

Using Language Education to Promote Sustainability and Global Citizenship- Teaching English Language Skills to Promote Environmental Sustainability in Saudi Arabia through National Geographic Texts

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Abstract

In line with global calls for Education for Sustainable Development (ESD), higher education institutions are increasingly integrating sustainability concepts into curricula. Prince Sattam Bin Abdulaziz University (PSAU), Kingdom of Saudi Arabia, has collaborated with National Geographic Learning (NGL) to incorporate visually rich and content-driven materials into English language courses. This study investigates how the integration of National Geographic texts within English language instruction can enhance students' environmental awareness, eco-literacy, and global citizenship. Using a survey-based research design, the study examines learners' perceptions of NGL materials and their influence on environmental knowledge, attitudes, critical thinking, and behavioural intentions related to sustainability. The findings indicate that the use of authentic, visually engaging texts fosters heightened environmental awareness and encourages responsible citizenship among learners. The study contributes to research on curriculum innovation and sustainability education by demonstrating how language education can serve as an effective platform for promoting environmental responsibility. The findings also align with Saudi Vision 2030, which emphasizes educational reform and sustainability as key drivers of socio-economic development.

Keywords: Education for Sustainable Development, Environmental awareness, English language education, Authentic materials, National Geographic Learning, Saudi Vision 2030, Global citizenship

1. Introduction

Sustainability has become one of the most pressing challenges facing contemporary societies, requiring educational systems to prepare learners with the knowledge, values, and skills necessary for responsible and informed citizenship. Broadly defined, sustainability involves protecting biological and cultural diversity, respecting ecological limits, promoting equitable governance and economic systems, and fostering human adaptability and innovation. Integrating sustainability into education is therefore both a challenge and an opportunity, as educational institutions are uniquely positioned to influence learners' attitudes and behaviours toward the environment (Glasser & Calder, 2005).

Education for Sustainable Development (ESD) highlights the central role of education in addressing global environmental, social, and economic challenges. Higher education institutions play a critical role in cultivating ecological awareness and critical thinking among future professionals and educators. As Obidova and Tursunova (2023) argue, students in higher education must consciously develop ecological thinking to respond effectively to contemporary environmental issues. The United Nations' 2030 Agenda for Sustainable Development, articulated through the 17 Sustainable Development Goals (SDGs), further emphasizes the responsibility of educational systems to equip learners with sustainability-related knowledge and competencies. Despite these global efforts, research indicates that students' understanding of sustainability and the SDGs remains uneven, pointing to the need for more effective and contextually grounded educational interventions (Yuan et al., 2021; Zamora-Polo et al., 2019).

Within this broader educational landscape, English Language Teaching (ELT) offers a distinctive and effective platform for advancing sustainability education. English is widely used as a medium for accessing global knowledge, scientific discourse, and international communication, making it particularly suitable for addressing environmental and sustainability-related topics. Using authentic texts, communicative activities, and interdisciplinary content, ELT can simultaneously promote language proficiency and environmental awareness. Previous research has shown that integrating environmental themes into language instruction supports learners' engagement, critical thinking, and understanding of global environmental challenges (Simanjuntak et al., 2023).

Teaching materials play a central role in shaping learners' knowledge, attitudes, and values. Studies suggest that students benefit from instructional materials that highlight the relationship between humans and the natural environment, a dimension often underrepresented in

conventional textbooks. Visually rich and authentic materials have been found to enhance learner engagement and support the comprehension of complex environmental concepts. However, scholars have also cautioned that ELT materials developed in external contexts may introduce cultural perspectives that do not always align with local values if they are not critically selected and contextualized (Khawaji, 2022). This underscores the importance of carefully choosing teaching resources that support both sustainability education and national educational priorities.

National Geographic Learning (NGL) materials are widely recognized for their high-quality visual content, authentic texts, and focus on global and environmental themes. Through high-definition imagery and narrative-driven content, these resources enable learners to visualize ecological processes, understand global environmental challenges, and appreciate the diversity and beauty of natural ecosystems (Barber et al., 2024). Research suggests that multimedia-rich and visually engaging materials can enhance learner motivation and foster long-term environmental awareness. Approaches such as Content and Language Integrated Learning (CLIL), project-based learning, and the use of multimedia resources have been shown to strengthen both language development and environmental literacy (Hasrina et al., 2024).

In the Saudi Arabian context, sustainability and educational reform are central to national development strategies, particularly within the framework of Saudi Vision 2030. Higher education institutions are encouraged to integrate sustainability principles into curricula to support socio-economic development and responsible citizenship. Prince Sattam Bin Abdulaziz University (PSAU) has collaborated with National Geographic Learning (NGL) to incorporate sustainability-oriented materials into English language courses. Despite the growing adoption of such materials, limited empirical research has examined how National Geographic texts contribute to environmental awareness and eco-literacy within Saudi higher education settings.

Addressing this gap, the present study investigates how integrating National Geographic texts into English language instruction at PSAU influences students' environmental knowledge, attitudes, critical thinking, and intentions toward sustainable behaviour. By employing a survey-based research design, the study seeks to contribute to the literature on Education for Sustainable Development, curriculum innovation, and the role of language education in promoting environmental responsibility within the context of Saudi higher education.

2. Literature Review

This section reviews and synthesizes scholarship at the intersection of English Language Teaching (ELT), environmental education, and the use of authentic and visual materials, with particular attention to their role in promoting eco-literacy and sustainability awareness. Rather than treating textbooks solely as linguistic tools, recent research increasingly conceptualizes them as influential pedagogical artifacts that shape learners' values, worldviews, and engagement with global issues.

English language textbooks are widely recognized as foundational resources that significantly influence language acquisition, particularly at beginner and elementary levels. Studies emphasize that textbooks play a leading role in developing core linguistic competencies, including reading, writing, grammar, and vocabulary. Vocabulary development has been identified as a crucial aspect of language learning, with textbooks serving as a primary source of lexical input for many EFL learners (Alshumrani & Al-Ahmadi, 2022). Consequently, the effectiveness and quality of ELT materials are intricately linked to students' overall language achievement and communicative competence.

Beyond linguistic outcomes, contemporary textbook research has expanded to examine how materials support the development of English Core Competencies (ECCs), such as critical thinking, intercultural communication, and real-world language use (Li & Deocampo, 2022). Scholars argue that modern ELT materials should move beyond accuracy-driven instruction and rote memorization to promote meaningful communication and long-term language acquisition (Solhi et al., 2020). Empirical studies further demonstrate that textbook quality—encompassing content selection, presentation, language use, and graphic design—has a significant positive relationship with learners' literacy development and engagement (Anwas et al., 2022; Murni et al., 2023).

An emerging strand of research highlights the importance of authenticity and cultural relevance in ELT materials. Authentic texts and real-world content have been shown to enhance learner motivation and provide meaningful contexts for language use (Momani, 2024). At the same time, researchers caution that ELT textbooks developed in external or Western contexts may unintentionally marginalize local cultures and identities if not carefully contextualized (Khawaji, 2022). Integrating local cultural elements into ELT materials has been found to strengthen learner identity, motivation, and acceptance, particularly among young learners (Ratri & Tyas, 2022; Deng & Wang, 2023). This balance between global perspectives and local cultural sustainability is increasingly viewed as a key criterion for evaluating ELT textbooks in diverse educational contexts.

Within the field of environmental education, scholars emphasize the role of education in fostering environmental literacy, defined as a combination of knowledge, critical awareness, and responsible action toward ecological issues. However, several studies report that students' understanding of sustainability concepts remains limited, indicating a gap between policy-level commitments and classroom-level implementation (Yu et al., 2024). English language education has been identified as a promising space for addressing this gap, as it provides opportunities to engage learners with global environmental discourses while simultaneously developing language skills (Simanjuntak et al., 2023).

In the Saudi Arabian context, ELT curricula have undergone significant transformation in response to globalization and national reform agendas. While global English materials offer exposure to international perspectives, scholars note concerns regarding the uncritical

transmission of Western lifestyles and values through imported textbooks, which may conflict with local cultural norms and national identity (Khawaji, 2022). Recent studies therefore call for ELT materials that align with Saudi Vision 2030 by integrating sustainability, cultural values, and social responsibility alongside language instruction (Dakhiel & Ahmed, 2022; Hameed, 2023).

Visual and multimedia-based materials have gained increasing attention for their pedagogical potential in sustainability education. Research suggests that visually rich texts can facilitate comprehension of complex environmental concepts, enhance learner engagement, and support long-term retention (Newman & Ogle, 2019; Barber et al., 2024). Multimedia resources, including digital platforms and project-based activities, have been shown to support approaches such as Content and Language Integrated Learning (CLIL), which integrates subject content with language instruction to promote both linguistic and environmental learning outcomes (Hasrina et al., 2024).

National Geographic Learning (NGL) materials exemplify this integration through their use of high-definition imagery, authentic narratives, and sustainability-oriented themes. Despite their widespread adoption in ELT classrooms, particularly in higher education, there remains limited empirical research examining how such visual texts contribute to environmental awareness, eco-literacy.

3. Methodology

3.1 Research Design

This study adopted a quantitative survey-based research design to examine students' perceptions of integrating National Geographic Learning (NGL) materials into English language instruction and its impact on environmental awareness, eco-literacy, critical thinking, and global citizenship. A survey approach was considered appropriate for capturing learners' attitudes, perceptions, and self-reported behavioural intentions related to sustainability within an educational context. The questionnaire was administered at the end of the academic term after students had sufficient exposure to the NGL materials and classroom activities integrated throughout the course. This timing ensured that participants had adequate experience with the instructional content and could provide informed responses regarding their perceptions, learning experiences, and awareness of sustainability-related concepts. Prior to analysis, all questionnaire responses were reviewed for completeness and accuracy, and the data were organized and coded for statistical processing.

3.2 Context and Participants

The study was conducted at Prince Sattam bin Abdulaziz University (PSAU) in the Kingdom of Saudi Arabia. Participants were undergraduate students enrolled in English language courses that incorporated National Geographic Learning textbooks and digital resources as part of the curriculum.

A total of 97 students participated in the study included in Appendix A and B. Participants were selected using convenience sampling, as they were readily accessible and actively engaged in courses utilizing NGL materials. Participation was voluntary, and informed consent was obtained from all respondents. The study involved the administration of a minimal-risk questionnaire to students. Prior to participation, the purpose of the study and the voluntary nature of participation were explained orally. Students were informed that participation or non-participation would have no impact on their academic standing and that they could decline to participate without penalty. Completion of the questionnaire using participants' own devices was taken as implied informed consent. Formal written consent was not obtained due to the minimal-risk nature of the study; however, participants provided implied consent through voluntary completion of the questionnaire.

3.3 Instructional Materials

The instructional materials used in the study were NGL English textbooks and accompanying digital platforms, which integrate high-definition visual content, authentic texts, and sustainability-related themes. These materials emphasize the development of the four language skills (listening, speaking, reading, and writing), along with grammar and vocabulary, while exposing learners to environmental issues, global cultures, and real-world contexts.

3.4 Instrumentation

Data were collected using a structured questionnaire designed to measure students' perceptions of the use of NGL materials and their influence on:

- Environmental knowledge
- Environmental attitudes
- Critical thinking
- Behavioural intentions toward sustainability
- Global citizenship awareness

The questionnaire employed choices to understand the students' perceptions in English language teaching and sustainability education.

3.5 Reliability and Validity

To ensure internal consistency, the reliability of the questionnaire was assessed using Cronbach's alpha where applicable. The results indicated acceptable reliability levels ($\alpha \geq 0.70$), demonstrating that the instrument was suitable for data collection.

3.6 Data Collection and Analysis

The questionnaire was administered at the end of the academic term after students had sufficient exposure to NGL materials and sustainability-focused classroom activities. Prior to analysis, responses were reviewed for completeness, coded, and organized systematically for statistical processing. Using descriptive statistical methods the data was analysed. Frequencies and percentages were calculated to summarise participants' responses and identify trends related to environmental awareness, sustainability knowledge, language development, and students' perceptions of the effectiveness of NGL materials. The analysis aimed to identify patterns in learners' attitudes toward sustainability and environmental responsibility within the context of English language education. All statistical analyses were conducted using appropriate data analysis software to calculate the percentages, and the findings were interpreted in relation to the objectives of the study.

3.7 Ethical Considerations

Ethical approval was obtained from the relevant institutional faculty at PSAU. Faculty members verbally informed the participants of the study's purpose, assured of confidentiality, and informed that their participation was voluntary.

Education for Sustainable Development (ESD) emphasizes the integration of environmental, social, and economic dimensions of sustainability into teaching and learning. The United Nations' Sustainable Development Goals (SDGs) highlight the significant role of education in achieving sustainable futures, particularly through developing environmental literacy and global citizenship. However, research indicates that university students often demonstrate limited understanding of sustainability concepts, underscoring the need for more effective and contextually relevant educational interventions (Yuan et al., 2021; Zamora-Polo et al., 2019).

English Language Teaching (ELT) offers a unique platform for advancing sustainability education. Through authentic texts, communicative tasks, and interdisciplinary themes, ELT can simultaneously develop language proficiency and environmental awareness. Previous studies suggest that integrating environmental content into language instruction enhances learners' engagement, critical thinking, and understanding of global environmental issues (Simanjuntak et al., 2023).

Teaching materials play a vital role in shaping learners' perspectives and attitudes. Visually rich and authentic resources have been shown to support environmental learning by enabling students to visualize complex ecological concepts and connect language learning with real-world issues. However, concerns remain regarding the cultural relevance of imported ELT materials and their alignment with national values and sustainability priorities (Khawaji, 2022).

National Geographic Learning (NGL) materials are widely recognized for their high-quality visual content and sustainability-oriented themes. Despite their growing use in English language classrooms, limited empirical research has examined how such materials contribute to environmental awareness and eco-literacy within Saudi higher education contexts. In line with Saudi Vision 2030, which emphasizes sustainability and educational reform, this study investigates how integrating National Geographic texts into English language instruction at Prince Sattam bin Abdulaziz University can promote students' environmental knowledge, attitudes, and intentions toward sustainability.

س 1-ما هو مستوى الطالب؟ Q 1-What level is the student?

97 responses

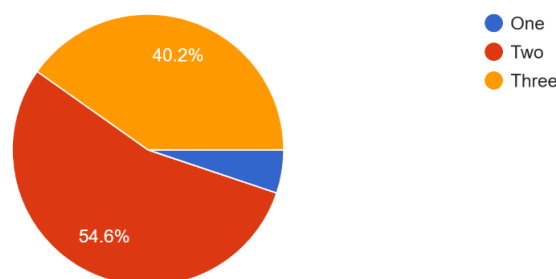


Figure 1. Distribution of student proficiency levels (N=97)

Figure 1 illustrates the distribution of student levels and reveals a notable imbalance among the three surveyed groups. Level Two students studying the *Life Elementary* textbook constituted the majority of the 97 respondents (54.6%), indicating that more than half of the participants were at an intermediate stage of the programme. Level Three students using the *Life Pre-Intermediate* textbook accounted for 40.2%, representing a substantial proportion of upper-level learners. In contrast, Level One students studying the *Life Beginner* textbook formed a small minority (approximately 5%).

This uneven distribution indicates that the dataset is weighted toward more advanced learners (Levels Two and Three), which may influence interpretations related to academic maturity, environmental awareness, and engagement with course content. The under-representation of introductory-level students suggests that the findings primarily reflect the perceptions and competencies of learners with prior academic exposure. Consequently, this limitation should be considered when interpreting subsequent analyses, as it

may restrict the generalisability of the results across all proficiency levels.

Q 2-Have you heard the term "sustainability" before studying this book? What best describes your prior exposure to sustainability topics/climate change topics...؟ (قبل قراءة هذا الكتاب)

97 responses

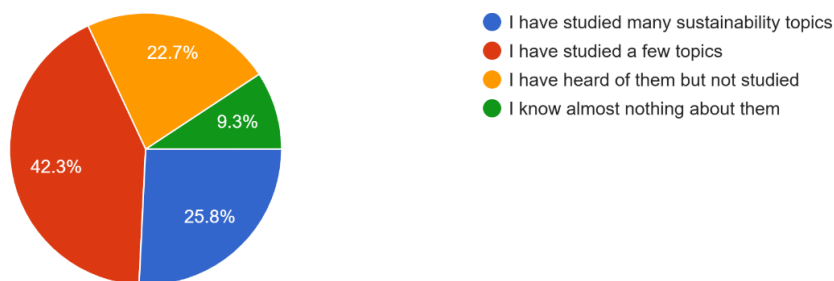


Figure 2. Students' Prior Knowledge of Sustainability Concepts

Figure 2 illustrates participants' self-reported levels of prior exposure to sustainability and climate-change topics before using the *Life* textbook. The results reveal substantial variation in students' background knowledge. While 25.8% of respondents indicated that they had studied many sustainability-related topics, the majority reported more limited familiarity. The largest proportion of students (42.3%) stated that they had studied only a few sustainability topics, suggesting partial and fragmented prior knowledge upon entering the course. A further 22.7% reported that they had merely heard of such topics without formal instruction, indicating a superficial level of awareness. Only a small minority (9.3%) reported having almost no prior knowledge of sustainability concepts.

Taken together, these findings indicate that sustainability was not entirely unfamiliar to most learners; however, their understanding was incomplete. This uneven distribution of pre-existing knowledge highlights the importance of structured instructional materials in consolidating and standardising foundational sustainability concepts within ELT contexts.

Q 3-While reading the *Life* textbook, how often did you encounter topics related to sustainability? س3- أثناء قراءتك لكتاب الحياة، كم مرة واجهت مواضيع تتعلق بالاستدامة؟

97 responses

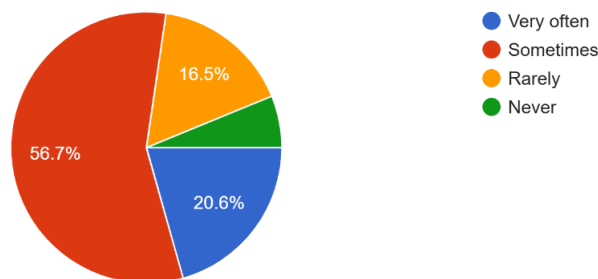


Figure 3. Frequency of Sustainability-Related Topics in the *Life* Textbook

Figure 3 presents students' perceptions of how frequently sustainability-related topics appeared in the *Life* textbook. More than half of the respondents (56.7%) reported encountering sustainability themes "sometimes," suggesting that such topics are integrated throughout the textbook but are not consistently present in every unit. In addition, 20.6% indicated that they encountered sustainability content "very often," reflecting a substantial level of thematic recurrence. By contrast, 16.5% reported encountering such topics "rarely," and 6.2% stated that they had "never" encountered sustainability-related content.

Overall, the results suggest that the *Life* textbook incorporates sustainability topics to a moderate-to-high degree. However, the presence of students reporting limited or no exposure points to variability in learner perception or engagement, which may be influenced by instructional emphasis, reading practices, or learners' ability to identify sustainability-related themes.

Q 4- Based on the reading passages in the "Sustainable life lessons," which of these is often highlighted as a benefit of protected green spaces in urb...
 ا على فائدة المساحات الخضراء المحمية في المناطق الحضرية؟
 97 responses

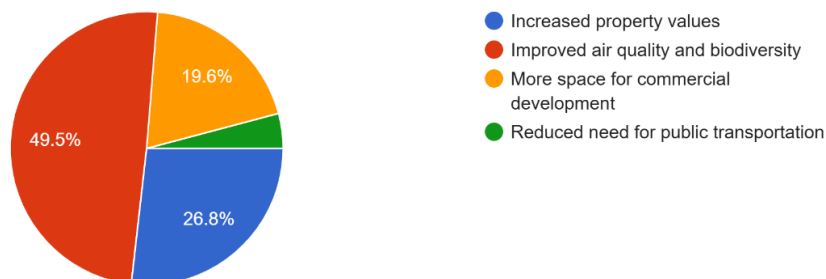


Figure 4. Students' Perceptions of the Benefits of Protected Urban Green Spaces

Figure 4 summarises participants' perceptions of the primary benefits associated with protected urban green spaces, as presented in the reading passages from *Sustainable Life Lessons*. The findings show a clear preference for environmental benefits. Half of the respondents (49.5%) identified improved air quality and biodiversity as the most significant advantages of protected green spaces, reflecting strong recognition of their ecological value. The second most frequently selected benefit was increased property values (26.8%), indicating awareness of the socioeconomic implications of maintaining urban green areas. A smaller proportion of respondents (19.6%) selected the provision of additional space for commercial development, which may suggest differing interpretations of the role of protected green spaces or indirect associations between environmental quality and urban development. Only 4.1% of participants identified reduced reliance on public transport as the main benefit, indicating that transportation-related outcomes were not widely associated with green space protection.

Q 5-Did the reading passages help you understand the causes and effects of environmental problems?
 س5- هل ساعدتك نصوص القراءة على فهم أسباب وتأثيرات المشاكل البيئية؟
 97 responses

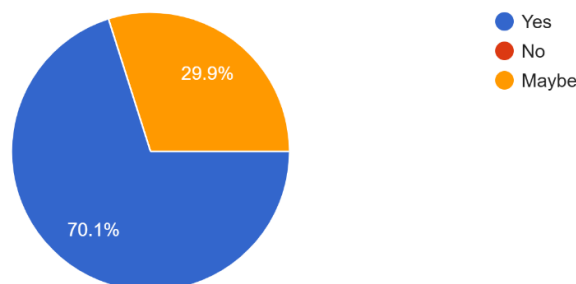


Figure 5. Perceived Effectiveness of Reading Passages in Explaining Environmental Problems

The results for Question 5 are presented in Figure 5 and reflect students' perceptions of the effectiveness of the reading passages in enhancing their understanding of the causes and consequences of environmental challenges. A substantial majority of respondents (70.1%) answered "Yes," indicating that the reading materials were effective in supporting environmental comprehension. A further 29.9% selected "Maybe," suggesting partial understanding or a need for additional instructional support. Notably, none of the respondents selected "No." The findings indicate that students perceived the reading passages as effective in fostering environmental literacy. The absence of negative responses suggests that the reading materials were at least minimally beneficial for all learners.

Q 6- During listening activities, were the speakers' views on environmental issues clear and easy to understand? س6- أثناء أنشطة الاستماع، هل كانت آراء المتحدثين بشأن القضايا البيئية واضحة وسهلة الفهم؟

97 responses

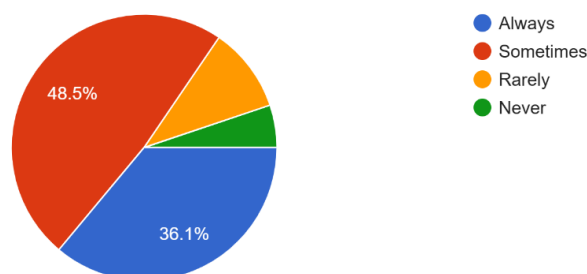


Figure 6. Clarity of Environmental Perspectives in Listening Activities

Figure 6 presents students' perceptions of the clarity and comprehensibility of speakers' viewpoints in the listening activities related to environmental issues. The largest proportion of respondents (48.5%) indicated that the speakers' ideas were "sometimes" clear and easy to understand, suggesting variability in perceived clarity across listening tasks. A further 36.1% reported that the speakers were "always" clear, indicating that a considerable number of learners found the listening materials accessible and comprehensible. In contrast, 10.3% of participants selected "rarely," and only 5.2% selected "never," indicating that comprehension difficulties were limited to a small minority of learners. Overall, the findings suggest that the listening materials were effective, though not consistently clear for all students.

Q 7- In a typical "Sustainable life video presentation," what is a common approach used to make environmental challenges more understandable? س7- في "عرض ... الشائع المستخدم لجعل التحديات البيئية أكثر قابلية للفهم؟

97 responses

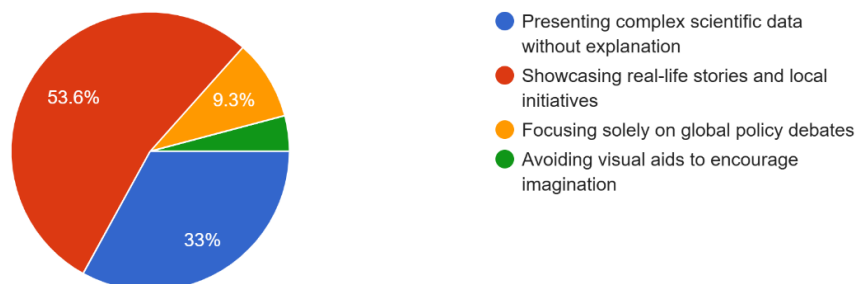


Figure 7. Perceived Strategies Used in Sustainability Video Presentations

Figure 7 illustrates students' perceptions of the strategies used in the *Sustainable Life* video presentations to explain environmental issues. More than half of the respondents (53.6%) identified the use of real-life stories and local initiatives as the primary strategy, indicating a strong preference for contextualised and narrative-based approaches. A further 33% reported that the videos presented complex scientific information without sufficient explanation, suggesting that some learners perceived the content as technically demanding. Only 9.3% of respondents identified global policy debates as the dominant focus of the videos, while 4.1% indicated that the videos lacked visual aids. These findings suggest that narrative-based and visually supported strategies were prominent features of the video materials and were recognised by learners as effective means of enhancing comprehension.

Overall, the results indicate that students entered the course with varying levels of prior sustainability knowledge and experienced moderate to high exposure to sustainability themes through the *Life* textbook. According to Barber et al. (2024), these instructional tools, which use high-definition images and narrative-driven information, help learners visualise ecological processes, grasp global environmental challenges, and appreciate the diversity and beauty of natural ecosystems. Reading, listening, and video materials were perceived as effective in promoting environmental understanding, with narrative-based and contextualised approaches emerging as particularly salient for learners.

Q 8- Do you feel the vocabulary and language structures learned in the "Sustainable life lessons" have improved your ability to discuss environmental topics...؟
حسنّت قدرتك على مناقشة المواضيع البيئية باللغة الإنجليزية؟

97 responses

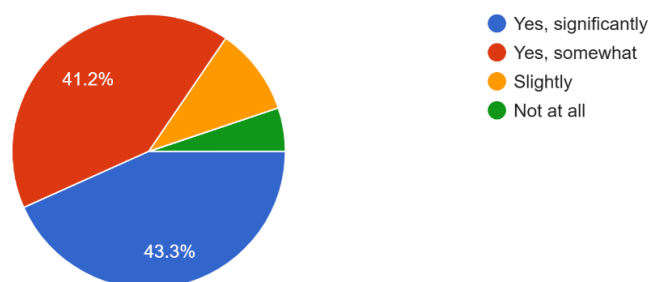


Figure 8. Perceived Impact of Sustainability Lessons on Environmental Communication Skills

Figure 8 presents the results of Question 8, which examined learners' perceptions of how effectively the vocabulary and language structures taught through the NGL materials enhanced their ability to communicate environmental issues in English. The response distribution indicates a positive impact on language development. A substantial proportion of participants (43.3%) reported that the instruction improved their performance "significantly," while a further 41.2% indicated that it improved their performance "somewhat." Taken together, 84.5% of respondents perceived moderate to strong linguistic benefits, suggesting that the integration of sustainability-related content supported both vocabulary acquisition and communicative competence.

A smaller proportion of respondents (10.3%) reported only "slight" improvement, indicating that some learners may require additional scaffolding, targeted vocabulary practice, or differentiated instructional support to fully internalise the language structures presented. Only 5.2% selected "not at all," suggesting that negative perceptions of linguistic impact were limited to a small minority. According to Simanjuntak et al. (2023) English language education has been highlighted as a possible location for bridging the gap, since it allows learners to connect with global environmental discourses while simultaneously strengthening language abilities. Overall, these findings indicate that sustainability-oriented language instruction was effective in enhancing students' capacity to discuss environmental issues in English.

Q 9-Which section was the most interesting in terms of giving clear ideas about sustainability and its meaning؟
س9- ما هو القسم الأكثر إثارة للاهتمام من حيث تقديم أفكار واضحة حول الاستدامة ومعناها؟

97 responses

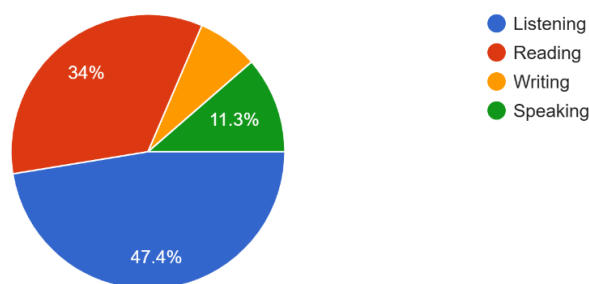


Figure 9. Language Skills Perceived as Most Effective for Understanding Sustainability Concepts

Figure 9 summarises responses to Question 9, which asked participants to identify the skill-based component they found most effective in providing clear understanding of sustainability and its importance. Listening activities were rated as the most effective component by half of the respondents (47.4%). This finding suggests that auditory input, such as spoken explanations and listening texts, played a significant role in supporting learners' conceptual understanding of sustainability. Reading activities were the second most frequently selected option, accounting for 34% of responses. This indicates that written texts also contributed to comprehension, by offering structured explanations, definitions, and contextualised examples that complemented listening materials. In contrast, speaking activities were selected by only 11.3% of participants, while writing received the lowest endorsement (7%). These results suggest that productive skills were perceived as less effective in transmitting clear conceptual information. Overall, the findings indicate that receptive skills—particularly listening—were viewed as the most influential in establishing foundational understanding of sustainability concepts. Productive skills played a more limited role in conceptual clarity, potentially functioning more as opportunities for practice and consolidation rather than initial meaning construction.

Q 10- Which of these best describes how well the textbook meets the goal of making students aware of sustainability? أي مما يلي يصف بشكل أفضل مدى...كتاب المدرسي في تلبية هدف جعل الطلاب على دراية بالاستدامة؟
97 responses

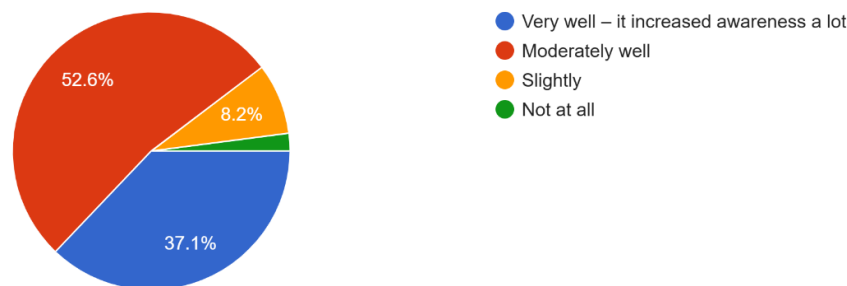


Figure 10. Perceived Effectiveness of the Textbook in Promoting Sustainability Awareness

Figure 10 presents the results of Question 10, which investigated students' perceptions of how effectively the textbook enhanced their overall understanding of sustainability. The findings indicate generally positive evaluations, with some variation in perceived impact. More than half of the respondents (52.6%) reported that the textbook achieved this goal "moderately well," suggesting that sustainability content was present and informative, though not consistently perceived as highly impactful. A further 37.1% of participants reported that the textbook performed "very well" in raising their awareness, indicating that for a substantial proportion of learners, the materials successfully conveyed meaningful and engaging sustainability concepts. In contrast, 8.2% indicated that the textbook improved their awareness only "slightly," while approximately 2% reported "not at all."

Overall, these findings suggest that the textbook was largely effective in promoting sustainability awareness, with most students reporting moderate to elevated levels of perceived impact. According to Simanjuntak et al., (2023) combining environmental-related subjects into language education promotes students' critical thinking, participation, and comprehension of global environmental issues. At the same time, the variability in responses indicates potential scope for strengthening the explicitness, depth, and pedagogical integration of sustainability-related content.

Q 11- Did the textbook present real-life stories or people involved in sustainable practices? هل قدم الكتاب المدرسي قصصًا حقيقية أو أشخاصًا مشاركين في ممارسات مستدامة؟
97 responses

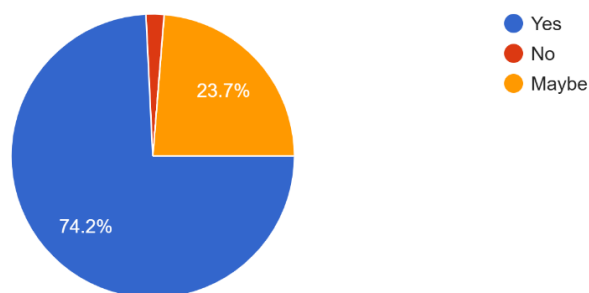


Figure 11. Inclusion of Real-Life Sustainability Narratives in the Textbook

Figure 11 displays responses to Question 11, which examined whether learners perceived the textbook as including real-life stories or profiles of individuals engaged in sustainable practices. A clear majority of respondents (74.2%) agreed that the textbook contained such examples, indicating that sustainability concepts were frequently presented within authentic and contextualised scenarios. This suggests that the materials successfully linked abstract environmental principles to real-world practices. However, 23.7% of respondents selected "Maybe," indicating some uncertainty regarding the presence or prominence of real-life examples. This ambiguity may reflect differences in instructional emphasis, integration across units, or the memorability of such content. Only a small proportion of participants (approximately 2%) responded "No," suggesting that the near-universal perception was that authentic examples were present to some extent. Overall, the findings indicate that real-life sustainability narratives were a notable feature of the textbook and were recognised by most learners. Nevertheless, the proportion of uncertain responses suggests that these elements could be more explicitly highlighted or pedagogically reinforced to ensure clearer recognition and impact.

Q 12- How effective was the combination of reading, writing, and listening activities in helping you understand sustainability? After using the book, how well d...استدامة؟ بعد استخدام الكتاب، ما مدى فهمك للاستدامة البيئية؟
97 responses

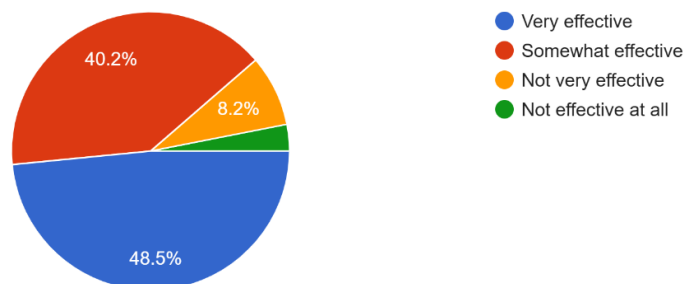


Figure 12. Effectiveness of Integrated Language Activities in Supporting Sustainability Understanding

Figure 12 presents the results of Question 12, which examined students' perceptions of how helpful the integrated reading, writing, and listening activities were in enhancing their understanding of environmental sustainability. The findings indicate a strong positive response to the multimodal instructional approach. Nearly half of the respondents (48.5%) rated the combination of activities as "very effective," suggesting that the integration of multiple language skills supported comprehension of sustainability concepts. A further 40.2% described the activities as "somewhat effective," indicating moderate yet meaningful learning gains for many participants. In contrast, smaller proportions of students reported limited benefits: 8.2% selected "not very effective," and only 3% reported that the activities were "not effective at all." Overall, the distribution of responses suggests that the integrated skills approach was broadly successful in promoting sustainability understanding, while also highlighting that a small subset of learners may require additional instructional support or alternative learning pathways.

Q 13- Has the book made you more aware of your own environmental impact? هل جعلك الكتاب أكثر وعياً بتأثيرك البيئي؟
97 responses

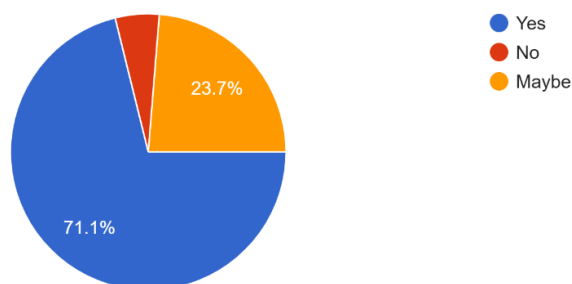


Figure 13. Impact of the Textbook on Students' Environmental Self-Awareness

Figure 13 illustrates responses to Question 13, which explored whether the textbook increased students' awareness of their own environmental impact. The results demonstrate a substantial perceived effect. A clear majority of respondents (71.1%) reported that the textbook made them more conscious of how their actions affect the environment. This indicates that the materials were effective in encouraging self-reflection and personal engagement with sustainability concepts. In comparison, 23.7% selected "Maybe," suggesting a more limited or ambiguous influence on personal awareness. Only a small minority (approximately 5%) indicated that the textbook did not increase their awareness. Taken together, these findings suggest that the textbook was generally effective in fostering environmental self-awareness, although the extent of impact varied among learners.

Q 14- How confident are you about understanding spoken English about sustainability topics? س14- ما مدى ثقتك في فهم اللغة الإنجليزية المنطوقة حول مواضيع الاستدامة؟

97 responses

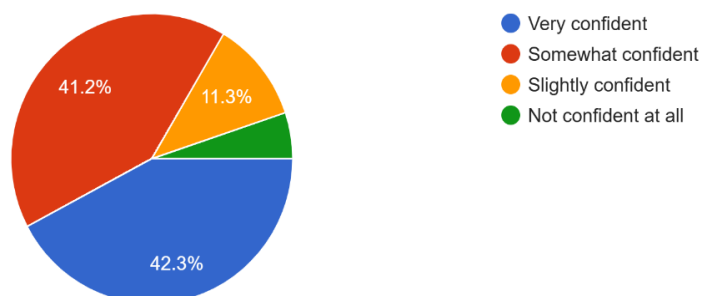


Figure 14. Students' Confidence in Understanding Spoken English on Sustainability Topics

Figure 14 presents the results of Question 14, which assessed students' confidence in understanding spoken English related to sustainability topics. The findings indicate generally high levels of confidence. A large majority of respondents (83.5%) reported feeling either "very confident" (42.3%) or "fairly confident" (41.2%) in their ability to comprehend spoken input in this domain. By contrast, 11.3% reported feeling "slightly confident," and approximately 5% indicated that they were "not confident at all." These results suggest that listening materials and activities were largely accessible and effective in developing topic-specific listening comprehension, although a small proportion of learners may benefit from additional scaffolding or targeted listening support.

Q 15- Do you believe your actions, however small, can contribute to global environmental sustainability goals? س15- هل تعتقد أن أفعالك، مهما كانت صغيرة، يمكن أن تساهم في تحقيق أهداف الاستدامة البيئية العالمية؟

97 responses

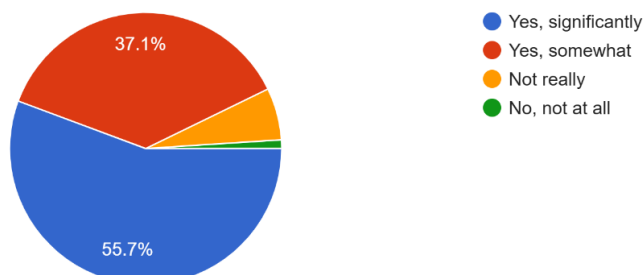


Figure 15. Students' Beliefs Regarding Individual Contributions to Sustainability

Figure 15 displays responses to Question 15, which examined students' beliefs about the importance of individual actions in contributing to global sustainability goals. The findings indicate a strong recognition of personal responsibility. More than half of the respondents (55.7%) reported that individual actions can make a significant contribution to sustainability efforts, while an additional 37.1% believed they contribute moderately. Together, these responses account for over 92% of participants. Only a small proportion expressed scepticism, with 5.2% selecting "Not really" and an exceedingly small percentage indicating "Not at all." Overall, the results suggest that most students perceived a meaningful link between individual behaviour and broader environmental outcomes.

Q 16- After completing the "Sustainable life lessons," how motivated are you to become an "active problem-solver and changemaker" regarding environmental i...؟ (مثل تقليل النفايات، وترشيد استهلاك المياه) في تغييرها
97 responses

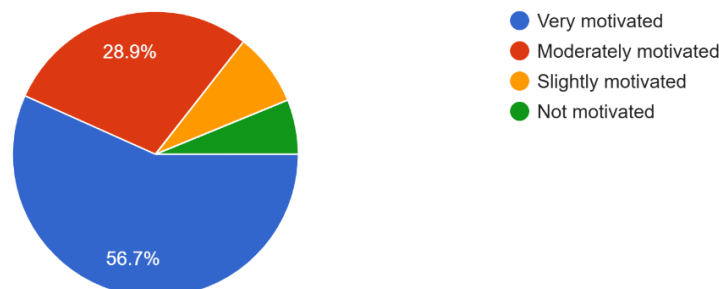


Figure 16. Students' Motivation to Adopt Sustainable Behaviour After Completing the Lessons

Figure 16 presents the findings for Question 16, which investigated the extent to which the *Sustainable Life Lessons* motivated students to become active problem-solvers and to consider adopting more sustainable behaviours. The results indicate a strong motivational impact. More than half of respondents (56.7%) reported feeling "very inspired" to take action, while a further 28.9% indicated that they were "moderately inspired." Smaller proportions reported limited motivation: 8.2% selected "slightly inspired," and approximately 5% reported feeling "not inspired." Overall, the findings suggest that the textbook and associated lessons were effective in encouraging learners to reflect on their personal habits and potential contributions to environmental solutions. These findings corroborate the studies conducted by Ratri and Tyas (2022) and Deng and Wang (2023) that ELT materials have been found to increase learner identification, motivation, and acceptance, especially among young learners.

Q 17- After finishing the textbook's sustainability units, which statement best reflects your view؟ (ما هي العبارة التي تعكس وجهة نظرك بشكل أفضل؟)
س17- بعد الانتهاء من وحدات الاستدامة في الكتاب المدرسي، ما هي العبارة التي تعكس وجهة نظرك بشكل أفضل؟
97 responses

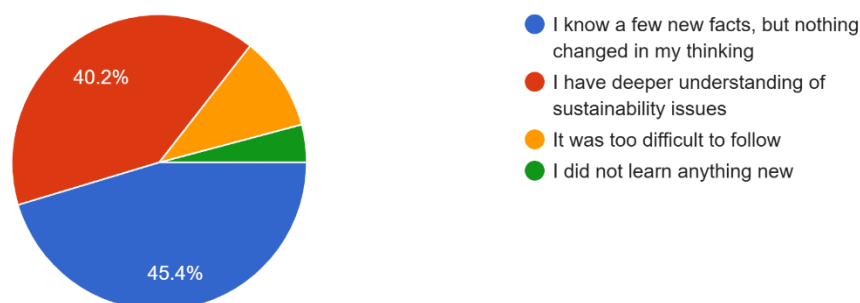


Figure 17. Students' Reflections After Completing the Sustainability Units

Figure 17 summarises responses to Question 17, which explored students' overall reflections after completing the sustainability units. The results indicate generally positive learning outcomes. The largest proportion of respondents (45.4%) reported that they had learned "a few new facts" without experiencing a major shift in their views, suggesting informational gains without substantial conceptual transformation. A substantial group (40.2%) indicated that they had developed a deeper understanding of sustainability issues, reflecting higher levels of cognitive engagement. Smaller proportions reported challenges: 10.3% found the content difficult to understand, and only 4.1% reported that they did not learn anything new. Momani, (2024) states that authentic texts and real-world content have been found to boost learner motivation and create meaningful contexts for language practice. These findings suggest that while the sustainability units were effective for most learners, additional support may be needed to enhance accessibility and maximise learning outcomes for all students.

Q 18- How important do you think it is for individuals to learn about environmental issues from sources like National Geographic?
 س18- ما مدى أهمية أن يتعلم الأفراد عن القضايا البيئية من مصادر مثل ناشيونال جيوغرافيك؟
 97 responses

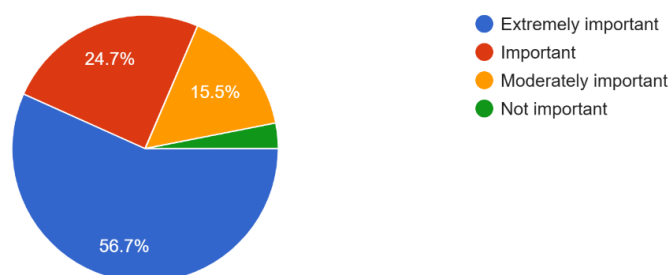


Figure 18. Perceived Importance of Learning Environmental Issues

Figure 18 presents the results of Question 18, which examined students' perceptions of the importance of learning about environmental issues from reputable educational sources, such as National Geographic. The findings reveal a strong consensus regarding the value of credible sources. More than half of the respondents (56.7%) rated such sources as "extremely important," while a further 24.7% considered them "important." Together, these responses represent approximately 81% of participants. In contrast, 15.5% rated these sources as "moderately important," and only 3.1% considered them "not important." Overall, the results indicate a high level of trust in reputable educational media and suggest that learners value the accuracy, clarity, and authority provided by well-established sources in understanding environmental issues.

4. Discussion

This section interprets the findings reported in Sections 4.1–4.18, highlighting their implications for environmental literacy, content-based ELT pedagogy, and sustainability education. The discussion integrates quantitative trends, learning theories, and prior research to situate the study's results in the broader literature.

4.1 Prior Knowledge and Exposure to Sustainability Topics

Consistent with Sections 4.1 and 4.2, students exhibited varying degrees of prior familiarity with sustainability concepts, with the majority reporting partial or superficial knowledge. This aligns with Barber et al. (2024), who note that learners often enter environmental education with uneven prior exposure. The moderate-to-high exposure to sustainability topics in the *Life* textbook (Figure 3) suggests that structured, content-integrated materials are effective in standardising foundational knowledge. These findings highlight the importance of instructional scaffolding in bridging gaps in learners' pre-existing awareness.

4.2 Comprehension and Perceived Learning Gains

Students reported positive outcomes across reading, listening, and video tasks (Sections 4.4–4.7, 4.12–4.14). Reading passages (Figure 5) were effective in clarifying the origins and impacts of environmental issues, while listening activities (Figures 6 and 14) enhanced comprehension of spoken environmental discourse. Video narratives (Figure 7) and real-life examples (Figure 11) supported contextual understanding, consistent with research emphasizing multimodal and narrative-based pedagogy (Riechers, 2024; Minor, 2021). The integrated skill-based activities (Figure 12) reinforced comprehension through cognitive and linguistic channels, illustrating the benefits of multimodal approaches in content-based ELT.

4.3 Cognitive and Conceptual Development

A sizeable portion of students reported deeper awareness of sustainability issues (Figures 4, 13, 17), suggesting that the materials promoted conceptual understanding alongside factual learning. While a subset of learners experienced limited transformation, this pattern is consistent with early phases of sustainability education, where foundational knowledge precedes higher-order cognitive engagement. The textbook's inclusion of real-life examples (Figure 11) and emphasis on individual responsibility (Figures 15–16) appear particularly effective in fostering reflective and action-oriented thinking, supporting transformative learning goals.

4.4 Motivation, Agency, and Behavioural Intent

Figures 15 and 16 indicate high levels of perceived personal efficacy and motivation to engage in sustainable behaviours, with over 85% of students reporting moderate to strong inspiration to act. This suggests that the textbook successfully promotes environmental agency, a key factor in sustainability education (Barber et al., 2024). Linking cognitive knowledge to perceived ability and personal action is essential in encouraging learners to internalise sustainability principles and adopt proactive environmental behaviours.

4.5 Language Development and Communicative Competence

Figures 8 and 9 demonstrate that content-based language instruction effectively enhanced both vocabulary acquisition and communicative

competence in environmental discourse. Listening and reading were identified as the most effective skills for understanding sustainability content, whereas productive skills (speaking and writing) were less influential in conceptual acquisition. These findings support the pedagogical principle that comprehension-oriented input precedes productive output in second-language acquisition, particularly within domain-specific content (Littlewood, 1984).

4.6 Role of Credible Educational Sources

Figure 18 highlights students' recognition of reputable sources, such as National Geographic, as critical for understanding environmental issues. This underscores the importance of incorporating authoritative, scientifically validated media into educational programs to foster evidence-based comprehension and engagement.

4.7 Pedagogical Implications

Collectively, these findings suggest that the *Sustainable Life Lessons* curriculum effectively integrates environmental content with language development. Key pedagogical recommendations include:

1. **Maintain multimodal integration** of reading, listening, and video materials to support diverse learning preferences.
2. **Highlight real-life examples** explicitly to reinforce contextual understanding.
3. **Provide targeted scaffolding** for learners with lower prior knowledge or language proficiency.
4. **Link content knowledge to personal action** to foster environmental agency and behavioural change.
5. **Incorporate credible external sources** to ensure accuracy and engagement.

Overall, the study demonstrates that content-based ELT with a sustainability focus can simultaneously enhance environmental literacy, language competence, and motivational engagement.

4.8 Student Knowledge and Expectations

Survey results indicated varying levels of sustainability awareness among students. Many recognized the term “sustainability” but were uncertain of its precise definition, consistent with prior research emphasizing the need for clear conceptual grounding in education for sustainable human development (Zamora-Polo et al., 2019). Given the publisher's reputation, most students expected the National Geographic (NG) textbooks to include environmental content, reflecting both prior exposure and anticipatory expectations for comprehensive coverage of sustainability topics.

4.9 Engagement with National Geographic Content

While engaging with the NG Life series, students frequently encountered sustainability-related topics, which contributed to a better understanding of the origins, causes, and consequences of environmental challenges (Erguvan, 2024). For many participants, this course represented their first in-depth exposure to NG's sustainability resources (Hansen et al., 2023). The textbooks' rich visual features enhanced comprehension and captured attention, facilitating meaningful learning experiences.

4.10 Critical Thinking and Communication

Writing activities, in which students expressed personal perspectives and proposed solutions to environmental challenges, strengthened critical thinking and problem-solving abilities. This aligns with the aims of development education to cultivate globally responsible citizens capable of enacting local and global change (Volkman & Fraunhofer, 2023). Such tasks are consistent with pedagogical practices aimed at developing environmentally literate learners, promoting both analytical and reflective skills (Simanjuntak et al., 2023).

4.11 Alignment with Vision 2030

NG materials increased student interest in sustainability and complemented Saudi Arabia's Vision 2030 objectives regarding sustainable development and educational reform. Observations suggest that integrating visual texts fosters meaningful connections between language acquisition and environmental awareness, contributing to broader socio-cultural and policy-aligned learning outcomes (Dakhil & Ahmed, 2022).

4.12 Discussion

The findings indicate that the NG Life curriculum significantly improves students' environmental understanding while simultaneously enhancing English language proficiency. This multidisciplinary approach supports the integration of sustainability into ELT, preparing students to engage in global citizenship and environmental stewardship (Jiang et al., 2023).

Visual and narrative-based materials promoted critical thinking, analytical reasoning, and engagement with real-world environmental issues. Integrating language learning with sustainability objectives achieved two complementary outcomes: improving communicative competence and increasing ecological literacy. These results are consistent with international studies demonstrating that combining content-based instruction with sustainability topics enhances both conceptual understanding and language skills (Simanjuntak et al., 2023; Obidova & Tursunova, 2023).

Moreover, the curriculum's interactive and multimodal design, including reading, listening, writing, and video-based activities, encouraged active learning, fostered personal responsibility, and motivated students to adopt sustainable behaviours. This aligns with successful models applied in other contexts, where English language courses have been adapted to embed environmental themes,

cultivating learners who are linguistically proficient and environmentally aware (Barus & Simanjuntak, 2023).

4.13 Limitations

Several limitations should be considered. First, the sample size was small and limited to the College of Science and Humanities at the main university, with most respondents being female non-specialist English students. Male participation was minimal, limiting the representativeness of the findings. Second, unequal distribution of student levels posed challenges in evaluating comprehension across specific Sustainable Development Goals (SDGs), as students encountered different SDGs at various stages. Future research could focus on larger, level-specific samples to allow more precise alignment of learning outcomes with targeted SDGs. Finally, time constraints due to students' laboratory schedules may have affected engagement, suggesting that extended study periods could yield more robust insights.

5. Conclusion

This study demonstrates that integrating sustainability into ELT using NG Life resources is effective in promoting environmental knowledge, linguistic competence, and learner motivation in higher education settings in Saudi Arabia. An interdisciplinary curriculum that combines language learning with environmental education fosters ecological literacy, critical thinking, and personal responsibility, enabling students to actively engage with sustainability challenges.

Key outcomes from this study include:

- Students entered the course with mixed prior knowledge but a strong willingness to learn.
- NG Life materials clarified sustainability concepts and provided relatable, real-world examples.
- Listening and reading activities were particularly effective in enhancing comprehension.
- Integrated skill-based activities reinforced understanding and application.
- The curriculum increased environmental self-awareness, sense of agency, and motivation for sustainable behaviour.

Overall, embedding sustainability within language learning can significantly shape students' environmental knowledge, attitudes, and intentions. By equipping students with both linguistic and ecological competencies, ELT programs can contribute to national and global sustainability initiatives, preparing learners to participate actively in environmental stewardship (Jiang et al., 2023; Obidova & Tursunova, 2023; Simanjuntak et al., 2023).

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Author contributions

Wahaj Unnisa Warda and Sabiha Unnisa. contributed equally to this work. Wahaj Warda was responsible for the conceptualisation, methodology, investigation, and data collection, being affiliated to PSAU acquiring the funding, distribution and collection of the questionnaires to faculty and students.

Sabiha Unnisa contributed to the formal analysis, literature review, software statistical analysis and data analysis. The writing of the respective sections and original draft preparation was by both authors.

Both authors jointly participated in the validation and visualisation of the results. The manuscript was reviewed and edited by both authors. All authors have read and agreed to the published version of the manuscript.

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Competing interests

The authors state that there is no conflict of interest.

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Obtained.

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The Publication Ethics Committee of the Sciedu Press.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

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The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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References

- Alshumrani, H., & Al-Ahmadi, N. M. (2022). The representation of vocabulary knowledge aspects in Saudi EFL textbooks. *Arab World English Journal*, 13(4), 325-340. <https://doi.org/10.24093/awej/vol13no4.21>
- Anwas, O. M., et al. (2022). Students' literacy skills and quality of textbooks in Indonesian elementary schools. *International Journal of Language Education*, 6(3), 233-244. <https://doi.org/10.26858/ijole.v6i3.32756>
- Barber, D., Meldrum, N., & Sayer, M. (2024). *Learning beginner teacher's book* (3rd ed.). National Geographic Learning.
- Barus, I. R. G., & Simanjuntak, M. B. (2023). Integrating environmental education into maritime English curriculum for vocational learners: Challenges and opportunities. *BIO Web of Conferences*, 79, 8001. <https://doi.org/10.1051/bioconf/20237908001>
- Dakhiel, M. A., & Ahmed, S. A. (2022). Empowerment of Saudi women in secondary school English language books: An analytical study. *Arab World English Journal*, 13(4), 3-23. <https://doi.org/10.24093/awej/vol13no4.1>
- Deng, S., & Wang, X. (2023). Exploring locally developed ELT materials in the context of curriculum-based value education in China: Challenges and solutions. *Frontiers in Psychology*, 14, 1-12. <https://doi.org/10.3389/fpsyg.2023.1191420>
- Erguvan, I. D. (2024). Assessing the sustainability literacy of undergraduate students in a first-year writing course. *Discover Education*, 3(1). <https://doi.org/10.1007/s44217-024-00179-7>
- Glasser, H., Calder, W., & Fadeeva, Z. (2005). *Definition: Research in higher education for sustainability*. Document prepared for the Halifax Consultation. Halifax Nova Scotia; 2005
- Hameed, A. (2023). Environmental concerns and English language teaching in the Saudi context: Perceptions and practices. *Journal of Language Teaching and Research*, 14(4), 1127-1137. <https://doi.org/10.17507/jltr.1404.31>
- Hansen, J. J., Gissel, S. T., Jensen, M., & Nielsen, T. M. (2023). Digital textbooks support for academic reading and disciplinary literacy. Abstract from NoFa9 – The 9th Nordic Conference on Subject Education, Vaasa, Finland, 47-47. Retrieved from <https://www.abo.fi/wp-content/uploads/2023/05/nofa9-book-of-abstracts.pdf>
- Hasrina, N., et al. (2024). Integrating environmental themes into English language teaching: Current practices and future strategies. *Journal on Education*, 7(2), 9455-9465. <https://doi.org/10.31004/joe.v7i2.7906>
- Jiang, B., Yang, J., & Zhengping, Z. (2023). Innovative teaching models for English general education courses in Chinese universities under the dual carbon goals. *E3S Web of Conferences*, 458, 6016. <https://doi.org/10.1051/e3sconf/202345806016>
- Khawaji, A. (2022). Transition of English language teaching in Saudi Arabia: A critical evaluative study. *Arab World English Journal*, 13(4), 265-280. <https://doi.org/10.24093/awej/vol13no4.17>
- Li, S., & Deocampo, M. F. (2022). An analysis of senior high school English textbooks' core competencies using China's English curriculum standard framework. *Arab World English Journal*, 13(4), 162-182. <https://doi.org/10.24093/awej/vol13no4.11>
- Littlewood, W. (1984). *Foreign and second language learning*. Cambridge University Press.
- Minor, D. (2021). *Visual literacy is critical for 21st century learners*. National Council of Teachers of English. Retrieved from <https://ncte.org/blog/2021/01/visual-literacy-critical-21st-century-learners>
- Momani, E. R. (2024). Incidental writing skills acquisition through using literature-based instruction. *Arab World English Journal*, 15(2), 321-340. <https://doi.org/10.24093/awej/vol15no2.20>
- Mumi, D., et al. (2023). The development of a new task-based maritime culture content multimedia textbook for vocabulary instruction. *BIO Web of Conferences*, 79, 8003. <https://doi.org/10.1051/bioconf/20237908003>
- Newman, M., & Ogle, D. (2019). *Visual literacy: Reading, thinking, and communicating with visuals*. Bloomsbury Publishing PLC.
- Obidova, G., & Tursunova, M. (2023). Pedagogical conditions for the development of ecological thinking and culture in the process of learning English by students of natural sciences. *E3S Web of Conferences*, 452, 07027. <https://doi.org/10.1051/e3sconf/202345207027>
- Ratri, D. P., & Tyas, P. A. (2022). Review of locally tailored ELT textbooks to meet primary students' needs: Textbooks development.

Journal of English Educators Society, 7(2), 145-153. <https://doi.org/10.21070/jees.v7i2.1667>

Riechers, A. (2024). *The elements of visual grammar: A designer's guide for writers, scholars & professionals*. Princeton University Press.

Simanjuntak, M. B., Sutrisno, S., Putrawan, B. K., Lumingkewas, M. S., & Hutabarat, C. (2023). Enhancing environmental literacy through English language education in maritime institutions. *BIO Web of Conferences*, 79, 11001.

<https://doi.org/10.1051/bioconf/20237911001>

Solhi, M., et al. (2020). Evaluation of the English language coursebooks used at the Turkish public elementary schools. *Journal of Language and Linguistic Studies*, 16(3), 1282-1308. <https://doi.org/10.17263/jlls.803714>

Volkman, L., & Fraunhofer, H. (2023). Environmental literacy, sustainable education and posthumanist pedagogy: Teaching the climate crisis in a global, transatlantic online setting. *International Journal of Development Education and Global Learning*, 15(2), 87-102. <https://doi.org/10.14324/ijdegl.15.2.02>

Yu, B., Guo, W. Y., & Fu, H. (2024). Sustainability in English language teaching: Strategies for empowering students to achieve the Sustainable Development Goals. *Sustainability*, 16(8), 3325, 1-14. <https://doi.org/10.3390/su16083325>

Yuan, X., Yu, L., & Wu, H. (2021). Awareness of sustainable development goals among students from a Chinese senior high school. *Education Sciences*, 11(9), 1-25. <https://doi.org/10.3390/educsci11090458>

Zamora-Polo, F., et al. (2019). What do university students know about sustainable development goals? A realistic approach to the reception of this UN program among the youth population. *Sustainability*, 11(13), 1-19.

Appendices

Appendix A:

Table 1. Summary of Key Findings (N = 97)

Question Figure	Main Findings	% of Respondents (Key)	Implications
Q1 / Fig. 2	Prior knowledge of sustainability	Many topics: 25.8%; Few: 42.3%; Heard of: 22.7%; None: 9.3%	Most learners enter with partial knowledge; scaffolding needed
Q2 / Fig. 3	Exposure in textbook	Sometimes: 56.7%; Very often: 20.6%; Rarely/Never: 22.7%	Textbook moderately integrates sustainability topics
Q3 / Fig. 4	Benefits of urban green spaces	Environmental: 49.5%; Socioeconomic: 26.8%	Learners value ecological and economic relevance
Q4 / Fig. 5	Reading comprehension effectiveness	Yes: 70.1%; Maybe: 29.9%; No: 0%	Reading passages support environmental literacy
Q5 / Fig. 6	Listening comprehension clarity	Always: 36.1%; Sometimes: 48.5%; Rarely/Never: 15.5%	Listening effective but variable; scaffolding recommended
Q6 / Fig. 7	Video strategies	Real-life stories: 53.6%; Data-only: 33%; Policy: 9.3%; No visual aids: 4.1%	Narrative-based videos enhance understanding
Q7 / Fig. 8	Language development	Significantly: 43.3%; Somewhat: 41.2%; Slight: 10.3%; None: 5.2%	Vocabulary and communication skills improved
Q8 / Fig. 9	Preferred skill for learning	Listening: 47.4%; Reading: 34%; Speaking/Writing: 18.3%	Receptive skills key for conceptual clarity
Q9 / Fig. 10	Textbook effectiveness	Very well: 37.1%; Moderately: 52.6%; Slight/None: 10.2%	Textbook largely effective, room for enhancement
Q10 / Fig. 11	Real-life examples	Yes: 74.2%; Maybe: 23.7%; No: 2%	Authentic contexts improve engagement
Q11 / Fig. 12	Integrated activities	Very effective: 48.5%; Somewhat: 40.2%; Low: 11.2%	Multimodal tasks support comprehension
Q12 / Fig. 13	Environmental self-awareness	Yes: 71.1%; Maybe: 23.7%; No: 5.2%	Promotes reflection and responsibility
Q13 / Fig. 14	Confidence in listening	Very/Fairly: 83.5%; Slight: 11.3%; None: 5.2%	Listening skills effectively developed
Q14 / Fig. 15	Personal sustainability responsibility	High: 55.7%; Moderate: 37.1%; Low: 7.2%	Agency reinforced
Q15 / Fig. 16	Motivation for action	Very: 56.7%; Moderate: 28.9%; Low/None: 13.2%	Supports transformative learning
Q16 / Fig. 17	Overall learning reflection	Few facts: 45.4%; Deeper understanding: 40.2%; Limited/no: 14.4%	Conceptual gains achieved; room for deeper transformation
Q17 / Fig. 18	Credible sources	Extremely/Important: 81.4%; Moderate: 15.5%; Not important: 3.1%	Trust in authoritative media enhances environmental literacy

Appendix B: Students' Questionnaire

Q1- What level is the student?	Level 1	Level 2	Level 3	
Q 2- Have you heard the term "sustainability" before studying this book? What best describes your prior exposure to sustainability topics/climate change topics (before using this book)?	I have studied many sustainability topics.	I have studied a few topics.	I have heard of them but not studied.	I know almost nothing about them
Q 3-While reading the Life textbook, how often did you encounter topics related to sustainability?	Very often	Sometimes	Rarely	Never
Q 4- Based on the reading passages in the "Sustainable life lessons," which of these is often highlighted as a benefit of protected green spaces in urban areas?	Increased property values	Improved air quality and biodiversity	More space for commercial development	Reduced need for public transportation
Q 5-Did the reading passages help you understand the causes and effects of environmental problems?	Yes	No	Maybe	
Q 6- During listening activities, were the speakers' views on environmental issues clear and easy to understand?	Always	Sometimes	Rarely	Never
Q 7- In a typical "Sustainable life video presentation," what is a common approach used to make environmental challenges more understandable?	Presenting complex scientific data without explanation	Showcasing real-life stories and local initiatives	Focusing solely on global policy debates	Avoiding visual aids to encourage imagination
Q 8- Do you feel the vocabulary and language structures learned in the "Sustainable life lessons" have improved your ability to discuss environmental topics in English?	Yes, significantly.	Yes, somewhat.	Slightly	Not at all
Q 9-Which section was the most interesting in terms of giving clear ideas about sustainability and its meaning?	Listening	Reading	Writing	Speaking
Q 10- Which of this best describes how well the textbook meets the goal of making students aware of sustainability?	Very well – it increased awareness a lot	Moderately well	Slightly	Not at all
Q 11- Did the textbook present real-life stories or people involved in sustainable practices?	Yes	No	Maybe	
Q 12- How effective was the combination of reading, writing, and listening activities in helping you understand sustainability? After using the book, how well do you understand environmental sustainability?	Very effective	Somewhat effective	Not very effective	Not effective at all
Q 13- Has the book made you more aware of your own environmental impact?	Yes	No	Maybe	
Q 14- How confident are you about understanding spoken English about sustainability topics?	Very confident	Somewhat confident	Slightly confident	Not confident at all
Q 15- Do you believe your actions, however small, can contribute to global environmental sustainability goals?	Yes, significantly.	Yes, somewhat.	Not really	No, not at all
Q 16- After completing the "Sustainable life lessons," how motivated are you to become an "active problem-solver and changemaker" regarding environmental issues (Barber et al., 2024)? Did the book motivate you to change or consider changing any habits (e.g., reducing waste, conserving water)?	Very motivated	Moderately motivated	Slightly motivated	Not motivated
Q 17- After finishing the textbook's sustainability units, which statement best reflects your view?	I know a few new facts, but nothing changed in my thinking.	I have deeper understanding of sustainability issues.	It was too difficult to follow.	I did not learn anything new
Q 18- How important do you think it is for individuals to learn about environmental issues from sources like National Geographic?	Extremely important	Important	Moderately important	Not important