Bulletin of Nexus
Multidisciplinary International Research Journal, Double-Blind Peer Reviewed, Open Access Journal
*ISSN : 3065-7865 / Volume-2, Issue-9 Sept- 2025*

Original Article

# A Theoretical Framework on Environmental Literacy Among Arts and Science Ug Students

**Sandeep Kumar[1] Dr.Ram Niwas Deshwal[2]**
[1](Research Scholar), Department of Education, Ras Bihari Bose Subharti University (RBBSU), Dehradun, India
[2](Associate Professor), Department of Education, Ras Bihari Bose Subharti University (RBBSU), Dehradun, India

**Manuscript ID**:
BN-2025-020932

ISSN: 3065-7865

Volume 2

Issue 9

Sept 2025

Pp.149-158

**Submitted:** 18 Aug 2025

**Revised:** 25 Aug 2025

**Accepted:** 21 sept 2025

**Published:** 30 Sept 2025

DOI:
10.5281/zenodo.17294383
DOI link:
https://doi.org/10.5281/zenodo.17294383

**Abstract**

*Environmental literacy is a multidimensional construct that extends beyond factual knowledge to encompass awareness, attitudes, values, skills, and behaviors that collectively enable individuals to engage responsibly with the environment. It is not a static trait but a dynamic capacity that develops through interaction with ecological systems, educational experiences, and socio-cultural contexts. Among undergraduate students, particularly those pursuing Arts and Science disciplines, environmental literacy plays a pivotal role as they represent a generation of emerging leaders, educators, researchers, and citizens who will shape sustainable futures. This paper advances a theoretical framework for understanding environmental literacy among Arts and Science undergraduates, one that integrates the cognitive dimension (knowledge and comprehension of environmental concepts), the affective dimension (attitudes, values, and emotional connection to nature), and the behavioral dimension (practical actions and decision-making that reflect environmental responsibility). The framework also highlights the socio-cultural dimension, recognizing that students' worldviews and practices are influenced by cultural narratives, disciplinary orientations, institutional contexts, and broader societal values.*

**Keywords:** Art, Science, environment literacy, Students.

## Introduction

Environmental problems are now one of the most important problems of the 21st century. They affect every part of human life, from health to politics to culture. Climate change, loss of biodiversity, deforestation, water scarcity, and pollution are no longer problems that happen far away; they are problems that people all over the world deal with every day. This is true for both rich and poor countries. In this context, the idea of environmental literacy has become more important as a skill that people, groups, and societies need to have in order to deal with these ecological problems. Environmental literacy encompasses not only the acquisition of knowledge regarding the environment but also the cultivation of attitudes, skills, values, and behaviors that enable individuals to make informed decisions and participate in responsible environmental actions. It is a multidimensional construct that is often described in terms of cognitive (knowledge-based), affective (attitudinal), and behavioral (action-oriented) domains. These domains all work together to shape a person's overall sense of environmental responsibility. Colleges and universities have a very important role to play in teaching people about the environment because they are where the next generation of leaders, policymakers, teachers, and citizens will come from. Undergraduate students, particularly those in Arts and Science programs, are a significant demographic as they embody a wide array of societal segments, including varied disciplinary focuses, cultural viewpoints, and intellectual legacies. It is important to know how much and what kind of environmental literacy these students have in order to come up with effective teaching methods and institutional plans that will help them deal with the complicated sustainability problems of today and tomorrow.

The concept of environmental literacy originated in the 1960s and 1970s, paralleling the emergence of the environmental movement, and has since developed through diverse conceptual



**Address for correspondence:**
**Sandeep Kumar**, (Research Scholar), Department of Education, Ras Bihari Bose Subharti University (RBBSU), Dehradun, India
**Email-** sk4166915 @gmail.com

**How to cite this article:**
*Kumar, S., & Deshwal, R. N. (2025). A Theoretical Framework on Environmental Literacy Among Arts and Science Ug Students. Bulletion of Nexus, 2(9), 149–158. https://doi.org/10.5281/zenodo.17294383*

Quick Response Code:
Website: https://bnir.us

frameworks. At first, environmental literacy was thought to be the same as environmental knowledge, which meant teaching students about ecosystems, pollution, and conservation. However, later studies showed that just having knowledge wasn't enough to make people act in ways that are good for the environment. Researchers have stressed that environmental literacy must encompass attitudes, values, and skills, rendering it a more comprehensive construct. Roth (1992) characterized environmental literacy as a continuum extending from awareness and sensitivity to profound knowledge, concern, and commitment, ultimately resulting in action. Subsequent frameworks, including Hollweg et al. (2011), elaborated on this concept, defining environmental literacy as a synthesis of competencies encompassing the comprehension of ecological principles, the critical assessment of environmental challenges, involvement in decision-making processes, and the pursuit of responsible civic engagement. These theoretical advancements emphasize the necessity of transcending a reductionist, information-centric conception of environmental literacy towards a framework that encompasses emotional, ethical, and practical dimensions. This evolution is especially pertinent in the realm of higher education, where students are required to not only assimilate information but also to develop critical thinking, ethical reasoning, and problem-solving skills.

Undergraduate students in the Arts and Sciences contribute distinctive viewpoints to the dialogue on environmental literacy owing to their disciplinary focuses. For example, science students learn to use logical reasoning, experimentation, and empirical evidence to solve problems. When they work on environmental issues, they often focus on the scientific and technological parts, like learning about climate models, studying biodiversity, or coming up with ways to make technologies that are good for the environment. On the other hand, students in the arts tend to look at environmental problems from cultural, moral, aesthetic, and humanistic points of view. They investigate the impact of literature, history, philosophy, and the arts on human interactions with nature, emphasizing the influence of values, identities, and cultural narratives in molding environmental perspectives. Both points of view are useful, and when combined, they give a fuller picture of what it means to be environmentally literate. For instance, science can help us understand how climate change happens, while the arts can help us think about moral questions of fairness, justice, and responsibility. Consequently, a theoretical framework for environmental literacy among Arts and Science undergraduates must consider these disciplinary distinctions while highlighting their potential synergies. International frameworks like UNESCO's Education for Sustainable Development (ESD) agree that higher education plays an important role in teaching people about the environment. UNESCO contends that education should not merely convey knowledge but also foster values, attitudes, and skills that empower learners to contribute to sustainable societies. This vision is very relevant to universities, where students not only learn but also help shape their learning environment and the communities around them. Sustainability has been added to many universities' curricula, research agendas, and campus activities. However, there exists a considerable disparity between policy objectives and the actual involvement of students in environmental matters. Studies indicate that although students frequently articulate environmental concerns, their knowledge and behaviors do not consistently correspond with their attitudes, leading to the phenomenon termed the "attitude-behavior gap." This disconnect highlights the necessity of a comprehensive theoretical framework to assist educators and policymakers in comprehending the determinants of environmental literacy and formulating interventions that reconcile the disparity between awareness and action.

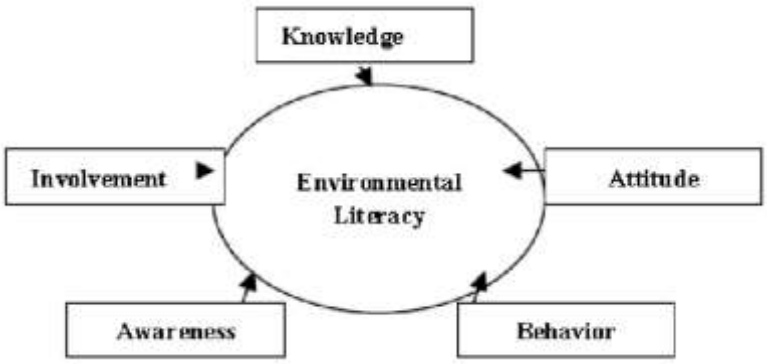
The socio-cultural context significantly influences the development of environmental literacy. Students come from all over the world, and each one brings their own cultural beliefs, community norms, and personal experiences to their university education. For example, students who live in rural areas may have first-hand experience with natural resources and environmental degradation, while students who live in cities may mostly learn about environmental problems through the news and policy debates. These differences affect how students see environmental issues and how they deal with them. In the same way, a student's disciplinary identity affects how they build their relationship with the environment. A student of science might feel empowered to create technological solutions, while a student of the arts might put more value on advocacy, communication, or moral reflection. A theoretical framework that encompasses cognitive, affective, behavioral, and socio-cultural dimensions can yield a more comprehensive understanding of environmental literacy among undergraduates. The global sustainability agenda, especially the United Nations Sustainable Development Goals (SDGs), makes it even more important for Arts and Science undergraduates to be environmentally literate. Some goals, like Climate Action (SDG 13), Life

Below Water (SDG 14), and Life on Land (SDG 15), directly call for more awareness and action on the environment. Others, like Quality Education (SDG 4) and Responsible Consumption and Production (SDG 12), stress the importance of education in promoting sustainability. Universities are in a unique position to help these goals by making environmental literacy a part of all fields of study. By doing this, they not only give students the skills they need to deal with sustainability issues, but they also get them ready for jobs where environmental issues are becoming more important, whether in science, technology, the arts, policy, or business. Given these factors, it is both timely and essential to create a theoretical framework for environmental literacy among undergraduate students in the Arts and Sciences. This framework can serve various functions: it can direct empirical research on student attitudes and behaviors, influence curriculum development and teaching methods, and bolster institutional policies designed to cultivate environmentally responsible graduates. This framework can help us understand how undergraduates deal with environmental issues by taking into account the interactions between knowledge, attitudes, skills, disciplinary perspectives, and socio-cultural influences. It recognizes that environmental literacy is not fixed but rather dynamic, developing through education, personal experiences, and societal transformations. It is important to note that environmental literacy should not be seen as an optional skill, but rather as a basic skill for being a good citizen in the 21st century.

Ultimately, the introduction of this paper lays the groundwork for building such a framework by looking at how the idea of environmental literacy has changed over time, how it is made up of many different parts, and how Arts and Science students have made unique contributions. It places the conversation within the larger framework of higher education and global sustainability issues, while stressing the immediate need for universities to play a role in producing graduates who are environmentally literate. The theoretical framework formulated in the ensuing sections aims to tackle these complexities by amalgamating existing scholarship with the particular context of Arts and Science undergraduates, thereby presenting a model that is both exhaustive and flexible. The paper seeks to enhance the discourse on education for sustainability and offer pragmatic insights for educators, researchers, and policymakers dedicated to cultivating an ecologically literate and responsible generation of young adults.

**Environmental Literacy**

Knowledge, environmental impact, pro-environmental behavior, and cognitive abilities are the four pillars upon which environmental literacy rests, and they constitute the intended result of environmental education. While environmental information is somewhat unimportant, studies that aim to forecast desired behaviors place a premium on strong relationships and positive attitudes towards the natural world. Teaching natural sciences as discrete fields with an emphasis on information acquisition frequently fails to prioritize developing an emotional connection to the natural world. Here is where art and cultural education must be actively involved; only then can it freely and effectively convey the emotional side of our connection to and destruction of the natural world.




Art has the power to convey not just the splendor of nature but also the depth of its pain, to highlight the consequences of human inadequacy, and to propose remedies. Because art can serve as a warning, an intimidation, or an encouragement, it's important for art education to incorporate environmental science into other areas of study so that the combined educational impact can target various aspects of environmental literacy. The significance of the research findings is highlighted in the paper, which confirm that arts have an impact on the emotive component of environmental literacy. Teaching about art and culture can also inspire students to think creatively about how to

solve real-world problems, drawing connections not only to other disciplines but also to the environmental crises we're facing now. Finally, the authors offer some recommendations for how art education might promote environmental literacy among students.

**Environmental Literacy and The European Green Competencies Framework**

A person with environmental literacy has "the capacity to perceive and interpret the relative health of environmental systems and take appropriate action to maintain, restore or improve the health of those systems," according to the author who initially used the phrase. The term suggests that people may lack the ability to sense different environmental threats, and that they should be encouraged to become more sensitive so that they can notice and respond to these issues. This is the goal of environmental education, which can incorporate art into its curricula along with other disciplines. Going forward, based on this concept, our actions serve as a suitable measure for assessing environmental literacy.

Consistent with the UNESCO-UNEP (1978) description of environmental education goals, this is a product of the first intergovernmental conference on environmental education and is widely cited and implemented. The conference agreed that environmental education should aim to do the following: raise people's consciousness about the interconnectedness of economics, society, politics, and the environment; provide them with opportunities to learn about and practice the values, attitudes, and commitments that are necessary to address environmental issues; and encourage and inspire new ways of behaving in this regard. The environmental education program's overarching goals are as follows:

The goal of raising environmental consciousness is to make people and communities more attuned to the interconnected issues facing our planet. Learning—so that communities and individuals can broaden their exposure to and familiarity with environmental issues and their causes. attitudes—to encourage communities and individuals to develop a sense of environmental responsibility, a commitment to protecting and enhancing the environment, and a desire to do their share to make a difference. Ability—to assist communities and individuals in developing the capacity to recognize and address environmental issues. With the goal of encouraging participation at all levels of society, we can better equip people to tackle environmental issues.

A theoretical and empirical framework was established to assess environmental literacy in the United States, drawing on the work of Roth (1978) and the environmental education objectives of UNESCO and the United Nations Environment Program (1978). This framework was then used in other countries. Environmental literacy has evolved over time as a framework for environmental education. Its final operationalization identifies four components: ecological knowledge, which refers to basic ecology; environmental affect, which includes verbal commitment, which means the intention to act to improve the state of the environment; environmental sensitivity, which means practicing and enjoying activities in and with nature; environmental feeling, which means love of nature; cognitive skills, which include the ability to identify issues, analyze them, and plan actions to address them; and actual commitment, which means what one does to preserve the environment.

In line with the concept of environmental literacy, the European Union's current educational strategy has established a set of green competences dubbed European sustainability competencies. Among the environmental competencies are the following: the ability to accept sustainability values (such as valuing nature, equity, and sustainability), to embrace complexity in sustainability, to use cognitive skills (such as system thinking, critical thinking, and problem formulation), to imagine futures that are sustainable and those that are alternative, to be adaptable (to manage changes and difficulties), to think creatively and connect different fields, and to take action (on an individual, group, or political level) to ensure sustainability. Consequently, it is evident that educational systems should support a literacy/competency framework that includes sensitivity to nature, pro-environmental values, preparedness to act, ability to analyze and explore the situation, and ability to develop solutions, in order to respond to environmental crises. The end goal of environmental education is for students to engage in environmentally responsible conduct, and schools are intended to help students alter their minds and actions in this regard.

**Art Based Environmental Education and Eco-Art Education, Facilitating Environmental Literacy Through Visual Art**

The function and promise of art lessons can be better understood with the help of the offered synopsis of environmental education's aims and purposes and the connection between the affective domain and conduct. They have the potential to strengthen our connection to nature, heighten our awareness of the opportunities

presented by nature, and equip us to respond appropriately to the challenges we face. Art oriented environmental education, also known as eco-art education, is a strategy for environmental education that takes advantage of art programs to foster environmental literacy.

Environmental education that incorporates art was first conceived in Finland. Art is crucial to this kind of learning because it allows students to communicate their experiences in relation to nature, which in turn makes them more open to these experiences, and it also tends to build knowledge and responsibility. Students may, for instance, be assigned to look for things in nature that have to do with birth, death, and life, and then to express their thoughts and feelings about these things through creative expression.

There are two primary environmental goals that art education may help achieve: first, helping children re-establish relationships with nature; and second, helping them understand the causes and consequences of the ongoing environmental crises. Author discovers that the two purposes of art lessons are complimentary, even if being in nature offers delight and amazement and facing problems can cause sadness. In the field of architectural design, there is another possible use for art education: the development of ecologically sound products and services. Art education in elementary and secondary schools can and should lay the groundwork for environmental awareness in the field of building design.

In eco-art education, the cognitive, positivist foundations of environmental education are balanced with the more creative, emotive, and sensory aspects of art education, creating a novel approach to environmental education. Nicely laid out in Wilson's monograph (2011) are the criteria for effective eco-art education implementation, the first of which is making teaching relevant for everyday life, as this is the precondition for learning. What really matters for our learning is when the material is applicable to our lives. We should aim to provide information that is relevant to the local context, drawing inspiration from locations, subjects, and materials found in the area.

Exploring should be the means by which environmental education takes place, fostering awe and amazement at one's immediate surroundings and encouraging an attitude of gratitude for them. The pupils need to be shown the local forest, stream, and park, and educated on how human actions are endangering the natural ecosystem. Engaging in outdoor activities can inspire the creation of artistic works, allowing us to convey our astonishment at nature's beauties. In art class, students can share their thoughts and feelings about nature and the threats it confronts, and have a safe space to do so. Afterwards, art classrooms can become a space where students seek answers, creating objects that consider both the demands and the value of the natural environment. Take the school yard as an example; children can design their own summer classrooms based on what they find there. Posters alerting the public and urging them to take action can be made by researching the most pressing environmental issues in their town.

Environmentally conscious behavior can be fostered by connecting the lessons taught in other disciplines, such as art, biology, and technological education, in order to find answers to environmental challenges. It takes imagination, research, and the ability to see things from numerous angles in order to come up with a list of potential answers. Students should use their senses to discover, experience, and develop a sense of autonomy in order to promote environmental sensitivity and sensations. Schools and educational policies should make it easier for students to go outside and learn about nature through their senses of sight, touch, and smell. An essential condition for responsible conduct, it is a means to amplify the effect on the environment. Listen to the wind in the treetops, feel the bark, and study the shape of the leaves before students draw an oak.

The "extinction of experience" has been acknowledged. Worldwide, people are experiencing less time in nature as a result of overdeveloped urbanization. This has negative effects on people's health, emotions, and behavior. The author has investigated ways to bring people back into touch with nature. They have delineated various forms of connection with nature: the material, which involves consuming resources derived from nature, the experiential, which involves direct interaction with parks, lakes, forests, etc.; the cognitive, which involves knowing about the environment and the attitudes one endorses; the emotional, which involves attachment and empathy (for instance, towards a specific location in nature); and the philosophical, which involves one's worldview, the meaning of nature within it, and one's comprehension of the role of humans in relation to nature. They discover a great deal of artistic potential in treatments that encourage a deeper intellectual and emotional connection to nature, and they conclude that these interventions have the greatest impact.

**Disciplinary Perspectives: Arts Vs. Science Students**

The investigation of environmental literacy among undergraduate students is significantly enriched and complicated when analyzed through

the framework of disciplinary perspectives, particularly between individuals enrolled in Arts and Science programs. Students in the Arts and Sciences are often on opposite ends of the epistemological spectrum. The Sciences are usually based on evidence, analysis, and empirical methods, while the Arts are more interpretive, critical, and humanistic. These disciplinary orientations significantly impact how students conceptualize, interact with, and respond to environmental issues, thus shaping the cognitive, affective, and behavioral aspects of their environmental literacy. For instance, science students often see environmental problems as things that can be solved through scientific research, new technologies, and logical choices. A lot of the work they do in school is about ecosystems, looking at environmental data, and coming up with useful ways to cut down on pollution, save energy, or protect nature. This orientation improves the cognitive part of environmental literacy by giving them technical knowledge and the ability to solve problems. But their training might not always stress the ethical, cultural, and emotional parts of human-nature relationships enough, which could lead to an approach that is too focused on technology. On the other hand, arts students often look at environmental issues through the lenses of history, literature, philosophy, visual culture, and social critique. For them, the environment is more than just a physical system that needs to be managed; it is also a cultural symbol, a place of meaning, and a moral duty. Their studies cultivate empathy, ethical contemplation, and critical engagement with discourses of power, justice, and equity, thereby enhancing the emotional aspect of environmental literacy. However, since Arts curricula often prioritize creative expression over technical or empirical knowledge, Arts students may occasionally lack the scientific literacy required to fully understand intricate ecological systems or assess technical solutions.

Even with these differences, both Arts and Science students add important points of view to the creation of a complete model of environmental literacy. For example, Science students' focus on data, experimentation, and technological solutions is essential for tackling urgent environmental issues such as climate change, biodiversity decline, and transitions to renewable energy. But if you don't have the moral, cultural, and humanistic insights that the Arts often teach, scientific solutions might not take into account issues of social justice, cultural context, or community acceptance. Conversely, although Arts students' emphasis on cultural narratives, ethics, and aesthetics enhances our comprehension of human-environment interactions, their contributions are most significant when anchored in credible scientific knowledge. These disciplinary orientations show how Arts and Science work together to improve environmental literacy: the Sciences show us how to solve environmental problems, and the Arts show us why. This synergy is especially important in higher education, where the goal is not just to teach students about science or ethics, but also to make them environmentally literate citizens who can connect knowledge, values, and actions in ways that address both the ecological and social aspects of sustainability. The differences between disciplines also show up in how they teach and how students learn, which has an effect on how well they understand the environment. Science classes often use lab work, field studies, data analysis, and math to teach. These kinds of methods encourage learning through experience and help people develop skills that are important for understanding and managing natural systems. For instance, a biology student might do fieldwork on forest ecosystems or look at water quality data to learn about how the environment works. These experiences enhance cognitive engagement and impart practical skills, closely aligning with the behavioral aspect of environmental literacy. Arts curricula, on the other hand, usually focus on reading, writing, talking, and thinking critically. Students may examine environmental themes in literature, analyze depictions of nature in visual art, or participate in discussions regarding environmental ethics and policies. These learning methods help people learn how to interpret, think about, and talk about things, which are all important for shaping environmental values, building empathy, and changing public discourse. A literature student studying ecocritical texts or a philosophy student exploring the ethical aspects of climate justice may cultivate a deep sense of environmental responsibility. Even though their involvement may be less technical, it greatly enhances the emotional and socio-cultural dimensions of environmental literacy. The differences in pedagogy are important because they show that disciplinary perspectives shouldn't be seen as competing or hierarchical. Instead, they should be seen as complementary, with each one filling in the gaps left by the other.

Another aspect of disciplinary perspectives relates to students' career orientations and ambitions. Many science students want to work in research, environmental management, engineering, or policy analysis, where having scientific knowledge and being able to solve problems are very important. Their career paths

reinforce the cognitive and behavioral aspects of environmental literacy, as they must use scientific knowledge to solve real-world problems. On the other hand, arts students often want to work in education, communication, advocacy, or cultural production, where the goal is to change people's minds, tell stories, and get people involved. These trajectories underscore the emotional and socio-cultural aspects of environmental literacy, as Arts graduates may be instrumental in enhancing awareness, promoting dialogue, and championing systemic change. The interaction among these career orientations emphasizes the notion that tackling environmental issues necessitates both technical proficiency and cultural evolution. Neither viewpoint is adequate; instead, the amalgamation of disciplinary insights is essential to cultivate environmentally literate graduates capable of serving as sustainability agents in various contexts.

The separation between Arts and Science students also makes us think about the "attitude-behavior gap" in environmental literacy. Studies indicate that Arts students frequently demonstrate significant environmental concern and pro-environmental attitudes; however, these do not consistently manifest in behaviors, potentially due to insufficient technical knowledge or practical skills. On the other hand, science students might be good at solving environmental problems, but they might not always show as much emotional involvement, like empathy or moral concern. This difference shows that we need teaching methods that purposefully close the gaps between subjects by encouraging learning across disciplines. For instance, working together on projects that bring together Arts and Science students to solve real-world problems related to sustainability can help students combine empirical analysis with cultural and ethical reflection. A collaborative initiative focused on sustainable urban design might see Science students providing technical knowledge regarding energy efficiency and environmental impact, whereas Arts students would tackle concerns related to aesthetics, community values, and social equity. These kinds of experiences can help students get out of their comfort zones in their fields of study, which will help them become more well-rounded and knowledgeable about the environment.

In addition, disciplinary perspectives must be comprehended within the overarching socio-cultural and institutional framework of higher education. Universities frequently fortify disciplinary boundaries via curricular frameworks, departmental segregations, and evaluative mechanisms. These structures can make it harder for students to learn about things outside of their field, which can slow down the growth of holistic environmental literacy. At the same time, more and more people are realizing how important environmental issues are, which has led many universities to try out interdisciplinary programs, sustainability initiatives, and hands-on learning opportunities. Some schools, for example, have minors in environmental studies or sustainability that draw students from both the Arts and Sciences. This gives students a chance to talk to each other across disciplines. Others run sustainability projects on campus that get people from all fields involved, like campaigns to cut down on waste or green campus initiatives. These institutional practices indicate that although disciplinary perspectives influence environmental literacy, they can also be surpassed through deliberate design of educational experiences.

The disparity between Arts and Science students exemplifies the complex nature of environmental literacy and the imperative for interdisciplinary methodologies in higher education. Science students offer cognitive and behavioral advantages derived from empirical knowledge and technical problem-solving skills, whereas Arts students provide affective and socio-cultural benefits based on ethical reasoning, cultural analysis, and creative expression. When looked at alone, each group has its own set of limitations, but when looked at together, they give a fuller picture of what it means to be environmentally literate. The difficulty for teachers and policymakers is to make frameworks and curricula that don't reinforce disciplinary silos but instead encourage an integrative approach. This approach acknowledges that addressing environmental issues necessitates both scientific comprehension and cultural metamorphosis, as well as rational scrutiny and ethical creativity. Higher education can create a generation of graduates who are not only knowledgeable about environmental issues but also able to deal with them in socially responsible, culturally sensitive, and action-oriented ways by valuing the contributions of both the Arts and the Sciences.

**Implications For Higher Education**

The cultivation of environmental literacy among Arts and Science undergraduates has significant ramifications for higher education, affecting curriculum design, pedagogy, institutional policies, student engagement, and the overarching mission of universities in the twenty-first century. More and more, higher education institutions are being asked to help solve global sustainability problems. The United Nations Sustainable Development Goals (SDGs) make it clear that

education is a key way to deal with climate change, loss of biodiversity, and consumption that isn't sustainable. So, universities are not just places where people learn; they are also places where people learn how to be environmentally responsible and make smart choices. For undergraduate students in the arts and sciences, the consequences are especially important because their fields of study lead to different but complementary ways of becoming environmentally literate. Higher education for Science students must guarantee that curricula encompass not only technical and empirical understanding of ecological systems but also avenues for critical reflection on the ethical, cultural, and social ramifications of environmental decision-making. Without this kind of thinking, Science graduates might end up with a technocentric view that focuses on solutions without taking into account human values, fairness, or the views of the community. For students in the arts, higher education should not only teach them how to be empathetic, think ethically, and critique culture, but also give them opportunities to learn basic scientific literacy and how to solve problems in real life. If Arts graduates don't have these skills, they might stay at the level of advocacy and critique without the technical tools they need to evaluate or put solutions into action. The primary implication for higher education is the necessity for curricular integration, wherein sustainability and environmental themes are interwoven across disciplines rather than being restricted to environmental science or specialized elective courses. A comprehensive strategy would guarantee that all students, irrespective of their field of study, attain a fundamental level of cognitive, emotional, and behavioral proficiency in environmental literacy. For instance, environmental case studies could be included in literature, history, or economics classes as part of general education programs. Environmental ethics, communication, or policy could be included in science programs. This kind of integration into the curriculum recognizes that sustainability problems are cross-disciplinary and gets students ready to deal with them from many points of view.

Another implication has to do with how to teach. Conventional lecture-based pedagogy frequently prioritizes the dissemination of information while inadequately fostering the attitudes, values, and practical skills necessary for environmental literacy. Instead, colleges and universities need to use active, participatory, and experiential learning methods that get students directly involved with environmental issues. For students in science, this could mean doing fieldwork, working on projects in the lab, or doing data analysis exercises that mimic real-world environmental problems. For students in the arts, it could include service learning, research in the community, or creative projects that use storytelling, visual arts, or media to talk about environmental issues. Importantly, teaching methods should also encourage interdisciplinary collaboration, such as having students from the Arts and Sciences work together on projects related to sustainability. This kind of collaboration helps Science students understand cultural and ethical points of view, while Arts students learn about empirical and technical aspects. For example, a joint project on sustainable urban planning could have Science students design green infrastructure while Arts students look at how the changes would affect social equity and culture. These interdisciplinary experiences assist students in transcending disciplinary boundaries and fostering a more holistic and nuanced understanding of environmental literacy.

The third implication pertains to the institutional function of universities. In addition to their teaching and learning, universities need to show environmental responsibility in how they run their businesses and make decisions. Green campus initiatives like cutting down on waste, using less energy, using public transportation, and protecting biodiversity not only help the school have a smaller ecological footprint, but they also give students real-life examples to learn from. Environmental literacy becomes more real and believable when students see their schools putting the values they teach into action. Institutions can also set up offices for sustainability, green clubs run by students, or research centers that focus on new ways to protect the environment. These kinds of structures make sustainability a permanent part of the university's mission, so it doesn't rely on individual faculty members. Also, universities need to make sure that their research goals are in line with sustainability goals. This means that faculty and students should work together on research that looks at important environmental issues from different angles. Arts and Science faculties, frequently situated in distinct departments, ought to be motivated to collaborate on initiatives that integrate empirical data with cultural analysis, consequently enhancing both scholarly understanding and societal influence.

The fourth implication pertains to student engagement and empowerment. You can't teach environmental literacy just by telling people what to do; students need to be involved and have a say in what they learn. Universities need to give students chances to use what they've learned in real-life situations. Internships, community partnerships, study-abroad programs focused on

sustainability, and student-led initiatives all give students a chance to use what they've learned, test their values, and take action to protect the environment. These kinds of chances help close the "attitude-behavior gap" that people often talk about by turning awareness into real action. Also, student voices should be heard when institutions make decisions about sustainability, like when they plan the campus or make new rules. This not only encourages more people to participate in democracy, but it also strengthens the behavioral side of environmental literacy by giving students the power to make changes in the environment.

Another implication pertains to assessment and evaluation. Conventional assessment techniques, including examinations and essays, may inadequately reflect the multifaceted characteristics of environmental literacy. Institutions of higher learning must create instruments that assess not only cognitive knowledge but also emotional dispositions and behavioral competencies. For example, reflective journals, portfolios, evaluations of community projects, and surveys of students' attitudes and behaviors toward the environment can all give us a fuller picture of how students are growing. Assessments should also take into account that students may enter higher education with different levels of environmental literacy and learn at different speeds. This kind of detailed assessment is necessary for helping to plan the curriculum, finding gaps, and figuring out how well educational interventions work.

The consequences also apply to the growth of faculty. In order to teach and mentor students well, faculty members need to know a lot about the environment. Faculty can incorporate sustainability into their courses, no matter what field they teach, through professional development programs, workshops, and interdisciplinary teaching teams. It is also important to help faculty come up with new ways to teach, do research on sustainability, and take part in campus sustainability programs. Without help from the school, faculty efforts could stay broken or not last.

Lastly, the bigger effect on higher education is that it will change what universities are supposed to do in the twenty-first century. Universities cannot stay in their ivory towers while the world faces environmental problems that have never been seen before. They need to see themselves as active participants in changing society by making sure that their graduates are not only able to find work, but also responsible citizens of the world. This necessitates adopting an educational paradigm that transcends economic utility to include ecological stewardship, moral contemplation, and civic participation. For undergraduates in the Arts and Sciences, this vision means gaining expertise in their own fields while also learning about the environment in other fields. This way, future scientists, artists, teachers, policymakers, and professionals will all be able to help make their fields more sustainable. Consequently, higher education must acknowledge environmental literacy as an essential graduate attribute, vital to its objective of cultivating well-rounded, socially responsible, and globally conscious individuals.

The effects of environmental literacy on higher education are extensive and revolutionary. They want environmental themes to be included in all subjects, experiential and interdisciplinary teaching methods to be used, the university to commit to being a model of sustainability, students to be actively involved, new ways of testing students, faculty development, and a new definition of the university's mission. To deal with these effects, we need to break down disciplinary barriers and adopt a more comprehensive view that values both the scientific and humanistic aspects of environmental literacy. Higher education can help create a generation of graduates who are environmentally literate and ready to understand the complexities of ecological systems. These graduates will also be committed to acting ethically, responsibly, and creatively to make the future more sustainable.

**Conclusion**

To teach Arts and Science undergraduates about the environment, we need a full theoretical framework that takes into account cognitive, affective, behavioral, and socio-cultural aspects. This kind of framework shows how important it is for graduates to be environmentally responsible by having a variety of disciplines, new ways of teaching, and a strong commitment from the school. This method can help with research, making new courses, and making rules for higher education that are good for the environment.

**Acknowledgement**

The authors express their sincere gratitude to Ras Bihari Bose Subharti University, Dehradun, for providing the necessary academic environment and institutional support to carry out this research. The authors are deeply indebted to Dr. Ram Niwas Deshwal, Associate Professor, Department of Education, for his valuable guidance, insightful suggestions, and constant encouragement throughout the study.

Special thanks are extended to the undergraduate students of Arts and Science faculties whose participation and perspectives significantly enriched the conceptual understanding of

environmental literacy. The authors also acknowledge the contribution of various scholars and researchers whose works have provided the theoretical foundation for this study.
Finally, heartfelt appreciation is conveyed to colleagues, friends, and family members for their continuous support, motivation, and understanding during the completion of this research work.

**Financial support:**
Nil

**Conflicts of interest**
The authors declare that there are no conflicts of interest regarding the publication of this paper

**References**

1. Abbas, M. Y., & Singh, R. (2014). A survey of environmental awareness attitude and participation amongst university students: A case study. *International Journal of Science and Research, 3*(6), 1755–1760.
2. Abd El-Salam, M. M., El-Naggar, H. M., & Hussein, R. A. (2009). Environmental education and its effect on the knowledge and attitudes of preparatory school students. *Journal of the Egyptian Public Health Association, 84*(3-4), 345–369.
3. Biswas, A. (2020). A nexus between environmental literacy, environmental attitude and healthy living. *Environmental Science and Pollution Research, 27*(6), 5922–5931.
4. Kola-Olusanya, A. (2005). Free-choice environmental education: Understanding where children learn outside of school. *Environmental Education Research, 11*(3), 297–307.
5. Marušić Jablanović, M., Stanišić, J., & Savić, S. (2023). Ekološka pismenost učenika u beogradskim školama: rezultati pilot istraživanja [Environmental literacy of students in Belgrade schools: Results of a pilot study]. *Inovacije u nastavi, 35*(4), 28–46.
6. O'Brien, S. R. (2007). *Indications of environmental literacy: Using a new survey instrument to measure awareness, knowledge, and attitudes of university-aged students* (Publication No. 15055) [Doctoral dissertation, Iowa State University]. Iowa State University Digital Repository.
7. Raatikainen, K. J., Juhola, K., Huhmarniemi, M., & Peña-Lagos, H. (2020). "Face the cow": Reconnecting to nature and increasing capacities for pro-environmental agency. *Ecosystems and People, 16*(1), 273–289.
8. Ramirez-Andreotta, M., Brody, J., Lothrop, N., Loh, M., Beamer, P., & Brown, P. (2016). Reporting back environmental exposure data and free-choice learning. *Environmental Health, 15*, 2–11.
9. Sia, A. P., Hungerford, H. R., & Tomera, A. N. (1986). Selected predictors of responsible environmental behavior: An analysis. *Journal of Environmental Education, 17*(2), 31–40.
10. Singh, A., Kumari, S., & Singh, J. (2014). A comparative study of environmental awareness among secondary school teachers in Bareilly District, U.P., India. *Universal Journal of Environmental Research and Technology, 4*(1), 60–64.