy focuses on active learning, experiential learning, and participatory learning (Cortese, 2005 as cited in Burns, 2011).

To understand the new content, it is important to relate the new concept to prior knowledge and build upon it. The place where learning occurs is of crucial importance and therefore place-based learning can be chosen (Burns, 2011). Different perspectives are important to understand environmental sustainability. For an instance, to comprehend global warming, learners need to reflect on various aspects like shipping of foods and goods, driving cars, coal-burning, etc. This design creates a sustainable culture by transforming the learners' attitudes and values. To learn in a specific context, the sustainability pedagogy brings the content, perspectives, and process, which in turn helps to build on transformational learning (Burns, 2011). Environmental sustainability course design associates the other four measurements of the Burns model of sustainability pedagogy to change students' attitudes and values, and change the unsustainable culture. This model helps the learners to understand the relationship between sustainable issues, think critically, promote civic responsibility through active participation, and use ecological design to make transformational learning (Burns, 2013). To bring about environmental sustainability awareness among students, their active engagement in the provided learning experiences is essential.

When students are engaged in active learning, knowledge and the intended behavior was improved. The Critical theory and Burns model of sustainability pedagogy were used by Sherman and Burns, (2015) in Portland and found that experiential learning and creating learning communities were the factors that enhance education for sustainability.

Engagement of Activities

A study conducted in the Caribbean islands showed that the engagement in practical activities enhances environmental sustainability awareness (Eppinga, et al., 2019). They not only teach the theoretical concepts but include the practical modules so that students will be involved in the activities. The same result was shown in a study conducted by Melles, in the UK. Practical approaches enable the students to become more conscious of environmental sustainability (Melles, 2019).

Project-Based Learning

A study conducted in Switzerland found that learning experiences like project-based learning help to engage and motivate the students (Schweizer, et al., 2018). The planning and conducting researches keep the students engaged in the activities. Reeves conducted a study in the UK and found that learning experiences

such as Workshop- style public events also keep the students engaged in the activities (Reeves, 2019). A study conducted in Canada revealed that students' active participation in role playing and discussions during their learning, made them feel they were more engaged in the lessons (Frye, 2020). In USA, Medical students were given learning experiences with lots of activities and found that they were engaged in those activities (Kallail et al., 2020). A study conducted in Indonesia also found that learning experiences like experimental activities engage the students (Wahyudiati et al., 2020). Therefore, it can be said that there is a positive relationship between the learning experiences and the engagement of activities. A study conducted in the UK revealed that, the learning experiences (audit-based learning) that were provided in the business sustainability module that involved experiential real-world activities developed environmental sustainability knowledge, skills, and values (Emblen -Perry, 2019). A study conducted in South Africa showed the same result. The learning experiences provided by the tasks required students' engagement which promoted environmental sustainability awareness (Pretorius, et al., 2019).

Participatory teaching strategies

Teachers are the most influential people in the life of students (Okayama, 2019). It was found that keeping the students engaged in learning is of utmost significance. Diversity of teaching and learning approaches are used to promote sustainable development. The suitable strategies for sustainability, as indicated by Sagdic & Sahin, (2016) are participatory, active teaching techniques. Participatory teaching and learning strategies stimulate students to think about their own learning with regard to sustainability. Additionally, participatory teaching strategies are seen as the best tools for evolving and creating knowledge, skills, and experiences, that lead to action competency (Dagiene & Stupuriene, 2016).

According to Prabawania, et al., (2017), action competence is the capacity to act with reference to environmental concerns. To improve such skills, students should be given a chance to practice their rights to participate in decision making and activities that involve solving environmental issues (Stanzus, et al., 2017). They should be given the opportunity to investigate issues, gain an understanding of them, and make informed decisions about them. Hence, strategies that focus on active participation are important in the development of students' positive attitudes towards sustainability. Participatory techniques incorporate problem-solving, discussions, debates, presentations, fieldwork, experiments, demonstration, project, and

co-operative learning. Comparative methods were found by (Öztürka & Olgana, 2016) who discovered that participatory strategies include deliberations, debates, and experiential hands-on work. They contend that these techniques empower the students to grow, express, and justify their own perspectives about environmental issues.

As per Tziganuk & Gliedt (2017), the utilization of participatory strategies promotes skills such as critical thinking, envisioning future situations, and making choices cooperatively. A participatory strategy like experimentation, for instance, provides opportunities for students to handle environmental issues under manageable circumstances, with the end goal to increase direct experiences. During experiments, students can observe and gain an understanding of the causes of some environmental issues; the factors that impact them, and draw conclusions based on the experiments (Bangay, 2016). This can be an effective method to prepare students for their future life, through the experience of an active classroom and effective learning.

Decision making is a component of being a citizen in a democratic society and the best approach to help students in making informed decisions is considered as citizenship education (Melles, 2019). In order to empower the students with the skills required to hold discussions with others during decision making with regards to society, they have to learn how to ask queries, get proof, comprehend physiognomies and constraints of scientific evidence, and suitable approaches for passing judgments on the credibility of scientists (Yoshiyuki, 2017).

For some sustainability programs, fieldwork is the most significant methodology. As per Melles, (2019) fieldwork exercises are successful methods as they are connected to reflection and actions for achieving a change. Dambudzo, (2015) agree that fieldwork exercises are useful in students' learning since they let the students be active co-constructors, rather than passive recipients of knowledge inside the classroom. Vinlove (2017) recognizes the significance of fieldwork exercises since they include hands-on learning experiences in the environment; these are envisioned to change students' behavior towards the environment and take appropriate actions for sustainability. Subsequently, fieldwork exercises are particularly supported in the teaching of environmental sustainability with the goal of achieving a change towards sustainability.

Learning Resources

One way to follow the human-ecological relationship is to look at the weakness of the people in comparison to the forces of the natural world and thus society's capacity to grow and develop. Sandell et al., recognized that human interaction with the natural world started in the hunter-gatherer age, proceeding through our modern understandings and methodologies (Sandell, et al., as cited in Hensley, 2017). Human societies have developed in the populace, spreading out over the globe, advancing in technology, from early nomadic tribes and agricultural settlements to industrial centers and the post-industrial world. During each of these stages, nature and natural assets have been essential to humankind. However, the manners by which people and the earth have interacted have differed overtime. Human knowledge of the earth has developed from early days to present-day methods for controlling natural resources to meet our needs and towards advanced ecological comprehension. All through these times of history, human weakness to nature kept decreasing consistently. However, risks remained and continued to increase, given the unpredictability of nature. This constant condition of risk and unpredictability, even today, holds essential implications for environmental sustainability. Human populaces developed, innovation and industry progressed, through different risks such as social imbalance. Additionally, the impacts of ecological destruction exacerbated, representing vulnerabilities within mankind's range of influence rather than past dangers like natural disasters. In the meantime, the post-modern age has seen technological and social progressions that could mitigate these vulnerabilities (Sandell et al., as cited in Hensley, 2017). A lot of these headways and developments to deal with sustainability issues can be connected to changes the way humans understand the earth and biological systems. All through these historical developments, scientific revelations, and evolving vulnerabilities, points of view on the relationship between people and nature turned out to be more complex and varied.

The campus setting provided resources for the students to be engaged in different activities to promote environmental sustainability (Cogut, et al., 2019). Making the campus more environmentally-friendly provided lots of opportunities for the students to get actively involved in, like transportation and energy efficiency. This stimulated the awareness of environmental sustainability. A study conducted in Brazil revealed that the materials that provide knowledge require students to participate actively to change the attitude and behavior (Matzembacher and Meira, 2019). The online resources like webinars, blogs, journals, open repositories, social media and e-learning platforms (Radu & Fogorasi, 2020) let the

students get actively involved in activities that enhance the awareness of environmental sustainability (Torrisi-Steele & Atkinson 2020).

A study conducted in Nigeria revealed that teachers need to be well motivated to reform teaching. Resources like curricula require students' engagement in practical activities (NimotaJibolaKadir & AbiodunAkanbiGafar, 2018). Findings of a study conducted by Soltani, et al., (2019), showed that the facilities provided by the campus promote students' engagement in the activities. The campus had facilities like cycles so that students engaged in cycling for transportation. Results of a study conducted in Australia found that the students were engaged in the learning materials that were uploaded in the course site.

Value-Based Education

Edification and romanticism were instrumental in molding the manner in which human advancement and our association with the natural world are respected, and many of the meanings and metaphors we see today have their beginnings in these philosophical developments of the late eighteenth century. The anthropocentric ethical thoughts of the enlightened, involving people's ability to think and reason, and hence act ethically, differentiate people from the rest of the natural world. It is from this perspective which follows that, because of these capacities of humankind, it is our right to utilize natural resources and the earth to satisfy our requirements and advance society (Sandell et al., as cited in Hensley, 2017). The romantic development remained as opposed to the anthropocentric relationship upheld by enlightenment scholars, and from this development, the perspectives of biocentrism and ecocentrism have risen. Where biocentrism values other organisms and underlines an ethical commitment towards different life forms, ecocentrism regards the whole natural world, encompassing the living and non-living, as the focal point (Sandell et al., as cited in Hensley, 2017). Sandell et al., followed these philosophical points of view to modern ethical and value-based ways to deal with sustainability and what it ought to accomplish, what ought to be protected or sustained, and how to approach explicit sustainability issues. These thoughts still exist today, however unapparent at times, and prompt different perspectives on the most effective ways to take care of specific issues, in light of the interests they prioritize. For instance, when looked with a sustainability decision, for example, protecting a species that may do harm to another part of the biological system or human developments; however, the points of view of anthropocentrism, biocentrism

and egocentrism would lead to different results (Sandell et al., as cited in Hensley, 2017). These points of view on the connection between people and the earth, or manners by which people have approached ecological issues, are profound. They give an understanding that numerous perspectives have existed and still exist. Our translations of the real world, located in historical, learning, or ethical viewpoints have fluctuated, and regularly questionable. Similarly, the modern ideas of sustainability also come from different complex understandings and evolving explanations.

Experiential Learning

Education plays a pivotal role in modelling, transforming and setting up states of mind and qualities. Education for environmental sustainability should be an integral part of the curriculum at all the levels. The literature on sustainability demonstrates that there are various challenges that could hinder the successful execution of instruction for environmental sustainability in secondary schools. The difficulty of comprehending the concept of sustainability is one among the barriers (Avisar, et al., 2018). Teachers who make lot of effort to implement manageability into their teaching regularly focus on learning the environment; they however fail to involve the students in activism or expert environmental change (Corney, as cited in Avisar, et al., 2018). Most of the teachers lack motivation to integrate sustainability into their daily lives including the professional schedules, because activism is a non-scholarly action (Avisar, et al., (2018).

Working through direct interaction with the environment provides valuable opportunities for obtaining a lot of knowledge and understanding. This implies that education for environmental sustainability must go beyond educating about the environment and its related issues. It must empower individuals with practical skills that will enable them to oversee and collaborate with the local environment (Okayama, 2019). Education through the environment can be considered as a pedagogical strategy that facilitates environmental awareness through direct experience (Vinlove, 2017) in natural settings. Therefore, it can be concluded that education for environmental sustainability can happen both inside and outside the classroom through outdoor activities (Murray, 2018). These activities will probably empower the students to learn inappropriate situations outside the classroom. This is of utmost importance for helping students value their environment from a wide range of viewpoints. It additionally empowers them to make associations between the knowledge obtained in the classroom in

relation to environmental issues that they witness themselves. It also boosts students' learning in that they will probably recognize and take care of issues in their everyday circumstances. In this way, students will be successfully engaged with sustainable practices at nearby, national and worldwide dimensions, which will facilitate them to work towards a sustainable future (Sima, et al., 2019).

Conclusion

In spite of the fact that education for environmental sustainability is promoting at all levels of teaching, this is yet a developing concept. Integration of education for environmental sustainability is irregular, to a great extent relying upon the endeavors of individual teachers or local schools (Sehnm, et al., 2019). Literature clearly shows that further studies need to focus on the types of activities that engage the students and their effect towards environmental sustainability awareness (Reeves, 2019). And also the types of learning experiences (Emblen-Perry, 2019) and resources (Frye, 2020) that engage the students to promote the environmental sustainability awareness need to be explored.

This paper has successfully developed a systematic literature review that is useful for future research in this area. Moreover, this study has provided new insight view on engagement of activities that promote environmental sustainability awareness and looked at the components from a different angle. Theoretically, learning experiences and resources that engage the students to promote environmental sustainability awareness are highlighted. As this is a conceptual paper, data was not collected and generalization is not suitable.

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