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**TEACHERS' CLIMATE CHANGE AWARENESS AND ENVIRONMENTAL INTEGRATION IN TEACHING**

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**ABSTRACT**

*The study employed a quantitative, descriptive-correlational research design using complete count sampling and involved 143 public school teachers. Data were collected using a validated survey questionnaire and analyzed using descriptive statistics and Pearson's correlation analysis. The findings revealed that teachers had a very high level of awareness of climate change in terms of knowledge and attitudes. They also demonstrated a high level of self-efficacy. This suggests that while teachers possess a strong understanding and positive dispositions toward climate change, there remains room to strengthen their confidence and perceived capacity to implement climate-related instruction effectively. The extent of environmental integration in classroom instruction was also found to be high across all dimensions examined. Correlation analysis indicated a significant relationship between climate change awareness and environmental integration, with self-efficacy showing the strongest association. These results underscore that teachers who possess greater knowledge, confidence, and positive attitudes toward climate change are more likely to integrate environmental topics effectively into their classroom instruction. This finding highlights the pivotal role of teachers' preparedness in advancing environmental education. It suggests that strengthening teachers' competencies can directly enhance the quality and depth of climate-related learning experiences for students. The findings are significant as they emphasize the importance of strengthening teachers' self-efficacy and instructional support to enhance climate change education. The study concludes that improving teachers' awareness—particularly their confidence in teaching climate-related content—can lead to more meaningful and consistent integration of environmental topics in classroom instruction.*

**KEYWORDS:** *Climate change awareness, environmental integration, instructional strategies, climate change education, environmental education.*

## **INTRODUCTION**

Climate change is a global crisis characterized by rising temperatures, severe weather, and disrupted ecosystems, significantly impacting health and food security. Education is widely recognized as a primary tool for fostering resilience, with schools serving as the frontline for environmental advocacy (Parnes et al., 2025). However, a global disparity persists between teachers' conceptual knowledge and their actual classroom integration. In the United States and Europe, educators frequently cite a lack of specialized training and instructional confidence as barriers to effective climate literacy (Nation & Feldman, 2021; Leve et al., 2023).

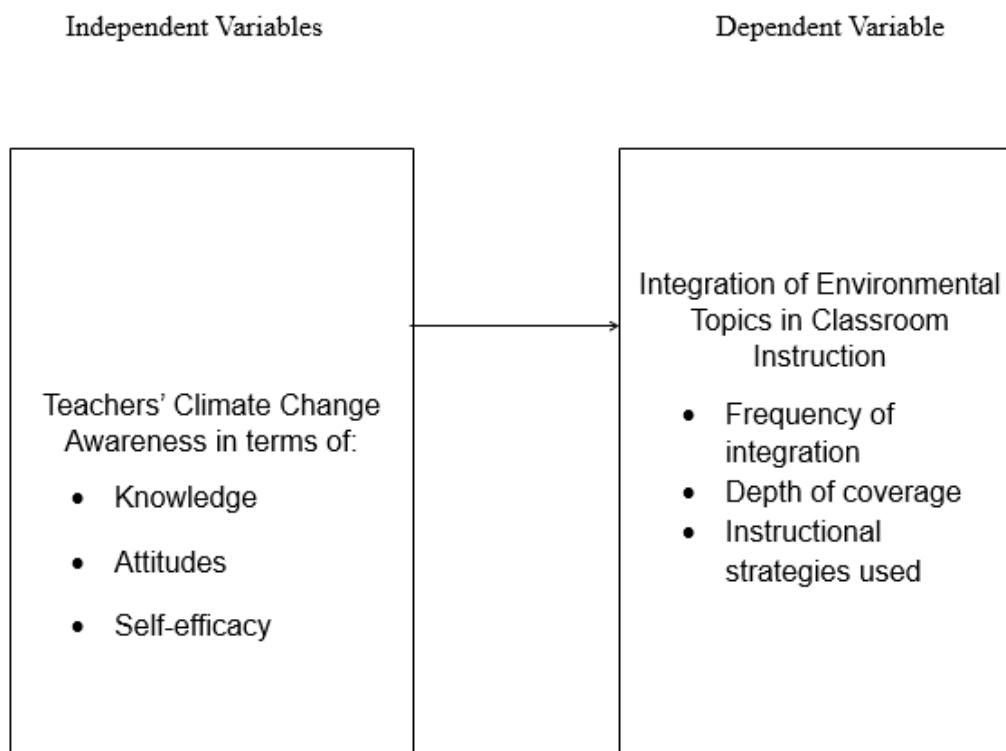
In the Philippines, the threat is intensified by devastating typhoons and agricultural instability. Local research suggests that misconceptions among Filipino educators continue to hinder the delivery of accurate environmental education (Boco & Malindog, 2020). Specifically, in the agricultural province of Bukidnon, environmental initiatives such as tree-planting are often treated as isolated events rather than woven into the regular curriculum. This "knowledge-practice gap" is exacerbated by limited access to updated materials and professional development (Almazroa, 2024).

This study addresses these challenges by examining the relationship between teachers' awareness of climate change and their extent of environmental integration within the Division of Bukidnon for the 2025–2026 school year. By investigating how climate literacy influences pedagogical choices, this research aims to inform policymakers and school leaders in developing targeted support systems. Ultimately, strengthening teacher preparedness is essential to equipping the next generation with the knowledge and attitudes required to confront the environmental exigencies of our time.

### ***Theoretical Framework***

This study is grounded in the Theory of Planned Behavior (Ajzen, 1991), Environmental Literacy Theory (Roth, 1992), and Social Cognitive Theory (Bandura, 1986). These frameworks collectively suggest that a teacher's intention to integrate climate change into the curriculum is driven by their attitudes, perceived social support, and self-efficacy. Environmentally literate educators serve as essential role models, translating their knowledge into classroom practices that influence student behavior through observational learning.

The independent variable, Teachers' Climate Change Awareness, comprises knowledge, attitudes, and self-efficacy. The dependent variable, Environmental Integration, is measured by the frequency, depth, and instructional strategies used. Research by Almazroa (2024) and Karim et al. (2022) underscores that higher climate literacy leads to more effective pedagogical delivery, while misconceptions can hinder integration (Boco & Malindog, 2020). Ultimately, this framework illustrates that enhancing teacher awareness is a critical precursor to fostering climate-resilient communities.



**Figure 1. Schematic diagram of the study.**

### *Scope*

This study examines the correlation between climate change awareness and the degree of environmental integration in classroom instruction among public school teachers in the Kitaotao 2 District, Division of Bukidnon, during the 2025–2026 school year. The research specifically evaluates awareness through the lenses of knowledge, attitudes, and self-efficacy, while integration is measured by the frequency, depth of coverage, and specific instructional strategies employed by educators.

The scope is delimited to selected public school teachers within this district, excluding private institutions and other divisions, which may affect the generalizability of the findings

to broader educational contexts. Additionally, the study uses self-reported data, which is subject to participants' personal perceptions and potential biases. Despite these boundaries, the research offers critical insights into how internal awareness translates into pedagogical practice. These findings provide a foundation for future academic research and the development of targeted professional programs to enhance environmental education and climate literacy in the region.

### **Review of the Literature**

The integration of environmental education within the school system is fundamentally dependent on the cognitive and affective preparedness of teachers. Global research consistently establishes that an educator's awareness—comprising their knowledge, attitudes, and self-efficacy—serves as the primary catalyst for pedagogical action. However, a recurring theme in recent literature is the "knowledge-practice gap," where even well-intentioned teachers struggle to translate theoretical understanding into meaningful classroom instruction. For instance, Ibourk et al. (2024) identified that many educators enter the profession with deep-seated misconceptions, such as confusing climate change with ozone depletion, which necessitates technology-enhanced professional development to correct. Similarly, Herranen and Aksela (2024) found that while teachers express a high willingness to teach sustainability, their self-efficacy is notably lower when it comes to guiding students toward direct environmental action.

The literature further suggests that climate literacy is not merely a scientific pursuit but an interdisciplinary one that involves social, ethical, and emotional dimensions. Studies by Leve et al. (2023) and Abd-El-Aal and Evans (2025) highlight that pedagogical knowledge must be paired with emotional support, as high levels of climate anxiety can negatively correlate with a teacher's confidence to deliver environmental content. This emotional and conceptual complexity is reflected in cross-sectional studies from Egypt, Bhutan, and Sri Lanka, where teachers often demonstrate moderate knowledge but inconsistent practices (Abdallah et al., 2024; Dorji et al., 2021; Rupasinghe & De Silva Weliange, 2023). These findings suggest that personal factors—such as work experience, identity, and professional values—significantly dictate how environmental themes are prioritized within the curriculum (Tang, 2025; Zen et al., 2024).

In the Philippine context, integration challenges are often systemic. Boco and Malindog (2020) and Nasol (2021) observed that widespread misconceptions and a lack of systematic frameworks for elementary and secondary schools hinder the effective delivery of climate-

related lessons. Despite these barriers, innovative approaches in language arts and project-based learning have shown that climate education is most effective when it is made culturally relevant and relatable to students' daily experiences (Nurhaliza et al., 2024). However, the literature also warns that "curriculum overload" and time constraints often force teachers back into traditional instructional models, even when their environmental awareness is high (Sikhosana, 2025).

Ultimately, the reviewed literature reveals a significant need for a holistic approach to teacher training that addresses both cognitive gaps and emotional barriers, such as low self-efficacy. By examining the relationship between awareness and classroom practice in a rural, agricultural setting such as Bukidnon, this study addresses a critical gap in existing research. The synthesis of these global and local perspectives underscores that strengthening teacher preparedness through targeted institutional support and pedagogical resources is the most viable path to fostering a climate-resilient, environmentally literate generation.

### **Research Methodology**

This study used a quantitative correlational research design, which is appropriate when the goal is to determine the relationship between two or more variables without manipulating them (Creswell & Creswell, 2018). A correlational design focuses on measuring the strength of relationships between variables and whether increases or decreases in one variable are associated with changes in another. This is highly relevant to the present study because it seeks to determine whether teachers' awareness of climate change, as measured by knowledge, attitudes, and self-efficacy, is significantly related to the extent to which they integrate environmental topics into classroom instruction.

By using this design, the study can statistically analyze the degree and direction of the relationship between teachers' awareness and their teaching practices, which is essential for providing evidence-based recommendations for curriculum development and teacher training. It is therefore suitable because it allows the researcher to describe the natural association between these two important educational factors without altering the school setting or instructional methods.

### **Findings**

The study measured awareness through Knowledge, Attitudes, and Self-Efficacy. While Knowledge and Attitudes reached "Very High" levels, Self-Efficacy remained slightly lower, suggesting a gap in instructional confidence.

**Table 2 Level of Teachers' Awareness in Climate Change in Terms of Knowledge.**

Indicator	Mean	SD	Interpretation
Deforestation contributes to climate change.	4.69	0.466	Very High Awareness
Climate change is primarily caused by human activities such as burning fossil fuels.	4.59	0.493	Very High Awareness
Climate change leads to rising global temperatures and sea levels.	4.48	0.591	Very High Awareness
Renewable energy sources help reduce climate change impacts	4.43	0.497	Very High Awareness
Greenhouse gases trap heat in the Earth's atmosphere.	4.20	0.576	Very High Awareness
Overall	4.48	0.404	Very High Awareness

Table 2 presents the teachers' knowledge regarding climate change concepts. The results show a Very High Awareness, with the highest understanding observed in the role of deforestation. This suggests that teachers possess a strong scientific foundation necessary for environmental instruction.

**Table 3 Level of Teachers' Awareness in Climate Change in Terms of Attitudes.**

Indicator	Mean	SD	Interpretation
I am concerned about the impacts of climate change in my community.	4.78	0.451	Very High Awareness
Teaching about climate change helps students become responsible citizens.	4.76	0.459	Very High Awareness
Teachers have a responsibility to educate students about climate change.	4.75	0.467	Very High Awareness
Climate change education is essential for all students.	4.73	0.443	Very High Awareness
Schools should integrate climate change topics across all subjects.	4.73	0.477	Very High Awareness
Overall	4.75	0.416	Very High Awareness

Table 2 reflects the teachers' attitudes toward climate issues. The Very High Awareness rating indicates a deep-seated professional concern and a strong belief that schools must prioritize climate education.

**Table 4 Level of Teachers' Awareness in Climate Change in Terms of Self-Efficacy.**

Indicator	Mean	SD	Interpretation
I am concerned about the impacts of climate change in my community.	4.78	0.451	Very High Awareness
Teaching about climate change helps students become responsible citizens.	4.76	0.459	Very High Awareness

Teachers have a responsibility to educate students about climate change.	4.75	0.467	Very Awareness	High
Climate change education is essential for all students.	4.73	0.443	Very Awareness	High
Schools should integrate climate change topics across all subjects.	4.73	0.477	Very Awareness	High
Overall	4.75	0.416	Very Awareness	High

Table 4 evaluates teacher self-efficacy. While rated as High Awareness, this dimension scored lower than knowledge and attitudes. This suggests that while teachers are informed, they require more confidence in designing specific environmental activities and answering complex student inquiries.

**Table 5 Extent of environmental integration in teacher instruction in terms of frequency of integration.**

Indicator	Mean	SD	Interpretation
I use current events to highlight the effects of climate change.	4.29	0.901	Very High
I integrate discussions on how students can help mitigate climate change.	4.25	0.826	Very High
I include climate change topics in my lesson plans.	4.10	0.977	High
I discuss environmental issues related to climate change in class.	3.97	0.791	High
I include climate-related activities or projects in my teaching.	3.81	0.971	High
Overall	4.08	0.815	High

Table 5 shows the frequency of integration. The High Extent rating confirms that environmental issues are consistently included in lesson plans and daily discussions.

**Table 6 Extent of Environmental Integration in Teacher Instruction in Terms of Depth of Coverage.**

Indicator	Mean	SD	Interpretation
I encourage critical thinking about solutions to climate change.	4.06	0.704	High
I use a variety of resources to deepen my understanding of climate change.	4.06	0.780	High
I provide detailed examples of climate change mitigation strategies.	3.90	0.647	High
I explain both local and global impacts of climate change in depth.	3.82	0.947	High
The climate change topics I teach are detailed and comprehensive.	3.73	0.804	High
Overall	3.91	0.672	High

Table 6 assesses the depth of coverage. Teachers reached a High Extent, primarily focusing on scientific causes. The lower score for ethical and political aspects implies a need for a more interdisciplinary approach to climate policy and ethics.

**Table 7 Extent of Environmental Integration in Teacher Instruction in Terms of Instructional Strategies Used.**

Indicator	Mean	SD	Interpretation
I integrate climate change topics into other subjects (e.g., math, language).	4.01	0.835	High
I incorporate multimedia resources (videos, infographics) to explain climate change concepts.	3.99	0.860	High
I use group discussions or debates to explore climate change issues.	3.86	0.708	High
I use interactive activities (e.g., experiments, demonstrations) to teach climate change.	3.81	0.813	High
I invite guest speakers or use community resources to enhance climate change lessons.	3.31	1.058	Moderate
Overall	3.80	0.624	High

Table 7 outlines the instructional strategies used. The results show a High Extent, favoring interactive discussions and multimedia. The lowest score for community field trips highlights logistical barriers to experiential learning outside the classroom.

**Table 8 Relationship Between Awareness and Environmental Integration.**

Variable	r	p-value	Interpretation
Knowledge	.423	.000	Significant
Attitudes	.278	.000	Significant
Self-efficacy	.660	.000	Significant
Overall	.702	.000	Significant

Table 8 displays the relationship between the variables. The Strong Positive Correlation indicates that greater awareness is associated with greater integration. Crucially, Self-Efficacy emerged as the strongest predictor of classroom integration, suggesting that teacher confidence is the primary driver of environmental education.

## CONCLUSION AND RECOMMENDATIONS

Teachers in the Kitaotao II District possess a robust foundation of climate change awareness, characterized by very high levels of knowledge and positive attitudes. This awareness serves as a primary driver for the integration of environmental topics into classroom instruction. While conceptual integration is prevalent, there remains a need to transition from theoretical discussions to more comprehensive coverage and community-based experiential strategies.

The significant positive relationship identified—particularly the strong link between self-efficacy and integration—confirms that a teacher’s internal confidence is the most critical factor in the successful delivery of climate change education. Therefore, while teachers are conceptually ready, their pedagogical impact is maximized only when they feel personally capable and technically equipped to facilitate environmental learning.

School administrators should prioritize professional development that moves beyond basic climate facts and focuses on practical, hands-on instructional strategies to boost teacher confidence.

Educators are encouraged to move beyond classroom discussions by incorporating community-linked activities, such as local environmental projects or field-based observations, to deepen student engagement.

Establish a district-wide platform for teachers to share best practices, localized lesson plans, and multimedia resources to reduce the burden of individual curriculum preparation.

Policymakers should provide structured support, including updated instructional materials and logistical assistance for community-based environmental initiatives.

Subsequent studies should investigate external variables such as institutional budget allocations, the availability of specialized ICT tools, and the impact of teacher-led environmental integration on actual student behavioral changes.

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