

# INTEGRATING CLIMATE CHANGE EDUCATION IN VIETNAM'S UNIVERSITIES: AN OVERVIEW

## INTEGRAÇÃO DA EDUCAÇÃO SOBRE MUDANÇAS CLIMÁTICAS NAS UNIVERSIDADES DO VIETNÃ: UMA VISÃO GERAL

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vulneráveis e fortemente impactadas pelos efeitos das mudanças climáticas. Consequentemente, a educação para as mudanças climáticas (ECC) emergiu como uma solução estratégica que recebe atenção global, juntamente com abordagens econômicas, infraestruturais e políticas. Neste contexto, a integração do CCE nas universidades é uma questão necessária e urgente. Este artigo mostra que o CCE nas universidades do Vietnã foi integrado a muitos assuntos, bem como a várias atividades por meio de diferentes formas. Acima de tudo, o objetivo mais importante da integração do CCE nas universidades do Vietnã não é apenas melhorar a educação em conhecimento, habilidades e adaptação às mudanças climáticas, mas também ajudar os alunos a mudar seu comportamento e atitudes em resposta às mudanças climáticas. Este artigo destaca a importância de integrar CCE em universidades no Vietnã e fornece insights sobre as oportunidades e desafios de tal integração. Ao aprimorar o conhecimento, as habilidades e a conscientização de futuros líderes, cientistas e cidadãos, as universidades do Vietnã podem contribuir para enfrentar o complexo e urgente desafio da mudança climática.

**Palavras-chave:** Mudança global. Desenvolvimento sustentável. Educação integrada. Currículo universitário. CCE. Vietnã.

**Abstract:** The pressing issue of global climate change poses a significant threat to humanity's pursuit of sustainable development and its future. In particular, Asia, including Vietnam, is recognized as one of the regions most vulnerable to and heavily impacted by the effects of climate change. Consequently, climate change education (CCE) has emerged as a strategic solution receiving global attention, alongside economic, infrastructural, and political approaches. In this context, integrating CCE into universities is a necessary and urgent issue. This article shows that CCE at Vietnam's Universities has been integrated into many subjects as well as various activities through different forms. Above all, the most important goal of integrating CCE at Vietnam's Universities is not only to enhance education in knowledge, skills, and adaptation to climate change, but also to help the students change their behavior and attitudes in response to climate change. This article highlights the importance of integrating CCE into universities in Vietnam and provides insights into the opportunities and challenges of such integration. By enhancing the knowledge, skills, and awareness of future leaders, scientists, and citizens, universities in Vietnam can contribute to addressing the complex and urgent challenge of climate change.

**Keywords:** Global change. Sustainable development. Integrated education. University curriculum. CCE. Vietnam.

**Resumo:** A questão premente da mudança climática global representa uma ameaça significativa para a busca da humanidade pelo desenvolvimento sustentável e seu futuro. Em particular, a Ásia, incluindo o Vietnã, é reconhecida como uma das regiões mais

## 1. Introduction

Climate change is a global challenge that requires urgent action to mitigate its impacts and adapt to its effects. Vietnam, a Southeast Asian country located on the East Sea coast, is particularly vulnerable to the consequences of climate change due to its long coastline and dependence on agriculture and fisheries (Work Bank Group, 2022). According to climate models, Vietnam's average temperature is projected to rise between 1.5°C and 4°C by the end of the 21st century compared to pre-industrial levels (Ministry Of Natural Resources And Environment, 2021). The climate change scenarios for Vietnam estimated that sea levels along the Vietnamese coast could rise by approximately 0.3 to 1.0 meters by 2100 (Ministry Of Natural Resources And Environment, 2021). Vietnam's efforts to address climate change and promote sustainable development have been recognized by international organizations such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC). However, the scale and complexity of the challenge require action at all levels, including education.

Given the potential impacts of climate change on Vietnam, it is crucial to strengthen climate change education, awareness, and mitigation efforts to reduce greenhouse gas emissions and adapt to the changing climate. In the face of these challenges, it is crucial to equip the current and future generations with the knowledge, skills, and attitudes necessary to understand and address the complex issues of climate change. Universities play a critical role in educating the next generation of leaders, scientists, and citizens who can effectively respond to the challenges of climate change and sustainable development. Integrating climate change education (CCE) into university curricula can build knowledge and skills, raise awareness and engagement, and foster innovation and action. Such integration can also contribute to the broader goals of quality education, social justice, and environmental stewardship (UNESCO, 2020).

Despite the importance of CCE, there is a need to assess the current state of CCE in Vietnam's universities and identify opportunities and challenges for further integration. This article provides an overview of the current state of CCE in Vietnam's universities and explores opportunities and challenges for integrating CCE in this context.

The integration of CCE in universities serves multiple purposes. Firstly, it raises awareness among students about the causes, impacts, and potential solutions to climate change. Through multidisciplinary approaches, students gain a comprehensive understanding of the scientific, social, economic, and environmental dimensions of climate change (Reimers, 2021).

This knowledge equips them with the necessary tools to become informed global citizens and future leaders who can address climate-related challenges in various fields.

Secondly, integrating CCE helps universities fulfill their societal responsibilities by preparing graduates who can contribute to sustainable development and resilience-building efforts. Graduates with a solid foundation in CCE are better equipped to develop innovative solutions, engage in evidence-based decision-making, and advocate for climate action in their professional careers.

Furthermore, integrating CCE in universities fosters collaboration and knowledge exchange among faculty, researchers, students, and external stakeholders (Reimers, 2021). This interdisciplinary approach promotes holistic problem-solving and encourages partnerships between academia, government agencies, industries, and local communities. Such collaborations are essential for implementing effective climate change adaptation and mitigation strategies at local, regional, and national levels.

## **2. The importance of Climate Change Education initiatives in Universities**

CCE has gained increasing recognition as a crucial component in addressing the complex challenges posed by global climate change. Extensive research has demonstrated the importance of education in fostering climate change awareness, promoting sustainable behaviors, and catalyzing societal transformation (Pinotti, 2022).

Education plays a vital role in raising awareness about climate change, fostering informed decision-making, and promoting sustainable practices (Reimers, 2021). Education can encourage people to change their attitudes and behavior while also empowering individuals to make well-informed decisions. Numerous studies have highlighted the positive impact of CCE on knowledge acquisition, attitude formation, and behavioral change (Muroi & Bertone, 2019; Tibola Da Rocha et al., 2020). By equipping individuals with a deep understanding of climate change science, impacts, and adaptation strategies, education empowers them to take active roles in mitigating and adapting to the effects of climate change.

Universities across the globe have recognized the urgency of integrating CCE into their curricula and campus activities. A wide range of initiatives and programs have been implemented, demonstrating the diverse approaches and strategies employed to educate students about climate change. These initiatives encompass interdisciplinary courses, research programs, community engagement projects, and sustainability-focused campus practices.

For instance, universities have developed interdisciplinary climate change programs that combine natural and social sciences, enabling students to grasp the multifaceted nature of climate change (Leal Filho et al., 2021). These programs emphasize the integration of climate change knowledge into various disciplines such as environmental science, engineering, economics, and social sciences. Additionally, universities have established research centers and institutes dedicated to climate change studies, fostering cutting-edge research and innovation in climate science, policy, and adaptation strategies. Furthermore, universities have embraced experiential learning and community engagement as effective approaches to CCE. Through fieldwork, internships, and partnerships with local communities, students have the opportunity to apply their knowledge and skills in real-world contexts, contributing to sustainable development projects and enhancing their understanding of climate change's local impacts (Leal Filho et al., 2021).

### **3. Overview of Universities in Vietnam and their current CCE initiatives**

Vietnam, as a country highly vulnerable to the impacts of climate change, recognizes the urgent need for CCE within its educational institutions, especially in universities (Hien, 2019). The study provides an overview of the current state of CCE in Vietnam's universities, including the initiatives, challenges, and opportunities for integration. Vietnam's universities have taken significant steps to incorporate CCE into their academic programs and extracurricular activities. Many universities now offer courses, modules, or programs specifically dedicated to climate change. These educational offerings span various disciplines, including environmental science, engineering, agriculture, economics, and social sciences.

In addition to formal academic programs, universities in Vietnam have implemented a range of extracurricular activities and initiatives to raise awareness and promote CCE. These initiatives often involve student-led organizations, research projects, seminars, workshops, and community engagement activities. Through these efforts, universities aim to create a holistic learning environment that fosters understanding, critical thinking, and practical skills related to climate change.

CCE in Vietnam's universities is gaining increasing attention as the nation faces significant environmental challenges. Several universities have recognized the importance of integrating CCE into their curricula to equip students with the necessary knowledge and skills to address these issues effectively (Pham, 2014). Despite progress, the current state of CCE in

Vietnam's universities is still in its nascent stage. Limited research and documentation specifically focused on CCE hinder a comprehensive understanding of its status and effectiveness. However, available evidence suggests that universities in Vietnam are taking initial steps to incorporate CCE into their academic programs.

In the northern of Vietnam, the Vietnam National University, Hanoi (VNU) established a Central Institute for Natural Resources and Environmental Studies (VNU-CRES) in 2016. The VNU-CRES aims to establish itself as a leading scientific organization regionally and globally by engaging in research, technological applications, and interdisciplinary postgraduate education. The institute strives to serve as a hub for scientific and technological expertise both domestically and internationally to address major challenges concerning biodiversity conservation, natural resources, and climate change, with a focus on promoting the country's socio-economic development from a sustainable perspective.

In the central of Vietnam, one notable example is the Hue University, which has established the Centre for Climate Change study in Central Vietnam (CCCSC). The CCCS serves as a hub for interdisciplinary research, capacity building, and knowledge dissemination on climate change-related topics. It collaborates with various faculties and departments to develop courses, organize seminars, and conduct research projects related to CCE.

In the southern, the Ho Chi Minh City University of Technology has implemented a CCE program as part of its curriculum. The program focuses on raising awareness about climate change, building students' understanding of its causes and impacts, and fostering the development of innovative solutions. Similar initiatives can be found in other universities across the country, albeit to a lesser extent. In addition, Ho Chi Minh City University of Natural Resources and Environment (HCMUNRE) is a pioneering educational institution in the southern region that offers undergraduate training programs in the field of Climate Change and Sustainable Development. This field of study enables learners to identify issues related to climate change, propose interdisciplinary solutions, and participate in the planning, policy-making, and implementation of strategies to address natural disasters and promote sustainable development.

In the Mekong Delta, which is considered to be one of the deltas most affected by climate change and sea level rise, the United States and Vietnam established the Research Institute for Climate Change (DRAGON-Mekong Institute) to address the challenges faced by the Mekong Delta and the Mississippi Delta. This partnership between the United States Geological Survey (USGS) and Can Tho University aims to establish a global network, to enhance cooperation and knowledge sharing among deltas worldwide. The Institute is designed

to become a recognized center of excellence for research and scientific knowledge transfer to decision-makers, managers and local communities at a wide range of levels – provincial, regional, national, and international. The Institute supports the adaptive capacities of deltas to climate-related hazards and natural disaster risks, promotes socio-economic development, sustainable values, and the conservation of natural ecosystems. Beside that, The DRAGON-Mekong Institute, located at Can Tho University, serves as an important bridge in expanding and enhancing CCE activities for students. For instance, in November 2022, DRAGON-Mekong, Can Tho University, participated in the program “Environmental Education Program in the Mekong Delta region funded by USAID”. The Environmental Education Program in the Mekong Delta region funded by USAID aims to: identify environmental issues, biodiversity, and climate change in the three sub-ecological regions of the Mekong Delta, Vietnam; develop materials, organize training sessions, and workshops to enhance the knowledge and skills of youth in all 13 provinces within the Mekong Delta region, in order to contribute to addressing issues related to climate change, environment, and biodiversity.

Furthermore, the Vietnam National University Ho Chi Minh City (VNUHCM) granted its affiliate An Giang University the authorization to establish and operate a Climate Change Institute (CCI). The establishment of the CCI on the premises of An Giang University – located in the Mekong Delta aims to fulfill the training and educational needs while contributing to community development in the field of climate change. The CCI's primary objective is to conduct research on various aspects such as the climate system, natural resources, environment, and sustainable development. It also focuses on agriculture, rural development, providing scientific and technological consultancy, and offering community development services. Additionally, the institute is responsible for organizing and overseeing postgraduate training programs to support the development of human resources in line with the master plan of An Giang University. It actively participates in the scientific evaluation of studies related to environmental issues, climate change, agriculture, and rural development.

### **Challenges and Opportunities for Integrating CCE in Universities in Vietnam**

While CCE initiatives in universities worldwide have shown promising results, integrating CCE in Vietnam's universities faces specific challenges. Limited faculty capacity and expertise in climate change-related disciplines pose significant obstacles. This can impede the development and delivery of quality CCE programs. Many students and faculty members may have limited



awareness and understanding of climate change and its implications (Yen et al., 2021). This can hinder the effective integration of CCE into existing programs and activities. Moreover, the interdisciplinary nature of climate change requires collaboration among faculties and departments, which may face administrative and logistical barriers within universities.

Another challenge is the need for up-to-date and context-specific teaching materials and resources. Developing relevant and localized content that reflects Vietnam's unique climate change vulnerabilities, impacts, and adaptation strategies is essential for effective education. Furthermore, securing funding and resources for CCE initiatives remains a challenge, especially for universities with limited financial capabilities. Funding constraints may limit the availability of teaching materials, equipment, and infrastructure necessary for effective education.

While challenges exist, these challenges present opportunities for universities to collaborate and share resources. By forming partnerships with government agencies, research institutions, and international organizations, universities can leverage collective expertise, access funding opportunities, and strengthen the quality and effectiveness of CCE. Moreover, Vietnam's commitment to international climate change agreements, such as the Paris Agreement, COP26, provides a favorable policy framework for CCE (Work Bank Group, 2022). The government's emphasis on sustainable development, resilience-building, and green growth strategies aligns with the objectives of CCE. This alignment creates opportunities for universities to align their educational efforts with national priorities and contribute to the country's sustainable development goals.

#### **4. Approaches and Strategies for integrating CCE**

Climate change education plays a vital role in equipping students with the knowledge, skills, and attitudes necessary to understand and address the challenges posed by climate change (Reimers, 2021). Integrating climate change education into the curricula of Vietnam's universities requires the adoption of various approaches and strategies that are tailored to the specific needs and contexts of the educational institutions. In this section, we explore some effective approaches and strategies that can be implemented for the successful integration of climate change education at Vietnam's universities.

*Interdisciplinary Curriculum Integration:*

One approach to integrating climate change education is through interdisciplinary curriculum integration. This involves incorporating climate change-related topics and concepts across various disciplines, including environmental science, social sciences, economics, engineering, and policy studies. By embedding climate change themes into existing courses, students can develop a holistic understanding of the multidimensional aspects of climate change and its implications for different sectors.

*Experiential Learning and Field-based Activities:*

Experiential learning approaches, such as field trips, outdoor activities, and community engagement projects, provide students with hands-on experiences that deepen their understanding of climate change and its impacts. Field-based activities can include visits to vulnerable communities, climate-related research projects, and participation in environmental restoration initiatives. These experiences foster a sense of connection and responsibility towards the environment while enhancing students' problem-solving and critical thinking skills.

*Collaborative and Participatory Learning:*

Creating opportunities for collaborative and participatory learning can be an effective strategy for integrating climate change education. Group projects, case studies, and role-playing exercises enable students to work together, exchange ideas, and engage in discussions on climate change issues. This approach encourages active participation and empowers students to become agents of change in addressing climate change challenges.

*Integration of Indigenous Knowledge and Local Context:*

Recognizing the importance of indigenous knowledge and local context is crucial in climate change education. Incorporating indigenous knowledge systems, traditional practices, and local case studies into the curriculum helps students understand the socio-cultural dimensions of climate change and its impacts on local communities. It also fosters a sense of respect for local knowledge and encourages the development of context-specific adaptation and mitigation strategies.



*ICT and Online Learning:*

Leveraging information and communication technologies (ICT) and online learning platforms can enhance the accessibility and effectiveness of climate change education. Online courses, webinars, interactive modules, and virtual simulations provide flexible learning opportunities for students, allowing them to engage with climate change topics beyond the traditional classroom setting. These digital tools also enable the sharing of resources, collaboration among students and educators, and access to real-time climate data and information.

*Partnership and Collaboration:*

Establishing partnerships and collaborations between universities, government agencies, non-governmental organizations, and industry stakeholders is essential for the successful integration of climate change education. Collaborative initiatives can involve joint research projects, knowledge sharing platforms, guest lectures by experts, and internships that provide students with practical experiences in climate change-related fields. These partnerships enhance the relevance and applicability of climate change education, fostering a stronger connection between academia and society.

By implementing these approaches and strategies, Vietnam's universities can effectively integrate climate change education into their curricula, equipping students with the necessary knowledge and skills to address the challenges of climate change in their future endeavors.

## **5. Recommendations for integrating CCE in Vietnam's universities**

To effectively integrate CCE in Vietnam's universities, it is essential to draw upon best practices from around the world and adapt them to the local context. Based on the above approaches and strategies, the study highlights key best practices that can enhance the integration of CCE within Vietnam's higher education institutions.

*Interdisciplinary Approach:* Emphasize the interdisciplinary nature of climate change by encouraging collaboration across faculties and departments. Facilitate joint initiatives, research projects, and courses that bring together diverse disciplines to address the complex challenges posed by climate change.

*Curriculum Integration:* Integrate climate change topics into existing curricula across various disciplines. Embed climate change principles, concepts, and solutions into courses such as

environmental science, engineering, social sciences, economics, and policy. Foster a comprehensive understanding of climate change among students from different academic backgrounds.

*Experiential Learning:* Promote experiential learning opportunities that allow students to engage directly with climate change issues. Encourage field trips, practical projects, internships, and research experiences that provide hands-on experiences and contribute to real-world solutions. Foster critical thinking and problem-solving skills.

*Community Engagement:* Foster partnerships between universities and local communities to address climate change challenges. Encourage students and faculty to work with communities on climate change adaptation and mitigation projects. This engagement not only enhances the learning experience but also contributes to sustainable development at the grassroots level.

*Research and Innovation:* Support and encourage climate change research and innovation within universities. Establish research centers or institutes focused on climate change, providing resources and platforms for faculty and students to conduct cutting-edge research. Foster innovation and the development of practical solutions to address climate change challenges in Vietnam.

*Capacity Building:* Invest in faculty capacity building programs to enhance their knowledge and teaching skills in climate change-related fields. Facilitate professional development opportunities, workshops, and training programs that enable faculty members to stay updated with the latest advancements in climate change science, policy, and adaptation strategies.

*Student Engagement:* Foster student engagement and empowerment in CCE. Encourage student-led initiatives, clubs, and organizations focused on climate change awareness, advocacy, and action. Provide platforms for students to voice their ideas, innovations, and solutions to address climate change.

*Collaboration and Networking:* Facilitate collaboration and networking among universities, both within Vietnam and internationally. Establish partnerships with other universities, research institutions, and organizations to share knowledge, resources, and best practices. Participate in national and international networks focused on CCE and research.

*Continuous Evaluation and Improvement:* Implement a system for monitoring, evaluation, and continuous improvement of CCE initiatives. Collect feedback from students, faculty, and stakeholders to assess the effectiveness of programs and identify areas for improvement. Regularly update curricula and teaching methodologies to reflect emerging trends and challenges in climate change.

By adopting these best practices, Vietnam's universities can enhance the integration of CCE, preparing students to be future leaders in addressing climate change challenges. These practices contribute to building a sustainable and resilient society and align with national and global goals for climate action and sustainable development.

## 6. Conclusion

Climate change poses significant challenges that require immediate action and long-term solutions. Vietnam, like many other countries, is grappling with the impacts of climate change and the need to prepare its current and future generations to address this pressing issue. This article has provided an overview of integrating CCE in Vietnam's universities, highlighting its importance and presenting best practices for effective implementation.

First, we discussed the urgency of climate change and its profound impacts on Vietnam. As one of the most vulnerable countries, Vietnam faces threats to its environment, economy, and society. Recognizing the gravity of the situation, integrating CCE in universities becomes crucial to equip students with the knowledge, skills, and mindset necessary to address climate change challenges.

The literature review revealed that CCE is gaining traction globally, with universities playing a pivotal role in preparing students to become climate change leaders and agents of change. By reviewing existing initiatives, challenges, and opportunities, we established the foundation for integrating CCE within Vietnam's higher education landscape.

Through the overview of CCE in Vietnam's universities, we observed the current state of initiatives and the need for further integration. While some universities have made commendable progress in incorporating climate change topics into their curricula, challenges such as limited resources, lack of coordination, and the need for interdisciplinary collaboration persist. However, with concerted efforts and strategic approaches, these challenges can be overcome.

Based on the approaches and strategies for integrating CCE, we presented a set of recommendations for integrating CCE in Vietnam's universities. These include adopting an interdisciplinary approach, curriculum integration, experiential learning, community engagement, research and innovation, capacity building, student engagement, collaboration, and continuous evaluation. By embracing these recommendations, universities can create a transformative learning environment that prepares students to tackle climate change issues effectively.

In conclusion, integrating CCE in Vietnam's universities is not only an imperative but

also an opportunity to foster sustainable development and resilience. By equipping students with the necessary knowledge, skills, and awareness, universities can contribute to building a climate-literate society capable of addressing the challenges ahead. It is essential for universities, policymakers, stakeholders, and the broader community to collaborate and invest in the integration of CCE.

Moving forward, it is recommended that universities develop comprehensive action plans, establish interdisciplinary platforms, and allocate resources for CCE initiatives. Additionally, close coordination among universities, government agencies, NGOs, and local communities is vital to create a synergistic approach to CCE in Vietnam. By embracing the principles of CCE and leveraging the experiences and lessons learned from successful initiatives, Vietnam's universities can play a significant role in shaping a sustainable and resilient future. Together, we can build a society that is well-prepared, adaptive, and committed to addressing the challenges of climate change, ultimately contributing to the global effort to mitigate its impacts and foster a sustainable planet for generations to come.

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