

An Ecossemiotic Analysis of Grade XII English Textbooks Published by the Punjab Curriculum and Textbook Board

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ABSTRACT

A new ecossemiotic analysis of Grade XII English textbooks, published by the Punjab Curriculum and Textbook Board (PCTB), was conducted using Halliday's Systemic Functional Linguistics (SFL) framework (1978) to explore the visual and linguistic portrayals of potential environmental issues within these textbooks. Focusing on Book II and Goodbye, Mr. Chips, the study examines semiotic resources—images, diagrams, and layouts to uncover ecological meanings through SFL's ideational, interpersonal, and textual metafunctions. Ten images are selected as the sample of the study. It shows that some images, such as those depicting harmony between humans and nature, support ecocentric principles, while others present anthropocentric perspectives that subordinate nature. A key weakness in Book II is its predominantly monochrome visuals and limited environmental information, which could hinder ecological engagement. The findings reveal that curriculum content lacks transdisciplinary and ecocentric viewpoints, underscoring the importance of including these elements to achieve sustainable development in line with UNESCO's SDG 4.4.7 (UNESCO, 2017). The study's outcomes aim to inform global discussions on environmental education and the Pakistani context, offering practical recommendations for practitioners to enhance the communication of ecological concepts through visual and verbal representations in textbooks, thereby improving ecological literacy.

Keywords: Ecossemiotics, Systemic Functional Linguistics (SFL), environmental discourse, English textbooks, ecolinguistics, PCTB, ecological literacy

INTRODUCTION

The rising frequency of global environmental crises such as climate change, deforestation, pollution, and threats to biodiversity has increased the urgency to promote environmental awareness and sustainable practices worldwide (IPCC, 2022). Education, often recognized as a key driver for social change, can significantly help develop ecological literacy and encourage sustainable behavior among learners (UNESCO, 2017). Textbooks play a vital role in shaping students' knowledge and attitudes toward the environment within formal educational settings, where out-of-school environmental learning programs are mainly attended by higher and semi-literate groups (Stibbe, 2015). This is especially true in Pakistan, a country highly vulnerable to the impacts of climate change yet responsible for a negligible share of global carbon emissions (UNDP, 2021), where integrating environmental studies into the curriculum is crucial to address urgent ecological challenges. As Pakistan is ranked the eighth most vulnerable country to climate change globally (IUCN, 2011) and has experienced severe impacts such as the 2022 floods, which affected 33 million people (UNICEF, 2023), educational content must aim to foster environmental

awareness among the youth. This research focuses on the content of Grade XII English textbooks from the Punjab Curriculum and Textbook Board (PCTB), since Punjab, a major province with relatively stronger educational infrastructure, is representative of wider regional practices.

The study uses an ecosemiotic approach based on Halliday's SFL (1978) to analyze how linguistic and visual semiotic resources in these textbooks (re)contextualize environmental meanings. Ecosemiotics, an interdisciplinary field combining semiotics and ecology, explores how signs and symbols in texts and images influence perceptions of ecology (Kull, 1998). Previous research shows that educational discourses often remain anthropocentric, portraying nature as a resource to serve human needs rather than as interconnected ecosystems (Alexander & Stibbe, 2014). This study addresses this gap by examining the textual and visual content of Pakistani textbooks, which have largely been overlooked in earlier research (Sharma & Rangarajan, 2019). By analyzing how environmental themes are presented, the research aims to evaluate the effectiveness of these materials in promoting environmental literacy and sustainable values, aligning with international frameworks such as UNESCO Sustainable Development Goal 4.7 (UNESCO, 2017). The results intend to help curriculum developers and policymakers in Pakistan by identifying the strengths and weaknesses of current educational materials in fostering environmentally responsible citizens.

Background of the Study

The degradation of the environment, highlighted by urgent issues such as climate change, pollution, deforestation, and biodiversity loss, remains one of the most critical global problems today and requires immediate attention and action. All nations around the world are confronting this challenge, and in their efforts to address it, they find no tool more powerful than education. Education is acknowledged as a catalyst for change that not only raises environmental awareness but also encourages sustainable behaviors among learners. Textbooks play a crucial role in shaping the values and sustainable environmental behaviors of students.

Pakistan, as a developing country, faces serious impacts of climate change. According to the United Nations Development Programme (UNDP), Pakistan's contribution to the carbon footprint is only 0.93 percent, yet it ranks eighth on the climate vulnerability index, making it more prone to climate change effects (UNDP Global Climate Promise, 2021). The UNICEF report of 2023 states that floods have affected 33 million people in Pakistan (UNICEF, 2023).

Environmental literacy in Pakistan is still developing. To increase awareness among Pakistani youth about climate issues, textbooks are essential. Punjab, being the most populous province, has maintained a relatively better education system since its inception. The Punjab Curriculum and Textbook Board (PCTB) is responsible for creating and publishing books up to the higher secondary level. Therefore, analyzing its published educational content is crucial to understanding how it encourages climate awareness. The language and visuals representing the environment can either reinforce anthropocentric or ecocentric worldviews, potentially influencing the future actions of young generations.

This study aims to evaluate the environmental content in Grade XII English textbooks published by PCTB using Eco-semiotic analysis. The application of Halliday's Systemic Functional Linguistics (SFL) Model provides a comprehensive framework for analyzing the visual elements of textbooks. SFL emphasizes the functions of language, especially its role in depicting environmental issues by examining how images, diagrams, and other visual semiotic resources contribute to or shape the meanings conveyed by the text.

Considering the significance of environmental education in promoting sustainable practices, this study is timely and relevant. By analyzing the environmental content in grade XII English textbooks in Punjab, this research focuses on assessing educational materials and their influence on developing ecological literacy and sustainable attitudes among students.

Statement of the Problem

At a time when the country faces the dangers of climate change, as evidenced by the 2022 floods affecting 33 million people, this importance becomes even clearer, highlighting the need for strong environmental education in Pakistan. Grade XII English textbooks from the Punjab Curriculum and Textbook Board (PCTB) are vital in fostering ecological literacy among students. However, little is known about the environmental images and discourses presented in these textbooks and whether they promote an anthropocentric rather than an ecocentric perspective. This gap between the values we, as educators, cherish and the superficiality of the school experience is a significant obstacle to fostering positive, sustainable attitudes in our learners. Consequently, this study aims to examine the ecosemiotic representation of environmental content in these textbooks, which will offer insight into their potential role in raising ecological awareness and encouraging sustainable behaviors among Pakistani youth.

Research Objectives

- To categorize types of environmental content visually depicted in Grade XII English textbooks published by PCTB.
- To analyze the semiotic resources (e.g., visuals, diagrams) used to illustrate ecological problems and their roles in conveying ecological signification.

Research Questions

1. What kind of environmental content is visually portrayed in grade XII English textbooks in Punjab?
2. What semiotic resources (e.g., images, diagrams) are used to represent environmental issues, and how do they function?

Significance of the Study

This study is valuable academically, educationally, and societally. Applying eco-semiotics to Pakistan, a less-studied, non-Western context, broadens the field's scope. It analyzes how visual elements in educational materials influence environmental awareness, filling research gaps and linking communication, education, and ecology. This can help curriculum designers and policymakers in Punjab evaluate environmental content in textbooks. The findings can inform curriculum development and promote environmental awareness among youth, fostering sustainable behaviors. Societally, it can influence youth and, if expanded nationally, the entire country in addressing environmental challenges. Given recent environmental degradation and climate change threatening Pakistan, there's a need for increased ecological awareness at secondary levels to support environmental preservation.

LITERATURE REVIEW

Environmental Education (EE) is becoming more vital each day due to global environmental problems, especially in developing countries like Pakistan. Textbooks are the main source for shaping perceptions

and encouraging sustainable attitudes toward the environment in Pakistan. Ecolinguistics, an interdisciplinary field, studies the complex connection between language and the environment, focusing on how linguistic practices can either support or hinder ecological sustainability. Stibbe (2015) states that language influences perceptions about the environment. Anthropocentric views, which often see nature as a resource mainly for exploitation, are reflected in dominant discourses. Common terms like “natural resources” portray the environment as a source for human use rather than a living system that humans are part of. Research in ecolinguistics not only challenges these discourses but also promotes alternative narratives to improve the relationship between humans and the environment.

Hungerford and Volk (2020) argue that understanding the ecological, social, and ethical foundations of human interactions with nature is a key part of environmental literacy. In educational settings, research involving ecolinguistic analysis of textbooks has highlighted environmental perspectives through a variety of viewpoints. Textbooks can be divided into two main groups: one favoring “Ecocentrism,” where nature is regarded as superior and deserves respect and protection, and the other favoring “Anthropocentric” ideas, which place humans at the center of the universe and see nature as a source of fulfilling human goals. Alexander and Stibbe (2014) found in their study of United Kingdom textbooks that, although environmental issues were included, their framing often downplayed the urgency of ecological challenges or minimized the perceived complexity of environmental problems.

The rapid climate changes over the last twenty years have made adding environmental themes to curricula essential for promoting sustainability. The United Nations' Sustainable Development Goals (SDGs), especially Goal 4.7, highlight the importance of incorporating environmental and sustainability education into national education systems (UNESCO, 2017), which has led many countries to include environmental topics in various subjects, including language learning.

This is the field in which ecolinguistics, as explored in Mohammed's (2025) research, has recently emerged: as an interdisciplinary area of investigation that focuses on language as a tool for environmental discursive construction and ecological awareness, particularly among EFL learners. This field combines linguistic analysis with environmental rhetoric by examining how language shapes opinions about the environment. In his study, Mohammed demonstrates how ecolinguistics can be utilized to enhance ecological awareness among EFL learners (Mohammed, 2025). The research is rooted in key works in the literature (e. g., Norton, 2000, 2010), where the intersection between identity and language learning is promoted, and it is argued that language influences learners' understanding of their environment, both culturally and socially constructed. Norton's model has been essential for understanding EFL learners and their identities in relation to environmental issues (Norton, 2000). Similarly, Nelson (2000) asserts that language education can make significant contributions to sustainable development by integrating ecological topics into standard curricula and fostering critical environmental awareness (Nelson, 2000). These works form the theoretical foundation upon which Mohammed's engagement with ecolinguistics as a pedagogic approach is built.

Furthermore, Mohammed (2025) discusses using discourse analysis as a tool to explore how language shapes environmental narratives in response to broader environmental justice movements. Repeated emphasis on the role of language in environmental advocacy, as highlighted in the document, can create “troublesome conscience” among learners and foster cynical attitudes toward ecological issues (Mohammed, 2025). The study reports diverse perceptions among learners, with concerns about light and sound pollution receiving moderate attention compared to ecosystem conservation (Mohammed, 2025). Overall, Mohammed's book exemplifies existing research that aims to promote ecolinguistics as a change agent in EFL teaching to develop ecological awareness through strategic language use.

Ecolinguistics, an emerging field at the intersection of linguistics and ecology, explores how language and the environment are connected to address ecological issues in education and curricula, such as English as a Second or Foreign Language (ESL/EFL). Zahoor and Janjua (2019) also highlight the importance of language in shaping ecological worldviews and advocate for integrating ecological themes into language education to raise environmental awareness. They argue that including environmental content in ESL/EFL textbooks can help socialize learners, especially children, to become aware of the natural environment and global environmental problems (Zahoor & Janjua, 2019; Brown, 1991). This aligns with Bhalla (2012), who recommends ‘greening’ children’s storybooks to foster ecologically conscious generations through their perceptions of nature. The research builds on similar studies, such as Jacobs & Goatly (2000), who reported a general lack of environmental protection activities in international EFL textbooks, and Stilbo (2004), whose CDA of Japanese EFL textbooks found superficial environmentalism.

Similarly, Amalsaleh et al. (2010) examined Iranian EFL textbooks and identified linguistic structures that foster anthropocentric views of nature. Akcesme (2013) also criticizes global English coursebooks for portraying the natural world as a tool for humans or as a foreign social “other,” thus maintaining human dominance over nature. Together, these studies highlight the widespread presence of anthropocentric attitudes in ESL/EFL textbooks — as discussed by Zahoor and Janjua (2019), who investigated this issue within the Pakistani context through state-sanctioned textbooks for grades III-V. The study is guided by Greta Gaard’s (2008) ecopedagogical framework, which promotes texts that ‘struggle against anthropocentrism and emphasize ecocentric values and relationships,’ encouraging more reciprocal human-nature interactions. Zahoor and Janjua (2019) also apply Halliday’s (1994) theory of transitivity to analyze how nature and the human-nature relationship are constructed in language, revealing a strong anthropocentric bias in Pakistani textbooks and their limited ecopedagogical potential. This emphasizes the need to update the curriculum to enhance ecological literacy.

Ecolinguistics, a growing branch of linguistic studies focused on the relationship between language change and environmental knowledge, aims to understand how language influences our interaction with the environment, especially in educational settings. The study examines ecological discourses in English Language Teaching (ELT) textbooks for Grades 6-10 produced by the Sindh Textbook Board, Pakistan: an EDA-Based Study by Iqbal and Lohar (n.d). Their work differentiates between helpful and harmful discourses, highlighting the importance of language in fostering environmental awareness or contributing to ecological harm (Iqbal & Lohar, n.d). This aligns with Stibbe (2015), who describes ecolinguistics as the study of language, environment, and agents, promoting positive discourse analysis that encourages ecocentric behavior. Research shows a global concern regarding the ecological content of textbooks.

Cristovova (2022) observed that many Brazilian EFL textbooks neglect ecological issues, as foreign topics are considered more important than local ones. Similarly, Xiong (2014) examined Chinese EFL textbooks and found that less than 4% of the content was dedicated to environmental topics, treating students more as consumers than producers of language. Stibbe (2014) criticised Japanese EFL textbooks for superficial environmentalism and for not questioning damaging discourses. In Pakistan, Zahoor and Janjua (2020) observed that textbooks from Punjab portray nature as a commodity, thus perpetuating anthropocentrism.

Conversely, Majjeda et al. (2022) explored positive discourses in secondary ELT textbooks of Punjab, which promote environmental responsibilities. Iqbal and Lohar (n.d.) suggest that ecological themes such as pollution and climate change appear in STBB textbooks, but language features like euphemism and passive voice are often used to obscure human responsibility for environmental issues. This finding is similar to Hookoosung and Ozeo (2020), who identified destructive narratives in Mauritian textbooks.

The study emphasises the need for curriculum reforms to include positive eco-discourses, aiming to enhance environmental education in Pakistan.

Ecolinguistics, an interdisciplinary subject that examines the relationship between language and ecology, has developed over the past 50 years to address global ecological issues (Zhou, 2021). This field questions linguistic practices and how they mediate human and environmental relationships, highlighting language as a tool for raising environmental awareness and promoting change (Stanlaw, 2020; Penz & Fill, 2022).

Language, as a fundamental medium for education, plays a crucial role in integrating environmental themes, likely through the 3 C's (Curriculum, Course book, Classroom). English, as the global lingua franca, is especially vital for embedding environmental themes in educational contexts, primarily via textbooks used both as a language medium and as a cultural instrument (Muhnpour et al., 2018). Environmental education (EE) and education for sustainability (ES) are essential in preparing the next generation to face environmental challenges such as climate change and biodiversity loss (Adriyanto et al., 2019). Incorporating these frameworks into curricula helps foster students' critical thinking and sense of responsibility (Schehly et al., 2022). Teachers play a vital role in effectively integrating ecological subjects (Abidin et al., 2023), and it is crucial that they possess skills in sustainability inclusion. Nonetheless, issues such as inadequate teacher training and resources have consistently hindered the effective delivery of EE and ES (Uita & Salorana, 2017). Other studies have analysed the content of English textbooks across different contexts in terms of ecolinguistics.

For instance, Faramand & Janfeshan (2021) reported limited ecolinguistic representation in Iranian textbooks, while Milless & Larouz (2018) emphasised the educational benefits of including local environmental themes in Moroccan textbooks. Similarly, Majed et al. (2022) identified strong ecolinguistic content in Pakistani textbooks, which starkly contrasts with the superficial environmental narratives presented in Hamed (2021)'s study of Egyptian textbooks. These findings underscore the need for more comprehensive and culturally responsive ecolinguistic interventions, especially in contexts such as Bangladesh, where environmental issues are severe and ecolinguistic research remains limited.

Ecolinguistics is an interdisciplinary field that examines the impact of language on environmental awareness, particularly in educational contexts (Zahoor, 2021). With the rise of global environmental issues, including ecological topics in curricula, such as English coursebooks, is essential for fostering environmentally conscious individuals (Akcismc, 2013).

Classroom textbooks are vital in teaching and learning English as a Second Language (ESL), as they are not only linguistic tools but also carry ideological implications, especially at the secondary level where learners have developed critical skills to question texts. This makes them effective vehicles for promoting environmental awareness, which aligns with the aims of Education for Sustainable Development (ESD) as emphasised by UNESCO-UNEP (1976). Evidence regarding the success of integrating ecolinguistics into textbooks internationally remains inconsistent. Meanwhile, Daramola and Odunsi (2016) demonstrated significant disparities in ecological literacy among Nigerian university students, indicating a need for robust environmental education. Similarly, Dharmay and Pankajam (2017) found that many secondary students in India possessed inadequate ecological knowledge, reflecting curricular deficiencies. In Vietnam, Tieu (2021) recommended embedding ecological lifestyle education within formal curricula, based on document analysis, and explicitly clarified the citizen guidance role.

Dilova et al. (2024) highlighted that the ecological content of textbooks must correspond with pupils' upbringing to foster ecological awareness. In the context of Pakistan, Zahoor's (2021) ecocritical analysis of primary-level textbooks revealed a limited use of language related to the environment, which primarily romanticizes nature rather than addressing urgent global sustainability issues, such as biodiversity loss or

climate change. The findings suggest that although some textbooks incorporate environmental topics, they tend to be superficial, irrelevant, and fail to address local ecological challenges.

In the Pakistani context, environmental discourse has not been given adequate attention in educational materials, and it is urgent to investigate how and to what extent environmental issues are presented in higher secondary-level textbooks. Previous studies mainly focused on textual analysis of the textbooks, completely overlooking the role of visuals in meaning-making. This study addresses that gap by applying an eco-semiotic framework to analyze the visuals used in textbooks.

RESEARCH METHODOLOGY

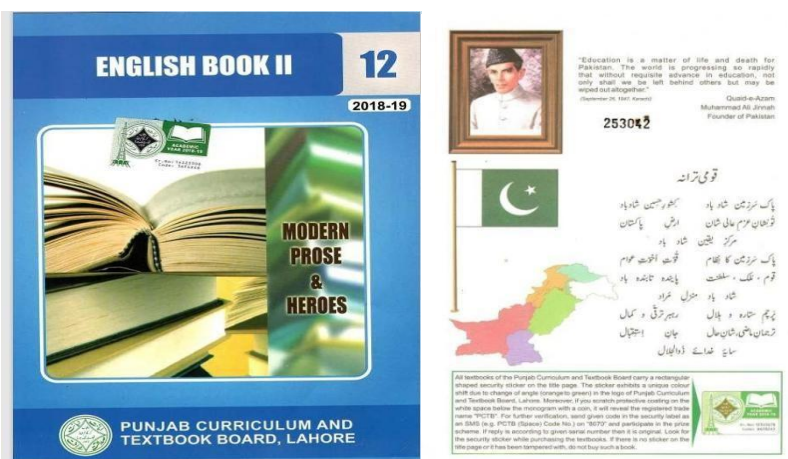
This study adopts a qualitative, interpretive research design, using Halliday's Systemic Functional Linguistics (SFL) as its analytical framework. The research examines environmental content in grade XII English textbooks used in Punjab, focusing on visual representations of environmental issues.

Systemic Functional Linguistics (SFL)

Halliday's (1978) Systemic Functional Linguistics (SFL) provides a useful framework for analyzing how visual language represents the world, with a focus on environmental content. SFL emphasizes three key metafunctions of language: ideational (representational meaning), interpersonal (social interactions), and textual (discourse organization). For this study, the ideational metafunction is especially important because it explains how processes (such as actions and events) and participants (like humans, animals, and natural elements) are linguistically constructed and depicted in relation to environmental issues.

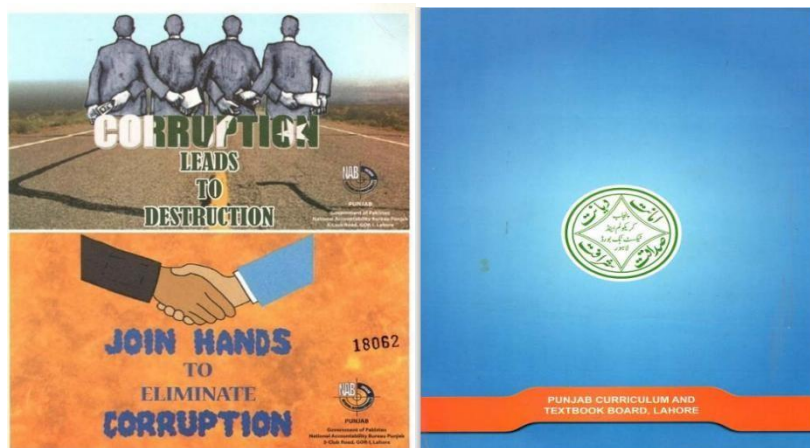
Previous studies using SFL to analyze environmental discourse reveal various ways environmental phenomena are depicted through material (actions), relational (states of being), and mental (thoughts, feelings) processes. The analysis will concentrate on material processes such as "cutting down trees" and "polluting rivers" to understand how human actions affect the environment. Relational processes like "the river is polluted" will be examined to see how the environment's condition is depicted.

DATA ANALYSIS



Book II of grade XII lacks any pictorial description of the environmental content and is void of colours. The entire book is in black and white print. The title page is sky blue with a blurred shade of green,

symbolising the significance of knowledge through images of books in the centre. The back cover features images of Quaid-e-Azam Muhammad Ali Jinnah, Pakistan's National Flag, and Map, all signifying patriotism.



The inner leaf on the back of the cover page shows images illustrating how corruption leads to destruction and how it can be curbed through collective effort, but it does not depict environmental issues and ecological challenges faced by Pakistan.

Goodbye, Mr. Chips

“Goodbye, Mr. Chips” is a novella by James Hilton published by PCTB for twelfth-grade students as part of the course material for the intermediate examination, along with Book II. This novella tells the story of Mr. Chipping, a beloved schoolteacher at Brookfield School in England. The story covers the entire life of Mr. Chipping, who is affectionately called “Mr. Chips” by his students and his wife. He often recalls past events and mostly lives in his memories.

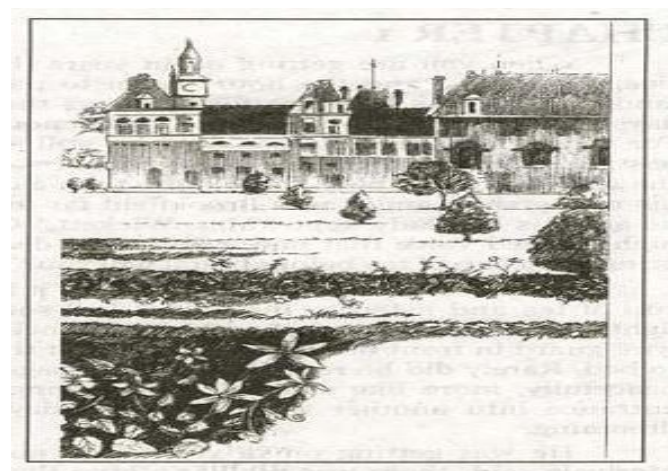
A total of 06 out of 11 images have been purposively selected for the Ecossemiotic analysis from this novella’s PCTB edition.



The cover of *Goodbye, Mr. Chips* (PCTB) analysed through Halliday's (1978) Systemic Functional Linguistics (SFL) and ecosemiotics, uncovers meanings that blend human experience with environmental symbolism.

- **The ideational metafunction** depicts Mr. Chips as an actor performing a material process (walking), set within a symbolic landscape of trees, a road, and a school that evoke themes of aging, memory, and harmony with nature.
- **Interpersonal metafunction** creates a reflective tone. Mr. Chips faces away from the viewer, establishing distance and universality. The soft, warm colours suggest nostalgia and a peaceful connection with the environment.
- **Textual metafunction** emphasises central positioning and visual equilibrium. The road extends from nature (left) to culture (right), symbolising life's journey. The natural elements frame human experience within ecological time and space.

Ecosemiotically, this image represents interdependence between human life and nature.



Brookfield

- **Ideational metafunction:** The Brookfield school, surrounded by well-arranged trees, flowers, and grass, shows harmony in the human-nature relationship.
- **The interpersonal metafunction** in the image presents a distant and reflective mood, where the absence of humans highlights eco-centric ideas.
- **The textual metafunction** shows a picture with school above and nature below, highlighting how education is supported by the natural world.

This image showcases the peaceful coexistence of nature and culture and reinforces the values of ecological care within educational settings.



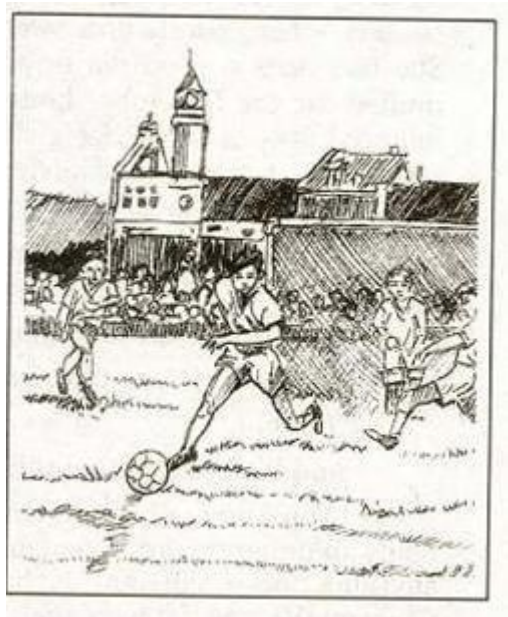
Katherine and Chips First Encounter

- **Ideational metafunction:** In this image, two people are depicted in an outdoor setting exploring nature (mountains) and examining actions.
- **Interpersonal metafunction** shows two human beings displaying genders and their postures, representing youth and old age embraced by nature.
- **The textual metafunction shows** the picture depicting high mountains (nature) towering above the human beings as well as reflecting their will to conquer nature.



Katherine

- **The ideational metafunction** shows the lady in this picture among the flowers, trees, and mountains, presenting a peaceful and harmonious relationship between humans and nature.
- **The interpersonal metafunction** shows that the lady's face is calm and forward-looking, but without any direct engagement with the viewer.
- **The textual metafunction** in the composition focuses on the figure, guiding the viewer's eye from the flowers in the foreground to the mountains, and emphasising harmony with nature.



Football Match at Brookfield

- **The ideational metafunction** of this image shows a football match in progress with three actively engaged players supported by the community and buildings in the background. The grass represents nature.
- **Interpersonal metafunction** involves the players actively engaging in the game, forgetting everything.
- **The textual metafunction** in the composition focuses on the players, highlighting human beings and showing ambiguity towards nature.

This image shows man as a more significant element than nature, with nature serving merely as a backdrop for man's actions.



Good bye Mr. Chips

- **The ideational metafunction** shows an old man (Chips) and a young boy, with the elderly person looking at the vibrant youth, while the background depicts the autumn season.
- **Interpersonal metafunction:** the trees and the old man both show decline and downfall, but the youth give a message of new beginning.
- **The textual metafunction** of the layout in this picture presents the man as the center of attention, while nature is given secondary importance, serving as the background.

This image illustrates that both humans and nature share a common theme: decline and renewal, as leaves fall in autumn just as humans age and return to the earth. However, youth offers a new beginning, like buds that will grow into fresh leaves.

DISCUSSION

The ecosemiotical analysis of Grade XII English textbooks by the Punjab Curriculum and Textbook Board (PCTB) highlights the potential of linguistic and visual semiotic resources used within the framework of Hallidayan Systemic Functional Linguistics (SFL). This analysis shows how environmental themes are constructed through semiotic resources. In Pakistan, which ranks eighth on the climate vulnerability index but contributes only 0.93% of global carbon emissions (UNDP, 2021), this study emphasizes the urgent need to evaluate educational resources. The concept of the non-space: a construct of ecological literacy's commonsense-making—A critical visual analysis of human-nature relations in Canadian high school social studies and science textbooks, with specific reference to Goodbye, Mr. Chips and Book II, Animals or Nature (2010)—explains the symbolic representation of environmental concepts through the ideational metafunction of SFL. For example, the cover and depiction of Brookfield School in Goodbye, Mr. Chips include natural environments such as trees, grass, and mountains, symbolizing peaceful coexistence between humans and nature.

The imagery of Mr. Chips walking through nature explores themes of aging, memory, and their interconnection. An ecocentric perspective, which sees nature as serving educational environments, is clear in the Brookfield imagery where plants surround the school. Conversely, images like the football game at Brookfield focus on human actions, presenting nature as a backdrop and reinforcing an anthropocentric worldview. This aligns with Zahoor and Janjua's (2019) research, which shows Pakistani textbooks often adopt a consumptive view of nature, using it for human benefit and limiting their ecopedagogical potential. The interpersonal metafunction, which regulates social interactions, also highlights differences in ecological messaging. Katherine's imagery of flowers and mountains suggests a peaceful, reflective relationship with nature, implying balance. However, without direct engagement with viewers, these images often seem passive, weakening their environmental call to action. The football game, emphasizing human-to-human interaction, shifts focus away from environmental issues, implying that nature's role is mainly for human enjoyment rather than preservation.

The ability to promote environmental awareness in students aligns with Stibbe's (2015) assertion that educational discourses often steer clear of challenging human-centered narratives. Visual compositions, such as the road from nature to culture on the Goodbye, Mr. Chips cover, symbolize the human journey within an ecological framework. Conversely, images like the football match and Mr. Chips with a young boy depict human figures as the main focus, making nature secondary, which weakens the sense of urgency around environmental issues—a pattern also noted by Alexander and Stibbe (2014) in their analysis of UK textbooks. Additionally, Book II uses very little color, which reduces its visual appeal and

hampers its ability to engage students effectively through visual semiotics. The imbalance between the two books in Book II highlights this concern. The ecosemiotic approach—combining semiotics and ecology—underscores how vital visual images are in building ecological awareness. Images showing harmonious human-nature relationships match Kull's (1998) idea of semiotic ecology, where signs promote connectedness. However, the abundance of anthropocentric images emphasizing human actions and studies reflects a wider global trend noted by Amalsaleh et al., Esmalian & Zare-Behtash (2010), and Cristovova (2022). While these resources sometimes promote ecological literacy, they lack consistency in supporting ecocentric values, which is a major shortcoming for Pakistan, especially considering its vulnerability to environmental disasters like the 2022 floods that affected 33 million people (UNICEF, 2023). This emphasis on visual semiotics addresses an important research gap, since most previous studies focused on textual content (Zahoor, 2021). Kress and van Leeuwen (2006) contend that visual semiotic resources influence perceptions as strongly as words. Book II lacks vibrant colors and captivating images that could engage students and promote active learning, which is especially important at the higher secondary level when critical thinking begins to develop (PLHR, 2025).

The prevalence of patriotic imagery—such as flags and national figures—dominates, emphasizing national identity over ecological concerns. Comparative studies, like Xiong's (2014) work on Chinese EFL textbooks and Stibbe's (2014) critique of Japanese textbooks, reveal similar shortcomings, with limited environmental content and superficial engagement with ecological themes. The PCTB's approach tends to offer a superficial treatment, overlooking deeper ecological issues. Conversely, recent Pakistani research, such as Majed et al. (2022), shows potential for improvement when visual and linguistic resources are aligned with ecocentric goals, despite current deficiencies. These findings are important for curriculum development, as SDG 4.7 by UNESCO emphasizes education for sustainability. The shallow ecological treatment and anthropocentric biases in existing textbooks hinder the development of critical environmental awareness needed to tackle Pakistan's urgent environmental challenges, including deforestation and pollution. The ecosemiotic analysis rooted in SFL and expanded ecosemiotic theory provides valuable insights into how educational materials can be redesigned to promote sustainability. Overall, the analysis indicates that while some visuals in the textbooks demonstrate ecocentric principles and interconnectedness, many mainly reinforce anthropocentric narratives, which pose risks in fostering environmental awareness in Pakistan—a country highly vulnerable to climate change impacts.

CONCLUSION

The depiction of Brookfield School's natural surroundings supports ideas of harmony and interconnectedness aligned with ecosemiotic principles, but images like the football match and Mr. Chips with a boy tend to subordinate nature to human activity, reinforcing human-centered beliefs. Since environmental education is crucial for fostering sustainable behaviors in Pakistan (UNESCO, 2017), the textbooks' design is inadequate; their failure to include evocative environmental imagery limits student engagement and critical reflection. This study aligns with global research highlighting challenges in integrating environmental themes into textbooks, such as those by Zahoor and Janjua (2019). The tendency to weaken ecopedagogical effectiveness through human-centered assumptions emphasizes the need for curriculum reform. Pakistan's emerging environmental literacy and inconsistent educational support hinder the growth of eco-citizenship. Overreliance on patriotic symbolism instead of ecological content suggests curricula are out of step with global sustainability goals, such as SDG 4.7.

This pioneering use of ecosemiotics in a Pakistani context fills a notable research gap, providing valuable insights into how visual semiotics can shape ecological awareness. The study offers practical guidance for curriculum developers and policymakers by emphasizing the role of images in fostering environmental

consciousness. Effective environmental education must inspire action and critical thinking, and visual themes in textbooks—through language and imagery—are essential tools in this process. Such peace between nature and humans is depicted in some images, e.g., Goodbye, Mr Chips.

- Environmental imagery circulated by the Brookfield School incorporates elements of nature to advocate for ecocentrism.
- There is a contrast between human activity, nature, and the football match.
- The minimalist visuals of Book II reduce interaction with the environment.
- The semiotic impact of a monochromatic design in Book II is limited; environmental messages are lost amid patriotic iconography.
- Katherine is stylized, conveying peacefulness and beauty but not engaging with the viewer.
- Human actions take precedence in human-centered imagery.
- The ideational metafunction emphasizes material processes such as “polluting rivers.”
- This is evident in the Interpersonal metafunction, where most domestic images create a sense of distance.
- Through the textual metafunction, humans often take center stage while nature recedes.
- Goodbye, Mr Chips features visuals similar to those dictated by ecosemiotic principles.
- Book II presents a missed opportunity to engage readers with ecological imagery.
- Some pictures symbolize that human life depends mutually on nature.
- Brookfield's photo fosters ecocentrism and biocentrism by not depicting humans.
- The visual compositions dull the urgency of the environmental messages.
- Warm colors in some images evoke nostalgia rather than activity.
- Nature is frequently portrayed as a backdrop for humans.
- Changes in ecological messaging hinder the development of environmental literacy.

Recommendations

Add more visually eco-centric imagery that emphasizes the innate value of nature. Incorporate colorful action photographs to instruct children about the environment. Focus textbook content on learning to support sustainable development, particularly through SDG 4.7. This includes training teachers on how to highlight ecological themes during class discussions. Update Book II to include direct references and stories related to the environment.

Gap for Future Research

This study aims to explore the ecosemiotic representation of environmental themes through visual analysis in the PCTB, Punjab province's Grade XII English textbooks, but it leaves textual details unexamined. If future research employs ecolinguistic tools to conduct a textual analysis of similar communications, such a study could help triangulate the findings obtained visually. Additionally, examining other grade levels or subjects, such as science or Urdu, may offer further insight into environmental trends within curricula. Comparative studies across provinces or with international textbooks based on this research might highlight contextual differences. Lastly, while educational resources are valued for fostering practical ecological literacy, gathering perceptual and usage insights from teachers and students would enhance understanding of their actual impact and how educational content influences perceptions and sustainable behaviours within Pakistan's socio-environmental context.

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