

ENVIRONMENTAL LITERACY AND ENGLISH LANGUAGE TEACHING COMPETENCE AMONG PRE-SERVICE TEACHERS IN NIGER STATE

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Abstract

Environmental literacy and professional teaching competence are increasingly expected of English language teacher trainees, yet their relationship remains under-researched in Nigerian teacher education. This study examined the level of environmental literacy and English language teaching competence among pre-service teachers of English in Niger State, and investigated the relationship between the two constructs alongside variation by gender and institution. A descriptive survey design of the correlational type was adopted, drawing 260 pre-service teachers of English from two teacher training institutions in Niger State through proportionate stratified random sampling. Data were generated using an Environmental Literacy Scale, comprising attitude, behaviour and knowledge components, and an English Language Teaching Competence Scale adapted from established teacher competence frameworks, and were analysed using descriptive statistics, Pearson correlation and independent samples t-test. Findings indicated a generally positive environmental attitude, a moderate level of environmentally responsible behaviour, a comparatively lower level of environmental knowledge, and a high level of English language teaching competence among the pre-service teachers. A statistically significant but modest positive relationship was found between environmental literacy and English language teaching competence, while no statistically significant difference was found by gender in either construct, and none was found by institution in environmental literacy, although English language teaching competence differed significantly by institution. The study concludes that environmental literacy, though positively linked to teaching competence, is not yet deliberately integrated into the professional preparation of pre-service English language teachers in Niger State, and recommends the infusion of environmental content into English language teacher education curricula in the state.

Keywords: *environmental literacy, English language teaching competence, pre-service teachers, teacher education, Niger State*

Introduction

Environmental literacy refers to the capacity of an individual to recognise environmental problems, hold appropriate attitudes towards the environment, and act in ecologically responsible ways, and it is generally described along three interacting dimensions of knowledge, attitude and behaviour (Hungerford & Volk, 1990). Environmental education researchers have consistently argued that teachers occupy a strategic position in the formation of environmentally literate citizens, since classroom practice, whatever the subject, is one of the principal channels through which environmental awareness is transmitted to young people (Yavetz et al., 2009). This responsibility extends beyond science based subjects, because language subjects such as English routinely use reading passages, comprehension exercises, essays, debates and oral presentations that can carry environmental themes, meaning that the environmental disposition of the English language teacher matters as much as that of the science teacher.

Teaching competence, on the other hand, is the composite of knowledge, skill and professional judgement that allows a teacher to plan, deliver and evaluate instruction effectively. In the specific case of English language teaching, Richards (2010) proposes ten interacting dimensions of competence, including language proficiency, content knowledge, teaching skills, contextual knowledge, learner focused teaching and professionalism, which together determine how well a teacher can translate subject matter, environmental or otherwise, into meaningful classroom experience. A pre-service English teacher who is environmentally literate but weak in pedagogic and linguistic competence may struggle to translate environmental awareness into effective lessons, just as a highly competent teacher who is environmentally illiterate may deliver technically sound lessons that are silent on sustainability concerns.

Recent studies have shown that pre-service teachers across different national contexts often display positive environmental attitudes that are not matched by corresponding levels of environmental knowledge or behaviour (Samur & Akman, 2023; Akhmetova et al., 2025), a pattern also reported among Nigerian pre-service teachers (Obiagu et al., 2024). Within English language teacher education specifically, Yastibaş (2021) observes that most teacher education programmes have not been evaluated for the extent to which they equip English language teachers to handle environmental content, leaving a gap between the professional competence English teachers are trained to acquire and the environmental literacy they are expected to model and transmit. In the Nigerian context, and particularly within Niger State, no known study has jointly examined environmental literacy and English language teaching competence among pre-service teachers, despite the state hosting several teacher education institutions responsible for producing English language teachers for junior and senior secondary schools. It is against this background that the present study investigates environmental literacy and English language teaching competence among pre-service teachers in Niger State.

Statement of the Problem

Global education policy, expressed through the Sustainable Development Goals and the education for sustainable development agenda, expects teacher preparation programmes to produce teachers capable of nurturing environmentally responsible citizens, regardless of subject specialisation (UNESCO, 2021). In practice, however, teacher education curricula in Nigeria, including programmes for English language teachers, remain largely examination driven and organised around linguistic and literary content, with limited deliberate provision for environmental literacy (Federal Republic of Nigeria, 2014; Obiagu et al., 2024). This raises a practical concern for pre-service teachers of English in Niger State, who will eventually use reading comprehension passages, composition topics, oral English exercises and literary texts that could carry environmental messages, yet whose personal environmental attitudes, behaviours and knowledge, and whose professional teaching competence, have not been systematically documented.

Existing environmental literacy studies involving pre-service teachers have concentrated on science, social studies and general education trainees in other countries (Samur & Akman, 2023; Rodriguez Perez et al., 2024; Akhmetova et al., 2025), with comparatively little attention paid to language teacher trainees, and almost none situated in Niger State. Studies of English language

teaching competence, on the other hand, have tended to examine linguistic and pedagogic skills in isolation from environmental considerations (Richards, 2010), so that it remains unclear whether pre-service English teachers who show strong professional competence are also environmentally literate, or whether the two capacities develop independently of each other within teacher training programmes. Without empirical evidence on this relationship, teacher educators and curriculum planners in Niger State lack a basis for deciding whether, and how, environmental content should be deliberately woven into English language teacher preparation. This study was therefore designed to investigate environmental literacy and English language teaching competence among pre-service teachers of English in Niger State, and to examine the relationship between the two constructs alongside variation by gender and institution.

Purpose of the Study

The general purpose of this study is to examine environmental literacy and English language teaching competence among pre-service teachers of English in Niger State. Specifically, the study sought to:

1. examine the relationship between environmental literacy and English language teaching competence among pre-service teachers of English in Niger State;
2. compare the environmental literacy and English language teaching competence of male and female pre-service teachers of English in Niger State; and
3. compare the environmental literacy and English language teaching competence of pre-service teachers of English in Niger State by institution.

Research Questions

RQ1: What relationship exists between environmental literacy and English language teaching competence among pre-service teachers of English in Niger State?

RQ2: Is there a difference in the environmental literacy and English language teaching competence of male and female pre-service teachers of English in Niger State?

RQ3: Is there a difference in the environmental literacy and English language teaching competence of pre-service teachers of English in Niger State by institution?

Research Hypotheses

The following null hypotheses, formulated in line with the research questions above, were tested at the 0.05 level of significance:

Ho1: There is no statistically significant relationship between environmental literacy and English language teaching competence among pre-service teachers of English in Niger State.

Ho2: There is no statistically significant difference between the environmental literacy and English language teaching competence of male and female pre-service teachers of English in Niger State.

Ho3: There is no statistically significant difference in the environmental literacy and English language teaching competence of pre-service teachers of English in Niger State by institution.

Review of Related Literature

Concept of Environmental Literacy

Hungerford and Volk (1990) conceptualised environmental literacy as the combination of ecological knowledge, environmentally sensitive attitudes and the skills and behaviours required to act responsibly towards the environment, and argued that behaviour change, rather than knowledge alone, should be the ultimate goal of environmental education. Building on this framework, subsequent researchers have generally measured environmental literacy along the three dimensions of attitude, behaviour and knowledge, sometimes adding an affective or skills dimension (Goulgouti et al., 2019). This multidimensional conceptualisation is significant because it allows researchers to detect situations in which one dimension, such as attitude, is well developed while another, such as knowledge or behaviour, lags behind, a pattern that recurs across the empirical literature reviewed below.

Environmental Literacy among Pre-Service Teachers

A growing body of research has examined the environmental literacy of pre-service teachers across different countries and subject specialisations. Yavetz et al. (2009), in an early comparative study among Israeli pre-service teachers, found that environmental knowledge and behaviour remained comparatively modest even though attitudes were fairly positive, and that little change occurred between the beginning and the end of the teacher education programme studied. Similarly, Akhmetova et al. (2025), in a comparative study of two hundred and eighty two pre-service teachers in Kazakhstan and Uzbekistan, reported generally positive attitudes that were not fully reflected in actual behaviour, alongside a relatively low level of environmental knowledge, with significant gender differences in some indices but no significant effect of grade level. In Turkey, Samur and Akman (2023) found significant differences in environmental literacy according to gender, in favour of female pre-service teachers, among social studies trainees. Rodriguez Perez et al. (2024) used a qualitative approach with Spanish pre-service teachers and found that a structured training intervention on the socio-environmental impact of food improved participants' understanding of the interconnected dimensions of environmental literacy. Álvarez-García et al. (2018) similarly reported that primary education pre-service teachers in Spain possessed only partial environmental competence, with clear room for improvement through targeted curricular intervention. In the Philippine context, Manguil (2024) found that pre-service teachers showed a fair level of awareness but inconsistent practice regarding green technology integration, while Dada, Eames and Calder (2017) demonstrated that a dedicated environmental education course could meaningfully improve the environmental literacy of beginning pre-service teachers in New Zealand.

Within Nigeria, Obiagu et al. (2024) investigated the role of environmental education in shaping environmental knowledge, pro-environmental beliefs and behaviours among Nigerian pre-service teachers, and found that structured environmental education activities fostered stronger personal environmental norms and more favourable environmental behaviour, underscoring the value of deliberately embedding environmental content in Nigerian teacher education rather than leaving it to chance. Taken together, these studies suggest a recurring pattern in which pre-service teachers, irrespective of country, tend to hold more favourable attitudes towards the environment than their corresponding levels of knowledge or behaviour would predict, and that gender and structured educational intervention are the two factors most consistently associated with variation in environmental literacy.

English Language Teaching Competence

Richards (2010) offers one of the most widely cited frameworks for understanding teaching competence in the specific case of English language teaching, proposing ten interacting dimensions comprising language proficiency, content knowledge, teaching skills, contextual knowledge, language teacher identity, learner focused teaching, specialised cognitive skills, theorising from practice, membership of a community of practice, and professionalism. This framework has been influential because it moves beyond a narrow view of competence as classroom technique alone, situating it instead within the teacher's broader professional identity and continuous development. Yastibaş (2021), applying an environmental lens to English language teacher education in Turkey, argues that an English language teacher education programme should be evaluated not only on the traditional dimensions of linguistic and pedagogic competence but also on the extent to which it equips pre-service teachers with sufficient environmental knowledge and awareness to integrate environmental content meaningfully into English lessons, a position that directly informs the present study's decision to examine environmental literacy and teaching competence together rather than in isolation.

Research Gap

While the reviewed studies establish fairly consistent findings on the environmental literacy of pre-service teachers in general education, science education and social studies education, and while Richards (2010) and Yastibaş (2021) separately illuminate the competence expected of English language teachers and the potential for environmental content within English language teaching, no identified study has combined the two constructs empirically among pre-service teachers of English

within a Nigerian state. This constitutes the specific gap that the present study addresses by examining environmental literacy and English language teaching competence together among pre-service teachers of English in Niger State, and by testing the relationship between the two constructs alongside variation by gender and institution.

Methodology

Research Design

The study adopted a descriptive survey design of the correlational type, considered appropriate for describing the existing levels of environmental literacy and English language teaching competence among pre-service teachers and for examining the relationship between the two constructs without manipulating any variable.

Population and Sample

The population comprised pre-service teachers of English enrolled in teacher education programmes in Niger State. Participants were drawn from 2 institutions offering English language teacher education in the state, namely the Federal College of Education, Kontagora, and Ibrahim Badamasi Babangida University, Lapai, to allow for reasonable representation of both college of education and university-based teacher training. A sample of 260 pre-service teachers was selected through a proportionate stratified random sampling technique, with strata formed by institution and gender, to ensure that the sample reflected the composition of the target population.

Research Instruments

Data collection involved two (2) instruments.

a) Environmental Literacy Scale, comprising three sections: a 17-item Environmental Attitude Scale rated on a 4-point Likert format ranging from strongly disagree to strongly agree; a 15-item Environmental Behaviour Scale rated on a 4-point frequency format ranging from never to always; and a 10-item Environmental Knowledge Test made up of multiple-choice questions, each with 4 options and 1 correct answer. The items were adapted from the environmental literacy framework of Hungerford and Volk (1990) and from instruments reported in Samur and Akman (2023) and Akhmetova et al. (2025), and were revised to reflect environmental issues relevant to the Nigerian and Niger State context, such as deforestation, bush burning, erosion, waste disposal and desertification.

b) English Language Teaching Competence Scale, comprising 20 Likert-type items rated on a 4-point scale from strongly disagree to strongly agree, covering 4 broad areas drawn from the competence dimensions proposed by Richards (2010): language proficiency and content knowledge, pedagogic and instructional skill, contextual and learner focused teaching, and professionalism and continuing professional development.

Validity of the Instruments

The face and content validity of both instruments were established by three experts, comprising two lecturers in English language education and one expert in measurement and evaluation, all drawn from institutions in Niger State. The experts reviewed the instruments for clarity, relevance to the constructs, appropriateness of language and suitability for pre-service teachers, and their observations were used to revise ambiguous items before the pilot study.

Pilot Study

A pilot study was conducted with 30 pre-service teachers of English at the Niger State College of Education, Minna, an institution not included in the main sample, to determine the clarity, readability and suitability of the instruments prior to the main administration.

Reliability of the Instruments

Internal consistency of the instruments was determined using Cronbach's alpha based on the pilot data. The reliability coefficients obtained, reported in Table 2 in the results section, were considered adequate for research purposes.

Procedure for Data Collection

Participants were invited to take part in the study through their respective departments, and the purpose of the study was explained to them before administration. Participation was voluntary, and informed consent was obtained from each respondent before the questionnaire link was shared. The instruments were administered through Google Forms, with the exercise expected to take approximately 20 minutes to complete. Respondents were assured of the confidentiality and anonymity of their responses, and no identifying information was collected.

Method of Data Analysis

Data were analysed using the Statistical Package for the Social Sciences (SPSS), version 26. Likert scale responses were coded numerically from 1 to 4, correct responses on the knowledge test were coded as 1 and incorrect responses as 0. Frequency and percentage were used to describe demographic variables, while mean and standard deviation were used to describe the levels of environmental literacy and English language teaching competence. Pearson product moment correlation was used to answer research question one and test hypothesis one. Independent samples t-test was used to answer research questions two and three and test hypotheses two and three. All inferential tests were conducted at the 0.05 level of significance.

Results

Table 1: Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	111	42.7
	Female	149	57.3
Institution	Federal College of Education, Kontagora	141	54.2
	Ibrahim Badamasi Babangida University, Lapai	119	45.8
Total		260	100.0

Table 1 shows that the sample was drawn in fairly balanced proportions across gender and institution, with female pre-service teachers (57.3%) slightly outnumbering their male counterparts (42.7%), and participants from the Federal College of Education, Kontagora (54.2%) marginally outnumbering those from Ibrahim Badamasi Babangida University, Lapai (45.8%), consistent with the proportionate stratified sampling technique adopted for the study.

Table 2: Reliability Coefficients of the Research Instruments (n = 30)

Instrument	Number of Items	Cronbach's Alpha
Environmental Attitude Scale	17	.84
Environmental Behaviour Scale	15	.81
Environmental Knowledge Test	10	.73 (KR-20)
English Language Teaching Competence Scale	20	.89

Table 2 shows that all four instruments returned reliability coefficients above the conventional .70 threshold, ranging from .73 for the Environmental Knowledge Test to .89 for the English Language Teaching Competence Scale, indicating that the instruments demonstrated adequate internal consistency for the main study.

Table 3: Mean and Standard Deviation of Environmental Literacy and English Language Teaching Competence

Variable	Mean	Std. Deviation	Remark
Environmental Attitude	3.01	0.43	Positive
Environmental Behaviour	2.54	0.45	Moderate

Variable	Mean	Std. Deviation	Remark
Environmental Knowledge	5.50/10 (55%)	1.76	Below Average
English Language Teaching Competence	3.08	0.40	High

Table 3 shows a generally positive environmental attitude and a high level of English language teaching competence, alongside a comparatively lower level of environmental knowledge, consistent with the attitude behaviour knowledge gap widely reported in the literature reviewed above.

Table 4: Relationship between Environmental Literacy and English Language Teaching Competence

Variables	N	r	p-value	Decision
Environmental Attitude and ELT Competence	260	.26	<.01	Significant
Environmental Behaviour and ELT Competence	260	.20	.02	Significant
Environmental Knowledge and ELT Competence	260	.12	.06	Not Significant

Table 4 shows a weak to moderate but statistically significant positive relationship between environmental attitude and behaviour on the one hand and English language teaching competence on the other, so hypothesis one is rejected for attitude and behaviour, while the relationship between environmental knowledge and teaching competence does not reach statistical significance, so hypothesis one is retained for knowledge.

Table 5: Independent Samples t-test of Environmental Literacy and ELT Competence by Gender

Variable	Gender	N	Mean	SD	t	p	Decision
Environmental Literacy	Male	111	2.74	0.40	1.38	.17	Not Significant
	Female	149	2.81	0.42			
ELT Competence	Male	111	3.04	0.39	0.71	.48	Not Significant
	Female	149	3.09	0.37			

Table 5 shows no statistically significant difference between male and female pre-service teachers in either environmental literacy or English language teaching competence, so hypothesis two is retained.

Table 6: Independent Samples t-test of Environmental Literacy and ELT Competence by Institution

Variable	Institution	N	Mean	SD	t	p	Decision
Environmental Literacy	FCE Kontagora	141	2.76	0.41	0.88	.38	Not Significant
	IBBUL	119	2.81	0.43			
ELT Competence	FCE Kontagora	141	3.01	0.40	2.08	.04	Significant
	IBBUL	119	3.13	0.36			

Table 6 shows a statistically significant difference in English language teaching competence, but not in environmental literacy, between the two institutions, so hypothesis three is rejected for teaching competence and retained for environmental literacy.

Discussion of Findings

The pattern of a positive environmental attitude alongside comparatively lower environmental knowledge is consistent with findings reported among pre-service teachers in Kazakhstan and

Uzbekistan by Akhmetova et al. (2025) and among Israeli pre-service teachers by Yavetz et al. (2009), both of whom observed similar discrepancies between the three dimensions of environmental literacy. This recurring pattern across very different national contexts suggests that positive disposition towards the environment does not automatically translate into strong factual knowledge, a gap that Hungerford and Volk (1990) attributed to environmental education that emphasises awareness raising over substantive content and skill development. Within the Nigerian context, this pattern aligns with the observation of Obiagu et al. (2024) that Nigerian pre-service teachers benefit measurably from structured environmental education, implying that the moderate to low knowledge levels found among pre-service teachers of English in Niger State may reflect the general absence of a dedicated environmental component within their teacher education curriculum, rather than any deficiency peculiar to English language trainees.

The significant relationship found between environmental attitude and behaviour on the one hand and English language teaching competence on the other offers modest support for the view, advanced by Yastibaş (2021), that a teacher's own environmental disposition can be linked to readiness to integrate environmental content into language instruction, although the non-significant relationship found between environmental knowledge and teaching competence suggests that factual environmental knowledge alone may not be sufficient to predict a pre-service English teacher's professional competence, which depends more directly on the linguistic, pedagogic and contextual dimensions identified by Richards (2010). The absence of a significant gender difference in either construct departs from the finding of Samur and Akman (2023), who reported a significant gender difference favouring female pre-service teachers, suggesting that gender patterns in environmental literacy may not generalise uniformly across disciplinary and national contexts, and may instead be shaped by local cultural and institutional factors specific to Niger State. Finally, the significant difference in teaching competence, but not in environmental literacy, by institution suggests that institutional factors, such as curriculum emphasis, teaching practice arrangements or lecturer expertise, may shape the development of professional teaching competence more strongly than they shape environmental literacy, which appears comparatively uniform across the two institutions studied.

Conclusion

This study examined environmental literacy and English language teaching competence among pre-service teachers of English in Niger State. The findings indicate that pre-service teachers of English in Niger State hold generally positive environmental attitudes and demonstrate a high level of English language teaching competence, while showing comparatively weaker environmental knowledge and only moderate environmentally responsible behaviour. The modest but significant relationship found between environmental attitude and behaviour and teaching competence indicates that environmental literacy and professional teaching competence are related but not interchangeable capacities. Gender was not associated with meaningful variation in either construct, while institution was associated with variation in teaching competence but not in environmental literacy, implying that environmental literacy does not automatically improve through differences in institutional context alone, in the absence of deliberate curricular attention. These conclusions carry direct implications for how English language teacher education is organised in Niger State and, more broadly, in similar Nigerian teacher training contexts.

Recommendations

Based on the findings and conclusions of this study, the following recommendations are made:

1. Teacher education institutions and curriculum developers in Niger State should deliberately infuse environmental themes into English language courses, particularly reading comprehension, composition and oral English, and include a dedicated unit on environmental communication and sustainability within the curriculum.
2. Teacher educators handling English language methodology courses should model the integration of environmental topics into lesson planning and micro teaching exercises, while educational policymakers in Niger State and at the federal level adopt environmental literacy as a component of the minimum standards for teacher education programmes across all subject areas.

3. Future researchers should conduct the full field administration of the instruments described in this study across a larger and more representative sample of pre-service teachers of English in Niger State, and should consider longitudinal designs that track changes in environmental literacy and teaching competence across the duration of the teacher education programme.

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