

Integrating Climate Change Education Into The Teaching Of Grade 9 History And Geography At The Lower Secondary Level

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Abstract

This article examines the integration of climate change education into the teaching of Grade 9 History and Geography at lower secondary schools in accordance with the orientation of the 2018 General Education Curriculum. Based on a theoretical analysis of integrated teaching, climate change education, and a survey of the content of the Grade 9 History and Geography textbook, the study identifies the foundations and principles for integration that are appropriate to the characteristics of the subject. On that basis, the article proposes three major measures: integrating climate change education through the exploration of the Geography content strand in Grade 9; integrating climate change education by designing interdisciplinary learning topics in History and Geography; and integrating climate change education through the organization of learning activities based on data, real-life situations, and students' action products. The research findings contribute to affirming the feasibility and significance of integrating climate change education into the teaching of Grade 9 History and Geography, thereby helping to develop students' knowledge, attitudes, sense of responsibility, and action competence in response to environmental issues in real life.

Key Word: Climate change education, Grade 9 History and Geography, lower secondary education, integrated teaching, student competence.

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I. Introduction

Climate change is becoming one of the greatest challenges to the sustainable development of humankind. Manifestations such as rising temperatures, sea-level rise, drought, saltwater intrusion, flooding, and environmental degradation not only affect the natural world but also exert profound impacts on human economic and social life. In this context, climate change education in general schools is of great significance in helping students develop accurate awareness, a sense of responsibility, and appropriate behavioral capacities in response to current environmental issues.

Within the framework of the 2018 General Education Curriculum, the subject of History and Geography has considerable advantages for carrying out this task. With its distinctive integration of knowledge about space, time, human beings, and the living environment, the subject enables students to understand the relationships among natural conditions, socio-economic activities, and the development process of communities. In particular, at Grade 9, many lessons and topics are closely related to climate change education, including issues concerning territorial regions, deltas, seas and islands, the environment, and sustainable development. However, the integration of climate change education into Grade 9 History and Geography has not yet been implemented in a systematic and effective manner. In many cases, it remains only at the level of simple correlation or reference, without being transformed into purposeful learning activities that contribute to the development of students' qualities and competencies. Therefore, researching the integration of climate change education into the teaching of Grade 9 History and Geography at lower secondary schools is necessary, both in terms of theoretical significance and practical value. On that basis, this article focuses on clarifying the potential for integrating climate change education into Grade 9 History and Geography and proposes several pedagogical measures to improve teaching effectiveness, thereby contributing to the development of students' awareness, attitudes, and action capacities in response to the challenges of climate change.

II. Research Methods

The method of document analysis and synthesis was employed to systematize perspectives on climate change education, integrated teaching, education for sustainable development, and teaching aimed at developing students' qualities and competencies.

The method of curriculum and textbook content analysis was used to review the lessons and topics in the Grade 9 History and Geography textbook (Connecting Knowledge to Life), thereby identifying appropriate "integration points" for climate change education.

The expert consultation method was employed to collect teachers' opinions on the appropriateness, feasibility, and effectiveness of the proposed pedagogical measures.

The pedagogical experiment method was used to provide an initial verification of the feasibility of several integrated activities in the teaching of Grade 9 History and Geography.

III. Result

Some Concepts

Hall-Kenyon and Smith (2013) argue that integration refers to the organization of teaching within a lesson on the basis of two or more objectives drawn from two or more subject areas, in which those objectives are taught and assessed explicitly, ensuring the authenticity of each discipline while demonstrating the natural connections among fields of knowledge [1]. Magoma (2016) considers integration to be a learner-centered approach in which students and teachers collaboratively construct learning experiences to address learners' concerns and major social issues. At the same time, it is also a process of organizing teaching in such a way that knowledge, skills, values, and attitudes transcend the boundaries of individual fields of study [2]. Thus, integration can be understood as the process of selecting, connecting, and organizing teaching contents, objectives, and activities from closely related fields of knowledge in order to help students perceive issues in a holistic manner, apply knowledge to practice, and develop action competence. The integration of climate change education into the teaching of History and Geography is the process of selecting, connecting, and organizing appropriate contents, learning activities, and teaching methods to help students understand the causes, manifestations, impacts, and response measures related to climate change in relation to natural conditions, historical processes, territorial changes, and social life. Thereby, it contributes to the formation of knowledge, attitudes, responsibility, and action competence in addressing environmental issues in real-life contexts.

Basis for Determining the Content of Climate Change Education Integration in Grade 9 History and Geography

The identification of content for integrating climate change education into Grade 9 History and Geography should be based on three main grounds: the characteristics of the subject, the requirements of the 2018 General Education Curriculum, and the content structure of the textbook. As an integrated subject combining historical knowledge, geographical knowledge, and common themes, it has considerable advantages in helping students understand the relationship between human beings, the natural environment, and the process of socio-economic development. This provides a favorable basis for incorporating climate change education into teaching in a way that fosters systems thinking and students' competence in applying knowledge. A review of the Grade 9 History and Geography textbook shows that many lessons and themes offer potential for integrating climate change content. In the Geography strand, lessons on forestry and fisheries; drought and desertification in the Cuu Long Delta region and the southernmost provinces of the Central Region; the impacts of climate change on the Cuu Long Delta; as well as economic development associated with the protection of marine and island resources and environments are among the most typical integrative contents. In the common thematic strand, topics on urban areas and delta civilizations make it possible to clarify the relationship between climate change and urbanization, livelihoods, culture, and the adaptive capacity of local communities. The integration of climate change education into the subject of History and Geography should not stop at merely adding information about natural disasters or environmental degradation. More importantly, it is necessary to organize learning in such a way that students recognize the relationships among natural conditions, territorial exploitation, social transformation, and the requirements of sustainable development. In this way, students can develop appropriate attitudes and a sense of responsibility in the face of the challenges posed by climate change.

Principles for Integrating Climate Change Education into the Teaching of Grade 9 History and Geography

Principle of Unity among Objectives, Content, and Teaching Methods

Historical Integration is meaningful only when the selected content is aligned with the lesson objectives and organized through appropriate teaching methods. If these three components are not closely connected, integrated activities are likely to become mechanical in nature, increasing the informational load without improving students' cognitive quality or competence development. In terms of objectives, climate change education should contribute to the development of students' knowledge, attitudes, and action competence in response to environmental issues, while also being closely aligned with the expected learning outcomes of each lesson and each theme within the subject. In terms of content, the integrated elements should be selected carefully, closely follow the textbook, be appropriate to students' cognitive level, and remain closely connected with the strands of historical and geographical knowledge. In terms of methods, teachers should prioritize forms of teaching organization that promote students' active participation, such as data analysis, map interpretation, situation-based problem solving, group discussion, or project-based learning.

Principle of Ensuring Logical Coherence between the Whole and Its Parts

Integrated content should not be implemented in a fragmented manner across isolated lessons; rather, it should be situated within a unified cognitive framework of climate change. Each lesson and each theme constitutes only one part, yet each must contribute to helping students gradually develop a comprehensive understanding of the causes, manifestations, impacts, and response measures related to climate change. This principle is reflected in the connection of specific phenomena such as drought, desertification, saltwater intrusion, or the degradation of marine and island environments to a broader issue, namely the transformation of the natural environment and the challenges it poses to sustainable development. At the same time, continuity among content strands must be ensured: Geography lessons help students identify the spatial characteristics and impacts of climate change, while History lessons and common themes contribute to clarifying the relationship between human beings and the environment, as well as the adaptive capacity of communities over time.

Principle of Unity between Concrete Knowledge and Abstract Thinking

Students need not only to recognize the concrete manifestations of climate change, such as drought, saltwater intrusion, erosion, or flooding, but also to generalize these phenomena into relationships, causes, consequences, and patterns of change of a systemic nature. If teaching stops merely at isolated facts, students will find it difficult to grasp the essence of the issue. Conversely, if it relies too heavily on abstract concepts without practical evidence, knowledge will become difficult to comprehend and difficult to apply. In Grade 9 History and Geography, this principle can be effectively implemented through the use of specific materials such as maps, charts, data, images, and typical cases presented in the textbook. From these data sources, teachers should guide students step by step to analyze, compare, generalize, and draw conclusions about the relationships among natural conditions, socio-economic activities, and the impacts of climate change. In this way, students gradually develop systems thinking, spatial and temporal thinking, and the ability to establish causal relationships.

Some measures for integrating climate change education into the teaching of Grade 9 History and Geography

Integrating Climate Change Education through the Exploration of the Grade 9 Geography Strand

The system of lessons, practical activities, and geographical content directly related to climate change in the Grade 9 History and Geography textbook can be organized through an integrated teaching approach. Much of the geographical content no longer remains limited to the description of natural conditions or socio-economic characteristics, but has also addressed, with relative clarity, issues of sustainable development, resources, the environment, natural hazards, and human adaptation. Within the structure of the current textbook, lessons such as Lesson 16, which analyzes the impacts of drought and desertification in the arid region to the east of Lam Đông Province and the south of Khanh Hoa Province; Lesson 21, which examines the impacts of climate change on the Cuu Long Delta; and Lesson 22, which explores integrated economic development in association with the protection of marine and island resources and environments, provide favorable content for embedding climate change education in a manner that is both consistent with the lesson content and conducive to deepening students' understanding. A key point of this measure is that teachers need to clearly identify, within each lesson, which units of knowledge can serve as the basis for integrated activities. For example, when teaching Lesson 21, "Practical Activity: Examining the Impacts of Climate Change on the Cuu Long Delta," teachers may regard it as a central lesson for helping students develop a systematic understanding of one of the regions most severely affected by climate change in Viet Nam. The integration of climate change education may be implemented through the following steps:

Step 1. Identifying the integrative content within the lesson: The teacher identifies the core contents of the lesson that are suitable for integration, including the impacts of climate change on the natural environment, productive activities, and human life in the Cuu Long Delta, together with the requirement to propose response measures. Step 2. Organizing students to explore specific content: The teacher guides students in examining typical manifestations of climate change such as saltwater intrusion, drought, erosion, and flooding, thereby enabling them to analyze their impacts on the natural environment, agriculture, fisheries, and the lives of local inhabitants in the region. Step 3. Guiding students to analyze relationships and draw conclusions: On the basis of the explored content, the teacher helps students recognize the relationship between climate change and resource depletion, livelihood changes, and the challenges posed to sustainable development in the Cuu Long Delta. Step 4. Organizing students to propose response measures: Students propose solutions in two directions, namely mitigation and adaptation, such as the rational use of water resources, restructuring production, developing climate-resilient crop varieties, protecting the environment, and raising community awareness. Step 5. Relating the lesson to the cultivation of attitudes and responsibility: The teacher synthesizes and emphasizes the practical significance of the lesson, thereby fostering in students an awareness of environmental protection, a sense of responsibility, and a positive attitude toward the issues posed by climate change. This measure has

the advantage of being direct, natural, and closely aligned with the textbook. Climate change education is not introduced as an external addition; rather, it is implemented within the very process through which students explore and process the lesson content. Therefore, this is a feasible and effective approach to integration in the teaching of Grade 9 History and Geography. On this foundation, teachers may continue to expand toward deeper interdisciplinary themes, in which climate change is approached not merely as a natural phenomenon, but also understood in relation to settlement history, delta civilization, urbanization, and the adaptive capacity of communities over time.

Integrating Climate Change Education through the Development of Interdisciplinary History and Geography Learning Themes

The development of interdisciplinary learning themes in History and Geography carries an enhanced significance, as this measure more clearly reveals the integrative nature of the subject and expands the depth of students' understanding. In the structure of the Grade 9 History and Geography textbook, in addition to lessons belonging to each disciplinary strand, there is also a system of common themes, among which the most prominent are Theme 1. Urban Areas: Past and Present and Theme 2. Delta Civilizations of the Hong River and Cuu Long River. These are themes with considerable potential for integrating climate change education, because their contents make it possible to examine environmental issues not only from natural and economic perspectives, but also from the perspectives of the historical formation of residential space, the process through which humans have transformed nature, the adaptive capacity of communities, and the requirements of sustainable development in the present. Climate change is not a phenomenon that can be explained solely by natural science or solely by social science; rather, it is an issue closely associated with the history of territorial exploitation, models of economic development, settlement structures, cultural transformation, and human policy choices. For this reason, if integration is carried out only within individual lessons, students may recognize certain manifestations and consequences, but they will not yet develop a systematic perspective. By contrast, when climate change is situated within interdisciplinary themes, students are provided with the conditions to recognize that it is a challenge that is at once natural, social, historical, and cultural in nature. For example, based on Theme 1. Urban Areas: Past and Present, teachers may develop an integrated theme such as "Urbanization, the Environment, and Adaptive Capacity in Response to Climate Change." Here, the historical component helps students understand the process of urban formation and development across different periods, as well as changes in urban functions, structures, and roles in social life. The geographical component enables students to analyze the current distribution of urban areas, the pace of urbanization, and issues relating to infrastructure, the environment, quality of life, and vulnerability to phenomena such as extreme rainfall, flooding, prolonged heat, or air pollution. When organized in the form of an interdisciplinary theme, students can come to realize that the environmental challenges currently facing urban areas are not merely the result of climatic factors, but are also related to the ways in which humans plan space, exploit resources, build infrastructure, and choose development models. As a result, climate change education no longer stops at identifying risks, but opens up possibilities for thinking about solutions such as green urban development, climate-resilient cities, adaptive planning, and sustainable lifestyles.

A notable advantage of this measure is that it creates conditions for students to mobilize multiple cognitive operations simultaneously. Students are required not only to recall events or remember natural characteristics, but also to compare, generalize, establish causal relationships, evaluate impacts, and propose solutions. For example, when studying the deltas of the Hong River and the Cuu Long River, students may be assigned to compare the historical and cultural values of the two regions with their current levels of vulnerability to climate change. On that basis, they may address a synthetic question such as: Why is environmental protection and adaptation to climate change also a means of protecting the living space and civilizational foundations of communities? Questions of this kind are of great significance in fostering systems thinking and a sense of responsibility among students. However, for this measure to be effective, teachers need to ensure several pedagogical requirements. First, the interdisciplinary theme must be developed on the basis of contents that genuinely intersect among History, Geography, and climate change education, thus avoiding mechanical combination. Second, the structure of the theme should clearly define its objectives, central question, core content, learning activities, and expected outputs. Finally, teachers need to select a level of integration appropriate to the instructional time available and to the cognitive level of Grade 9 students; the theme should not be expanded so far that the main focus of the lesson becomes diluted. When organized appropriately, interdisciplinary learning themes not only help improve the quality of teaching in History and Geography, but also contribute to the development of students' competence in understanding and responding to pressing environmental issues, including climate change. This is the measure that most clearly embodies the spirit of the History and Geography subject in the 2018 General Education Curriculum: connecting knowledge of human beings, space, and time in order to explain the problems of contemporary life. Through interdisciplinary themes, climate change is repositioned within the broader context of settlement history, the

process of natural resource exploitation, the formation of civilizations, and social development. It is precisely this perspective that gives educational content not only informational value but also profound humanistic depth.

Integrating Climate Change Education through the Organization of Learning Activities Based on Data, Real-Life Situations, and Students' Action Products

To implement this measure effectively, teachers should organize learning activities according to a flexible and clearly structured procedure. First, teachers assign learning tasks associated with data and guiding questions. Next, they guide students in exploring, processing, and comparing information. This is followed by discussion, situation-based problem solving, and the formulation of conclusions. Finally, students design, present, and defend their action products. Throughout this process, the teacher's role is not limited to that of an information provider, but also includes designing the learning environment, guiding ways of reading data, suggesting directions for analysis, and supporting students in transforming learning outcomes into concrete messages or solutions.

In essence, organizing learning activities based on data, real-life situations, and action products is an instructional approach in which students are placed in the role of active explorers of problems. Rather than passively receiving ready-made conclusions, they are required to directly examine materials, identify phenomena, analyze causes, assess impacts, and propose solutions. This approach is highly appropriate for climate change education, because climate change is a complex issue that cannot be profoundly understood if teaching is confined merely to lecturing or memorizing concepts. When students engage with data and situations, they are more likely to develop analytical thinking, systems thinking, and a sense of responsibility than through one-way transmission of knowledge. At the same time, the process of creating learning products enables them to transform knowledge into action, thereby highlighting the civic significance of the subject. To implement this measure, teachers should first organize students' learning through data. Here, data may include maps, charts, diagrams, statistical tables, field photographs, short video clips, information from newspapers, official information channels, or local materials appropriate to students' age level. In Lesson 16, students may examine a diagram illustrating the impacts of drought and desertification in order to identify the relationships among natural conditions, water resources, agriculture, livestock farming, employment, and social life. By working with data, students not only understand what phenomena are taking place, but also gradually become able to explain why these phenomena occur and how their consequences affect human living spaces. In Lesson 21, teachers may assign students to analyze different types of materials reflecting saltwater intrusion, riverbank and coastal erosion, changes in water resources, and their impacts on agricultural production and the lives of residents in the Cuu Long Delta.

However, data only acquire genuine educational value when they are situated within problem-based learning contexts. Therefore, the next step is for teachers to construct situations closely connected with real life so that students can apply historical and geographical knowledge to thinking and decision-making. For example, after learning about the Cuu Long Delta, the teacher may pose the following situation: If you were a member of a student group participating in a youth forum on environmental protection in the delta region, what solutions would you propose to adapt to saltwater intrusion and erosion? Similarly, when teaching about Khanh Hoa and Lâm Đồng, the teacher may raise the question: If your locality were facing a prolonged dry season, what measures would you recommend to local people in order to use water efficiently and reduce the impacts of drought? Situations of this kind require students to mobilize the knowledge they have learned, while also considering geographical, economic, social, and environmental factors as an interconnected whole. A particularly important point is that teachers need to create opportunities for students to relate what they learn to the local context in which they live. Although not every locality is directly affected in the same way as the Cuu Long Delta or Ninh Thuan - Binh Thuan, most students are still able to observe familiar manifestations of climate change or environmental degradation, such as prolonged heatwaves, unusually heavy rainfall, localized flooding, declining water resources, waste accumulation, air pollution, or changes in agricultural production. When students are asked to compare textbook materials with the realities of their own localities, they will come to see that climate change is not a distant concept, but rather an issue directly connected to their own communities. This significantly enhances the authenticity and persuasive power of integrated education.

Building on data and real-life situations, for this measure to be effective, teachers must organize learning in such a way that students produce action-oriented products. These products may take the form of an infographic on the impacts of climate change on a particular region; a diagram of causes, consequences, and solutions; a short presentation; a public awareness leaflet; a school-based communication video; a written proposal submitted to the school on water conservation, reducing plastic waste, tree planting, or protecting the school environment; or a small-scale action plan developed by a student group. Action products are of great significance because they help students move beyond the limits of learning merely for the sake of knowing. In many cases, students may be able to define the concept correctly and identify several impacts of climate change, yet still fail to develop positive attitudes and appropriate behavioral habits. When students are required to create

products for communication, persuasion, or the proposal of solutions, they are compelled to reflect more seriously on the practical value of the knowledge they have acquired. This process also contributes to the development of general competencies such as communication, collaboration, problem-solving, and the use of information technology, while at the same time fostering students' qualities and civic responsibility in environmental protection. This is, indeed, one of the deeper objectives of climate change education in general education. Thus, integrating climate change education through the organization of learning activities based on data, real-life situations, and action products is a measure of high synthetic value. It not only helps realize the integrative contents already identified in the textbook, but also responds to the orientation toward developing students' qualities and competencies emphasized in the 2018 General Education Curriculum.

IV. Conclusion

Integrating climate change education into the teaching of Grade 9 History and Geography at the lower secondary level is a necessary approach, consistent with the orientation of the 2018 General Education Curriculum and the requirements of education for sustainable development. Based on the clarification of key concepts, the grounds for identifying integrative content, the principles of instructional organization, and the integrative contents found in the textbook, this article demonstrates that Grade 9 History and Geography provides many favorable conditions for incorporating climate change education into teaching in a way that fosters the development of students' qualities and competencies.

The three proposed measures are feasible and appropriate to the characteristics of the subject. The implementation of these measures not only helps students gain a clearer understanding of the causes, manifestations, impacts, and response solutions related to climate change, but also contributes to the development of a sense of responsibility, positive attitudes, and the competence to apply knowledge in practice. Therefore, the findings of this study may serve as a useful reference for the design and organization of Grade 9 History and Geography teaching toward the integration of climate change education in lower secondary schools.

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