

# Assessing Teacher's Competence in Environmental Education: The Case of Selected National High Schools in Sulu

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**ABSTRACT.** This study aimed to assess the teachers' competence in environmental Education: The case of selected national high schools in Sulu and to identify factors that influence teachers' competence in environmental education, such as educational background, training, and available resources. Additionally, it explored teachers' perceptions of environmental issues and their role in fostering environmental awareness among students. To effectively structure the data collection process for this study, a descriptive-exploratory research design was employed using a quantitative approach was employed in bridging gender gap for fostering inclusivity in secondary schools: Sulu national high schools in focus. Because a descriptive technique gathers, examines, and verifies data, this approach is used. When creative investigation is followed by description, the discoveries are arranged to match hypotheses, which are subsequently tested or validated (Krathwohl, 1993). The result indicated that teachers in selected national high schools in Sulu, mostly females aged 31 and above, showed a moderate level of competence in environmental education, particularly in knowledge, teaching methods, and training. No significant differences were found across demographic groups, and strong correlations among key factors suggest these areas are closely linked. The results highlight the need for continuous training and align with the TPACK framework in enhancing environmental education.

**KEYWORDS:** *Competence, Environment, Teachers, High School, Health programs*

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The urgent need to address global environmental challenges has resulted in heightened efforts to incorporate environmental education (EE) into formal education systems (UNESCO, 2014; UNEP, 2020). This study, titled *Assessing Teacher's Competence in Environmental Education: The Case of Selected National High Schools in Sulu*, explores the level of teachers' competence in delivering EE in a region that faces both environmental and socioeconomic vulnerabilities (Abdurahman, 2019; Garcia & Ho, 2018).

Environmental education (EE) is widely recognized as a cornerstone of sustainable development. It provides people with the essential knowledge, abilities, and values to make well-informed choices and act responsibly toward the environment (Palmer, 1998; Tilbury, 1995; Gough, 2002). International organizations such as international organizations like UNESCO and UNEP have long emphasized the critical role of EE in fostering environmental awareness,

encouraging sustainable practices, and promoting long-term ecological balance (UNESCO, 2017; UNEP, 2021).

The Philippines, as a biodiversity-rich archipelago, confronts urgent environmental challenges such as deforestation, pollution, and climate change, and recurring natural disasters (Lasco & Espaldon, 2005; Dizon, 2016). In response, the Department of Education (DepEd) has integrated EE into the national curriculum to enhance environmental literacy and promote sustainability among learners (DepEd, 2016; SEAMEO INNOTECH, 2018). Despite these initiatives, gaps remain particularly in ensuring that educators are fully prepared and equipped with the necessary competencies to implement EE effectively (Ferreira, Ryan, & Tilbury, 2007; Stern, Powell, & Hill, 2014). In particular, teachers in marginalized and under-resourced settings, such as those handling multiple subject areas, face instructional challenges and the need for adaptive strategies (Castro et al., 2024).

Sulu, a province located in the southern Philippines, presents a unique context for this study. The region is marked by fragile ecosystems, resource limitations, and persistent sociopolitical instability. These conditions not only affect environmental conditions but also influence access to quality education and the overall implementation of EE (Basa & de Guzman, 2021; David, 2020). Teachers in this setting face distinct challenges that may hinder their ability to promote environmental stewardship among students (Choy & Lidstone, 2013), including professional overload and the need for supportive institutional policies (Chavez et al., 2024a; Dagoy et al., 2024). Furthermore, awareness of teacher rights and workplace protections, such as those enshrined in the Magna Carta for Teachers, can influence their engagement and competence in the classroom (Chavez et al., 2024b; Chavez et al., 2024c).

Since teachers play a pivotal role in delivering high-quality EE, understanding their current level of competence is vital (Stern et al., 2014; Gough, 2002). This study aims to examine the extent of teachers' knowledge, pedagogical strategies, and access to professional development in EE. It also seeks to identify the factors influencing their competence and to explore opportunities for strengthening EE delivery in Sulu. A contextual understanding of environmental and socioeconomic stressors, including health and academic insecurities prevalent in marginalized communities, is essential to designing effective interventions (Chavez, 2020).

Using a mixed-methods strategy, the study combines qualitative and quantitative data to offer a well-rounded understanding assessment of teacher competence (Creswell & Plano Clark, 2011). The findings are expected to inform teacher training programs, curriculum enhancement, and educational policy, with the ultimate goal of empowering students in Sulu to become responsible and proactive environmental stewards. In doing so, the study contributes to broader efforts to build a more sustainable and environmentally aware society (Sterling, 2010; UNESCO, 2022).

## **Research Questions**

This study aimed to assess the measures toward reading difficulties among Public Elementary School learners at Patikul West District, Division of Sulu, School year 2024-2025.

1. What is the demographic profile of the pupil-respondents in terms of:
  - 1.1 Age;
  - 1.2 Gender;
  - 1.3 Educational Attainment; and
  - 1.4 Length of Service?

2. What is the extent of measures toward reading difficulties among public elementary school learners at Patikul West District, Division of Sulu as perceived by the teachers in the context of:

- 2.1 Literacy goal;
- 2.2 Classroom strategies;
- 2.3 Supplementary instruction; and
- 2.4 Problem Identification?

3. To what extent does a significant difference exist in measures toward reading difficulties among public elementary school learners at Patikul West district, Division of Sulu as perceived by the teachers when data are classified according to their demographic profile in terms of:

- 3.1 Age;
- 3.2 Gender;
- 3.3 Educational Attainment; and
- 3.4 Length of Service?

4. Is there a significant correlation among the sub-categories subsumed under the extent of measures toward reading difficulties among public elementary school learners at Patikul West District, Division of Sulu?

### **Foreign Literature and Studies**

*Integrating Environmental Education into Language Teaching.* Environmental education (EE) is increasingly integrated into language instruction to foster meaningful learning and global awareness. Gürsoy and Sağlam (2011) studied English Language Teaching (ELT) teacher trainees' attitudes toward EE, finding that they held mildly positive views on incorporating environmental topics into language lessons. Similarly, Balčiūnaitienė and Teresevičienė (2014) emphasized that embedding sustainability topics into foreign language classes increases student engagement and builds sustainable development competencies. In Saudi Arabia, Alghamdi (2023) implemented a competence-based language teaching model, successfully developing students' awareness of sustainability through English writing tasks. These findings support the idea that EE is not limited to science classes and can be effectively integrated across disciplines. The study by Garil et al. (2024) further supports this approach, highlighting that emotionally connected language delivery enhances comprehension and retention—essential when dealing with complex topics like environmental issues.

*Teacher Competence and Curriculum Development.* A key element in EE implementation is teacher readiness. Negre (2014) evaluated Spanish primary education curricula and found that while environmental competencies were formally acknowledged, integration into actual subject content was often vague, and dedicated EE courses were mostly optional. Wanchana et al. (2020) further assessed secondary school teachers' environmental competencies and recommended interdisciplinary instructional strategies like project-based learning to enhance teacher capability in EE delivery. Bucoy et al. (2024) contributed to this conversation by revealing that some teachers exhibit knowledge deficits regarding their legal rights and responsibilities—an issue that can undermine their confidence and effectiveness when engaging in interdisciplinary and community-oriented education. Similarly, Leon et al. (2024) explored how policy compliance burdens and systemic obstructions in public schools can limit the effective implementation of inclusive and environmentally focused instruction.

*Localized Approaches to Environmental Education.* Recognizing cultural and environmental context is crucial in curriculum design. Bakhtiar (2016) developed an EE curriculum based on local wisdom in Indonesia, focusing on farming systems, land use, water management, local foods, and community livelihoods. These elements allowed schools to connect environmental topics with students' lived experiences, enhancing relevance and retention. In the Philippine context, Mendoza (2023) explored how Filipino service values and cultural norms influence professional attitudes—a useful lens for understanding how teachers may internalize and convey EE concepts, particularly those centered on care, stewardship, and social responsibility.

*EE in Diverse Educational Settings.* International studies emphasize the variability of EE integration depending on local challenges and educational structures. Gebrekidan (2024) conducted a systematic review of Ethiopia's EE efforts and concluded that while environmental topics were present in early education, a lack of consistent integration across educational levels hindered overall effectiveness. Similarly, Yeshalem, Degu, and Abraham (2013) pointed out the disparity in EE implementation in Ethiopia due to uniform curriculum structures applied to diverse ecological zones, which diluted the contextual relevance of EE. Adding to this, Chavez, Lamorinas, and Ceneciro (2023) examined how biases, stereotyping, and discriminatory discourse patterns—often present in educational content and delivery—can limit the efficacy of teaching socially relevant issues like environmental awareness, unless consciously addressed by educators.

*Community-Based Environmental Education Initiatives.* Real-world application of EE through school-community collaboration has proven impactful. Kilag et al. (2023) detailed three programs led by a private school in the Philippines: vertical gardens, coastal cleanups, and waste segregation. These initiatives were successful due to strong partnerships with local governments and private organizations, demonstrating how schools can foster environmental responsibility beyond the classroom.

*Implications for Teacher Training Programs.* The evidence from these international studies highlights a recurring theme: teacher development programs are crucial in influencing educators' capabilities ability to teach EE effectively. Ensuring that environmental sustainability is a core component of teacher training before and during their careers is vital to prepare educators for this task. As shown in multiple studies, embedding EE across the curriculum—supported by localized content, interdisciplinary strategies, and community engagement—can significantly enhance teacher competence and student environmental literacy. Furthermore, the development of inclusive teaching strategies and the emotional dimension of instruction, as illustrated by Garil et al. (2024) and supported by Leon et al. (2024), reinforce the need for comprehensive teacher preparation. Legal awareness and values orientation, reflected in the works of Bucoy et al. (2024) and Mendoza (2023), must also be considered for a well-rounded EE framework.

## **Local Literature and Studies**

*Status of Environmental Literacy Among Students.* A study by Hipolito (2021) focused on students' performance and attitudes towards environmental literacy through indoor and outdoor teaching methods. Conducted among Grade 10 students at Dolores National High School in Pampanga, it found that outdoor teaching significantly enhanced students' environmental literacy performance compared to traditional indoor lecture methods. Both male and female students, coming from families with college-educated parents, exhibited neutral attitudes toward environmental issues at the start of the research. However, by the end of the research, students in both groups showed improved attitudes, with those exposed to outdoor teaching demonstrating better performance.

*Teacher Competence in Environmental Education.* Teacher competence in Environmental education (EE) plays a crucial role in student learning outcomes. Leon et al. (2024) highlighted that barriers to effective EE implementation in public schools are often due to teachers' limited knowledge and perceived obstructions in compliance with EE standards. These barriers may also affect the overall effectiveness of environmental education programs. Similarly, Bucoy et al. (2024) stressed the importance of teacher knowledge, including awareness of legal rights, as a key component of effective teaching practices, which may be applicable to EE instruction.

*Role concerning Teacher Training and Professional Development.* Educator preparation programs have been identified as crucial for enhancing environmental education delivery. Negre (2014) and Wanchana et al. (2020) discussed the importance of teacher readiness and the need for interdisciplinary instructional strategies, like project-based learning, to promote competence in EE. In the context of Sulu, where educational resources may be limited, these recommendations are essential for ensuring teachers are well-prepared to deliver EE programs effectively.

*Program Innovations and Challenges in EE Implementation.* Innovative programs like the 5Bs Program (Galilea, Pradia, & Bawa, 2023) and community-based literacy efforts (Kilag et al., 2023) have shown success in enhancing students' environmental knowledge. However, challenges such as inadequate resources and teacher workload (Abril et al., 2022) remain prevalent, especially in resource-constrained areas like Sulu. These issues may hinder teachers' ability to implement effective EE programs and require a focus on sustainable resource management and professional support.

*The Impact of Teacher Attitudes on Environmental Literacy.* Teachers' attitudes toward environmental issues can significantly affect their teaching practices and students' environmental literacy. Chavez et al. (2024) emphasized the role of teacher attitude and policy awareness in facilitating quality instruction. Furthermore, studies such as those by Mendoza (2023) and Garil et al. (2024) underline the importance of teacher emotional connection to students, which enhances learning outcomes in various disciplines, including environmental education.

*Implications for Teacher Preparation Programs.* The integration of EE within educator preparation program is crucial for developing the necessary competencies in educators. The studies reviewed suggest that for environmental education to be effective, it must be incorporated into both pre-service and ongoing teacher development curricula. This includes localizing content, providing sufficient resources, and ensuring continuous professional development opportunities for teachers to enhance their competence in teaching EE.

## **Methodology**

This chapter is a concise overview of the research methods: The study outlines the research design, location of the study, target participants, sampling technique, data collection tools, procedures for gathering data, measures to ensure validity and reliability, and the statistical methods used for data analysis.

### *1. Research Design*

In "Research Design: Qualitative, Quantitative, and Mixed Methods Approaches," John W. Creswell outlines the descriptive method as a research approach that aims to systematically describe a phenomenon, population, or situation.

This study employed the quantitative method or the study adopted a descriptive-exploratory design, considered fitting in ascertaining the Assessing Teacher's Competence in Environmental Education: The Case of Selected National High Schools in Sulu.

## 2. *Research Locale and Respondents*

The locale of the study was confined at selected public high schools in Sulu Province, utilizing the six selected public secondary schools covered by the aforesaid district namely: Talipao National High School-Main, Talipao National High School-Annex-Pantao, Talipao National High School Annex-Talipao Proper, Indanan National High School-Main, Pasil Indanan National High School, Timbangan Indnanan National High School.

The respondents of this study were the one hundred (100) teachers among the six (6) selected public national high schools of Sulu specifically : from Talipao National High School-Main, Talipao National High School-Annex-Pantao, Talipao National High School Annex-Talipao Proper, Indanan National High School-Main, Pasil Indanan National High School, Timbangan Indnanan National High School during the School Year 2024-2025.

Distribution of respondents

No.	Name of Secondary School	No. of Respondents
1	Talipao National High School-Main	15
2	Talipao National High School-Annex-Pantao	6
3	Talipao National High School-Annex-Talipao Proper	15
4	Indanan National High School-Main	8
5	Pasil Indanan National High School	6
6	Timbangan Indanan National High School	10
Total:		100

## 3. *Sampling Design*

This study utilized a non-probability sampling technique, specifically purposive sampling. This approach was chosen based on considerations of accessibility, availability, and time limitations, allowing the selection of representative participants from Talipao National High School-Main, Talipao National High School-Annex-Pantao, Talipao National High School Annex-Talipao Proper, Indanan National High School-Main, Pasil Indanan National High School, Timbangan Indanan National High School will be deliberately selected as a sample for this study. The purposive sampling approach guarantees the acquisition of relevant and sufficient data required for the research.

## 4. *Research Instrument*

A structured research tool was utilized to obtain the primary empirical data for this study. Modified standardized questionnaire taken from the study of Tilbury, D. – Known for her contributions to sustainability and environmental education. which is a 30-item statements, The questionnaire was pre-tested to ensure the reliability and validity of the instrument through Chronbach’s reliability testing.

## 5. *Data Gathering Procedure*

To facilitate data collection, formal permission to administer the questionnaire was initially obtained from the Dean of the School of Graduate Studies at Sulu State College, followed by approvals from the Schools Division Superintendent, the District Supervisor, and the principals of the six (6) selected secondary schools. The researcher personally handled the distribution, administration, and retrieval of the questionnaires.

## 6. *Statistical Treatment of Data*

The following statistical tools were utilized in analysing the primary empirical data for this study:

1. Frequency and Percentage. The frequency and percentage are the statistical tools to be used to determine the profile of the teachers as to gender, age, civil status, length of service and educational attainment.

2. Weighted Mean and Standard Deviation. The weighted mean and standard deviation will be used to determine the level of teachers' competence in environmental education in the context of teacher's knowledge, teaching methods, and training development.

3. T-test and One-way Analysis of Variance (ANOVA). T-test for independent variable will be employed to determine the significant differences in the extent of teachers' competence in environmental education when data are grouped according to gender; and One-way Analysis of Variance (ANOVA) will be employed to determine the significant differences in the extent of teachers' competence in environmental education, when data are grouped according to age, civil status, length of service educational attainment.

4. Pearson Product-Moment Correlation. Pearson product-moment correlation will be used to determine the significant correlation among the sub-categories subsumed under the extent of teachers' competence in environmental education: the case of selected national high schools in Sulu in the context of teacher's knowledge, teaching methods, and training development.

Scales to be used		
Point	Scale Value	Interpretation
5	4.50 – 5.00	Strongly Agree
4	3.50 – 4.49	Agree
3	2.50 – 3.49	Moderately Agree
2	1.50 – 2.49	Disagree
1	1.00 – 1.49	Strongly Disagree

## Results

This chapter presents the analysis and interpretation of the results based on the data gathered for this study. It provides insights into the level of teachers' competence in environmental education, focusing on National High Schools in Sulu. Additionally, it examines the demographic profiles of teacher-respondents, including their age, gender, civil status, and length of service. The chapter also explores the level of teachers' competence in environmental education in terms of their knowledge, teaching methods, and training and development. Furthermore, it investigates the significant correlations and variations across these sub-categories based on the demographic characteristics of the respondents.

The results are presented, analyzed, and interpreted using appropriate scoring techniques and statistical methods treatment of the data, corresponding to each of the research questions outlined in this study.

1. What is the demographic profile of the teacher-respondents in terms of: 1.1 Age, 1.2 Gender, 1.3 Civil Status, and 1.4 Length of Service?

### *1.1 In terms of Age*

Table 1.1 presents the demographic profile of teacher-respondents from selected public national high schools in Sulu in terms of age. The data show that out of 100 teacher-respondents, 37 (37.0%) belong to the age group of 21–30 years old, while 63 (63.0%) are aged 31 years and above. These findings indicate that the majority of teacher-respondents fall within the 31 years and above age bracket. This suggests that most of the teacher-respondents in this study are categorized within the middle-age group.

Table 1.1 Demographic Profile of Teacher-Respondents by Age

Age	Number of respondents	Percent
21-30 years old	37	37.0%
31 years old and above	63	63.0%
Total	100	100%

### 1.2 In terms of Gender

Table 1.2 presents the demographic profile of teacher-respondents from selected public national high schools in Sulu based on gender. The data show that out of 100 teacher-respondents, 20 (20.0%) are male, while 80 (80.0%) are female. These findings reveal that more than half of the total teacher-respondents in this study are female, indicating that the teaching workforce in the selected public national high schools in Sulu is predominantly female.

Table 1.2 Demographic Profile of Teacher-Respondents by Gender

Gender	Number of respondents	Percent
Male	20	20.0%
Female	80	80.0%
Total	100	100%

### 1.3 In terms of Civil Status

Table 1.3 presents the demographic profile of teacher-respondents from selected public national high schools in Sulu based on their civil status. The data show that out of 100 teacher-respondents, 31 (31.0%) are single, 67 (67.0%) are married, and 2 (2.0%) are either separated or widowed. These findings reveal that more than half of the teacher-respondents are married, indicating that a significant portion of the respondents from selected public national high schools in Sulu belong to the married category.

Table 1.3 Demographic Profile of Teacher-Respondents by Civil Status

Civil Status	Number of respondents	Percent
Single	31	31.0%
Married	67	67.0%
Separated/Widowed	2	2.0%
Total	100	100%

### 1.4 In terms of Length of Service

Table 1.4 presents the demographic profile of teacher-respondents from selected public national high schools in Sulu based on their length of service. The data indicate that out of 100 teacher-respondents, 31 (31.0%) have been employed for 5 years or less, 32 (32.0%) for 6–10 years, 14 (14.0%) for 11–15 years, and 23 (23.0%) for 16 years or more. These findings show that the majority of teacher-respondents have been employed for 6–10 years. This suggests that a significant portion of the teacher-respondents has been working in the teaching profession for about a decade.

Table 1.4 Demographic Profile of Teacher-Respondents by Length of Service

Length of Service	Number of respondents	Percent
5 years and below	31	31.0%

6-10 years	32	32.0%
11-15 years	14	14.0%
16 years and above	23	23.0%
Total	100	100%

2. What is the level of teachers' competence in environmental education: the case of National High Schools in Sulu, in the context of: 2.1 Teacher's Knowledge, 2.2 Teaching Methods, and 2.3 Training and Development?

2.1 Literacy Goal, 2.2 Classroom Strategies, 2.3 Supplementary Instruction, and 2.4 Problem Identification?

*2.1 In the context of Teacher's Knowledge*

Table 2.1 presents the level of teachers' competence in environmental education in the context of their knowledge. The total weighted mean is 4.197, which corresponds to an overall rating of "Agree," and the total standard deviation is 0.57883, indicating some variation in the teachers' responses to the statements. These results suggest that teacher-respondents generally agree with their competence in environmental education knowledge.

The mean scores reveal that teacher-respondents highly agree on their understanding of how human activities affect the environment, as this statement obtained the highest mean score of 4.46 with a rating of "Agree." This suggests that teachers have a strong awareness of the impact of human actions on the environment. Similarly, teachers feel confident in answering students' questions related to environmental topics, as reflected in a mean score of 4.33. On the other hand, the statement with the lowest mean score (4.01) and rating of "Agree" is "I am familiar with national and international environmental policies and agreements." This implies that while teachers acknowledge their familiarity with environmental policies, it is an area with potential for further improvement.

*Table 2.1 Level of Teachers' Competence in Environmental Education in the Context of Teacher's Knowledge.*

Statements	Mean	S.D	Rating
I have a strong understanding of basic environmental concepts such as ecosystems and biodiversity	4.31	.734	Agree
I am knowledgeable about current environmental issues like climate change and pollution.	4.13	.787	Agree
I can explain the importance of sustainability to my students.	4.14	.766	Agree
I feel confident in answering students' questions related to environmental topics.	4.33	.726	Agree
I stay updated on new developments in environmental science and education.	4.06	.814	Agree
I am aware of the global impact of environmental problems.	4.28	.712	Agree

I understand how human activities affect the environment.	4.46	.642	Agree
I can identify the main principles of environmental education.	4.03	.758	Agree
I know how to integrate local environmental issues into my lessons.	4.22	.746	Agree
I am familiar with national and international environmental policies and agreements.	4.01	.810	Agree
Total Weighted Mean	4.1970	.5	Agree

Legend: (5) 4.50-5.00=Strongly Agree; (4) 3.50-4.49=Agree; (3) 2.50- 3.49=Moderately Agree; (2) 1.50-2.49=Disagree; (1) 1.00- 1.49=Strongly Disagree

## 2.2 In the context of Teaching Methods

Table 2.2 presents the level of teachers' competence in environmental education in the context of their teaching methods. The total weighted mean is 4.1260, which corresponds to a rating of "Agree," while the total standard deviation is 0.73631, indicating moderate variation among teacher-respondents in their level of agreement with the statements. This suggests that teachers generally demonstrate effective teaching methods for environmental education.

The highest mean score of 4.38 corresponds to the statement, "I frequently use real-life examples to teach environmental topics," with a rating of "Agree." This implies that teachers often utilize practical examples to make environmental concepts relatable and relevant to students. Additionally, statements like "I promote critical thinking when discussing environmental solutions with students" (mean = 4.26) and "I encourage students to discuss and reflect on environmental issues in class" (mean = 4.22) reflect a strong emphasis on critical engagement and discussion in their teaching methods. On the other hand, the lowest mean score of 3.85 corresponds to the statement, "I incorporate hands-on activities (e.g., experiments, field trips) to engage students in environmental learning," with a rating of "Agree." While teachers agree on the value of hands-on activities, this suggests there may be room for improvement in incorporating such experiential learning opportunities more consistently.

Table 2.2 Level of Teachers' Competence in Environmental Education in the Context of Teaching Methods.

Statements	Mean	S.D	Rating
I frequently use real-life examples to teach environmental topics.	4.38	.814	Agree
I incorporate hands-on activities (e.g., experiments, field trips) to engage students in environmental learning.	3.85	.914	Agree
I use multimedia resources (videos, websites) to make environmental topics more accessible to students.	4.02	.932	Agree
I encourage students to discuss and reflect on environmental issues in class.	4.22	.811	Agree

I integrate environmental education into multiple subjects, not just science.	4.16	.813	Agree
I use project-based learning to teach students about environmental challenges.	4.02	.853	Agree
I create group activities that involve problem-solving environmental issues.	4.13	.917	Agree
I promote critical thinking when discussing environmental solutions with students.	4.26	.787	Agree
I encourage students to take part in local environmental projects or initiatives.	4.09	.854	Agree
I regularly assess students' understanding of environmental topics through interactive methods like debates or presentations.	4.13	.812	Agree
<b>Total Weighted Mean</b>	<b>4.1260</b>	<b>.73631</b>	<b>Agree</b>

Legend: (5) 4.50-5.00=Strongly Agree; (4) 3.50-4.49=Agree; (3) 2.50- 3.49=Moderately Agree; (2) 1.50-2.49=Disagree; (1) 1.00- 1.49=Strongly Disagree

### 2.3 In the context of Training and Development

Table 2.3 presents the level of teachers' competence in environmental education in the context of training and development. The total weighted mean is 3.8850, corresponding to a rating of "Agree," with a standard deviation of 0.81753, indicating moderate variability in the teachers' responses. These results suggest that teachers generally perceive their training and development opportunities in environmental education positively.

The statement with the highest mean score of 4.17, "I would benefit from more opportunities for training and development in environmental education," indicates that teachers strongly agree with the need for additional professional development. This highlights an area of opportunity to further enhance their competencies in this field. Similarly, teachers feel motivated to apply new strategies learned during training (mean = 4.04) and find training workshops helpful in keeping them updated on the latest research and developments in environmental education (mean = 4.02). On the other hand, the lowest mean score of 3.69 is associated with the statement, "I have attended professional development workshops on environmental education in the past year." While teachers agree with this statement, it suggests that participation in recent training workshops may not have been as frequent as desired.

Table 2.3 Level of Teachers' Competence in Environmental Education in the Context of Training and Development.

Statements	Mean	S.D	Rating
I have attended professional development workshops on environmental education in the past year.	3.69	.982	Agree
The training I received has improved my ability to teach environmental topics effectively.	3.74	.991	Agree

My school provides ongoing support for professional growth in environmental education.	3.88	.902	Agree
I have access to sufficient resources and materials to improve my environmental education teaching skills.	3.75	.936	Agree
The professional development programs I participated in were tailored to my needs as an environmental educator.	3.80	.974	Agree
I feel motivated to apply the new strategies I learned during my training in my classroom.	4.04	.942	Agree
Training workshops help me stay updated on the latest trends and research in environmental education.	4.02	.995	Agree
I receive feedback from my school on how to improve my environmental education teaching methods.	3.83	.954	Agree
I collaborate with colleagues to share strategies and ideas on how to teach environmental education.	3.93	1.027	Agree
I would benefit from more opportunities for training and development in environmental education.	4.17	.865	Agree
<b>Total Weighted Mean</b>	<b>3.8850</b>	<b>.81753</b>	<b>Agree</b>

Legend: (5) 4.50-5.00=Strongly Agree; (4) 3.50-4.49=Agree; (3) 2.50- 3.49=Moderately Agree; (2) 1.50-2.49=Disagree; (1) 1.00- 1.49=Strongly Disagree

### 3. Is there a significant difference in the level of teachers' competence in environmental education: the case of selected National High Schools in Sulu, when data are grouped according to their demographic profile in terms of 3.1 Age, 3.2 Gender, 3.3 Civil Status, and 3.4 Length of Service? *3.1 According to Age*

Table 3.1 presents the differences in the level of teachers' competence in environmental education among selected National High Schools in Sulu when the data are grouped according to their demographic profile in terms of age. As shown in this table, the t-values and probability values (Sig.) for all subcategories, including Teacher's Knowledge, Teaching Methods, and Training and Development, are greater than the alpha level of 0.05. This indicates that there are no significant differences in the level of teachers' competence in environmental education when grouped by age.

For Teacher's Knowledge, the mean difference between teacher-respondents aged 21–30 years and those aged 31 years and above is 0.12059, with a t-value of 1.006 and a Sig. value of 0.317, indicating no significant difference. Similarly, for Teaching Methods, the mean difference is 0.07456, with a t-value of 0.487 and a Sig. value of 0.627, also not significant. For Training and Development, the mean difference is -0.12205, with a t-value of -0.719 and a Sig. value of 0.474, again showing no significant difference.

These findings imply that age does not significantly influence the level of teachers' competence in environmental education across the subcategories assessed. Hence, it is safe to say that generally, the age variable has no significant intervention in the ways how teacher-respondents perceive the level of teachers' competence in environmental education in Sulu. Therefore, the hypothesis which states that: “There is no significant difference in the level of teachers’ competence in environmental education: the case of selected national high schools in Sulu, when data are grouped according to their demographic profile in terms of age” is accepted.

Table 3.1 Difference in the Level of Teachers' Competence in Environmental Education in terms of Age.

Variables	Grouping	Mean	S.D	Mean Difference	t	Sig.	Description
Teacher’s Knowledge	21-30 years old	4.273	.62077	.12059	1.006	.317	Not Significant
	31 years old and above	4.152	.55296				
Teaching Methods	21-30 years old	4.173	.85947	.07456	.487	.627	Not Significant
	31 years old and above	4.098	.65930				
Training and Development	21-30 years old	3.808	.90166	-.12205	-.719	.474	Not Significant
	31 years old and above	3.930	.76783				

Note. \* Significant at alpha 0.05

### 3.2 According to Gender

Table 3.2 presents the differences in the level of teachers' competence in environmental education among selected National High Schools in Sulu when data are grouped according to their demographic profile in terms of gender. As shown in this table, the t-values and probability values (Sig.) for all subcategories, including Teacher’s Knowledge, Teaching Methods, and Training and Development, are greater than the alpha level of 0.05. This indicates that there are no significant differences in the level of teachers’ competence in environmental education when grouped by gender.

For Teacher’s Knowledge, the mean difference between male (4.32) and female (4.166) teacher-respondents is 0.15375, with a t-value of 1.063 and a Sig. value of 0.29, which is not significant. For Teaching Methods, the mean difference between male (4.135) and female (4.124) teacher-respondents is 0.01125, with a t-value of 0.061 and a Sig. value of 0.95, also not significant. Similarly, for Training and Development, the mean difference between male (4.015) and female (3.853) teacher-respondents is 0.16250, with a t-value of 0.794 and a Sig. value of 0.43, indicating no significant difference.

These findings imply that gender does not significantly influence the level of teachers' competence in environmental education across the subcategories assessed. Hence, it is safe to say that generally, the gender variable has no significant intervention in the ways how teacher-respondents perceive the level of teachers' competence in environmental education in Sulu. Therefore, the hypothesis which states that: “There is no significant difference in the level of teachers’

competence in environmental education: the case of selected national high schools in Sulu, when data are grouped according to their demographic profile in terms of gender” is accepted.

*Table 3.2 Difference in the Level of Teachers' Competence in Environmental Education in terms of Gender.*

Variables	Grouping	Mean	S.D	Mean Difference	t	Sig.	Description
Teacher's Knowledge	Male	4.32	0.4444	.15375	1.063	.29	Not Significant
	Female	4.166	0.6063				
Teaching Methods	Male	4.135	0.7569	.01125	.061	.95	Not Significant
	Female	4.124	0.7359				
Training and Development	Male	4.015	0.7869	.16250	0.794	.43	Not Significant
	Female	3.853	0.8266				

*Note.* \* Significant at alpha 0.05

### 3.3 According to Civil Status

Table 3.3 presents the differences in the level of teachers' competence in environmental education among selected National High Schools in Sulu when data are grouped according to their demographic profile in terms of civil status. As shown in this table, the F-values and probability values (Sig.) for all subcategories, including Teacher's Knowledge, Teaching Methods, and Training and Development, are greater than the alpha level of 0.05. This indicates that there are no significant differences in the level of teachers' competence in environmental education when grouped by civil status.

For Teacher's Knowledge, the F-value is 0.050 with a Sig. value of 0.951, which is not significant. For Teaching Methods, the F-value is 0.267 with a Sig. value of 0.766, which is also not significant. Similarly, for Training and Development, the F-value is 0.392 with a Sig. value of 0.677, again showing no significant difference.

These findings imply that civil status does not significantly influence the level of teachers' competence in environmental education across the subcategories assessed. Hence, it is safe to say that generally, the civil status variable has no significant intervention in the ways how teacher-respondents perceive the level of teachers' competence in environmental education in Sulu. Therefore, the hypothesis which states that: “There is no significant difference in the level of teachers' competence in environmental education: the case of selected national high schools in Sulu, when data are grouped according to their demographic profile in terms of civil status” is accepted.

*Table 3.3 Difference in the Level of Teachers' Competence in Environmental Education in terms of Civil Status.*

Sources of Variation	Sum of squares	Df	Mean Square	F	Sig.	Description	
Teacher's Knowledge	Between Groups	.034	2	.017	.050	.951	Not Significant
	Within Groups	33.135	97	.342			
	Total	33.169	99				
Teaching Methods	Between Groups	.294	2	.147	.267	.766	Not Significant
	Within Groups	53.378	97	.550			
	Total	53.672	99				
Between Groups	.530	2	.265	.392	.677		

Training and Development	Within Groups	65.637	97	.677		
	Total	66.168	99			Not Significant

Note. \* Significant at alpha 0.05

### 3.4 According to Length of Service

Table 3.4 presents the differences in the level of teachers' competence in environmental education among selected National High Schools in Sulu when data are grouped according to their demographic profile in terms of length of service. As shown in this table, the F-values and probability values (Sig.) for all subcategories, including Teacher's Knowledge, Teaching Methods, and Training and Development, are greater than the alpha level of 0.05. This indicates that there are no significant differences in the level of teachers' competence in environmental education when grouped by length of service.

For Teacher's Knowledge, the F-value is 2.031 with a Sig. value of 0.115, which is not significant. For Teaching Methods, the F-value is 0.708 with a Sig. value of 0.550, which is also not significant. Similarly, for Training and Development, the F-value is 0.479 with a Sig. value of 0.698, again showing no significant difference.

These findings imply that length of service does not significantly influence the level of teachers' competence in environmental education across the subcategories assessed. Hence, it is safe to say that generally, the length of service variable has no significant intervention in the ways how teacher-respondents perceive the level of teachers' competence in environmental education in Sulu. Therefore, the hypothesis which states that: "There is no significant difference in the level of teachers' competence in environmental education: the case of selected national high schools in Sulu, when data are grouped according to their demographic profile in terms of length of service" is accepted.

Table 3.4 Difference in the Level of Teachers' Competence in Environmental Education in terms of Length of Service.

Sources of Variation		Sum of squares	Df	Mean Square	F	Sig.	Description
Teacher's Knowledge	Between Groups	1.979	3	.660	2.031	.115	Not Significant
	Within Groups	31.190	96	.325			
	Total	33.169	99				
Teaching Methods	Between Groups	1.162	3	.387	.708	.550	Not Significant
	Within Groups	52.511	96	.547			
	Total	53.672	99				
Training and Development	Between Groups	.976	3	.325	.479	.698	Not Significant
	Within Groups	65.192	96	.679			
	Total	66.168	99				

Note. \* Significant at alpha 0.05

4. Is there a significant correlation among the sub-categories subsumed under the level of teachers' competence in environmental education: the case of selected National High Schools in Sulu, in the context of teacher's knowledge, teaching methods, and training and development?

Table 4 presents the correlations among the sub-categories subsumed under the level of teachers' competence in environmental education: the case of selected National High Schools in Sulu, in the context of teacher's knowledge, teaching methods, and training and development. The

computed Pearson correlation coefficients (Pearson  $r$ ) between these variables are significant at alpha 0.01, indicating statistically significant relationships.

The degrees of correlation among the subcategories are as follows:

1. A very high positive degree of correlation between Teacher’s Knowledge and Teaching Methods ( $r = 0.851$ ), suggesting a strong association between the teachers’ knowledge and the methods they use in teaching environmental education.
2. A high positive degree of correlation between Teacher’s Knowledge and Training and Development ( $r = 0.575$ ), indicating that teachers with higher competence in knowledge are likely to have engaged in more training and development activities related to environmental education.
3. A very high positive degree of correlation between Teaching Methods and Training and Development ( $r = 0.776$ ), emphasizing the significant influence of training and development on the teaching methods employed by teachers.

These findings suggest that the subcategories of Teacher’s Knowledge, Teaching Methods, and Training and Development are closely interrelated, with strong positive correlations between them. This implies that improvements in one subcategory are likely to positively influence the others, thereby enhancing the overall competence of teachers in environmental education.

Hence, it is safe to say that generally, the sub-categories subsumed under the level of teachers' competence in environmental education in Sulu are highly correlated. Therefore, the hypothesis which states that “There is no significant correlation among the sub-categories subsumed under the level of teachers’ competence in environmental education: the case of selected national high schools in Sulu in the context of teachers’ knowledge, teaching methods, and training and development.” is rejected.

*Table 4. Correlations among the Sub-categories Subsumed under the Level of Teachers' Competence in Environmental Education in Sulu.*

Variables		Pearson $r$	Sig.	N	Description
Dependent	Independent				
Classroom Strategies	Teaching Method	.851**	.000	100	Very High
	Training and Development	.575**	.000	100	High
Supplementary Instruction	Training and Development	.776**	.000	100	Very High

*Note.* \*\*Correlation coefficient is significant at alpha .01

Correlation Coefficient Scales Adopted from Hopkins, Will (2002):0.0-0.1 = Nearly Zero; 0.1-0.3 = Low; 0.3-0.5 = Moderate; 0.5-0.7 = High; 0.7-0.9 = Very High; 0.9-1 = Nearly Perfect.

## Conclusion

The following was concluded based on the findings of the study:

1. Majority of the teacher – respondents are in their prime in terms of age, female teachers outnumber the male teachers, and most of them are considered as neophytes in the teaching profession.

2. The teacher’s agreement on the level of teachers’ competence in environmental education in the context of teachers’ knowledge, teaching method, and training and development only goes to show that they know they still have a long way to go before becoming an effective teacher in environmental education.

3. The null hypothesis was rejected when they are grouped according to demographic profile could only mean that they are all on the same situation which is lacking knowledge on environmental education.

4. The high degree of positive correlation means the different factors or variables are closely interrelated and it is very difficult to separate one factor from another factor.

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