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RESEARCH PAPER

Exploring the Role of Green Education in Enhancing Multiple Literacies for the 21st Century: Preparing Students for Globalized Living and Working in the New Millennium

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ABSTRACT

To investigate the impact of green education on developing multiple literacies among students.To understand the relationship between green education and global readiness in students.To identify best practices for integrating green education into the curriculum for the 21st century.In a rapidly globalizing world, the demands on education for multi-literacy competence are greater than ever. Recently, green education has been theorized to be an appropriate way of cultivating these literacies in students so that students are prepared better for living and working globally as we approach the 21st century. Specifically, the goals of this research are to better comprehend how green education contributes to the cultivation of multiple literacies (cultural, ecological and critical); how green education relates to global readiness; and best practices for incorporating environmental educational content across a K-6th-grade university laboratory school curriculum. The context illuminates that sustainability and environmental awareness are growing trends within education, influenced by wider societal aspirations for sustainable development. The recommendations drawn from the study emphasize that programs should develop green educators, not only to promote environmental awareness among students, but also critical thinking and creativity as well as prepare global citizens. It is based on a qualitative research methodology with 12 participants selected from the field of green education and curriculum development using purposive method. In-depth interviews and document analysis techniques are used to gather high quality data against the research objectives. The study adds to the literature by giving empirical data about multiple literacies affected, thus promoting green education capacity building activities for preparation learners in global society. This is where a core area of intersection lies between environmentalism and education, understanding that we need to bring the environment into our educational frameworks in order to produce responsible environmentally literate global citizens.

KEYWORDS 21st Century, Globalized Living, Green Education, Multiple Literacies

Introduction

In the 21st century is a necessity in skills required for academic success and global interconnectivity. At its core is the development of a range of literacies not just reading and writing but critical thinking, environmental awareness, global citizenship. The importance of green literacies means that green education is fundamental in providing the competencies necessary to ensure students thrive in an era defined by this need and, as we argue here, a vital cornerstone from which all relevant literacies will flow (Amran et al., 2019).

The paper argues that green education is a means to cultivate multiple literacies necessary for 21st century lives and work in a globalized world. A new concept of green education has taken shape due to the grave environmental concerns that humanity is facing, and it comes in terms with crucial practices needed for sustainability in different areas; from daily practices such as living or researching sustainable at home (Su & Zhao, 2023),all through agricultural and industrial sectors. Green education along with the legacy of environmental education movements hitherto is a priority which involves more than literacy campaign issue through its environmental efforts to buttress several issues in green economy movement. Ecological literacy, digital literacy, cultural literacy, and socio-emotional literacy to name just a few competences are integrated in the curriculum for citizens along with critical thinking capacity that could inform successful citizenship globally (Limuna l et al., 2017).

While published research has explored the Importance of environmental education, there is still little literature resulting from empirical work on how to integrate such green pedagogy and a confluence multiple literacies necessary for contemporary global citizenship. In an attempt to address this absence, the paper explore how green education impacts on change in educational practices through its transformative potentialities that go beyond traditional curricula and approach learning processes interdisciplinary manner oriented towards critical thinking awareness, empathy care and sustainability consciousness(Delamothe, 2024).

This will be informative to educators, policymakers and education stakeholders in realizing the nexus of green education with multiple literacies. This paper contributes to this knowledge by illustrating practical approaches and theoretical bases underpinning education for sustainable development in action. The importance of green education for academic skills and personal growth, local actions and global stewardship was thus framed while drawing attention to both the challenges ahead but as well to some of the positive aspects(Falk-ross et al., 2024).

The decision to investigate green education is in line with its transformative potential in creating generations that can respond and adapt to global adversities. This study attempts to make advocacy for making green education an essential part of the general educational system, by explaining its values and potential influence which ultimately results in helping in shaping a new world generation that literally cares about moving forward as one people and preserving development)); this is still possible. Basically it explores how green education impacts educational practices, build multiple literacies and prepare students for meaningful participation in the globalized world. This is with the aim of contributing to contemporary debates and evidence-informed work that relates to the future of education in this period(*Alizer2024*.).

Literature Review

Education for global citizenship and sustainable development faces a challenge into preparing students not only for the modern world of work but challenges from ever transforming contexts. Abstract: This literature review investigates green education and its promotion of different types of literacy ages that are important for thriving in the 21st century. Thus, green education seeks to join together both: introducing environmental consciousness into teaching and preparing students for living in an interdependent world amidst significant global ecological challenges (Simister & James, 2020).

Green Education and its Foundations

Green education or environmental education believes that knowledge and human stewardship of the environment are fundamental to sustainable development. It covers a range of learning experiences fostering environmental awareness, knowledge, attitudes, and skills. Integration of green education with school system will improve ecological literacy and develop critical, creative, as well as problem-solving skills (Ismail, 2021).

Multiple Literacies in the 21st Century

This also broadens the definition of literacy beyond reading and writing to a variety of skills needed for participation in society as such. Among other literacies, these are digital literacy, cultural literacy, media literary and environmental literacy. In doing green learning, this thing comes out that shows the importance of environmental literacy as an essential part or building block in which if developed we give students knowledge to comprehend complex environmental questions and competencies to engage themselves with sustainable solutions on those issues(Olmos-Vega et al., 2023).

Globalized Living and Working

Globalization has been a game changer in the socio-economic scenario, highlighting the integration between economies and societies across the globe. Consequently, people are forced to interact in a variety of cultures, break borders and work together with other human beings in a way that would have never been before: climate change; transcendent issues such as biodiversity loss. Green education provides a solution in globalized living and working by developing global competence: the capacity to comprehend and act on issues of worldwide importance(Otani & Cameron, 2024).

The Role of Green Education

Green education is instrumental in developing literacy for the 21st century and creates an environmental optic on various subject matter while encouraging interdisciplinary learning experiences. In these places, students learn about ecosystems through hands-on experiences such as field studies and project-based learning in the process developing skills in working collaboratively with others (teamwork), communicates well and thinks how these components relate to each other within a larger system (systems thinking) (Cao et al., 2023).

Challenges and Opportunities

Although integration of green education has the potential to offer many benefits, the implementation remains challenging owing to constraints in curriculum delivery, inadequacy of teacher training and inadequate resources. Systemic changes in educational policies, teacher professional development and community engagement have to be brought about. Yet at the same time, initiatives to advance green education offer innovative opportunities for collaboration and sustainable development in multiple educational environments (Busetto et al., 2020).

In short, green education initiates a mechanism that optimizes several literacies for living and working in the 21st century. Green education nurtures environmental awareness, critical thinking and global competence that prepare man through the dynamic changes of interconnected sustainability challenges as they survive. Going forward, additional research and a cooperative effort is required to incorporate green

education within global educational systems so that future generations can address the challenges facing society today and shape a more sustainable tomorrow(Otani & Cameron, 2017).

Material and Methods

Research Design: The research design used in this study was a qualitative one, and this paper will provide an in-depth investigation of how green education can strengthen multiple literacies. To obtain a greater depth of understanding and insight from the participants about their experiences and perceptions in relation to green education, qualitative methods were selected(L. Haven & Van Grootel, 2019).

Research Approach: Phenomenological approach used in conducting the main survey. The intent of this orientation was to highlight the life experiences (everyday lives) of participants, providing insight into what it looks like "on-the-ground" in order to understand the true essence behind the built-ecological model influencing green education and its constituents' development of multiple literacies essential for globalized living/working during the 21st century(Busetto et al., 2020).

Sampling Strategy: Subjects were purposively selected due to their extensive firsthand experience with green education programmes. This was done in order to ensure that participants are able to offer valuable and relevant insights for addressing the research question (Suri et al., 2022).

Data Collection Methods:

Semi-Structured Interviews: We conducted 12 semi-structured interviews with each participant Semi structured interview guide contained series of open ended questions which were aimed at obtaining in-depth responses from the respondent's experience on different forms of literacies affected by their perceptions regarding green education and extent to which it has been instrumental.

Document Analysis: Curriculum materials, educational policies and institutional reports were analyzed to support the interview data were reviewed as well help contextualize the findings.

Data Analysis: Thematic analysis was utilized for all interview transcripts and documents. It included the encoding of the data to search for patterns referring to different multiple literacies and how they are enhanced through green education.

Limitations: A drawback of the study is that it was conducted in a specific geographical location where green education has been a key component of learning. However, the results of this analysis may not be fully generalizable to other contexts. While best efforts were employed to mitigate bias, results may remain skewed by participant motives and personal experiences with green education.

Results and Discussio

Theme 1: "Integrating Green Education to Enhance Multiple Literacies for 21st Century Skills"

Green education provides an example of how students' literacies may be extended beyond traditional boundaries in preparation for the complexities of 21st century living. Embedding environmental consciousness curriculum students will receive a well-rounded education in multiple literacies: interdisciplinary, experiential, and technology-driven. This theme can be expanded into several sub-themes:

Sub-Theme 1: Interdisciplinary Learning and Systems Thinking

Green education teaches them to tackle problems by invoking multiple aspects of science, economics and social studies. This intensive academic framework examines the links and interactions between different systems so that students can grasp how ecological, as well economic and social forces are tied one to each other. Students have the opportunity to explore how scientific research into ecology, as well as climate science can lead to a detailed understanding of our relationship with nature and how human behavior is shaping the natural world. This includes all the papers and articles, concerning economic as well as financial sustainability studies concentrating on environmental policies with their cost-benefit analysis; stability of renewable energy. Social studies, the social dimensions of environmental problems and global policies/programs regarding them Tailoring of this information from many disciplines helps the students analyse a number of issues in various form needed for complex global understanding. Looking at subjects from a variety of lenses encourages critical thinking as students learn environmental issues can be assessed or approached in multiple dimensions and scales, causing repercussions far beyond what meets the eye. Students are more prepared with green education to provide sustainable solutions responsibly and to make informed decisions in the best interest of both the planet and society.

"Green education refers to formal teaching that attempts to engage students in understanding and applying multiple literacies by tying environmental awareness directly into traditional subjects. For instance, students are taught scientific literacy through place-based projects in sustainability, like measuring their school's carbon footprint or observing local ecosystems. This method not just enriches their scientific understanding, additionally builds the way infant think that will be critical for the 21st century" (Participant-2)

Sub-Theme 2: Ecological and Global Literacy

Green education helps foster an appreciation for and understanding of the natural world by emphasizing ecological systems. Doing this helps students understand not just the basics of ecology but also how everything is interlinked in an ecosystem. Green education informs students of the sensitive balance that supports life, what each species does in their ecosystem and how ecosystems stay healthy and durable. It helps students develop a greater respect and responsibility for his environment. Green education gives students global experience in dealing with environmental problems. It illustrates the ripple effect of our local actions, proving that ecosystems and human activities are interdependent. In examining global environmental problems such as climate change, deforestation, pollution and loss of biodiversity, students develop an understanding of life on Earth as a web that is intricate and fragile, and acquire an awareness of the pressing necessity to be sustainable. They also learn about how the human activities impact natural systems and are inspired to think in a critically ways of their responsibility to maintain this sustain Ville service. This integrative education model is a foundational quality that we believe develops students into future-literate citizens with the capacity to positively influence global sustainability.

21st century context, green education extends the literacy base for some students from reading and writing into ecologic literacy. Through our program, students also learn to interpret intricate environmental data and acquire the necessary digital skills that they use in vast range of tools and platforms. Further, a green education fosters global literacy and encourages students to appreciate the multifaceted nature of the world's ecosystems as well as human-environment connections. (Participant-5)

Sub-Theme 3: Practical and Civic Engagement

The works of experiential learning such as gardening, recycling and energy saving promise students a great daily practical verification of their natural science knowledge. Through gardening, students can discover the workings of plant biology and soil health; they learn about the different life cycles of plants through hands-on activities reinforcing classroom learning. The recycling activities help students to understand the significance of waste management and resource conservation, as well as the many benefits for our environment when we reduce, reuse, recycle these materials. It gives students an insight into the basic principles of energy efficiency and how using processes that save avoid waste (e.g., checks) or recycle energy on a continuous basis also reduces impact on the environment. While at the same time also increasing scientific literacy by introducing real-life applications of science. This insight complements our practical demonstrations, wherein students are able to see real-world applications and management of complex ecological processes encouraging them to cultivate an appreciation for sustainable practices.

In addition, green education raises the level of civic literacy by underscoring individual and collective roles and responsibilities in respect to environmental stewardship. They are educated on the impact their behavior has in regards to environmental concerns and inspired to promote sustainable actions within their community. This way of teaching takes on a serious feel, and it encourages students to do their part in the conservation of nature either at home or around the world but ultimately gives them a sense of duty. An examination of how they fit into a larger ecosystem educates them to deliver informed public discourse on sustainability and become environmentally responsible proactive citizens.

"Green education has a big impact on students' multiple literacies through systems thinking and in connection with the literacy across curriculum practices. Through project-based work focusing on Environmental, Economic & Social issues students will gain a global perspective. In doing so, these processes not only shape them into effective academic scholars, but they also promote skills of communication across a variety of groups which work to articulate complex ideas and advocate for sustainable practices" (Participant-7)

Sub-Theme 4: Technological Integration and Digital Literacy

Using digital tools and interactive methods in green education also improves students' digital and media literacies, which are important relating to the increasing pace of our modern world. Technology and environmental studies Incorporating technology into the study of nature encourages students to interact with several different websites, digital platforms, and resources. They may, for example, program software to read environmental data from sensors, or predict changes in climate behaviors and many other ecological simulations. They will be able to interpret intricate data sets and analysis tools, thereby enhancing their management of information. Several mapping technologies such as Geographic Information Systems cannot only use by the students to understand and document biodiversity in a particular region. This has the advantage over traditional learning, that students can learn more practically and so enables quicker full understanding one lesson at a time. In this way, students are also able to leverage creative digital presentations and multimedia projects to express their findings in a both compelling and artistic form (e.g. digital storytelling or visual communication). Such hands-on and interactive methods help students to master the use of technology in solving actual environmental problems as well, which will be helpful for them to adapt themselves towards future technological advancements and careers in an ever-changing digital world [8]. Green education is now instant as everything goes online, and

ultimately a new breed of tech-savvy individuals going Green through the digital changes in life.

"Green education has a far-reaching impact on the cognition and application of multiple literacies by students. It fosters hands-on learning, by involving them in activities like Gardening, Recycling programs Etc. The programs develop their hands-on skills and scientific literacy, but also instill civic literacy as the students learn what they can do to be good stewards of our land." (Participant-10)

Sub-Theme 5: Holistic Development and Lifelong Learning

Green education in the true sense of the word may be family stimulated attitudes (towards environmental problems) prompting pupils to look for creative solutions, rather than waiting helplessly to see things getting worse. They gain a flexible approach to learning, adapting to increasingly complex and confronting issues they encounter. Green education has students better prepared to solve real-world challenges with innovative and efficient problem – solving skills. It also makes a person ability to communicate intricate ideas in a more convincing and comprehensible fashion which is an essential part of both personal and professional life. Team projects and interdisciplinary learning will also contribute to the capability of effectively working in teams and cultivating a culture of team sharing, enhancing individual responsibility. Further, green education provides the students the skill and courage to propagate eco-friendly practices and consequently emerge as a harbinger of change both at local levels and regional levels. These skills are indispensable to success in the 21st century in a world where sustainability and ecological literacy is becoming central for both career advancement and global citizenship.

"Deep engagement with multi literacies also makes the green education an innovative one which incorporates technology and interactive learning. Students employ digital tools to map local biodiversity, investigate environment data and create multimodal presentations about sustainability issues. This builds their digital and media literacy in general, but also a sense of lifelong learning and adaptability to a world that is very much still changing every other second" (Participant-12)

The themes from the above demonstrate how an education in green literacy enhances pupils of all ages at a number of cognitive levels, and effectively equips them with knowledge skills which allows for informed responsible global citizenship. By utilizing sustainability across the disciplines, students acquire a multi-faceted awareness of environmental issues that stimulates critical thinking and problem-solving skills. It gives them an education that enables them to form their opinions, lobby for sustainable applications and get out of the house with all the benefits they have received from learning how to create a world in common situations. Green education, at its core, gives students the knowledge to live and work in a world faced with some very tough problems.

Theme 2: Empowering Global Citizens through Green Education

Green education prepares students to thrive in the global arena by focusing on sustainability, critical thinking and a world view. This is a way to teach someone why they should care about cyclical living and how to go approach global challenges. When green education is integrated into the curriculum, it leads to a more informed and responsible generations of global citizens who are able do their best for their communities as well as planet. Green education aims to produce students that are not just academically competent but also eco-friendly and socially responsible. This educational approach:

Promotes Sustainable Practices: Revealing how green energy educational programs talk about renewable energies, resource conservation and environmental effects throughout the course of studies in a way which teaches students they learn to see all these areas as well but serious efforts on research involving global liability. For example, students come to understand first-hand that renewables such as solar, wind and hydro power can help fight climate change and avoid emissions of greenhouse gases from fossil fuels. They also learn about conservation of resources, the benefit is to understand why waste should be minimized, recycle materials and keep the natural resource for later human populations. Additionally, learning about how human activities may affect an ecosystem and biodiversity help students identify the consequences of environmental degradation thereby enabling them to have greater awareness for conservation efforts. So equipped with such detailed knowledge, students are prepared to debate sustainability issues supporting policies and practices that will add up achieving a relative balance between humanities activities and harmony with earth.

"Green education means giving knowledge about sustainable practices and being an environmental steward to the students. Students are educated around renewable energy, resource conservation, and social responsibility in ecological considerations to be able to influence meaningful global policy and sustainable development as more integrations arises; something that is increasingly necessary in our world context. Green education essentially education on sustainability or environmental stewardship" (Participant-2)

Develops Problem-Solving Skills: Through tackling real-world environmental problems, students have an opportunity to further ground their knowledge in sustainability while strengthening critical thinking and pushing innovative boundaries of problem solving. They are essential traits required in any industry and can give you a competitive edge on an international platform. Combining experiential learning with theoretical understanding of environmental challenges, students learn to address issues from different viewpoints; propose innovative solutions; and work collaboratively with peers and experts alike. The process will not only make them ready for future careers but also be aware about the environmental stewardship and sustainable development. Through these struggles, students gain the ability to work with uncertainty, adjust their expectations on-the-fly, and contribute effectively to the biggest environmental challenges of our age. Thus, including environmental education in the curriculum not only enhances academic learning but also develops human skills that are necessary in the current complex and dynamically changing world.

"Through green education, students are able to develop analytical and problem-solving skills as they work together to solve pressing environmental problems. And these degrees prepare students for interconnected and global careers in environmental science, urban planning and sustainable business practices using their knowledge to develop solutions that are usable across local as well as international contexts.." (Participant-6)

Cultivates a Global Perspective: Working on global environmental problems creates empathy and teaches people how to collaborate, both of which are critical for multinational teamwork or undertaking CSR by companies. This understanding of many issues can help individuals be more empathetic to the challenges that other regions and communities face. This compassion is vital to creating an inclusive and collaborative group that respects the contributions of everyone on their team regardless of cultural or geographic differences. In addition, solving complex environmental problems fosters teamwork practice as well. Through this, people are equipped with navigating differing perspectives, utilizing collective expertise and drawing on their creativity for holistic environmental results. In turn, the joys and challenges of these experiences simultaneously reinforce their civic commitments while developing their just-in-time

interpersonal skills for diverse and globalized workplaces. From becoming truly connected and aware of global crisis our world faces, we grow to be more compassionate and supportive team members who are not only contributing work but also feelings in energy which is spent on sustainable practices / actions all over the world.

"Green education instills a global perspective as it allows students to understand the various environmental problems in different regions of Earth. This realization fosters empathy, collaboration which are key ingredients for working in multi-national teams and with organizations that value sustainability and Corporate Social Responsibility. By introducing students to environmental problems in different regions of the planet, Green Education nurtures a global vision" (Participant-9)

Balances Growth and Protection: a comprehensive grasp of ecosystems and economies is necessary to provide students with the tools that enable their efforts in pursuing balanced economic growth along environmental conservation particularly because industries are shifting towards more eco-friendly solutions! Understanding an ecosystem, students learn the elaborate relationships in natural environments such as how fragile equilibrium are required to prevent species loss and maintain ecosystem services that secure our future. At the same time, learning economics allows students to interrogate the economic foundations of industrial growth, consumption patterns and financial consequences for environmental degradation.

"Through Green education students get a sense of the symbiosis between ecosystems and economies. This global perspective of the economy ensures they are adept at managing roles that require an optimal mix between economics and environment (another high demand skill, with most sectors making a move to be increasingly green in recent years). Through green education, the students are taught about the interconnected nature of ecosystems and economies." (Participant-12)

Encourages Lifelong Learning: The relevance and the efficacy of our students on today's global job stage focusing so intensely in "sustainability" may also depend heavily on their adaptability and continuous learning. This emphasis recognizes that industries and job requirements change continuously with evolving technology, economic conditions and societal need for sustainability. Educational institutions develop resilience-related attributes to make students capable of going through these changes. For this, currents in the area of sustainability will be informed to all students; after graduation one has as a basis lifelong learning process beyond formal education can serve as constant. This forward-thinking approach not only imparts students with the information and ability to tackle today's environmental concerns, but prepares a new wave of sustainability pioneers in their ultimate roles as both employees and business owners. Therefore incorporating, adaptability and lifelong learning not only increases students employ-ability but also makes them active agents in building an economic sector that is sustainable for the planet.

"*Green education is tailored to prepare you for lifelong learning and changing. Because environmental policies and technologies are constantly changing, students who learn about this information longer through green education training can continue to reinvent their skills years in the future and remain sought-after workers whose talents align with a world that is more eco-friendly. Green education is a nod to the need for life long learning, and flexibility*." (Participant-3)

By weaving these sub-themes into the curriculum, green education prepares students to become enlightened and dutiful citizens of one planet-world ready to elicit a process for positive changes in an interlinked universe. Strand the most prominent concepts in ecology, climate science and renewable resources while providing necessary

overlap through its focus of study on environmental dynamics and conservation. In doing so, these disciplines not only teach human-environment interaction and global environmental governance but also require students to approach questions analytically about the human impact on our world. In economy, the emphasis on economic effects of environmental policies and ecological business operations not only over enriches students with knowledge to provide argument for an environmentally-aware economical management decisions. At the same time, literature and arts also disseminate environmental awareness in an indirect way by weaving elements of nature into themes that imbue creative sensitivity as well as artistic expressions on graphical works or literary work.

Theme 3: Cultivating Sustainability: Integrating Green Education for a New Millennium

This theme introduces a way to mainstream sustainability into entire educational institutions with the aim of preparing students holistically for environmental challenges in the 21st century. Every part of this formula is thoughtfully crafted to give students a strong foundation in the principles of sustainability across many areas. This includes setting sustainability themes into the science, geography, social studies, economics study of human life and behavior (and so on) as well as nature concepts like ecology or climate science…renewable energy; human-environment connections; their interplay in global terms policy-making or sustainable development measures influence over financial/econometric prosperity and also expressions human creativity that imagines a healed world from performing arts to art reflections of ecosystem beauty. Teaching will be highly experiential, and interspersed with group research projects, integrating technical training (through systems design courses) with hands-on practice in the field to build practical skills and knowledge that is directly applicable to good environmental stewardship. Institutional practices will also involve adopting sustainable operations, energy efficiency measures, waste reduction programs that course the institution to model responsible environmental behaviors. Innovative community engagement initiatives provide students with access to sustainable development partners in the area, working with them to solve concrete and real-world sustainability challenges and promoting principles of active citizenship in addition to application (application) of knowledge. Further, students engage in conversations about ethical dilemmas, cultural viewpoints and social justice surrounding sustenance that can help guide them to become an empathetic citizen of the world. This array of efforts, taken together, is designed to ensure students possess the requisite knowledge and training to effectively approach a sustainable future.

Sub-theme1: Integrating Sustainability into the Curriculum

In this way, with the integration of sustainable ideals, climate change concerns and conservation concepts in subjects ranging from science (energy sources), geography (a pale blue dot), economics(effective or ineffective comes at what cost to nature), literature (works in conversation about our relationship with environment). This way, every student is provided with a basic understanding of how the world they are studying in interacts with nature and the knowledge to help change it.

"Sustainability & environmental education can be a part of the core syllabus into all subjects starting from schools & will not just make students future ready but prepare environmentally sensitive citizens as well. Embed sustainable and environmental education into the mainstream curriculum of all subjects in educational institutions. Global and national commitment by educational institutions to incorporate sustainability and environmental

education into the core curriculum of all subjects. All Educational institutions should imbibe the sustainability and environmental education in the core syllabus of every subject" (Participant-5)

Sub-theme 2: Hands-On Learning and Community Projects

Students can partake in many different eco-friendly activities, all of which benefit our communities by improving the overall well-being and sustainability. These activities range from tree-planting, recycling drives and clean-up campaigns; to larger conservation works. Benefits of participation in these activities extend far beyond immediate impact on the environment and include much-needed acquisition of lifelong skills and values.

Tree Planting: Participate in tree planting projects to sequestrate carbon dioxide, purify air and offer a sheltered home for animals. Tree planting allows students to participate in environmental stewardship, get firsthand knowledge of what trees are used and why they are important ecologically, and how to plant them properly. This is a powerful activity as the students can observe how their efforts over time allow for growth and positive impact on other.

Recycling Drives: Children learn about the recycling process and why it is important to prevent waste from going to landfills by collecting recyclable materials like paper, plastic, glass and metal in their home or classroom. It also helps students understand the importance of recycling and how waste affects our environment, encouraging sustainable behavior in everyday life.

Clean Up Actions: Students can pick up some sort of clean-up action where then the student go to place which we choose and remove litter from local parks, riverside, beach or street anywhere. These activities help clean the area and prevent pollution from harming local wildlife and ecosystems. As students participate in clean-up activities, they learn how to cooperate with others and organize tasks, and also research the negative impact of pollutants on the environment leading them to appreciate a well-preserved ecosystem. What they learn is conservation efforts more students understand the fact that our ecosystem balance and biodiversity can only be maintained through different approaches of involvement in broader conversation projects, like habitat restoration, water conservation wildlife protectionorestation. These would include such things as building bird houses, planting with native species and monitoring the local wildlife, advocating for sustainable community practices that sort of thing. As they participate in these conservation projects, students learn about how ecosystems are connected and why it is important for humans to protect them. These experiences are vital in growing up as sustainable beings, where children can take away the values learnt and instilled at a young age into their future life which in turn would result to being better citizens of environment conscious society.

"Institutions can incorporate hands-on learning opportunities by working on projects and through partnerships with local communities as well as environmental organizations. At the institutional level, projects and partnerships with local communities and environmental organizations provide a hands-on learning experience" (Participant-10)

Sub-theme 3: Utilizing Green Technologies on Campus

Schools are the best place to lay down some strategies that can be a contribution, renewable sources of energy, green buildings, water systems as well as waste management programs. They can lower their carbon footprint by way of solar panels and wind turbines while offering a hands-on demonstration on renewable energy when they place them near student residence halls. Buildings can be constructed to meet standards

and equipped with ongoing energy-efficient systems as living laboratory modules for the study of sustainable architecture and engineering. Through water conservation systems, like rainwater harvesting and greater reuse, students learn how to manage water sustainably. Alongside robust waste management programs that capture recycling and compost, long-term behavior changes are instilled in the community and innovative ideas for reduction of waste are created. Incorporating Sustainability Activities These green initiatives include courses, workshops and project based learning that are integrated into the curriculum so that students at SIT understand how sustainability is practically applied. It will further empower students to innovate and bring in those solutions during their professional career, making a contribution to more sustainable as well environmentally friendly society.

"Introducing green technologies and sustainable processes at campus level may act as a live lab for students/ Adopting green technologies and sustainable practices on the campus can act as a living laboratory for the students. In addition to sustainable practices, there are green technologies that students can learn from on campus which act as a living laboratory. Creating green technologies and sustainable practices on the campus can act as an end ecological lab for students" (Participant-11)

Sub-theme 4: Encouraging Research and Innovation

Another area where educational institutions can greatly increase the amount students and faculty contribute towards global environmental solutions, is by funding more research projects that aim to solve our environmental problems through aspects of environmental science and green technology (i.e. renewable energy and sustainable agriculture). This support allows them to conduct leading-edge research on key environmental issues such as climate change, resource depletion, and ecosystem degradation. Support for Environmental Science Research Environment is not just the prettiest academic study among others but a thing to make the impact from what we have observed till date be it in form of climate change, pollution and biodiversity loss which are pushing us toward ways to connect the dots on how we could bring any meaningful changes or responses towards sustainability. Investment in research is necessary for the development of non-fossil-based fuels, increased efficiency and breakthroughs in energy storage as well as intelligent grids or more generally energy savings and reduction measures which are indispensable to reduce greenhouse gas emissions so that a transition towards a low carbon economy becomes feasible. Research focused on developing drought-resistant crops, reducing water use through enhanced irrigation scheduling and engineering, soil health management practices, agroforestry development and other Integrated Pest Management strategies all strive to deliver food security outcomes with minimal environment impact. In addition to these sectors the funding could cater to other green technologies also like waste management, water purification, ecofriendly building materials and transportation which will have more innovative solutions for a greener planet. Academic journal articles, conferences, and industry collaborations are essential to the elegant communication of research outcomes to undergo rigorous evaluation, input for new ideas and practical application for impact save souls towards a balance sheet sustainable future.

"Institutions can promote sustainability research and innovation. In the area of sustainability, these institutions can drive research and innovation. Research & Innovation in Sustainability to be promoted by institutions these institutions can help cultivated the research and innovation of sustainability. Institutions can support sustainability research and innovation" (Participant-4)

Sub-theme 5: Fostering a Green Culture and Mindset

Schools can implement different policies and programs for sustainable living of their students and staff. These actions can include anything from regulating against single-use plastics, encouraging more public transport…programming/policies that implement plant-based diets. Through these policies, the educational institutes seek to create a green attitude throughout their communities. This entails promoting eco-friendly behavior and making decisions that have a positive impact on the health of our planet. For example, the lower use of single-use plastics to reduce environmental pollution and resource conservation. Public transportation Use of public transportation reduces carbon emissions in the air, is a relief to traffic congestion and pollution in urban conglomerations. At the same time, but as slightly lower priority, promoting plant-based diets can decrease environmental impacts linked to food production and consumption. Now, the endeavor reflects more than just an immediate environmental payoff as well and becomes about cultivating values and habits that can last beyond students' years at SIS. In this way, educational institutions enable students to make informed decisions that contribute a positive ethos of sustainability. This leads to an enhanced ability of them to educate and further support sustainable efforts in the near future. Schools form an integral part of these policies and programs schools, as in educational institutions hold the key to framing a sustainable future within their operational modules. In doing so, they help shape environmentally aware minds and prepare them to drive a future of sustainability justice.

"*A campus culture that facilitates sustainability can dramatically change the way students view and act." (Participant-9)*

This variety of educational paths ensures that schools are not only teaching students sustainable theories and science but also providing real-life examples and sustainable practices so that they can live in a way where the future generation is better equipped to face the environmental needs of today. Full incorporation of green education in educational institutions will happen only if these five components have been met, and this we believe is the way students can be well prepared to address environmental challenges of the new millennium.

Conclusion

Integrating green education is a new way of doing things and by far the most effective in promoting multiple literacies essential to 21st century skills. Through embedding environmental learning into the core subjects, students are able to cross-cut and experientially literate in technology and ecological literacy as well have a deep systemic understanding of ecology both locally and globally. This comprehensive educational experience enables students to develop essential critical thinking and problem solving skills for responsible action on complex global issues. Additionally, they also gain the digital and media literacies needed to become successful members in a global society that is both digital and interconnected through hands-on experience with technology. In this way, they are all prepared to use technology to fuel sustainability and ecological stewardship advocacy by interfacing theory with hands on experience. Developing a culture of green learning prepares students for the future, responsible citizens capable of responding to changing conditions in industry, technology and environmental solutions throughout their lives.

And the training being provided equips them to implement in both their personal lives and when they start work, Formats such as these foster a viable mindset shift. In the end, this comprehensive model not only equips students to address global issues with

nuance; it allows them to push for sustainable practices and regulations that contribute positively to their environment. Green education educates proactive global citizens for a more sustainable and equitable world, establishing governance between humankind and the planet. Green education is therefore ideally placed to ensure that environmental stewardship is made a fundamental societal value and action through the application of sustainability principles within guided practical engagement as an integral part of this desired future.

Recommendations

Green education integration with respect to the emergence of 21st-century skills in developmentally continued capacities Impact practice can be recommended based on several insights get Value. There are also some recommendations to make on the further insights of green education integration and transformative effect on students in developing 21st-century crucial competitive skills. Different recommendations can be offered based on the implications derived from green education infusion and its transformative role in teaching students 21st-century skills.

1. Integrate environmental sensitivity further within different subject matters as part of the curriculum commenting upon core courses such as Science, Geography, Economics and Literature etc. in schools and colleges to ensure a sustainable mindset right at the start of one's educational journey. This set-up also encourages cross-fertilization of learning experiences across different disciplines and provides students with a comprehensive understanding of both ecological and global systems.

2. Multiply extracurricular learning programs and collaborations with the community that apply their knowledge to practical conservation needs in which they can also engage hands-on. Seek partnerships from local communities and environmental institutions to have hands-on learning experiences and foster citizenship.

3. Improve the incorporation of digital and media literacies in green education efforts. Offer students tools to use technology creatively in researching environmental issues, promoting more sustainable practices and communicating their findings to a wider audience in professional ways.

4. Educator professional learning opportunities to deepen the expertise of green education practice. Create resources, advocacy, and professional development to support educators' capacity to integrate discourses of sustainability across subject areas.

5. Greening educational institutions' operations (e.g. through improved energy efficiency, waste reduction programs and adopting green technology) Serve as a living laboratory allowing to visualize and opt for sustainable alternatives while instilling in students eco -friendly practices.

6. Promote global citizenship education that encourages students to recognize their roles as responsible global citizens. Emphasize empathy, cultural understanding, and collaboration across diverse backgrounds in addressing global environmental issues.

7. To inspired students to actively advocate for sustainable practices and the promotion of environmentally responsible policies within their communities and

across generations. Create outlets and mentorship avenues for students to engage in advocacy work, policy narratives, or environmental-activist initiatives.

Educational institutions can build on these recommendations to increase the transformative dimensions of green education so that students will be able to lead and create a future wherever it is sustainable for everyone. These recommendations, by being implemented can contribute to a greater transformational impact of the Eco humanist education in order to prepare students to leading and participating on building this future sustainable and fair for all.

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