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# Pathways to Sustainability: Exploring the Role of Science Education in Developing Environmental Sustainability

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## ABSTRACT

*This qualitative research investigates the role of science education in fostering environmental literacy and promoting sustainability within science teacher education programs. Through in-depth interviews and focus groups, it aims to uncover the perceptions, practices, and challenges of sustainable development in environmental education into science teacher preparation. The findings reveal that various barriers such as insufficient curriculum content, lack of practical training opportunities, and limited institutional support hinder effective implementation of environmental literacy program. Moreover, the study finds the innovative strategies educators employ to overcome these obstacles. These strategies may include emphasizing experiential learning, interdisciplinary approaches, and community engagement. The results underscore the need for a comprehensive re-evaluation of science teacher education curricula to better equip future educators with the knowledge, skills, and attitudes necessary to advocate for and teach sustainability. This research is an effort offering insights and recommendations for policy makers, educators, and institutions committed to promoting sustainability through science education.*

**Keywords:** *Science Education, Environmental Literacy, Environment Sustainability*

## INTRODUCTION

### Background of the Study

Science education is important in understanding the world around us. It offers sizeable principles, natural mindfulness and supportability. Recently, it has become an international priority to work on environmental issues. Topics like biodiversity, environmental sustainability and climate change are key topics in science education, demanding training and management to adopt. Science instructors have possibility to impart environmental understandings among their students and adopt sustainable practices to save the environment

for future. However, their capability to do this efficiently depends largely on the adequacy of their environmental education training (Hesami, *et al.*, 2016).

In this context, the need for integrating environmental education in curriculum has become vital. By examining educators' views, reading educational substances, and evaluating coaching methods, this look at aims to become aware of strengths, challenges, and possibilities to bolster the position of science training in raising focus of technological know-how, the environment, and sustainability in teacher training packages (Kimaryo, 2011). This study may play constructive role in enhancing training practices on hot issues related environmental sustainability and its impact on society.

**Statement of the Problem**

Although there seems global emphasis on environment sustainability, yet training programs needs to be investigated regarding their emphasis on field work related environment preservation for future generation. Therefore, it is imperative to investigate the role of science education program in enhancing and advancing environmental sustainability. The main focus of this program is not to present theoretical knowledge, but practical implication of "environmental cognizance" and useful sustainable habits. Science education acts as a catalyst for environmental change but it is underutilized due to under-addressed shortcomings related to this program especially in preparing feasible educators. This study is an effort to seek insights of educators to guide us in creating more comprehensive training program. .

**Research Objectives**

The objectives of the study were to explore:

1. The role of Science Education programs in developing environmental literacy and sustainability in science educators

2. The issues related to environmental sustainability that needs to be integrated into science education curricula

**Research Questions**

There are the following questions

1. What is the role of Science Education Program in developing environmental literacy especially related to environmental sustainability?

2. What essential issues related to environmental sustainability needs to be integrated into science education curricula in fostering better future?

**Significance of the Study**

The study may prove significance for policy makers and curriculum developers by offering insights into classroom and field practices of science educators, especially on topics related to environment literacy and sustainability. It is by converting idea into reality by employing modern pedagogical techniques and advance procedures in trainings. This study may also prove beneficial for science educators who have their direct impact on students in preparing them for better future. The society may have beneficial in getting environmental- conscious generation and ensure more sustainable future. Educators who have fully command on these topics may polish their methodologies by connecting them directly to the everyday

happenings. Educating science teachers on environmental knowledge and sustainability has positive influences. This approach may make us able to handle environmental problems by inculcating environmental literacy among students. Last but not the least, this study may prove beneficial for other disciplines social studies, economics, and ethics by making them able in adopting scientific attitude and demonstrating its implications especially related to sustainability and environmental literacy.

## REVIEW OF THE RELATED LITERATURE

Science education being the most important and critical component of education structure is accepted worldwide in instilling basic thinking competencies and scientific understandings among students and educators. This program enable newbies expert in multiple disciplines like physics, chemistry, biology, astronomy, earth and life sciences. Brotman and Moore (2008) stated that scientific principles and methodologies help students in exploring clinical, behavioral and environmental facts. It is science education program which offers hands-on activities to bring students closer to nature. The topics like pollution, deforestation, habitat destruction, and biodiversity are easily dealt with environmental understanding. Love for ecosystem is a sure way to save nature for future. This can be foster through schooling and engagement in environmental projects.

Science education plays its pivotal role in environmental literacy. Science education program make students' expert in recognizing and dealing with environmental issues by dealing underlying reasons behind these issues. Formal schooling and outdoor activities like nature camps, environmental clubs, field trips and etc. help in getting insights into environmental science and ecology.

Environmental consciousness is results of training and network engagement. Literature emphasizes the need of attention about environmental conservation initiatives, policy adjustments and sustainable practices for environmental protection. Osborne and Dillon (2008) stated that government and community take help from collaborative and collective efforts to face and cope with issues related environment. Individuals can contribute in environmental protection by taking part in environmental conservation tasks voluntarily, advocating and promoting natural rules and dealing with environmental issues. In this way they may ensure a resilient and sustainable future. The harmony in nature and humans are the ultimate destiny of humans on a more safe and secured planet.

Sustainability is ability to fulfill the needs of existing generation. It is not to compromise at any cost. Instead the future of next generation is to be secured. Marpa (2020) suggested social equity, ecological balancing and long term prosperity as a result of addressing environmental and social issues. For sustainability it is recommended to meet human needs without disturbing planet's natural resources and ecosystem. Moreover, Environmental sustainability, as stated by Dimante, *et al.,* (2016) is to conserve herbal resources and avoiding pollution. It is to minimize damages in ecological aspects of planet to ensure the resilience of ecosystem.

Desa, *et al.,* (2012) stated that environmental sustainability must be ensured even while deciding economic sustainability. In this regards that stated that the suggested programs foe economic sustainability must be socially inclusive, and environmentally accepted. This is done by adopting green technologies and infrastructure. Economic sustainability requires consideration related natural sources and ecosystem. Long term initiatives must be kept on priority instead of short term efforts. Sola (2014) stated that societal prosperity and preservation of planet's resources can only be ensured by integrating environmental and social issues into economic choice-making techniques. Societies can ensure resilience, equity and prosperity for their future through practicing sustainable standards.

Science education refers to the technique of getting ready educators to educate technology effectively at diverse academic ranges, from fundamental faculty to secondary and past. This specialized shape of trainer schooling goals to equip teachers with the know-how, abilities, and pedagogical strategies necessary to engage college students in clinical inquiry, foster crucial thinking, and sell scientific literacy (Clough *et al.,* 2009). Prospective science instructors regularly pursue ranges in training with a concentration or specialization in technology, along with a Bachelor of Education with a focus on science training or a Bachelor of Science in Education. These applications generally cowl subjects including science content material knowledge, pedagogical strategies, lecture room management, evaluation techniques, and the combination of generation in technology coaching (Cofré *et al.,* 2015).

Some researchers focus on getting environmental literacy which is necessary for knowledgeable decisions related to environmental issues. Here, the students and educators get expertise in skills related ecological issues, environmental challenges related to herbal global and the ability to significantly analyze environmental statistics. Rowe (2002) further added that environmental literacy goes beyond actual expertise to include crucial wondering abilities, inclusive of comparing sources of facts, reading environmental records, and considering multiple perspectives on environmental issues

McBride, *et al.,* (2013) stated that environmental issues like pollution, habitat destruction, and loss of biodiversity can only be prevent by environmental sustainability. The persons who are environmentally literacy can deal these issues in a better way by recognizing cause and effect relationships behind these issues and can recommend policies and practices for a better sustainable and resilient future. Similarly, Teksoz, *et al.,* (2012) stated schools and other educational centers like community centers, nature centers, and environmental corporations are places to foster environmental literacy.

Pe'er, *et al.,* (2007) reported sources for environmental literacy like public attention campaigns, media outreach, and community projects that enhance cognizance about environmental issues and encourage sustainable behaviors. Kudryavtsev, *et al.,* (2012) stated that human destiny can only be secured by empowering people with environmental literacy. If humans will be equipped with basic skills and knowledge related to their environment, they will surely be tackle environmental issues in a better way. People attitude, abilities and expertise are essential in reducing environmental issues and dreaming sustainable future.

Several outdoor activities are suggested by Ozdilek, *et al.,* (2011) like tree plantation, habitat restoration, cleanup campaigns on sea-sides and biodiversity protection. In this way we may become able to protect natural ecosystem and endangers species of plants and animals. Engaging in advocacy and political action to help environmental rules and projects is a sustainable conduct with broader systemic influences. This may additionally involve voting for candidates who prioritize environmental issues, contacting elected officers to specific help for environmental rules, and collaborating in grassroots campaigns and movements (Gough, 2011). Therefore, further interviews were conducted to gain further insight into the topic of the survey. This chapter describes the mixed-method design, including why it was used and how the research instruments were employed. We created a questionnaire, semi-structured interviews, and focus groups. We also discuss the study participants, the challenges and concerns involved with the research approach, how the study was conveyed to the intended participants, ethical issues faced, and data processing procedures.

## RESEARCH METHODS

The study was qualitative in nature, employing interviews and focus group discussions to collect data. All students of BS and MPhil science education studying in the department of science education, university of Okara were the target population of the study. The interviews were conducted until the saturation point was achieved. The researchers used self-developed interview protocol, duly validated by the experts and pilot

tested by conducting mock interviews. Interview questions were designed to examine the role of science education in promoting environmental literacy and sustainability in science teacher education. Participants' variables varied by gender, qualifications, and age. The data was collected personally. A few interviews and focus group discussion was recorded after getting permission. Rest of the interviews was noted on the spot. Participants' responses and feedback to interview questions provided valuable information. All participants were satisfied with the content of the interview questions. Initially, it was hard to manage the focus groups but after instructing them carefully, we got high response rate. All things considered, therefore, focus group questions were built as research tools. To get a healthy discussion, the questions for focus group discussion were carefully drafted.

## DATA ANALYSIS AND INTERPRETATION

Qualitative data was analyzed thematically using framework having six-step process. After familiarizing the data, similar codes were emerged. The codes directed towards major themes. The themes were interpreted using nodes, to have true reflection of the views of the participants.

The following were the main themes emerged from data:

1. Understanding of Environmental Sustainability
2. Generating Positive Learning Environment
3. Enhancing Environmental Literacy
4. Removing the Difficulties of Environmental Education to the Community

### Theme 1: Understanding of Environmental Sustainability

Participants were inquired about their courses in environmental education. They were asked relevant questions through interview and focus group discussion. Collected data showed that most of the participants have three years of education experience. They started studying environmental education courses in the last three years. They were of the view that they learnt a lot about environment and its importance through their courses. For Example, a participant stated:

From an environmental education course, one can learn about the interconnectedness of ecosystems, the importance of biodiversity, the impact of human activities on the environment, and strategies for sustainable living. (T5).

Here it is found that from a natural instruction course, one can learn about the interconnecting of environments, the significance of biodiversity, the effect of human exercises on the environment, and methodologies for feasible living. On the other hand, participants had two years of teaching experience known basic issues related environment through their courses.

It fosters an understanding of environmental issues such as pollution, climate change, and resource depletion, as well as the importance of conservation and stewardship (T2).

Hence, It cultivates an understanding of natural issues such as contamination, climate alter, and asset consumption, as well as the significance of preservation and stewardship.

From the environmental education course, I gained a deeper understanding of the interconnectedness of ecosystems, the importance of biodiversity conservation, and the impact of human activities on the environment. (G1S1).

Therefore, from the natural instruction course, it can be said that students picked up a more profound understanding of the interconnecting of environments, the significance of biodiversity preservation, and the effect of human exercises on the environment. The collected data also showed that half of the participants favored human activities on the environment.

For example, one participant stated:

The impact of human activities on the environment, and the importance of sustainable practices to preserve natural resources cannot be ignored. I gained an understanding of environmental laws policies and strategies for promoting environmental stewardship within communities (T3).

Therefore, the effect of human exercises on the environment, and the significance of feasible hones to protect normal assets were outstanding. The participants were of the view that they have learned about natural laws arrangements and procedures for advancing natural stewardship inside the community.

The collected data showed that all the participants knew the importance of sustainable practices. For example, a few participants noted that:

The importance of sustainable practices to preserve our planet for future generations is admitted and approved (T1).

Few Participants stated that;

I also learned about sustainable practices and the role individuals and communities play in promoting environmental stewardship. I gained an understanding of sustainable practices, conservation efforts, and the significance of environmental stewardship for future generations (G3S2).

Hence, the participants had enough understanding of environmental sustainability. Their courses related environmental sustainability had basic concepts and the exercises and activities additionally enlarged their exposure on environmental sustainability.

**Theme 2: Positive Learning Environment**

Participants were inquired about the positive learning environment. They were asked and probed to tell about their viewpoint and thoughts on the learning environment.

Collected data showed that most of the participants knew about the term ‘Environment’. They believed it as a process of looking back on past experiences to analyze, examine and generate new meaning.

For Example, one participant said:

Teachers create a positive learning environment to foster student engagement, motivation, and achievement. A positive environment encourages active participation, collaboration, and a sense of belonging among students (T1).

Therefore, Instructors create a positive learning environment to cultivate understudy engagement, inspiration, and accomplishment. A positive environment empowers dynamic cooperation, collaboration, and a sense of having a place among understudies.

Another participant stated that:

A positive environment encourages active participation, collaboration, and a sense of belonging among students. It also reduces anxiety and promotes risk-taking, which are essential for effective learning. When students feel supported and valued, they are more likely to thrive academically and personally (G1S1).

This showed that participants were fully aware of the fact that a positive environment energizes dynamic support, collaboration, and a sense of having a place among understudies. It moreover diminishes uneasiness and advances risk-taking, which are fundamental for viable learning. When understudies feel upheld and esteemed, they are more likely to flourish scholastically and actually.

Another participant pointed that:

A positive learning environment promotes student engagement, collaboration, creativity, and critical thinking. It also helps build confidence, motivation, and a sense of belonging among students, leading to better academic performance and overall well-being. (G5S2).

A positive atmosphere encourages collaboration, creativity, and critical thinking. When students feel safe, supported, and valued, they are more likely to participate actively and achieve academic success (G4S5).

Hence, a positive learning environment advances understudy engagement, collaboration, imagination, and basic considering. It moreover makes a difference construct certainty, inspiration, and a sense of having a place among understudies, driving to superior scholarly execution and in general well-being. .

Collected data showed that by setting up a steady climate where understudies feel esteemed, regarded, and empowered to take part, instructors can improve learning results and develop a sense of having a place among understudies. A positive learning environment too advances collaboration, basic considering, and imagination, empowering understudies to flourish scholastically and socially, as stated by T1 and T4.

By establishing a supportive atmosphere where students feel valued, respected, and encouraged to participate, teachers can enhance learning outcomes and cultivate a sense of belonging among students. A positive learning environment also promotes collaboration, critical thinking, and creativity, enabling students to thrive academically and socially (T1).

A positive atmosphere fosters better concentration, engagement, and retention of information among students. When students feel safe, supported, and valued, they are more likely to participate actively in learning activities and take risks in their academic happenings. (T4).

Another participant stated that:

Recognizing and accommodating diverse learning needs is crucial in creating a positive learning environment. Teachers tailor their instruction to meet the individual needs of students, providing support and challenges as necessary to ensure all students can succeed (T5).

Hence, Recognizing and obliging different learning needs is vital in making a positive learning environment. Instructors tailor their instruction to meet the person needs of understudies, giving bolster and challenges as fundamental to guarantee all understudies can succeed.

Some other participants stated that:

A positive learning environment is essential for implementing the principles and practices of enhanced learning. It provides the foundation for engagement, active participation, differentiated instruction, feedback, metacognition, inquiry-based learning, and ultimately, academic success (T7).

Therefore, a positive learning environment is basic for actualizing the standards and hones of improved learning. It gives the establishment for engagement, dynamic cooperation, separated instruction, criticism, metacognition, inquiry-based learning, and eventually, scholastic victory.

Collected data showed that most of the participants knew about the students feel safe, supported, and valued. They believed it is a process of looking back on past experiences to analyze, examine, and generate new meaning.

When students feel safe, supported, and valued, they are more likely to actively participate in learning activities, collaborate with their peers, and take risks in their learning endeavors (G5S2).

**Theme 3: Enhancing Environmental Literacy**

Participants were inquired about the development of environmental literacy. They were asked to talk about their viewpoint and thoughts on the importance of developing environmental literacy. For example, one participant noted that:

This course likely developed environmental literacy by providing students with knowledge about environmental issues, engaging them in hands-on activities and discussions, and encouraging critical thinking and reflection (T4).

Hence, this course likely created natural mindfulness by giving understudies with information approximately natural issues, locks in them in hands-on exercises and talks, and empowering basic considering and reflection

Another participant stated that:

By exploring real-world examples, conducting experiments, and participating in outdoor activities, students can develop a deeper understanding of environmental concepts and their implications. Moreover, the course may have encouraged students to reflect on their behaviors and lifestyles, fostering a sense of responsibility towards the environment. (T5).

Hence, by investigating real-world cases, conducting tests, and taking part in open air exercises, understudies can create a more profound understanding of natural concepts and their suggestions. Besides, the course may have empowered understudies to reflect on their behaviors and ways of life, cultivating a sense of obligation towards the environment.

Other participants stated that:

The environmental education course developed environmental literacy by providing comprehensive knowledge about environmental issues, their causes, and potential solutions. Through interactive activities, case studies, and discussions, students were encouraged to critically analyze environmental challenges and explore ways to address them. Field trips and practical experiences further enhanced understanding and appreciation of nature and the environment. (G5S2).

Hence, the natural instruction course created natural mindfulness by giving comprehensive information almost natural issues, their causes, and potential arrangements. Through intuitively exercises, case considers, and discourses, understudies were empowered to basically analyze natural challenges and investigate ways to address them. Field trips and commonsense encounters advance upgraded understanding and appreciation of nature and the environment.

Collected data showed that most of the participants easily grew our knowledge and experimentally. For Example, one, participant noted that:

It also encouraged critical thinking and problem-solving skills to analyze environmental problems from different perspectives. Through discussions, activities, and real-life examples, students were able to develop a deeper understanding of their impact on the environment and how they can contribute to sustainability. (G4S3).

Hence, it moreover energized basic considering and problem-solving abilities to analyze natural issues from distinctive points of view. Through dialogs, exercises, and real-life illustrations, understudies were able to create a more profound understanding of their effect on the environment and how they can contribute to supportability.

Encouraging critical thinking about solutions to environmental problems, By immersing students in the subject matter, it helped them understand their role in protecting the environment and empowered them to take action (G4S5).

Empowering basic considering approximately arrangements to natural issues, By inundating understudies within the subject matter, it made a difference them get it their part in ensuring the environment and enabled them to require activity

By engaging students in activities such as analyzing real-world environmental issues, evaluating potential solutions, and considering the impact of their actions, educators can foster a deeper understanding of environmental challenges and inspire proactive involvement in environmental conservation efforts. (G5S3).

Therefore, by locks in understudies in exercises such as analyzing real-world natural issues, assessing potential arrangements, and considering the effect of their activities, teachers can cultivate a more profound understanding of natural challenges and rouse proactive association in natural preservation endeavors.

Collected data showed that most of the participants interactive lessons, hands-on activities, and real-world examples. For Example, one participant pointed that:

Through interactive lessons, hands-on activities, and real-world examples, students were able to gain a deeper understanding of their impact on the environment and the importance of conservation. (G5S2).

Hence, through intuitively lessons, hands-on exercises, and real-world cases, understudies were able to pick up a more profound understanding of their effect on the environment and the significance of preservation.

Other Participants Stated that:

The course emphasized the interconnectedness of environmental, social, and economic systems, encouraging students to adopt environmentally responsible behaviors and advocate for positive change. (T8).

Hence, the course emphasized the interconnecting of natural, social, and financial frameworks, empowering understudies to receive ecologically mindful behaviors and advocate for positive alter.

**Theme 4: Developing Environmental Education to the Community**

On inquiring about promoting environmental education to the community, they responded diverse answers. The data showed that most of the participants easy grow up their knowledge about promoting environmental education. For Example, one participant noted that:

Teachers can promote environmental education to the community by organizing workshops, seminars, and community events focused on environmental issues. They can collaborate with local organizations, government agencies, and businesses to develop educational programs and initiatives. (T1).

Similarly, other participants stated that:

Teachers can involve students in community-based projects such as tree planting, litter clean-ups,

and recycling drives to raise awareness and inspire action. By engaging the community in meaningful ways, teachers can amplify the impact of environmental education and foster a culture of sustainability. (T5). .

Teachers can promote environmental education to the community by organizing environmental literacy events, workshops, and campaigns. They can collaborate with local organizations, businesses, and government agencies to implement environmental initiatives and encourage community involvement in sustainability efforts. Teachers can incorporate environmental topics into school curricula and encourage students to engage in environmental projects and activism. (G5S1).

Hence, Instructors can advance natural instruction to the community by organizing workshops, classes, and community occasions centered on natural issues. Instructors can include understudies in community-based ventures such as tree planting, litter clean-ups, and reusing drives to raise mindfulness and motivate activity. Instructors can consolidate natural subjects into school educational module and empower understudies to lock in in natural ventures and activism.

Participants were inquired about skills that can be developed in the students by the use of apparatus in the physics laboratory. Similarly instructors can moreover have coordinated natural subjects into different subjects over the educational programs and include understudies in community-based ventures centered on supportability. In this regards they reported that:

Teachers can also integrate environmental themes into various subjects across the curriculum and involve students in community-based projects focused on sustainability. (T3).

Integrating environmental themes into the curriculum involves incorporating topics related to the environment, sustainability, and conservation across various subject areas. By infusing environmental concepts into lessons, assignments, and activities, educators can promote awareness, understanding, and action on environmental issues among students (T8)

Joining natural topics into educational programs includes joining points related to the environment, maintainability, and preservation over different subject ranges. By imbuing natural concepts into lessons, assignments, and exercises, teachers can advance mindfulness, understanding, and activity on natural issues among understudies. Additionally, some of the participants reported the importance of integration environmental themes into curriculum.

Integrating environmental themes into the curriculum means weaving topics concerning the environment, sustainability, and conservation throughout different subjects. (G1S2).

This entails embedding environmental concepts into lessons, assignments, and activities to raise awareness, deepen understanding, and inspire action on environmental issues among students (G5S1).

Hence, coordination natural subjects into the educational modules imply weaving subjects concerning the environment, maintainability, and preservation all through distinctive subjects.

**DISCUSSION**

Science education program offers worldwide know-how of scientific concepts and serving in fostering scientific attitude towards underline phenomena. Science education department across the world is seeking attention in preparing educators expert not only in its own discipline, but also in other disciplines like astronomy, earth science and social science as well. Brotman and Moore, (2008) were of the view that college students are encouraged to explore the herbal global, behavioral clinical investigations, and analyze facts through hands-on inquiry and experimentation. Courses related environmental literacy provides comprehensive knowledge about environmental issues, their causes, and potential solutions. Hands on activities like case studies, field trips and laboratory experimentations helps in enhancing students' environmental literacy among students.

Environmental know-how is foster through seminars, projects and students' engagement especially by introducing courses related environment sustainability. Trott and Weinberg, (2020) stated it is through education that we may ensure better future by sustainable practices, conservation efforts and on the field works. Individuals can contribute in cultivating more resilient and sustainable future by taking part in environmental campaigns, conservation tasks and environmental literacy. Science education program not only empower students with theoretical knowledge and rules serving in nature, but also providing practical knowledge by engaging students in field trips and case studies. As a result a sense of harmony appears among humans and nature which helps in making this planet worth living (Osborne, & Dillon, 2008). Attachment with environmental phenomena enables students to make themselves as active participants, collaborative and risk-takers. It not only reduces anxiety among them but also make them effective learners. Science education students become active academically as well when they are valued and supported (Abell, & Volkmann, 2006).

Marpa (2020) stated that environmental sustainability helps in shielding the natural assets of planet and ecosystem. It fosters mandatory and inclusive practices which are environmentally accepted. On the field activities enable students to perform in a better way and make them feel valued, respected and responsive. Teachers encourage them to have active participation and enhance their learning. Amran, *et al.,* (2019) stated that collaboration, critical thinking, and creativity among students are created through introducing a

positive learning environment. It's through addressing environmental and social issues; societies gain priority and safeguard the resources of this planet for future generation. Trott and Weinberg, (2020) further added that a positive learning environment helps in implementing principles and rues into practice. Characters like active engagement, feedback, metacognition, inquiry based learning are result of positive learning environment.

Environmental literacy, as stated by Rowe (2002), considers multiple perspectives on environmental issues and gathers environmental records. It is through the exploration of real world examples, students becomes able to develop deeper understanding on concepts related environment sustainability. Appleton (2013) shares the findings of his study that were similar to the study in hand. He was of the view that science education courses foster sense of responsibility towards environment because of active participation in outdoor activities.

There are other sources in addition to schooling to promote public awareness of environmental literacy. These includes public attention campaigns, media role and community projects. These practices help in addressing environmental issues and developing sustainable behaviour. Pe'er, *et al.,* (2007) stated the environmental education course provides comprehensive knowledge about environmental issues, their causes, and potential solutions, which as a result ensures environmental sustainability. Students were encouraged to analyze the environmental issues critically by exploring the nature through field trips and hands-on activities. As a result it ensures a safe and better future for the next generation.

## CONCLUSION

Global education is focusing on environmental sustainability to foster deep understanding about the need and importance of environmental literacy. Importance of sustainable practices by human activities is important topics of science education. This study is an effort to highlight the importance of environmental know-how, laws and policies to promote environmental management. The need of the hour is to know about the interconnectedness of biodiversity and preserving environment for present and future. By adopting sustainable practices, we may develop environmental literacy. Conservation projects, environmental campaigns, and environmental policy advocacy empower individuals to contribute to an ecologically sustainable world. Sustainable and resilient environmental literacy helps people to work for the future of humanity by creating harmony in nature and humans. The study recommended the effectiveness of science education courses for environmental sustainability. The study further recommended the inclusion of field trips, hands-on research and activities related to real world problems. Such experiential learning seems to provide not only a depth of understanding but also a sense of responsibility and connection to the environment.

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