

Fostering Sustainability Thinking by Incorporating Green Education in International English Language Textbooks among University Students

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Abstract: In a world increasingly defined by mounting environmental crises, education serves as a crucial tool for fostering sustainability awareness and thinking among university students. Textbooks, as fundamental learning resources, have the potential to shape the minds of global citizens by offering insights into contemporary environmental challenges. This study aimed to investigate the promotion of sustainable thinking in international English language textbooks by incorporating Green Education elements throughout various aspects of the Unlock English series. To meet these objectives, a series of textbooks (A1, A2, B1, and B2 levels) from the Unlock series has been analyzed using content analysis criteria developed by the researchers, which covered various dimensions of Green Education. The findings revealed that the textbooks moderately included Green Education components, primarily focusing on increasing students' environmental awareness. However, there was a noticeable lack of content aimed at developing personal environmental values, critical thinking skills, and active participation in action-oriented activities. While the textbooks were found to have the potential to enhance sustainability thinking among university students, the study concluded that there is a need for a more

balanced inclusion of Green Education components across language proficiency levels and textbook resources to promote holistic sustainable thinking.

Keywords: Sustainability thinking; Green Education; International English Language Textbooks

INTRODUCTION

In an era marked by a significant rise in environmental disasters and challenges, education serves as a vital force in promoting sustainability thinking among citizens. Through curriculum and learning resources, such as textbooks, education holds immense power to shape learners' perspectives as global citizens by deepening their understanding of the environmental crises the world is currently facing (Huckle & Wals, 2015; Parr et al., 2022). The urgency of preparing future generations to tackle environmental threats and the depletion of natural resources has never been more pressing (Purcell, 2019; Parr et al., 2022). This responsibility was emphasized during the 2015 United Nations Summit, where educational systems worldwide were urged to adopt the 2030 Agenda for Sustainable Development Goals (SDGs) (United Nations, 2015). These 17 SDGs serve as a global call to action, encouraging both developed and developing nations to work collaboratively to ensure the well-being of people and the planet (United Nations, 2023).

In response to the global imperative to promote sustainability thinking, the concept of Green Education has emerged as a strategy to address environmental challenges (United Nations, 2015; Chakraborty et al., 2018; Purcell, 2019; Parr et al., 2022). Also known as environmental and sustainable education, Green Education embodies a holistic pedagogical approach aimed at fostering ecological awareness, deepening the understanding of environmental issues and encouraging sustainable practices (United Nations, 2015; Parr et al., 2022). Its main goal is to equip future generations with the knowledge and skills necessary to confront escalating environmental crises, such as climate change, biodiversity loss, pollution, renewable energy and conservation (Rao & Aithal, 2016; Abeyrathna, 2022).

Green or environmental education comprises several key components and elements. Central to these components is the development of critical thinking and problem-solving skills, enabling learners to analyze and address environmental issues based on scientific principles. Additionally, it emphasizes the cultivation of active citizenship, encouraging individuals to become global citizens who are not only aware of local environmental challenges but also actively engaged in addressing them (Yarbro, 2022; UNESCO, 2023). Green Education also extends

beyond traditional classroom settings, advocating for hands-on learning experiences and real-world applications (Aithal & Aithal, 2016; Rao, 2019).

According to the United Nations Environment Programme (2003), the objectives of Green Education are categorized into six primary targets: promoting environmental awareness, knowledge, attitudes, skills, evaluation abilities, and participation. Furthermore, Yarbro (2022) classified green educational skills into four categories: Sustainable Knowledge and Topics, Personal Skills, Social Skills, and Ways of Thinking. Acquiring these green skills empowers future generations to contribute to the preservation of ecosystems, particularly in higher education (Purcell, 2019; Parr et al., 2022; UNESCO, 2023).

Higher education institutions play a pivotal role in promoting Green Education, given their unique intersection with the green economy (Lozano et al., 2017; Strietska-Ilina et al., 2021). This responsibility extends beyond curriculum development, encompassing sustainable infrastructure, environmentally friendly facilities, innovative teaching practices and the integration of green technologies (Aithal & Aithal, 2016). Higher education is charged with preparing a generation of pioneers who possess a profound sense of environmental responsibility and awareness. By embedding sustainability thinking and environmental consciousness into curricula, graduate students can be equipped with the necessary tools to engage with and contribute to the growth and transformation of the green economy. As a result, these students can collaborate across disciplines to advance green technologies, sustainable business practices, and environmental policies (UNESCO, 2023). Incorporating Green Education into curricula can also facilitate a shift towards learner-centered approaches and interdisciplinary learning, influencing not only teaching methods but also curriculum design and the development of educational materials, particularly textbooks (Louw, 2013; Parr et al., 2022).

Textbooks, as essential educational resources, offer students learning experiences that shape their perceptions, attitudes and actions (Tevdovska, 2018). They are a fundamental component of the teaching-learning process, creating opportunities for social interaction among learners and teachers, which stimulates critical thinking (Kazemi et al., 2017). Textbooks encompass a variety of learning activities and resources that contribute to achieving educational objectives within structured content, following a systematic approach. The development of textbooks is typically guided by objectives and standards aligned with curriculum goals, ensuring a structured and consistent learning experience (Tevdovska, 2018; Priyanti, 2019; Köroğlu & Elban, 2020). In the context of advancing green practices in higher education, textbooks have been increasingly influenced by the principles of this holistic pedagogical approach across disciplines, including the teaching of English using international English language textbooks (Zahoor & Janjua, 2018).

Learning English as a foreign language has become widespread globally due to its status as the language of science and research (Rao, 2019 and Qassrawi & Al Karasneh, 2023). International English language textbooks, designed for learners worldwide, incorporate an intercultural approach often referred to as International Culture Textbooks (McKay, 2000; Awayed-Bishara, 2015; Rodríguez & Espinar, 2015; Kazemi et al., 2017). Integrating Green Education into these textbooks is particularly significant, as they are used globally and can serve as a powerful tool for raising awareness about environmental issues among international learners (Zahoor & Janjua, 2018). By embedding green skills in these textbooks, students can simultaneously develop their language skills and acquire environmental literacy, fostering a sense of shared responsibility as global citizens (Liondos, 2022; Şeker, 2023).

The inclusion of Green Education elements in international English language textbooks, such as the Unlock series; therefore, is both justified and valuable (Aithal & Aithal, 2016). Published by Cambridge University Press in 2014, the Unlock Textbook Series is aligned with the Common European Framework of Reference for Languages (CEFR). The language activities in this series are categorized into four skills, distributed across two separate books: Reading/Writing and Listening/Speaking for each level. The Unlock series covers four proficiency levels: A1 (Beginner), A2 (Intermediate), B1 (Upper Intermediate), B2 (Advanced), and C1 (Upper-Advanced).

A close examination of previous studies on incorporating Green Education aspects into international English language textbooks, such as the Unlock series, reveals a focus on analyzing Sustainable Development (SD) concepts in English language textbooks (AlQawi, 2016; Ullah et al., 2017; Zahoor & Janjua, 2018; Mohammadnia & Moghadam, 2019; García-González et al., 2021; Liondos, 2022; Şeker, 2023). However, this study has been distinguished as one of the few that has analyzed the promotion of sustainable thinking by integrating Green Education skills into textbooks used in higher educational institutions globally. Most of the reviewed studies concentrated on the inclusion of environmental education representations in school-level English textbooks designed to reflect learners' native cultures—commonly referred to as "Source of Culture Textbooks" (McKay, 2000). In contrast, this study specifically targeted international English language textbooks used in universities and other higher educational institutions worldwide. Moreover, the analytical framework employed in this research was developed by the researchers based on previous literature (e.g., United Nations Environment Programme, 2003; Yarbrow, 2022). The analysis criteria were particularly relevant to fostering sustainable thinking among college students, giving this study its distinctive contribution (See Appendix A).

Given the growing interest in promoting sustainable thinking by incorporating green skills into international English language textbooks, it has become crucial to conduct content analyses to evaluate the presence of Green Education elements in

the Unlock series. Research on the inclusion of such components in these textbooks, particularly within higher education, remains limited. The significance of this study lied in the global use of these textbooks, which have the potential to raise environmental awareness among adult learners and empower them to actively address global sustainability challenges. Therefore, this study aimed to investigate the presence of Green Education components that promote sustainability thinking in the Unlock English Language Textbook series (A1, A2, B1, B2), focusing on their distribution across different proficiency levels.

Questions of the Study

To achieve the research's main objective, the questions that guided this effort were as follows:

RQ1: To what extent do the Unlock English language textbooks foster sustainable thinking by incorporating Green Education elements?

RQ2: How are the identified Green Education components distributed across various aspects of the Unlock English language textbooks, including topics, questions, texts, illustrations and videos?

Definitions of Terms

- Sustainability Thinking :

It refers to reasoning Sustainable Development Goals (SDGs) to address environmental challenges by educational policies and frameworks that include teaching strategies and curriculum. In the current study, Sustainability Thinking refers to the (four) components of Green Education used in the checklist of analysis.

- Green Education:

It overlaps with environmental education and refers to a comprehensive pedagogical approach that encompasses skills for fostering ecological awareness, promoting understanding of environmental issues and adopting sustainable practices. Operationally, this type of education represented four main domains of skills, sub-skills and indicators used in the analysis. The four main domains were:

- a) Awareness of the Environmental Topics and Challenges,
- (b) Environmental Personal Values,
- (c) Environmental Thinking Skills, and
- (d) Participation and Engagement in Solving Environmental Challenges.

These domains were extracted based on the United Nations Environment Programme (2003), which can be regarded as the theoretical paradigm of the current study.

- International English Language Textbooks:

These textbooks are a type of educational resource designed by publishers from English native-speaking countries for global students, incorporating an

intercultural approach known as International Culture Textbooks to be used in countries worldwide. In this study, the Unlock Textbook Series, which is a series of textbooks published by Cambridge University Press in 2014, was analyzed as a sample of these textbooks.

METHOD

The Context of the Study

In the current study, promoting sustainability thinking in International English Language Textbooks, by investigating the inclusion of Green Education components in such textbooks, was performed. The representation of Green Education categories was content-analyzed in the Unlock English language Textbook series applied at worldwide universities, such as in Palestine and Jordan. It is worth noting that this type of textbook is prepared by international textbook publishers to be utilized in English-non-speaking countries worldwide.

Textbook Selection (Sampling)

Unlock English Textbook series has been designed based on the Common European Framework of Reference for Languages (CEFR). Thus, learning content and activities are divided into four skills and organized in two separate books: Reading/Writing and Listening/Speaking for each level. This series also comprises five proficiency levels: A1 (Beginners), A2 (intermediate), B1 (upper intermediate), B2 (Advanced), and C1 (upper advanced). In the current study, investigating the inclusion of Green Education components in four proficiency levels of Unlock English Textbook series (A1, A2, B1, and B2 for Reading and writing only) was undertaken as displayed in Table 1 below.

Table 1: Unlock English Textbook series (A1, A2, B1, B2) Content-analyzed in the Current Study

Textbook	Level
Unlock Reading, Writing and Critical Thinking 1	A1- Basic/for beginners
Unlock Reading, Writing and Critical Thinking 2	A2- Intermediate
Unlock Reading, Writing and Critical Thinking 3	B1- Intermediate
Unlock Reading, Writing and Critical Thinking 4	B2- Advanced

As shown in **Table 1**, four proficiency levels of the Unlock English Textbook series (A1, A2, B1, B2) were content-analyzed. This range of textbooks was

included to cover the learning content that most university students may have been exposed to concerning the Green Education categories.

Textbooks Analysis

Content analysis is a method used for analyzing the manifest or latent content of any communication material by categorizing, formulating, and evaluating the content using coding and inducting themes. This method of analysis can be trusted in making inferences and conclusions about the meaning, use and effect of certain communication texts. One of the pillars of content analysis is the determination of the analysis unit, which specifies the elements from the content-analyzed text (written, spoken, visual .. etc.) used by the analysts while breaking down any content into features and themes to keep the process focused and organized. Specifying the criteria of analysis is also an essential element in analyzing any content. These criteria can be pre-determined, which means they were specified before the analysis (Krippendorff, 2018). In the context of the current study, the unit of analysis in addition to the criteria applied were displayed as follows:

Unit of Analysis

The unit of analysis used in analyzing Unlock English language textbooks were topics, questions, texts, illustrations and videos in the four textbooks series (A1, A2, B1, B2) (See Appendix A).

Criteria of Analysis

The criteria of analysis utilized in the current study were established by the researchers in light of the paradigms of analysis defined in the previous literature (United Nations Environment Programme, 2003; Yarbrow, 2022). The main domains of analysis were:

- (a) Awareness of the Environmental Topics and Challenges,
- (b) Environmental Personal Values,
- (c) Environmental Thinking Skills, and
- (d) Participation and Engagement in Solving Environmental Challenges.

It is worth noting that each domain comprised sub-categories and specific indicators prepared parallel with using a checklist for each unit of analysis (i.e. topics, questions, texts illustrations and videos) (See Appendix A). A sample of the criteria implemented along the analysis was exhibited in Table 2 below.

Table 2: A Sample of the Criteria and Indicators Utilized in Content-Analyzing Unlock English Textbooks

Categories of Green Education	Indicators
<p>1. Awareness of the Environmental Topics and Challenges</p>	<p>a. Scope of Environmental Topics: Under this category, the content (topics, text, illustrations, questions and videos) is expected to cover environmental topics, including:</p> <ul style="list-style-type: none"> • Climate change, biodiversity, conservation, renewable energy, pollution, sustainable development, pollution, natural resources depletion, global warming, population growth, pollution, recycles, protecting and preserving the environment, eco-system, renewable and non-renewable natural resources. <p>b. Inclusion of Diverse Perspectives: Under this category, the content (topics, text, illustrations, questions and videos) is expected to:</p> <ul style="list-style-type: none"> • Acknowledge diverse perspectives on environmental topics, including cultural, social, and economic viewpoints. • Environmental challenges faced by different communities. <p>c- Precise and Recent Information: Under this category, the content (topics, text, illustrations, questions and videos) is expected to:</p> <ul style="list-style-type: none"> • Present recent environmental challenges. • Offer up-to-date environmental information supported by reputable scientific sources. • Include the dynamic nature of environmental issues incorporating the latest findings. <p>d- Global and Local Context: Under this category, the content (topics, text, illustrations, questions and videos) is expected to:</p> <ul style="list-style-type: none"> • Include both global and local environmental topics and challenges. • Highlight the overlap between global and local environmental topics. • Include both global and local environmental events.

As shown in **Table 2**, the criteria of analysis encompassed one of the main domains of Green Education components “the Awareness of the Environmental Topics and Challenges”. This domain implied four sub-categories and indicators generated in harmony with the components of Green Education (For the other criteria and indicators used in the current study see, Appendix A).

Validity and Reliability

In respect of the validity of the obtained data, the pre-determined criteria used in this analysis were validated by (8) experts specialized in different fields Social Studies Education, Curriculum and Instruction, Curriculum and Instruction of English as a Foreign Language. Some remarks and suggestions were presented by the jury of experts, such as deleting and merging some sub-categories, which were taken into account.

The reliability of the obtained data and results was achieved by conducting inter and intra-coding techniques. The inter-reliability was performed by involving two analysts. The researchers compared the percentage of agreement between the two coders’ checklists of analysis. After this comparison, the reliability indicator was high, and it reached 90% of agreement.

FINDINGS

The present study was instigated to examine the possibility of the sustainability thinking enhancement in the Unlock English language textbooks (A1, A2, B1, B2)(Reading/Writing) by including these components. It also aimed at identifying the distribution of these components across topics, questions, texts, illustrations and videos.

The results pertained to the first question regarding the enhancement of sustainability thinking through including Green Education components in the Unlock English language textbooks (A1, A2, B1, B2 (Reading/ Writing) were displayed in Table 3 below.

Table 3. Results pertaining to the enhancement of sustainability thinking by including Green Education components in the Unlock English language textbooks ((A1, A2, B1, B2 (Reading, Writing and Critical Thinking)

Textbook	A1					A2					B1					B2					Total	Prec.		
	I p	Tx	Qs	I	V	Ips	Tx	Qs	I	V	I p	Tx	Qs	I	V	I p	Tx	Qs	I	V				
1. Awareness of the Environmental topics and challenges																								
b- Scope of Environmental Topics	2	1	3	5	1	1	2	2	2	1	3	5	10	5	2	2	5	6	8	4	70	63.6%		
c- Inclusion of Diverse Perspectives																								
d- Precise and Recent Information:																								
e- Global and Local Context																								
2. Environmental Personal Values																								
a. Promotion of Environmental Empathy.	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	3	1	0	9	8.1%		
b. Environmental Ethical Considerations																								
3. Environmental Thinking Skills																								
a-Resource Efficiency Skills																								
b-Experiential Learning skills (learning by doing) and Real-World Applications.	0	0	0	0	0	1	0	2	0	1	0	0	9	0	1	0	1	16	0	0	31	28.1%		
c-Critical Thinking and Problem-Solving Exercises																								
d-Future Orientation																								
4. Participation and Engagement in Solving Environmental Challenge																								
a. Active Engagement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
b. Action-Oriented Content																								
c. Innovation and Adaptation																								
d. Collaboration and Partnerships																								
Total	2	1	3	5	1	2	2	4	2	2	3	5	22	7	3	2	6	25	9	4	110	100%		

As displayed in Table 3, Green Education components identified in the Unlock English language textbooks (A1, A2, B1, B2) were mainly categorized under promoting students’ awareness (63%). However, (28%) of such components were only for triggering students’ environmental thinking skills. As for promoting the components concerning enhancing personal values, they were less (8%), and no components related to promoting active participation and engagement in action-oriented activities were listed. As for the inclusion of Green Education components across language proficiency levels, it is apparent that most of these components

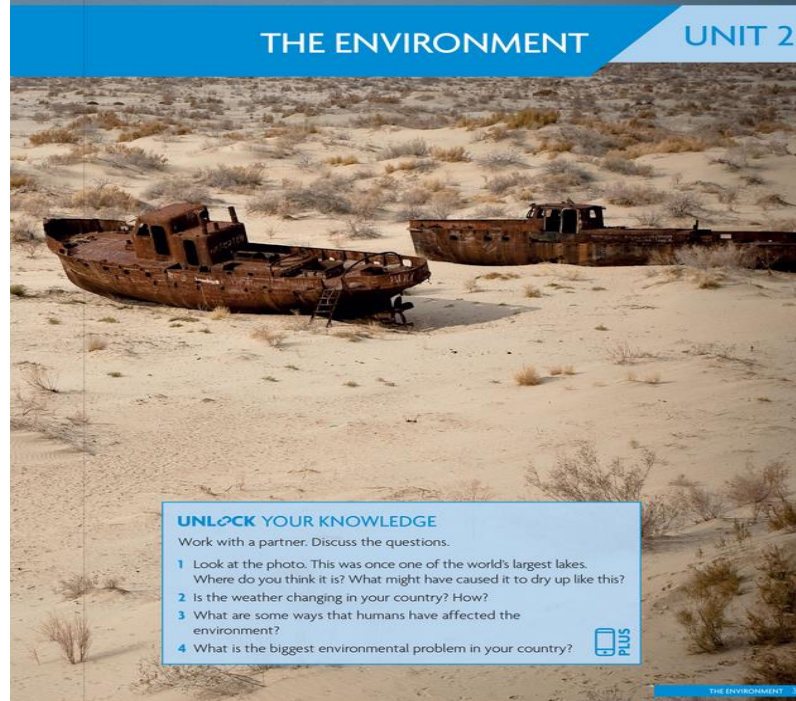
were included in B1 and B2 levels respectively, whereas few were integrated in A1 and A2 levels.

With regards to the distribution of these components in the Unlock English language textbooks across topics, questions, texts, illustrations and videos, Table 4 illustrated the results.

Textbook Units of Analysis	A1, A2, B1, B2				
	Topics	Texts	Questions	Illustrations	Videos
Total	9	14	54	23	10
Percentages	8.1%	12.7%	49%	21%	9%

Table 4. The distribution of Green Education components in the Unlock English language textbooks across topics, questions, texts, illustrations and videos

As shown in Table 4, the majority of Green Education components included in the Unlock English language textbooks (A1, A2, B1 and B2) were categorized under “Questions” (49%). (21%) of these components were pictures and images. As for the topics and videos, the four content-analyzed textbooks include (9) topics and (10) videos that represent Green Education aspects and target sustainability thinking. Some examples of topics, texts, questions and illustrations were presented in Pictures 1, 2 and 3 below.

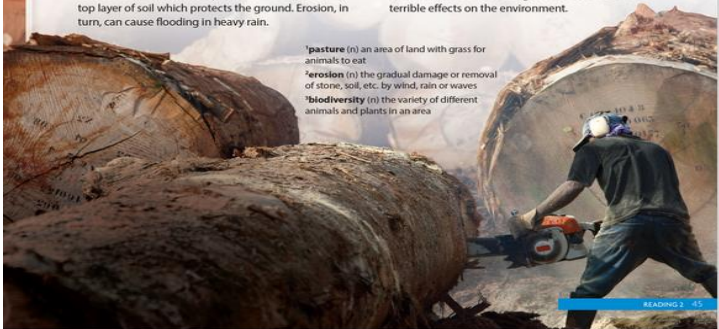


Picture 1: An example of the topics and questions that represent the components of Green Education in the Unlock English language textbooks.

THE CAUSES AND EFFECTS OF DEFORESTATION

- 1 Forests, which cover almost one-third of the surface of the Earth, produce oxygen and provide homes to plants, animals and humans. These days, many of the world's great forests are threatened by **deforestation** – the process of removing trees from large areas of land. The **destruction** of forests occurs for several reasons; trees are used as fuel or for **construction**, and cleared land is used as pasture¹ for animals or fields for planting food. The main harmful effects of deforestation are climate change and damage to animal habitats.
- 2 The main causes of deforestation are commercial **farming** by big business and farming by local people. Huge commercial farms have taken over large areas of forest in many countries. In Indonesia, for example, industrial **logging** is carried out to clear huge areas for the production of palm oil, while in Brazil, large areas of the Amazon **rainforest** are cleared to grow soy and vegetable oil. In contrast, local farmers may cut down and burn trees to clear an area just big enough to graze cattle or grow crops. However, after two or three years, the land can no longer be used, so the farmer moves to another piece of land. Normally, it takes around two years for cleared land to recover, but in populated areas the land is never allowed to recover. This constant reuse of land leads to heavy erosion² – the loss of the top layer of soil which protects the ground. Erosion, in turn, can cause flooding in heavy rain.
- 3 One serious effect of deforestation is climate change. Normally tropical rainforests help control the Earth's temperature by absorbing carbon dioxide. As an example, the vast rainforest of the Amazon covers an area around 25 times the size of the UK and absorbs an estimated 1.36 billion tonnes of carbon dioxide annually. However, in areas where deforestation has taken place, the carbon dioxide goes into the atmosphere and traps heat in a process called the **greenhouse effect**. The result is global warming. Increasing global temperatures result in less rain. This causes the rainforests to dry out and leads to fires – which cause more emissions of carbon dioxide. In this way, the rainforests actually contribute to global warming instead of helping to solve it.
- 4 Forest destruction also has an effect on biodiversity³. Deforestation causes the loss of habitats and damage to land where plants and animal species live, leading to the extinction of many species. A decrease in biodiversity threatens entire ecosystems and destroys future sources of food and medicine.
- 5 In conclusion, damage to the world's forests is leading to changes in the natural environment and causing global warming. Looking to the future, governments should act to plant more trees which will absorb carbon dioxide and protect forests from illegal logging. Otherwise, deforestation on such a large scale is sure to have terrible effects on the environment.

¹pasture (n) an area of land with grass for animals to eat
²erosion (n) the gradual damage or removal of stone, soil, etc. by wind, rain or waves
³biodiversity (n) the variety of different animals and plants in an area



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Picture 2: An example of the texts and illustrations that represent the components of Green Education in the Unlock English language textbooks.

Endangered species

- 1 An **endangered species** is a group of animals or plants which could soon become extinct. Extinction happens when the last animal of the species has died out and there will be no more. Many species are nearly extinct and could disappear from the Earth very soon if we don't do anything to save them. There are many reasons why species become endangered, but most harm to species is **due to** human activities such as habitat destruction, hunting and overfishing.
- 2 Habitat destruction is the main reason why animals become endangered. This happens in two ways. First, when humans move into a new area, they cut down trees to build houses and farms. This **destroys** the animals' habitat – the **natural** environment where plants or animals usually live – and leaves them without food. Animal habitats are also destroyed because of pollution. Dirty water from factories, which contains **chemicals**, ends up in rivers, and poisons used on farmland may even kill animals which live in the area.

Picture 2: An example of the texts that represent the components of Green Education in the Unlock English language textbooks

DISCUSSION

The findings of this study focused on the enhancement of sustainability thinking through the inclusion of Green Education components in the Unlock English language textbooks, spanning different proficiency levels and learning resources (i.e., topics, questions, texts, illustrations, and videos).

Based on the analysis, it was revealed that the Green Education components in the Unlock textbooks were primarily aimed at promoting students' environmental awareness, comprising 63% of the identified components. This suggests that the primary goal of these components is to provide a foundational understanding of environmental challenges, which serves as the basis for fostering students' sustainability thinking. By raising awareness, these textbooks may act as an entry point for advancing sustainable thinking, as building knowledge and comprehension is the first step towards higher cognitive levels of thinking (Krathwohl, 2002; Rentawati et al., 2018).

In terms of fostering students' environmental thinking skills, only 28% of the identified components were dedicated to developing such skills. These included promoting resource efficiency, experiential learning, critical thinking and problem-solving skills. Although raising environmental awareness is essential, the textbooks moderately addressed the development of higher-order thinking skills, such as critical thinking related to sustainability issues. This finding suggests the need for greater alignment with the Sustainable Development Goals (SDGs) (United Nations, 2023), which emphasize the importance of equipping learners with the skills necessary to tackle and resolve environmental problems.

Additionally, the findings revealed a gap in the inclusion of Green Education components related to promoting personal values, with only 8% of the identified components falling into this category. This indicates that the textbooks may not strongly emphasize fostering values and attitudes that encourage sustainable behaviors and decision-making. However, values and attitudes play a crucial role in motivating actions (Oroujlou & Vahedi, 2011). Therefore, placing greater emphasis on this aspect could significantly contribute to promoting sustainability thinking. As attitudes, values and motivation fall within the affective domain, which is closely linked to teaching practices, it may be essential to assess students' environmental values and attitudes through surveys or other measures after they have studied using the Unlock textbooks.

Furthermore, the Unlock textbook series showed the absence of green components concerning active participation and engagement in action-oriented activities. Students' active involvement in sustainability initiatives can guide positive steps towards change. The ignorance of such components in textbooks may limit students' opportunities to apply the knowledge and skills that they have been acquainted with in real-world projects (Badea, et al., 2020). It is worth noting that students' involvement in green real practices and projects can be shared by different

disciplines, so it might be of value to measure the active participation in green projects and practices based on educators' and students' perspectives.

Regarding the inclusion of Green Education components across different textbook levels (A1, A2, B1, and B2), the results indicated that most of these components were concentrated in the B1 and B2 textbooks. This suggests that the promotion of sustainable thinking is linked to students' language proficiency. However, the limited inclusion of these components in the A1 and A2 levels highlights the importance of introducing these concepts earlier in foreign language teaching to maximize their impact. In terms of the distribution of Green Education components across learning resources (texts, illustrations, topics, videos, and questions), the findings revealed that most of the components were derived from the questions in the Unlock textbook series. This suggests that the Unlock textbooks place significant emphasis on using questions to engage students in sustainability thinking, as questions are effective in stimulating critical thinking and creativity (Henny et al., 2022). Additionally, illustrations and videos were incorporated as essential elements in the Unlock textbooks, helping to convey various environmental topics in a meaningful way. The use of visual aids can enhance students' understanding of environmental issues by providing real-world examples and imagery (Shabiralyani et al., 2015).

Overall, it was found that the Unlock English language textbooks primarily include Green Education components that promote environmental awareness. However, there is a notable deficiency in components that foster environmental thinking, personal values and active participation. Moreover, the distribution of Green Education components across proficiency levels, as well as across questions, visuals, topics and videos, was found to be imbalanced.

CONCLUSION

This study provided a thorough analysis of the incorporation of Green Education elements in the Unlock textbook series, which is widely used by university students as international English language textbooks. The inclusion of these elements was examined in the context of fostering and shaping sustainable thinking among students, preparing them as global citizens who will play a key role in addressing the environmental challenges of the present day. Based on the results, several conclusions can be drawn:

- Although some Green Education components were incorporated into the Unlock English language textbooks, this inclusion needs to be more balanced and comprehensive. Since the majority of the components focused on raising students' awareness of environmental issues, there is a need to further emphasize the development of critical thinking skills, personal values, and attitudes toward sustainability throughout the entire series.

- The lack of components that promote active participation in action-oriented activities highlights a gap in empowering students as change agents. Encouraging students to engage in real-world sustainability efforts could better equip them to contribute meaningfully to global environmental challenges.
- The distribution of Green Education components across proficiency levels was uneven, with most components identified in the higher proficiency levels (B1 and B2). Introducing these components at the beginning levels (A1 and A2) could better enhance students' sustainability thinking as they progress through the series.

Suggestions for Future Researchers:

- Future research should explore the teaching practices employed by instructors when using the Unlock textbooks to promote sustainable thinking among learners. Understanding how educators implement these components can shed light on best practices and potential areas for improvement.
- Additionally, it is important to consider students' perspectives on how effectively the textbooks support their understanding and engagement with sustainability issues. Conducting surveys or interviews with students could provide valuable insights into their experiences and the textbooks' impact on their environmental awareness and attitudes.
- Further studies could also investigate how integrating Green Education elements earlier in the language learning process (e.g., at the A1 and A2 levels) influences students' overall development of sustainability thinking and whether early exposure leads to deeper engagement in later stages.

In conclusion, this research calls upon educators, curriculum developers, and textbook publishers to collaboratively enhance sustainability education in language learning materials. By promoting greater participation and empowerment, students can be better prepared to take on their roles as active global citizens.

REFERENCES

- Aithal, S., & Aithal, S. (2016). Opportunities and Challenges for Green Technology in the 21st Century. Srinivas Institute of Management Studies, Pandeshwar, Mangalore, India, Department of Chemistry, Srinivas School of Engineering, Mukka, Mangalore, India.
- Alqiawi, D. A. (2016). Content analysis of the English language textbooks based on education for sustainable development. *Education for Sustainable Development*, 5(1). ISSN 2250-1991.
- Awayed-Bishara, M. (2015). Analyzing the cultural content of materials used for teaching English to high school speakers of Arabic in Israel. *Discourse & Society*, 26(5), 517– 542.
- Badea, L., Șerban-Oprescu, G. L., Dedu, S., & Piroșcă, G. I. (2020). The Impact of Education for Sustainable Development on Romanian Economics and Business Students' Behavior. *Sustainability*, 12, 8169. <https://doi.org/10.3390/su12198169>
- Chakraborty, A., Singh, M. P., & Roy, M. (2018). A study of goal frames shaping pro-environmental behavior in university students. *International Journal of Sustainability in Higher Education*, 18(3), 00-00. DOI: 10.1108/IJSHE-10-2016-0185

- Charoensil, De., Thiengkamol, N., Kurukodt, J. & Thiengkamo, Ch. (2012). Development of Environmental Education Characteristics. *The Social Sciences*, 7, 496-501. [10.3923/sscience.2012.496.501](https://doi.org/10.3923/sscience.2012.496.501).
- García-González, A., García Palencia, S. & Sánchez Ondoño, I. (2021). Characterization of environmental education in Spanish geography textbooks. *Sustainability*, 13(3), 1159. MDPI AG. Retrieved from <http://dx.doi.org/10.3390/su13031159>.
- <https://teachonline.asu.edu/remote-conference-2022/green-skills-preparing-learners-for-the-green-economy/>
- Henny, I., Tambusai, A., & Hasibuan, A. L. (2022). The Effect of Questioning Technique and Critical Thinking on Students' Reading Comprehension. *International Journal of Educational Research Excellence (IJERE)*, 01(01), 159. e-ISSN: 2830-7933. Retrieved from <https://ejournal.ipinternasional.com/index.php/ijere>
- Huckle, J. & Wals, A. (2015). The UN Decade of Education for Sustainable Development: business as usual in the end, *Environmental Education Research*, 21:3,491-505, DOI: 10.1080/13504622.2015.1011084.
- Kazemi, A., Aidinlou, A., & Asl, D. (2017). Manifestations of globalization and linguistic imperialism in English language teaching and materials preparation: Ideology in the international ELT textbooks. *Research in English language pedagogy*, 5(2), 223-246.
- Köroğlu, Z. & Elban, M. (2020). National and Global Identity Perspectives of Textbooks: Towards a Sense of Global Identity. *Advances in Language and Literary Studies*, 11, 55-65.
- Krathwohl, D. R. (2002). A Revision of Bloom's Taxonomy: An Overview. *Theory into Practice*, 41(4), 212-219
- Krippendorff, K. (2018). *Content analysis: an introduction to its methodology*. Los Angeles: Sage.
- Liondos, V. (2022). The concept of sustainability in school textbooks: The case of English language textbooks in C, D, E, F Greek primary school classes.
- Louw, P. (2013). Green Curriculum: Sustainable Learning at a Higher Education Institution. *The International Review of Research in Open and Distributed Learning*, 14(1), 1-15. DOI: 10.19173/irrodl.v14i1.1310.
- Lozano, R. et al., 2017. Connecting Competences and Pedagogical Approaches for Sustainable Development in Higher Education: A literature review and framework proposal. *Sustainability*, 9(10).
- McKay, S. L. (2000). Teaching English as an international language: implications for cultural materials in the classroom. *TESOL Journal*, 9(4), 7–11.
- Mohammadnia, Z., & Moghadam, F. D. (2019). Textbooks as resources for education for sustainable development: A content analysis. *Journal of Teacher Education for Sustainability*, 21(1), 103-114. DOI: 10.2478/jtes-2019-0008.
- Oroujlou, N., & Vahedi, M. (2011). Motivation, attitude, and language learning. In *International Conference on Education and Educational Psychology (ICEEPSY 2011)* (pp. 994-1000). *Procedia - Social and Behavioral Sciences*, 29
- Parr, A., Binagwaho, A., Stirling, A., Davies, A., Mbow, C., Hessen, D. O., Bonciani Nader, H., Salmi, J., Brown Burkins, M., Ramakrishna, S., Serrano, S., Schmelkes, S., Tong, S., & McCowan, T. (2022). Knowledge-driven Actions: Transforming Higher Education for Global Sustainability. UNESCO Global Independent Expert Group on the Universities and the 2030 Agenda, <https://unesdoc.unesco.org/ark:/48223/pf0000380519>
- Priyanti, N. (2019). The Effects Of An EFL Textbook On Learners' Identity Construction. *POLYGLOT: Jurnal Ilmiah*, 1661,15(2). DOI: [dx.doi.org/10.19166/pji.v15i2](https://doi.org/10.19166/pji.v15i2).
- Purcell, W.M., Henriksen, H. and Spengler, J.D. (2019), "Universities as the engine of transformational sustainability toward delivering the sustainable development goals: "Living labs" for sustainability", *International Journal of Sustainability in Higher Education*, Vol. 20 No. 8, pp. 1343-1357. <https://doi.org/10.1108/IJSHE-02-2019-0103>.

- Qassrawi, R.M. Al Karasneh, S.M. (2023) Benefits of Facebook Usage (as a Web 2.0 Application) in Foreign Language Instruction in Higher Education: A Meta-Analysis Study. *Cogent Arts and Humanities*, 10 (1), art. no. 2185447.
- Rao, S. (2019). The role of English as a global language. *Research Journal Of English (RJOE)*, 4(1), 65. Retrieved from: https://www.researchgate.net/publication/334282978_THE_ROLE_OF_ENGLISH_AS_A_GLOBAL_LANGUAGE#fullTextFileContent
- Rentawati, H., Djidu, H., Apino, K., Anazifa, R., (2018). Teachers' Knowledge About Higher-Order Thinking Skills and Its Learning Strategy. *Problems of Education in 21st Century*, 76 (2).
- Şeker, M. (2023). A study on how environmental issues are discussed in social studies textbooks. *Environmental Development and Sustainability*. <https://doi.org/10.1007/s10668-023-03532-2>.
- Shabiralyani, G., Hasan, K. S., Hamad, N., & Iqbal, N. (2015). Impact of Visual Aids in Enhancing the Learning Process: Case Research in District Dera Ghazi Khan. *Journal of Education and Practice*, 6(19), 226. ISSN 2222-1735 (Paper) ISSN 2222-288X (Online).
- Strietska-Ilina, O., Hofmann, C., Durán Haro, M., & Jeon, S. (2021). Skills for Green Jobs: A Global View - Synthesis Report Based on 21 Country Studies. International Labour Office, Geneva.
- Tevdovska, E. (2018). authentic materials vs. textbooks in ESP (English for specific purposes). *Journal of Languages for Specific Purposes*. 5(1), 57-66(10).
- Ullah, R., Khalil, M., & Zahoor-ul-Haq, D. (2017). Inclusion of pro-environmental education in textbooks at the elementary and secondary level: A review of Khyber Pakhtunkhwa Textbook Board, Pakistan. *Aussie-Sino Studies*, 3(3), September.
- UNESCO, (2023). Empowering Youth for Sustainable Development: The Role of Media and Information Literacy in Promoting Green Skills. Retrieved on October, 2023, From: <https://www.unesco.org/en/articles/empowering-youth-sustainable-development>
- United Nations, (2023). Global Sustainable Development Report (GSDR). Department of Economic and Social Affairs Sustainable Development. Retrieved in September,2023 from: <https://sdgs.un.org/gsdr/gsdr2023>.
- United Nations. (2015). Sustainable Development Goals. United Nations Sustainable Development Summit 2015. Retrieved from: <https://sustainabledevelopment.un.org/post2015/summit>
- United Nations (2023). The 17 Goals. Department of Economic and Social Affairs Sustainable Development (2023). New York. Retrieved in October 2023 from: <https://sdgs.un.org/goals>
- United Nations (2003). United Nations Environment Programme: Report of the Governing Council Twenty-second session (3-7 February 2003). New York. file:///Users/bayan/Downloads/A_58_25-EN.pdf
- Yarbro, J. (2022). Green Skills: Preparing Learners for the Green Economy. REMOTE: The Connected Faculty Summit. Arizona State University.
- Zahoor, M. & Janjua, F. (2018). Green contents in English language textbooks in Pakistan: An Eco linguistic and eco-pedagogical appraisal. *British Educational Research Journal*. <https://doi.org/10.1002/berj.3579>.

APPENDIX A

Criteria Utilized in Identifying (Content-analyzing) Green Education Components in Unlock Textbooks Series

Categories of Green Education	Indicators
<p>5. Awareness of the Environmental topics and challenges</p>	<p>a- Scope of Environmental Topics: Under this category, the content (topics, text, illustrations, questions and videos) is expected to cover environmental topics, including:</p> <ul style="list-style-type: none"> - Climate change, biodiversity, conservation, renewable energy, pollution, sustainable development, pollution, natural resources depletion, global warming, population growth, pollution, recycles, protecting and preserving the environment, eco-system, renewable and non-renewable natural resources. <p>f- Inclusion of Diverse Perspectives: Under this category, the content (topics, text, illustrations, questions and videos) is expected to:</p> <ul style="list-style-type: none"> - Acknowledge diverse perspectives on environmental topics, including cultural, social, and economic viewpoints. - Environmental challenges faced by different communities. <p>c- Precise and Recent Information: Under this category, the content (topics, text, illustrations, questions and videos) is expected to:</p> <ul style="list-style-type: none"> - Present recent environmental challenges.
	<ul style="list-style-type: none"> - Offer up-to-date environmental information supported by reputable scientific sources. - Include the dynamic nature of environmental issues incorporating the latest findings. <p>d- Global and Local Context: Under this category, the content (topics, text, illustrations, questions and videos) is expected to:</p> <ul style="list-style-type: none"> - Include both global and local environmental topics and challenges. - Highlight the overlap between global and local environmental topics. - Include both global and local environmental events.
<p>2 Environmental Personal Values</p>	<p>a- Promotion of Environmental Empathy: Under this category, the content (topics, text, illustrations, questions and videos) is expected to:</p> <ul style="list-style-type: none"> - Foster environmental empathy towards the natural world. - Encourage a sense of responsibility. - Encourage caring/ looking after for the environment. <p>b- Environmental Ethical Considerations: Under this category, the content (topics, text, illustrations, questions and videos) is expected to:</p> <ul style="list-style-type: none"> - Address ethical considerations related to the environment, including environmental justice, fair distribution of resources, and the impact of human actions on future generations. - Promote environmental responsibility, social equity, and respect for diversity. - Appreciate of the efforts and initiatives of individuals and institutions in protecting the environment.

<p>6. Environmental Thinking Skills</p>	<p>a-Resource Efficiency Skills: Under this category, the content (topics, text, illustrations, questions and videos) is expected to:</p> <ul style="list-style-type: none"> - <u>Efficient natural</u> resources usage and reduction of waste to minimize ecological footprint. <p>b- Experiential Learning skills (learning by doing) and Real-World Applications: Under this category, the content (topics, text, illustrations, questions and videos) is expected to:</p> <ul style="list-style-type: none"> - <u>Provide activities</u>, examples, or case studies that provide experiential learning opportunities related to the environment. - Offer real-world scenarios, showcasing practical applications that illustrate environmental challenges and successful sustainability initiatives. <p>c-Critical Thinking and Problem-Solving Exercises: Under this category, the content (topics, text, illustrations, questions and videos) is expected to:</p> <ul style="list-style-type: none"> - Include exercises and activities that promote critical thinking and problem-solving skills. - Encourage students to analyze environmental issues and propose sustainable solutions.
	<ul style="list-style-type: none"> - Prompt critical reflection on personal behaviors and societal practices. <p>d-Future Orientation: Under this category, the content (topics, text, illustrations, questions and videos) is expected to:</p> <ul style="list-style-type: none"> - Offer/ <u>promote</u> long-term solutions for tackling environmental issues and consequences.
<p>4 Participation and Engagement in Solving Environmental Challenges</p>	<p>a- Active Engagement: Under this category, the content (topics, text, illustrations, questions and videos) is expected to:</p> <ul style="list-style-type: none"> - Encourage active participation, engagement, and empowerment of individuals and communities to address environmental challenges collaboratively. - Examine students' active participation, problem-solving, and engagement in sustainability issues. <p>b- Action-Oriented Content: Under this category, the content (topics, text, illustrations, questions and videos) is expected to:</p> <ul style="list-style-type: none"> - Assess whether the textbook includes actionable steps and practical tips for individuals and communities to contribute to environmental conservation and sustainable living. <p>c- Innovation and Adaptation: Under this category, the content (topics, text, illustrations, questions and videos) is expected to:</p> <ul style="list-style-type: none"> - Identify and discuss innovative suggestions and <u>solutions</u> and adaptive strategies. <p>d- Collaboration and Partnerships: Under this category, the content (topics, text, illustrations, questions and videos) is expected to:</p> <ul style="list-style-type: none"> - Encourage collaboration among individuals, <u>governments</u>, businesses, academia, and communities to achieve common sustainability goals.