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Reinvigorating Climate Change Education in Universities a Social Transformative Agenda

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Abstract

Many Higher Education Institutions (HEIs) have implemented measures to enhance their sustainability efforts, such as integrating student-led organizations, research and innovation centers, and eco-friendly campus projects. In a unified effort to achieve SDG4, universities are collaborating to align their initiatives with the Sustainable Development Goals. Incorporating these goals into the academic curricula and exploring SDG-related themes are crucial steps in this process. The global community is faced with environmental threats due to climate change. The problematic process of societal transformation involved in responding to climate change. Reviving climate change education in educational institutions can provide a strong impetus for societal change. Future leaders, professionals, and citizens are significantly shaped by the knowledge, attitudes, and abilities they acquire in universities. This paper thematically reviewed relevant literature which then sought to unpack strategies employed by universities to advance climate change education. Transformational paradigm and social change (structural-functional) theory are the underlying philosophical view for this paper. Curriculum integration, a holistic approach, experiential learning, community engagement, faculty development, campus sustainability, policy advocacy, developing student leadership, partnerships, and collaborations are some approaches to reviving climate change education that came to light from the paper. By implementing these approaches, universities may position themselves as hubs for climate change education, research, and action, raising a generation of conscious, involved, and equipped individuals ready to lead societal transformation in the direction of a sustainable future.

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Keywords

Climate Change Education, Social transformation, Strategies, social change, SDG4, Universities

1. Introduction

One of the main responses to the deteriorating state of the global environment is the formal education curriculum that facilitates quality teaching and learning of climate change education (Damoah & Omodan, 2022; Damoah & Adu, 2019). The threat of global temperature rises above 1.5 degrees Celsius can be mitigated through climate change education (Damoah & Omodan, 2023). The most current Global Education Monitoring Report by UNESCO in 2020 highlights the role that education plays in reducing climate change and adapting to it, yet many nations do not acknowledge the significance of climate change education (CCE) or make major investments in it (Molthan-Hill et al., 2022). Stevenson et al. (2017) assert that universities all around the world are becoming more aware of their obligation to educate students and the general public so that they may actively participate in climate change adaptation

and mitigation. Universities adopting and supporting carbon-neutral objectives and behaviors are part of this responsibility. inside this bigger framework. These days, more and more higher education institutions adopt a dual approach. In implementing low-carbon operating procedures, universities first want to achieve carbon neutrality as an institution. In addition, academic institutions are creating curricula and pedagogical strategies to teach students about reducing climate change's effects and adapting to it (Kiehle et al., 2023).

Pee and Vululleh (2020) argue that Future environmental auditors, community leaders, corporate executives, engineers, practitioners, technical professionals, policymakers, and, most importantly, the general public can all benefit from the education provided by higher education institutions (HEIs), which also helps to spread social and governmental reforms. Practical environmental initiatives have a trajectory that is influenced by the responsibilities that civil society groups and institutions play in society (Damoah & Adu, 2022). The cumulative increase in societal awareness gradually permeates and shapes the policies and procedures of the business sector, community stakeholders, and local and federal governments on how to manage better climate change mitigation and adaptation in their many spheres of influence, including through advocacy, daily actions, and professional careers (Kelly et al., 2015).

Leal Filho et al. (2019) contend that universities are now aware of their obligation to develop climate change education modules and prioritize carbon neutrality, but sometimes organizational complacency, operational complexity, and an abundance of regulatory requirements that have an impact on governance in the higher education sector can stymie these efforts. Among other ways, nature-immersive field projects, international case studies, and higher degree research can all be used in climate change education (CCE) at universities, which can take the shape of formal, informal, or non-formal learning and teaching methods.

Over the past ten years, there has been a progressive global trend away from a limited focus on environmental preservation in curriculum toward broader aims and innovative teaching techniques, as shown by a literary study of university education on climate change and sustainability. Corporate social responsibility, multiculturalism, community involvement, and ethics are some of these programs. They also take the form of recycled materials, greening campuses, embodied pedagogies, and outdoor education that immerses students in the natural world (Kromydas, 2017).

Climate change education requires immediate attention due to global environmental challenges (Damoah, 2023). Universities need to orient themselves dynamically going forward. This will significantly close the knowledge gap between the generation and sharing of crucial information concerning climate change that has the potential to spread throughout many other areas. Engagement in this area has become increasingly important to higher education providers in recent years. There have been more instances of institutions adopting responsibility for funding environmentally friendly initiatives to meet sustainability goals (Saeed et al., 2019). In addition, recent trends have seen an increase in the number of universities worldwide deciding to actively divest their endowments from interest in fossil fuels. The road toward climate-driven education is strategic, integrative, and gradually integrates the SDGs (Leal Filho et al., 2021).

Hou and Jacob (2017) intimated that the Times Higher Education Impact Rankings are a mechanism for outlining the parameters that institutions employ to accomplish certain UN SDGs. SDG 13 (climate action) is one of them. This assesses whether or not universities engage in climate change research, how they utilize low-carbon energy, and whether or not they offer educational initiatives targeted at achieving carbon neutrality. Leal Filho et al. (2021) argue that 376 universities from 70 different countries are included on the most recent list for the year 2020. The top five institutions are all located in New Zealand, Australia, or the United States; no African universities made the list.

The world community is primarily concerned with climate change and climatic variability. Critical inquiries together with reflexive and transformational educational techniques are required due to the complex interconnections between the earth's socio-ecological systems and the global climate. Regarding sustainability issues and the difficulties posed to learning and pedagogy, this may assist in meeting the need for more radical social learning-centered reform (Leal Filho et al., 2021). Therefore, there is a need to move away from basic, silo-based approaches to education and toward more systemic and in-depth research that combines biophysical, socio-economic, and socio-psychological conceptions (White & Delaney,2021). In this context, ideas like Education for Sustainable Development (ESD), a

crucial instrument for sustainable development and a crucial component of high-quality education, have acquired international traction. ESD equips individuals to modify their perspectives and practices to move toward a sustainable future. By expanding chances for top-notch education on sustainable development, this may be achieved. Through the reform of educational pedagogies and the empowerment of individuals to acquire the information, abilities, attitudes, and behaviors necessary for sustainable development which will foster social transformation. This emphasizes the importance of including sustainable development concepts in the curriculum, such as climate change (UNESCO, 2020). Universities all around the world must make an effort to provide advanced curricula, programs, capacity building, and multidisciplinary collaboration to encourage meaningful learning on Climate Change.

Furthermore, since climate change is largely the result of interactions between humans and the environment, schools can help us do more than just understand these changes to our habitat and help us adapt to them (Damoah et al., 2023). They can also help us slow down these changes and lessen their impact as we adopt sustainable practices and, possibly, even reverse them as we develop technologies that change the factors that cause climate change. People need to be prepared to adopt sustainable behaviors to lessen both their contribution to climate change and the effects of climate change on their daily lives (Feola, 2015). This is accomplished through educating people about more sustainable ways to interact with their environment. When we make decisions about our consumption and way of life, these activities may be personal to us.

Human competencies, or people's knowledge, motivation, and skills, are essential for climate change adaptation and mitigation. However, acquiring those skills is a very difficult task that calls for concentration and expertise. Climate change education, a branch of education for sustainable development, is a new educational area born out of the potential of education to influence human-environmental interactions. To help students comprehend, adapt to, and minimize climate change, a lot has been written and is being done in this area. To confront this grave peril that mankind faces, governments all over the world have created curricula and established policies in collaboration with civil society groups and other institutions (Huckle & Wals, 2015).

Læssøe and Mochizuki (2015) intimated that international organizations like UNESCO have made significant efforts to promote climate change education and have created and disseminated materials to do so. Wynes and Nicholas(2017) argued that despite these efforts, education has not yet been able to significantly reduce the impact that our species has on climate change, nor have we been able to adapt to these climatic changes. As a result, much like polar bears, we are witnessing the destruction of our habitat, much of which is due to our own doing, and we are unsure of whether we will survive these changes alongside other species. The fact that no one nation can resolve it independently and that no nation can protect itself from its repercussions makes it the defining global dilemma. However, it is extremely doubtful that the necessary collective response will be generated. Climate change may end up being the problem that defines the twenty-first century.

2. Objective

This paper thematically reviewed relevant literature on climate change education in institutions of higher learning and its implications.

3. Methods

This is a thematic literature review paper anchored on the Transformative Paradigm(PT). The revolutionization of the role of CCE in higher education is imperative to mitigate the effects of climate change, as argued in this paper. The philosophical foundation of the TP prioritizes social justice and human rights concerns, including the climate and environmental crises that are affecting communities worldwide (Mertens & Wilson, 2012). The Transformational paradigm assumes a complex world with various perspectives on reality emerging from socioeconomic and cultural viewpoints. Knowledge is produced within a framework of power and privilege, with repercussions tied to whatever version of knowledge is granted privilege. No one technique is preferred; rather, methodological choices are linked to the goals of social justice. The methodology includes a structural analysis that promotes a critical and reflexive interaction between the evaluator and stakeholders (Baker et al., 2021). Universities need to integrate CCE into their curriculum to bring environmental and societal transformation. TP entails altering how we see, experience, and

behave in daily life, encompassing individual and societal transformation. This resonates with the philosophical view of social change theory.

The concept of change is broad, encompassing alterations in social relationships and structures. Social change involves observing changes in any social phenomenon over time. Parson Talcott's 1951 structural-functional theory is the basis for this paper. According to this theory, social structures have both structural and functional components. Structures have a direct impact on function, and society is viewed as a balanced system, like the human body. Social institutions make changes to stabilize the social order when external or internal events disturb it (Parson, 1951). Universities must implement policies that promote environmental advocacy and create a supportive atmosphere and defined curriculum to develop the necessary skills for a transformative society. Universities have a social contract of designing pedagogical strategies that integrate CCE into their curriculum and programs to bring the needed environmental and societal transformation. Moreover, universities should prioritize research on pressing climate change issues. This is crucial for developing an environmentally conscious young generation that can protect ecosystems and contribute to society. This paper reviews the literature on the following thematic areas: the importance of climate change education in institutions of higher learning, Strategies to Reinvigorate Climate Change Education

4. Discussion

The paper thematically discussed the relevance of climate change education and the strategies to revive climate change education in institutions of Higher learning.

4.1 Why Climate Change Education is Important for Sustainable Development

The significance of climate change education cannot be overstated because it promotes sustainable behaviors, enhances awareness, and empowers individuals and communities to act, all of which are crucial for social transformation. Therefore, the following vital aspects of climate change education should be given due consideration as they play a significant role in achieving this goal (Gillard, 2016).

Corner et al. (2015) assert that to effectively combat climate change, education must prioritize raising public awareness of its causes, impacts, and urgency. This can only be achieved by providing accurate and accessible information on its scientific basis, as well as its connection to human activities and potential consequences on both ecosystems and human societies. It is essential to emphasize the interconnectedness of environmental, social, economic, and political systems, and how individual actions and choices can have a significant impact on the broader climate system (Williams et al., 2017). Failure to do so will result in irreversible damage to our planet, with catastrophic consequences for future generations

Mitigation and adaptation strategies are emphasized in climate change education. It offers useful information on sustainable practices that people and communities may embrace, such as recycling, sustainable agriculture, and alternative forms of energy and renewable energy. The development of critical thinking abilities via CCE enables people to examine and analyze various sources, spot biases, and make well-informed judgments. To overcome the difficulties brought on by climate change, problem-solving abilities are stressed (Niles et al., 2016).

Ojola (2015) argues that individuals are motivated to act and are given hope that they can improve the world through education on climate change. It highlights how both group and individual activities, from individual lifestyle decisions to civic activity and advocacy, matter. To ensure that marginalized populations have equitable access to knowledge and chances to participate in climate action, inclusion, and equality should also be promoted via education. Education should recognize the interdisciplinary nature of the problem of climate change by including topics from the humanities, social sciences, and the sciences. This interdisciplinary approach fosters cross-disciplinary cooperation and promotes holistic understanding. CCE is included in more comprehensive initiatives for education for sustainable development (ESD). To build a just and sustainable society, people need to have the knowledge, skills, values, and attitudes to do it. An all-encompassing and revolutionary strategy may be accomplished by integrating CCE with ESD. Partnerships and teamwork among several stakeholders, including educational institutions, governments, NGOs, corporations, and communities, are required for CCE (Takahashi et al., 2016). Through such cooperation,

shared accountability is encouraged and CCE is relevant, contextualized, and successful in tackling regional and global issues

Information on the latest climate policy, its origins, effects, and potential remedies is a key component of climate change education. To make people more aware of how complicated the problem is, it discusses how numerous environmental, social, and economic variables are intertwined (Smith & Jacques, 2022). Sustainability, social justice, and fairness are all ideals and ethical principles that CCE upholds. It inspires people to consider their morals and actions, developing a sense of obligation and concern for the environment and future generations. Building people's capacity to deal with climate change concerns should be a major goal of education. To do this, it is necessary to provide instruction, opportunities for skill growth, and assistance with sustainable activities including waste reduction, sustainable agriculture, and renewable energy (Owen-Oliner, 2021).

Collaboration and networking among many stakeholders, including teachers, students, decision-makers, corporations, and nonprofit groups, are encouraged by climate change education (Pucciarelli & Kaplan, 2016). This encourages group participation, information sharing, and the adoption of best practices, which strengthens the effects of initiatives to educate people about climate change. CCE is thought of as a process of lifelong learning. As new scientific discoveries and solutions materialize, they promote ongoing learning, adaptation, and creativity. Individuals are therefore better able to keep educated about the issues related to climate change and adapt to them. These elements may be incorporated into CCE to enable people to become aware, involved, and responsible global citizens who actively support social change and sustainable practices (Cinner et al., 2018).

4.2 Strategies to Reinvigorate Climate Change Education for Sustainable Ecosystems in Universities

A strong impetus for societal change may be provided by reviving climate change teaching at universities. Future leaders, professionals, and citizens are significantly shaped by the knowledge, attitudes, and abilities they acquire in universities (Weir et al., 2017). The following strategies can be used to advance climate change education as a social transformation agenda in universities:

Universities should include CCE in a range of degrees and specialties, reaching beyond environmental sciences. Consider incorporating themes related to climate change into the social sciences, humanities, business, engineering, and other pertinent areas. Students are assisted in understanding the complexity of climate change and its importance to their particular areas by this multidisciplinary approach. Higher education institutions (HEIs) ought to tackle climate change education holistically, considering its political, economic, social, and environmental aspects. Universities promote cooperation across diverse colleges and departments to create thorough curricula that examine how various fields are related to climate change (Molthan-Hill et al., 2022)

Universities should provide students the chance to learn experientially through activities like field excursions, internships, and research projects that let them interact with the problems caused by climate change in the real world (Lin et al., 2017). Their comprehension of the effects, adaption strategies, and mitigation attempts of climate change is improved by this practical experience. To produce worthwhile educational opportunities, HEIs should promote partnerships and cooperation with nearby communities, NGOs, and companies. This might include collaborative problem-solving activities, service-learning programs, and community-based research projects that address climate change challenges in the local area (Tang, 2019).

By giving platforms to student-led groups, clubs, and projects, the higher education community can encourage student participation in climate change activities. Encourage students to plan activities, workshops, and awareness drives on campus and in the neighborhood (Bodolica et al., 2021). This promotes a sense of ownership and responsibility among the student group as well as leadership skills development. Assist lecturers in improving their expertise in teaching about climate change. Provide tools, workshops, and chances for professional development to assist lecturers in successfully incorporating climate change subjects into their courses. To contribute to the academic conversation, encourage publishing and research in the area of climate change (Richlin, 2023).

By putting green campus programs into place, institutions may serve as examples of sustainable behavior. Reduce carbon emissions, advance renewable energy, establish waste-management plans, and encourage environmentally friendly transportation methods. Showcase sustainable solutions on campus as a living laboratory and include students in sustainability initiatives. Encourage collaborations and joint ventures with other colleges, research centers, and international organizations that are involved in climate change teaching. To boost worldwide efforts in climate change education, exchange best practices, pool resources, and work together on research projects (Leal Filho et al., 2015).

At the municipal, state, and international levels, universities are encouraged to participate in policy advocacy (Damoah, 2023). Encourage staff and students to speak out for climate-friendly legislation, participate in public discussions, and have an impact on the selection of policies that affect sustainability and the environment. Expand the scope of climate change education beyond the undergraduate level by providing seminars, online courses, and continuing education programs for past students and the general public. To encourage continuous involvement and information sharing, create alumni networks centered on sustainability and climate change (Monroe et al., 2019).

5. The Role of Higher Education Institutions in Achieving the SDG 4

Higher Education Institutions (HEIs) play a critical role in advancing the Sustainable Development Goals (SDGs) and setting an example for other industries (Damoah, 2021; Ketlhoilwe et al., 2020). They have the power to influence public discourse on the SDGs and are instrumental in achieving the 2030 Sustainable Development Goal Agenda. Although SDG 4 emphasizes quality and inclusive education, HEIs impact all the goals through research, teaching, and campus initiatives. They are a valuable source of ideas and solutions for global challenges, contributing to economic, environmental, and social development (UNESCO, 2020).

UNESCO (2020) further stresses that HEIs are situated at the center of networks of partners from the public sector, private sector, and business community, amplifying their potential to effect positive change. HEIs have already taken measures such as implementing campus greening and community engagement programs (Leal et al., 2015). Universities are working collaboratively to achieve the SDGs, with a particular focus on SDG 4, while taking care to align their strategies with the SDGs. To further advance the SDGs, it is recommended that universities integrate the goals into their curricula and encourage Ph.D. candidates to research and write theses on SDG-related topics.

6. Conclusion

Education for social change should go beyond traditional teaching. It ought to promote involvement and active engagement, allowing people to use their knowledge in practical settings. Projects, neighborhood efforts, and collaborations with sustainability-focused groups can all fall under this category. To solve the complicated and pressing issue of climate change, it is important to empower individuals, foster a feeling of urgency and responsibility, and foster a sense of community. We can develop a resilient and sustainable society that can mitigate and adapt to climate change by incorporating these ideas into educational institutions and practices. The promotion of sustainable behaviors and the acceleration of societal change are both facilitated by climate change education. People may make wise judgments and take the necessary steps to lessen the effects of climate change by raising their level of awareness, comprehension, and knowledge about it. Implementing these techniques, universities may position themselves as centers for climate change education, research, and action, raising a generation of knowledgeable and engaged people who are prepared to lead the societal transformation toward a sustainable future.

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