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Let's Go Eco: A Positive Discourse Analysis of English Reading Materials in High School Textbooks Based on the Attitude System

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ABSTRACT

This paper examines the reading materials of high school English textbooks through the lens of the attitude system and a positive discourse analysis methodology. It seeks to (1) analyze the distribution of attitude resources and ecological discourse orientations in the learning materialsto clarify the ecological values embedded in them; (2) assess high school students' understanding of ecological discourses and their level of ecological consciousness; and (3) evaluate the features and limitations of the reading texts in cultivating the ecological consciousness of students, identify problems, and explore solutions to help young people develop a proper ecological perspective. To achieve these objectives, the present study chose the corpus of high school English textbooks (Shanghai Foreign Language Education Press Edition), which was classified into four topic groups and utilized the UAM Corpus Tool to analyze the texts within the systemic context. A questionnaire survey was then administered among high school students using this edition of English textbooks, and data analysis was conducted using the SoJump platform. The findings suggest that the majority of the textbooks' attitudinal resources were appreciation, followed by judgment and affect. Beneficial discourse accounted for the highest proportion, followed by ambivalent and destructive discourse. High school students were able to identify beneficial discourse, but they struggled to differentiate between ambivalent and destructive discourses and had negative attitudes towards environmental practices. The results can provide textbook writers and classroom teachers with a more objective and comprehensive understanding of the ecological content in textbooks and facilitate the development of ecological consciousness among students.

Keywords: Ecolinguistics; Positive Discourse Analysis; High School English Reading Texts; Attitude System

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ARTICLE INFO

Received: 23 July 2024 | Revised: 10 September 2024 | Accepted: 20 September 2024 | Published Online: 26 September 2024

DOI: https://doi.org/10.55121/le.v1i1.211

CITATION

Li, X., Xu, J., 2024. Let's Go Eco: A Positive Discourse Analysis of English Reading Materials in High School Textbooks Based on Attitude System. Linguistic Exploration. 1(1): 36–50. DOI: https://doi.org/10.55121/le.v1i1.211

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1. Introduction

The world is currently facing a variety of pressing environmental challenges, including global warming, deteriorating water conditions, and the extinction of species, which pose serious risks to the continued existence of humanity. In recent years, China has demonstrated a strong commitment to promoting the construction of an ecological society that fosters harmony between humanity and nature. In line with this objective, the National English Curriculum Standards for General High School (2017)[1] underscore the importance of reinforcing legal awareness, national security, national unity, ecological civilization, and maritime rights education, with a particular emphasis on ecological education in textbooks.

Since the content and attitudes expressed in course materials significantly influence the interests, consciousness, and emotions of students, which can persist throughout their lives, it is essential to assess the ecological teaching of high school English textbooks. By examining the language and discourses used in these textbooks, researchers can determine whether and to what extent they promote ecological awareness, responsibility, and action among learners. Such an analysis can help identify the values that the textbooks impart to students and provide a basis for improvement in ecological instruction.

Adopting the framework of the attitude system in ecolinguistics, this paper aims to conduct a discourse analysis of the reading discourses presented in high school English textbooks. Additionally, a questionnaire (see **Appendix A**) will be distributed to high school students to assess the role of the reading materials in enhancing their ecological consciousness.

This paper is divided into five parts.

Section 1 introduces the background of this paper, the purpose and significance of the study, and the paper's overall structure. Section 2 reviews relevant studies in ecolinguistics and textbook analysis. Section 3 presents the methodology, including the research framework, research questions, research subjects, research methods and research process. Section 4 conducts a complete discourse analysis of ecological language in reading texts and presents the results of the questionnaire survey. Section 5 summarizes the study's findings and limitations, andmakes recommendations for further study.

2. Literature Review

2.1. Previous Studies on Ecological Philosophy

Ecological discourse analysis assumes that the ecosophy (ecological philosophy) in discourses can have an impact on the perceptions and ecological behaviors of recipients.

Stibbe was the first scholar who proposed a systematic ecosophy, presenting his own framework of "living" for ecosophy in seven ways: (1) Valuing living, (2) Well-being, (3) Now and the future, (4) Care, (5) Environmental limits, (6) Social justice, and (7) Resilience[2] (p. 14).

(1) Valuing living

All beings value life highly and will do anything to defend it, which may happen deliberately, intuitively, and almost automatically. In other words, the maintenance of life is an innate requirement of all living creatures.

(2) Well-being

It emphasizes the quality of life. The purpose is not only to survive but to thrive, to have an exceptional level of fulfillment. However, it is essential to emphasize that human interest is a crucial requirement, and attempts to address environmental issues must not jeopardize it.

(3) Now and the future

Life's temporal horizon encompasses a good life now and in the future, as well as the capacity to live well for future generations.

(4) Care

Care means empathy, respect, and gratitude for the creatures that provide for our lives. Sometimes, we must harm other living species in order to maintain our own existence and well-being. As a result, empathy, respect, and gratitude are therefore essential. To be more explicit, we should be conscious of our influence on others, minimize suffering, accept responsibility for the ecosystems that sustain us, and "give back" to them.

(5) Environmental limits

Mankind must not overconsume the Earth's natural resources, as they are limited. To sustain within environmental constraints, an immediate and substantial decrease in global consumption is necessary.

(6) Social justice

A considerable portion of the population continues to suffer at present. Given the reduction in global consumption,

resources must be reallocated from the affluent to the poor in order for everyone to enjoy a high living standard.

(7) Resilience

The environmental destruction of industrialized countries will continue. Therefore, it is crucial to adapt to environmental change, increase resilience, and establish new societies when the old ones fail. As the earth becomes uninhabitable, this is necessary to sustain a high level of well-being.

This ecosophy prioritizes human life and quality of lifewhile acknowledging the needs of future generations. It recognizes the finite nature of resources and advocates equitable distribution of wealth to achieve global harmony. Moreover, increasing environmental resilience is crucial for addressing modern civilization's inherent risks. By focusing on human needs, it promotes empathy, remorse, and gratitude for past harm caused to others.

Given its clarity and comprehensiveness, this framework of ecosophy will be applied in the paper.

Stibbe[2] also argues that the establishment of an ethical framework for the analysis of ecological discourses should meet three conditions: The first is feasibility, i.e., whether conditionality is taken into account. The second is acceptability, which means it is not against human nature. The third is consistency, in which the ecological philosophy should be in line with reality. Moreover, Stibbe[2] contends that ecological discourse analysis is a process with a distinct political nature and value orientation. For the same discourse, analysts with varying ethical codes, values, and ecological philosophies will reach varying conclusions.

In light of the influence from ancient philosophy, Huang and Chen[3] provide an eco-philosophical view of "harmony" and a discourse analysis of harmony based on the political, economic, and cultural discourses in the Chinese setting, in order to promote harmony between people, nature, and society. Following Confucianism, Huang[4] claims that the main difference between humans and other life forms is "goodness of nature," that being human requires morality and conscience, and that there is a distinction between primary and secondary elements in our worldviews, values, ethics, and ecology, as well as an order of priority.

Zhao and Huang[5] delineate three principles of analysis, namely the principle of conscience, which asserts that humans should deliberately and conscientiously care for nature and strive for coexistence with it in harmony; the principle of proximity, which asserts that humans are tied to other kinds of life on earth by geographical, spatial, cognitive, emotional, and intellectual frameworks; and the principle of regulation, which asserts that human behavior should be guided by personal cultivation, social conventions, and national legislation.

This ethical framework clearly recognizes the legitimacy of human interests and the uniqueness of human beings. Nevertheless, it is important to note that there is no universal ecological philosophy, values, or judgments in ecological linguistics. In other words, there is no such thingas "correct" or "incorrect" values and approaches[3].

He and Liu[6] established an ecological view of "Diversity and Harmony, Interactionand Co-existence" to address international ecological discourses, with the goal of sustaining the positive growth of the international community ecosystem. It absorbs and incorporates the essence of traditional Chinese culture, philosophy, and diplomatic notions. "Diversity and harmony" imply that countries live in peace with one another, recognizing and respecting one another's interests and differences. "Interaction and co-existence"is a way of engagement in which nations complement and integrate each other. The objective of this ecological philosophy is to maintain the dynamic equilibrium of the international ecosystem community.

In terms of the classification of discourse, Stibbe[2] divides discourses into three categories: beneficial discourse, ambivalent discourse and destructive discourse. Furthermore, while it is important to analyze discourses, it is even more important to provide a sound and appropriate interpretation of the results. When the speaker expresses positive emotions (affect, judgment, appreciation) towards objects that follow the ecosophy of "living", this discourse contributes to a positive development of the ecosystem; hence, it is a beneficial discourse. By the same token, when the speaker expresses negative emotions towards objects that contradict the ecosophy of "living" and are not conducive to the ecosystem's development, this discourse is destructive. When the attitudes are neutral, neither following nor contradictingthe ecosophy of "living", the discourse is ambivalent.

Since there are no clear boundaries between the three discourses, Huang & Chen[3] developed a discourse analysis continuum to indicate the degree of discourses.

2.2. Previous Studies of English Textbook Discourses from Attitude System

Several recent papers have analyzed English textbook discourses from the perspective of the attitude system.

Pan[7] analyzed attitudinal resources within story genres using Martin's appraisal theory. It demonstrates the effectiveness of this approach for enhancing students' proficiency in English reading and emphasizes the importance of considering genre in analysis. The study also highlights the significance of attitudinal lexis for understanding story genres and suggests further research on engagement and graduation in understanding these genres.

Liu[8] used both quantitative and qualitative analysis to examine the attitudinal resources in English textbooks' narratives. The study aims to reveal the implicit meanings of narratives and how textbook writers achieve their intentions through generic staging. The findings show that appreciation resources are more often adopted than judgment resources. Attitudinal resources (appreciation, affect, and judgment) are extensively used in narratives to develop plots, improve readers' understanding of characters and highlight textbook writers' intentions. The study concludes that the application of appraisal theory to narratives is crucial for improving students' reading proficiency.

Yang[9] analyzed three sets of primary school English textbooks published by People's Education Press, using Martin's appraisal theory and Kress and VanLeeuwen's visual grammar theory to identify the moral values contained within them and the distribution and frequency of linguistic resources by grade level. The results show that politeness was emphasized in all three sets of textbooks in the lower primary grades, while observing public order was emphasized in the upper primary grades.

These three studies have provided insights into how language resources can be used effectively to convey moral values and improve reading proficiency. However, at present, there are few studies on the analysis of English textbooks from the perspective of the attitudinal system based on ecological discourses. Liu's[10] paper studied three types of eco-discourse (beneficial, ambivalent and destructive), using a questionnaire to assess the impact of these discourses on high school students. She found that there are not only beneficial ecological discourses in textbooks, but also ambivalent and destructive discourses. She suggests that textbook writers should examine discourse choices from an ecological perspective and improve ecological orientation. Classroom teachers should integrate ecological education into their daily teaching activities, encourage students to reflect on the ecological discourses in textbooks, and provide them with opportunities for practice. What her paper lackedwas a sufficient theoretical underpinning on the attitudinal system for the analysis of the examples. In addition, her questionnaire did not really demonstrate students' ability to identify the three ecological discourses.

Another paper, by Wang and Shi[11], used an ecological linguistic perspective on attitudinal system to detail the distribution of theattitudinal resources in ecological discourses. They called for the creation of ecological awareness and a thorough investigation of useful discourses in teaching materials and urged students to pay attention to ecological discourses in the materials. The weaknesses of their study are the lack of qualitative analysis and the absence of interviews or surveys with teachers or students to obtain first-hand information to support their research. These are the research gaps that need to be filled.

3. Theoretical Framework

3.1. Positive Discourse Analysis

Positive discourse analysis (PDA), introduced by James R. Martin in 1999, is an evolution of critical discourse analysis (CDA). Based on Systemic Functional Linguistics (SFL), PDA employs a cordial and approachable methodology to discourse analysis, which has a positive social impact and enriches discourse analysis theories[12]. It tends to encourage harmonious social development, views discourse positively and grandly, and takes a constructive stance toward social contradiction and injustice.

SFL, especially the Appraisal Theory, provides PDA with linguistic means to analyze discourse. The Appraisal System is an interpersonal system at the semantic level of discourse and is related to the evaluation involved in the discourse[13]. Martin applied PDA to analyze discourses within the framework of the attitude system. He proposed conducting discourse analysis in a constructive and amicable manner that considers both the speaker and opposing parties, emphasizing the importance of accepting responsibility and pursuing reconciliation.

Appraisal theory can define the features of words and phrases, analyze the attitudes of the speaker/author, and align them with the audience/reader, thus enabling language to perform its intended function. According to Martin & White [13], textbook writers and speakers exhibit their personal views and attitudes in their text or speech, thereby reflecting the characteristic features of social communication.

Appraisal resources can facilitate the negotiation of social relationships by allowing the speaker or author to convey their feelings about particular individuals or objects to the audience or readers. Thus, evaluations are closely linked to attitudes. The evaluation comprises three aspects: the speaker's attitude towards what happened, the behavior of others, and certain objects; the intensity of the attitude, which may be high, medium, or low; and the source of the attitude, which may not belong to the speaker/author, who may merely convey the attitudes of others. The appraisal system is divided into three sub-systems: attitude, engagement, and graduation [13], among which the attitude system is the core which evaluates one's behavior and the value of things.

3.2. Attitude System

The attitude system, the central component of the Appraisal Theory (see **Figure 1**), is concerned with our feelings, including "emotional reactions, judgments of behavior and evaluation of things" ([13], p. 42). It consists of three categories: affect, judgment, and appreciation.

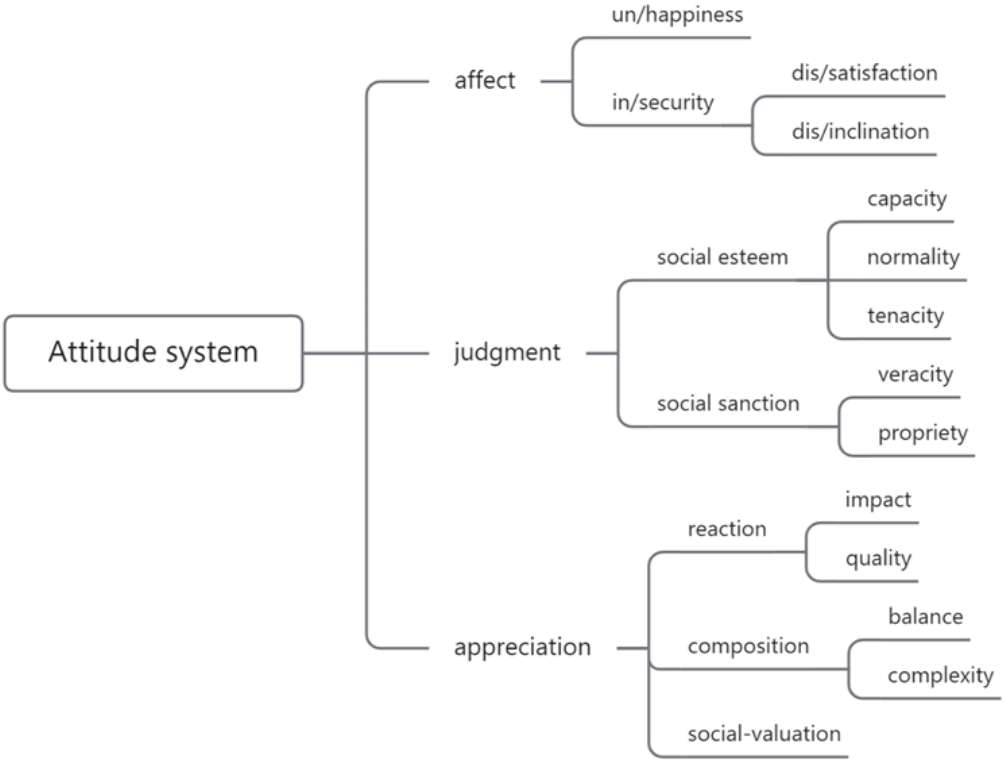


Figure 1. Attitude system ([13], p. 42).

Affect is related to positive and negative feelings, which can be divided into four groups: (un)happiness, (in)security, (dis)satisfaction, and (dis)inclination. The un/happiness variable covers emotions about "affairs of the heart", such as (un)happy and (un)like. The in/security variable covers emotions related to eco-social well-being, such as peace and anxiety. The dis/satisfaction variable covers emotions concerned with achievement and frustration in the activities we are engaged in. The (dis)inclination variable is a kind of irrealis affect, indicating the feeling of intention instead of reaction, such as fear and desire.

Judgment involves our attitudes toward people and the way they behave. It can be divided into two parts: "social esteem" and "social sanction" in general. Social esteem is

about people's character, which is concerned with the formation of social relationships, sometimes at the moral and ethical level. Social esteem has three sub-categories: "capacity" (how capable someone is), "normality" (how unusual someone is), and "tenacity" (how dependable someone is). Social sanction is about people's behaviors, their civic or religious duty, which is formal, especially in writing and the legal area. It can be divided into two sub-categories: "veracity" (how truthful someone is) and "propriety" (how ethical someone is or how far beyond approach someone is).

Appreciation is about evaluations of semiotic, or natural phenomena. It can be divided into three parts: "reaction"(Impact: do they catch my attention; Quality: do I like it?), "composition" (Balance and complexity: do they hang together and are they hard to follow?), and "social-valuation" (Are they worthwhile?)[13].

Affect focuses on participants' and people's own feelings. Judgment targets participants' behaviors while appreciation lays emphasis on things, whether they are concrete or abstract, material or semiotic.

4. Methodology

4.1. Research Questions

The aim of this study is to analyze the distribution of attitude resources and discourse orientations in high school English textbooks, clarify the ecological values embedded in these materials, and provide recommendations for textbook development and classroom instruction to further improve high school students' ecological values. Specifically, this study seeks to address three research questions:

1. How are attitude resources and ecological discourse orientations distributed in the reading materials?
2. What is the level of high school students' understanding of ecological discourses and their level of ecological consciousness?
3. What are the characteristics and limitations of the reading materials in cultivating students' ecological consciousness?

4.2. Research Data

The present study focuses on high school English textbooks (Shanghai Foreign Language Education Press Edition). The textbooks consist of seven volumes, including three required volumes and four selective volumes. Among them, there are nine reading passages in the "Human and Nature" theme. The corpus is classified into four topic groups, as shown in **Table 1**. The study analyzes the attitude resources in the corpus and conducts further research accordingly. In addition, 500 high school students who study the textbooks were chosen as the survey participants. This survey aims to investigate the attitudes of students towards the reading passages and the implications for English language teaching in Chinese high schools.

Table 1. Corpus of reading passages.

Reading Materials of "Human and Nature"		
Topic Group	**Topic**	**Sources**
Natural ecology	The beauty of nature	Required module 2 Unit 1 Reading B
	Zoos: Crucial or caring?	Requiredmodule 2 Unit 2 Reading A
	Friends reunited	Requiredmodule 2 Unit 2 Reading B
Environmental protection	The natural garden	Requiredmodule 2 Unit 1 Reading A
	The villain in the atmosphere	Selective module 3 Unit 4 Reading A
	Together for our ocean	Selective module 3 Unit 4 Reading B
Disaster warning	Surviving the earthquake	Selective module 2 Unit 4 Reading A
	How to survive natural disasters	Selective module 2 Unit 4 Reading B
Nature exploration	The most unknown and mysterious places on earth	Selective module 3 Unit 3 Reading B

4.3. Research Instruments

The current study seeks to investigate the attitudes towards ecological issues manifested in high school English textbooks and evaluate their impact on ecosystem well-being. A positive discourse analysis (PDA) of reading materialswas adopted to identify the lexical and semantic elements that convey attitudinal resources. The UAM Corpus Tool was uti-

lized to analyze text within the systemic context, allowing for a close examination of the distribution of affect, judgment, and appreciation resources.

To ensure the statistical data's reliability and validity, the research tool was used to obtain the distribution results of thethree attitude sub-systems. Moreover, the discourses were classified into three categories: beneficial, ambivalent, and destructive based on the ecosophy of "living". This framework determined whether the discourse promotes or hinders ecosystem well-being when the textbook writer or speaker expresses feelings, judgments, or appreciation about the ecosophy's object of view.

Furthermore, to discern students' ecological views, a questionnaire survey was conducted among high school students using this edition of English textbooks. The questionnaire underwent several revisions prior to being distributed based on the feedback from high school students, focusing on students' perspectives regarding ecological issues and their ability to discern ecological orientations implied in the given discourses. Finally, a total of 403 questionnaires were collected, of which 250 were valid. Subsequently, data analysis was conducted using the SoJump platform.

5. Results and Discussion

5.1. Distribution and Analysis of Attitude System

As can be seen from the **Table 2**, the most frequently utilized resource is the appreciation resource, which appears 138 times, accounting for 49.8% of all attitude resources. The judgment resource occurs 88 times, making up 31.8% of all attitude resources, while the affect resource has the least frequency, appearing only 51 times and accounting for 18.4% of all attitude resources.

From an attitude perspective, the data suggests that positive resources are more prevalent, with a cumulative total of 180 occurrences, accounting for 65.0%, while negative resources are less frequently used, with a cumulative total of 97 times, accounting for 35.0%. Therefore, the reading texts analyzed in this study, which deal with the "human and nature" theme, demonstrate a preponderance of positive attitude resources.

The statistics imply that the positive attitude resources used in the reading texts reflect the textbook writers' positive stance towards the natural environment and their commitment to promoting environmental awareness and protection.

Table 2. Distribution of attitude system.

	Positive	Negative	Total
Affect	30(10.8%)	21(7.6%)	51(18.4%)
Judgment	54(19.5%)	34(12.3%)	88(31.8%)
Appreciation	96(34.8%)	42(15.2%)	138(49.8%)
Total	180(65.0%)	97(35.0%)	277

5.1.1. Distribution of Affect Resources

An analysis of the selected ecological discourses shows that there are 51 affect resources in total, with 14 belonging to un/happiness, 11 to dis/satisfaction, 20 to in/security, and 6 to dis/inclination, as shown in **Table 3**. The most frequently used category is in/security, which accounts for 39.2% of the total affect resources, followed by un/happiness (27.5%), dis/satisfaction (21.6%), and dis/inclination (11.7%). The use of adjectives and nouns is prevalent in these affect resources, indicating that the textbook writers rely on descriptive language to express their attitudes and emotions.

Table 3. Distribution of affect resources.

Affect	Total
Un/happiness	14(27.5%)
Dis/satisfaction	11(21.6%)
In/security	20(39.2%)
Dis/inclination	6(11.7%)
Total	51

This analysis of ecological discourses suggests that the human-environment relationship is primarily viewed through affect resources, with in/security being the most frequently used category. The prominence of in/security resources may indicate widespread concern and anxiety about the current state of the environment and its impact on human well-being. The significant use of un/happiness and dis/satisfaction resources further suggests that individuals are fascinated with the natural environment but are unhappy with the lack of action taken to address environmental challenges. On the other hand, the limited use of dis/inclination resources may suggest that individuals are not entirely disinterested in the environment and may be willing to take action to address environmental issues.

The large number of positive attitudinal resources demonstrates that the ideals advocated in the texts main-

tain a positive and hopeful outlook on establishing a balance between humans and the environment and the sustainable use of natural resources. Implicitly negative views, such as the depiction of people's fears in natural disasters, also reflect a dread of nature and the necessity to acknowledge the obstacles that must be surmounted to attain the aim of living in harmony with environment. Yet, the textbook writers' stronger use of positive attitude resources shows that the overall attitude of the discourses is still hopeful, and that readers, particularly students, should likewise incline to perceive the interaction between humans and nature favorably. The employment of attitudinal resources highlights the significance of discourse in forming students' perception of the human-nature interaction.

5.1.2. Distribution of Judgment Resources

Based on the data, a total of 88 judgment resources were identified in relation to the human-environment relationship, including 70 social-esteem resources and 18 social-sanction resources, as shown in **Table 4**. Among the social-esteem resources, normality resources were the most common, accounting for 35.2%, followed by capacity resources (31.8%) and tenacity resources (12.5%). Within the social-sanction resources, propriety resources were predominant, accounting for 18.2% of the total, while veracity resources accounted foronly 2.3%. In terms of attitude polarity, positive resources accounted for 55.09% with 49 resources, while negative resources accounted for 44.91% with 39 resources.

Table 4. Distribution of judgment resources.

Judgment		Total
Social-esteem		70(79.5%)
	Normality	31(35.2%)
	Capacity	28(31.8%)
	Tenacity	11(12.5%)
Social-sanction		18(20.5%)
	Veracity	2(2.3%)
	Propriety	16(18.2%)
Total		88

These statistics imply that the human-environment relationship is perceived predominantly through social-esteem resources, with normality, capacity, and tenacity resources used in descending order. The high proportion of normality resources indicates that people view the relationship between humans and the environment as a normal and natural part of life. The prominence of capacity resources suggests that individuals are aware of the need for actions to be taken to address environmental challenges. The presence of tenacity resources may indicate the willingness of individuals to persevere in the face of obstacles and continue working towards a more sustainable future.

The social-sanction resources rely mainly on propriety, indicating that people consider it important to behave in an appropriate and respectful manner towards the environment. The limited use of veracity resources in social sanction suggests that individuals do not perceive the need for strict enforcement of environmental laws and regulations as a means of ensuring environmental protection.

In summary, the positive judgment resource in the data reveals that people have a positive outlookon preserving a harmonious relationship with nature and that they believe human actions, regulations, or ethical norms may be utilized to lessen the detrimental impact of human activities on the environment and establish a sustainable future in which people and nature coexist.

5.1.3. Distribution of Appreciation Resources

The analysis of the selected ecological discourses reveals that there are a total of 137 appreciation resources, with composition being the most frequently used category, accounting for 51.82% of the total appreciation resources, followed by social-valuation resources (24.09%) and reaction resources (24.09%), as shown in **Table 5**. This suggests that textbook writers make a point of describing the complexity and balance of the human-environment relationship, as well as the impact of human actions on the environment.

In terms of the specific composition resources, the category of balance is the most frequently used, accounting for 33.6% of the total composition resources, followed by complexity (18.2%). The fairly high proportion of balance and complexity resources indicates that the textbook writers view the human-environment relationship as a delicate and interconnected system that requires careful attention to ensure that both human needs and environmental needs are met.

Additionally, the use of impact and quality in the reaction category suggests that the textbook writers are emotionally attached to the environment and see it as having a significant impact on human life.

Social-valuation resources focus mainly on the assessment of the value of the human-environment relationship,

using words such as "helpful" and "creative" to express the influence of the environmental system.

Regarding the positive and negative attitudes, there are 95 positive-attitude resources and 42 negative-attitude resources in the selected discourses, with a proportion of 69.23% and 30.77%, respectively. The use of positiveattitudinal resources reflects the textbook writers' appreciation for the environment and their efforts to protect it. Meanwhile, the limited use of negative attitudinal resources suggests that they placea higher importance on the good, in line with the principles of positive discourse analysis.

Table 5. Distribution of appreciation resources.

Appreciation		Total
Reaction		33(24.1%)
	Impact	20(14.6%)
	quality	13(9.5%)
Composition		71(51.8%)
	Balance	46(33.6%)
	Complexity	25(18.2%)
Social-valuation		33(24.1%)
Total		137

5.2. Distribution and Analysis of Ecological Discourses

As can be seen in **Table 6**, among the three main categories of discourse: beneficial, destructive, and ambivalent, beneficial discourse, which emphasizes the harmonious coexistence between humans and nature and conscious protection of the environment, is the most dominant category, with 103 instances. Destructive discourse, which focuses on negative human impact on the environment and natural disasters, is the least common category, with 80 instances. Ambivalent discourse, which describes the human-centered role of nature and objectively portrays the natural environment and human activities, presenting both positive and negative aspects of the human-environment relationship, appears 95 times.

There are a number of eco-discourses in the reading texts, and the 103 positive ones demonstrate that the textbooks are committed to promoting the benefits of living in harmony with nature and the necessity for students to become more ecologically conscious and cognizant of environmental protection. The frequency of 80 destructive discourses demonstrates that people are aware of the dangers of natural catastrophes and warn themselves and future generations to take precautions. The detrimental impact of human activities on the environment is also glaringly apparent, and the discourses are therefore an urgent cry for students to solve problems in order to preserve the natural balance and protect the habitats of people and other living things. The frequency of 95 ambivalent discourses demonstrates that people have a complicated and dualistic view of the relationship between humans and nature, such as the destruction of nature for the purpose of allowing more people to survive, to improve the quality of life, to preserve their houses, or to maintain civilization. This suggests that students should take a conscious dialectical view of natural ecological issues and consider the interactions between human activities and the natural environment.

Table 6. Distribution of ecological discourses.

Discourse Orientation	Total
Beneficial-discourse	103(37.1%)
Destructive-discourse	80(28.8%)
Ambivalent-discourse	95(34.1%)
Total	278

This section will provide an in-depth analysis of the three types of ecological discourses and explore their impact on the ecological environment from different perspectives. All the description is based on Martin & White[13]'s attitude coding system, as shown in **Table 7**.

Table 7. Martin and White's[13] attitude coding system.

Abbreviation	Term
+	Positive Attitude
−	Negative Attitude
des	Affect: Desire or Dis/inclination)
hap	Affect: Un/happiness
sec	Affect: In/security
sat	Affect:Dis/satisfaction
norm	Judgment: Normality
cap	Judgment: Capacity
ten	Judgment: Tenacity
ver	Judgment: Veracity
prop	Judgment: Propriety
reac	Appreciation: Reaction
comp	Appreciation: Composition
val	Appreciation: Valuation

5.2.1. Analysis of Ecologically Beneficial Discourse

In this part, a number of sentences expressing ecologically beneficial attitudes areannotated to illustrate how the ecological attitudes of a discourseare understood.

Example 1. *"As six species of sea turtles are already threatened with extinction, this is a big problem."* (Selective 4 Unit 4 Reading B)

In this sentence, the word "threaten" is "-sec" and "big" is the "-prop" word, while "threaten" expresses concern about the endangerment and extinction of sea turtle species, and "big" emphasizes the seriousness of the problem, i.e., the gravity of natural extinction and the urgency of positive human intervention. This phrase is therefore an ecologically beneficial statement that calls for environmental protection to promote the conservation of sea turtles and other endangered species and to maintain ecological balance.

5.2.2. Analysis of Ecologically Ambivalent Discourse

Example 2. *"We can be thankful that carbon dioxide is keeping us comfortably warm, but the concentration of carbon dioxide in the atmosphere is going up 'steadily' and that is where the villainy comes in."* (Selective 4 Unit 4 Reading A)

In this sentence, the words "thankful" and "comfortably" are "+sat" showing that people appreciate the presence of CO_2, which renders them a cozy environment. "Steadily" is "+norm" implying that the increase in CO_2 concentration is a gradual process. "Villainy" is "-prop", a negative social judgment implying that an increase in CO_2 is an immoral and destructive act. This sentence thus contains both a beneficial discourse which recognizes the positive role of CO_2 for humans and a destructive discourse announcing that the increase in CO_2 due to human actions is destroying the ecological balance. Therefore, it is an ambivalent discourse.

5.2.3. Analysis of Ecologically Destructive Discourse

Example 3. *"There was only one thing that the king disliked—the remains of a huge tree standing in the middle of the gardens. It was withered and dry."* (Required 2 Unit 1 Reading A)

In this sentence, "dislike" is affect: dissatisfaction ("-sat"), showing the king's negative attitude towards a natural plant. "Withered" and "dry" are appreciation: reaction ("-reac"), which express a negative attitude towards the aging of trees, implying the consumption of natural resources and the destruction of theecosystem. However, from an ecological point of view, the dead tree still plays an important role in the ecosystem, such as providing habitats for wildlife and nutrients for other plants. Therefore, the attitude in this sentence is destructive discourse.

5.3. Results and Discussion of the Students' Questionnaire

This part will present an analysis of the questionnaire designed to gather information on high school students' ability to identify and understand beneficial, ambivalent, and destructive discourses in English textbooks.

5.3.1. Students' Understanding of Ecologically Beneficial Discourse

Specific data are shown in **Tables 8**, **9** and **10**.

Table 8. Judgments of high school students on ecological discourses in textbooks.

Options	Total	Proportion
Definitely can	181	72.4%
Perhaps can	61	24.4%
Uncertain	7	2.8%
Perhaps cannot	1	0.4%
Definitely cannot	0	0%

As six species of sea turtles are already threatened with extinction, this is a big problem.

Table 9. High school students' recognition of ecologically beneficial discourse.

Options	Total	Proportion
Destructive discourse (0)	1	0.4%
1	0	0%
2	3	1.2%
3	4	1.6%
4	9	3.6%
Ambivalent discourse (5)	20	8%
6	16	6.4%
7	29	11.6%
8	48	19.2%
9	45	18%
Beneficial discourse (10)	75	30%

Table 10. Implementation of ecologically beneficial discourse by students.

Options	Total	Proportion
Definitely will	130	52%
Perhaps will	91	36.4%
Uncertain	20	8%
Perhaps won't	8	3.2%
Definitely won't	1	0.4%

It was found that the majority of respondents (over 72.4%) believed that they could identify ecologically beneficial discourses and were willing to put beneficial ecological values into practice. Approximately 24.4% of the respondents indicated that they could only possibly identify ecologically beneficial discourses in the textbooks. A tiny proportion (0.4%) were unsuccessful in identifying them and were not willing to engage in good ecological practices. This shows that most students can recognize the ecological value of beneficial discourse, but some may not fully understand or appreciate their meanings. Therefore, the textbooks need to add more detailed information and guide students to recognize the significance of protecting endangered species and the beauty of living in harmony with nature.

5.3.2. Students' Understanding of Ecologically Ambivalent Discourse

Specific data are shown in **Tables 11** and **12**.

Table 11. Judgments of high school students on ecologically ambivalent discourse in textbooks.

Options	Total	Proportion
Definitely can	131	52.4%
Perhaps can	81	32.4%
Uncertain	27	10.8%
Perhaps cannot	8	3.2%
Definitely cannot	3	1.2%

When it is sunny and bright outside, we feel cheerful inside.

Table 12. High school students' recognition of ecologically ambivalent discourse.

Options	Total	Proportion
Destructive discourse (0)	0	0%
1	1	0.4%
2	2	0.8%
3	1	0.4%
4	2	0.8%
Ambivalent discourse (5)	18	7.2%
6	25	10%
7	32	12.8%
8	54	21.6%
9	48	19.2%
Beneficial discourse (10)	67	26.8%

Regarding the identification and understanding of ambivalent discourses, the results showed that most students (52.4%) were unable to identify ambivalent discourses and tended to choose the positive side of them. In some ways, this is conducive for students to develop a positive and optimistic view of ecology, but the general lack of knowledge and understanding of the negative aspects of ecological issues or the influence of long-standing socially conditioned stereotypes is not conducive to the development of harmony between humans and nature in the long run.

5.3.3. Students' Understanding of Ecologically Destructive Discourse

Specific data are shown in **Tables 13**, **14** and **15**.

Table 13. High school students' recognition of ecologically destructive discourse.

Options	Total	Proportion
Definitely can	121	48.4%
Perhaps can	61	24.4%
Uncertain	23	9.2%
Perhaps cannot	14	5.6%
Definitely cannot	31	12.4%

Wolves are dangerous and terrifying animals, a major threat to humans and other herbivores.

Table 14. High school students' recognition of ecologically destructivediscourse.

Options	Total	Proportion
Destructive discourse (0)	2	0.8%
1	1	0.4%
2	4	1.6%
3	4	1.6%
4	9	3.6%
Ambivalent discourse (5)	28	11.2%
6	16	6.4%
7	43	17.2%
8	45	18%
9	36	14.4%
Beneficial discourse (10)	62	24.8%

Table 15. High school students' intention to stopdestructive behaviors.

Options	Total	Proportion
Definitely will	144	57.6%
Perhaps will	65	26%
Uncertain	33	13.2%
Perhaps won't	7	2.8%
Definitely won't	1	0.4%

It turns out that most students did not recognize such statements as cutting down dead trees to create an elaborate fountain as ecologically destructive. This indicates that their thinking is still biased towards human-centeredness and

thus ignores the significance of nature. Therefore, textbooks and teachers need to emphasize the dangers of destructive discourses and their detrimental effect on sustainable development, so as to cultivate students' ecological awareness, helping them to act in a way that is conducive to the health of the ecosystem.

5.3.4. Students' Perceptions and Suggestions on Eco-Discourse in Textbooks

Specific data are shown in **Tables 16**, **17** and **18**.

Table 16. Whether the three ecological discourses accurately reflect reality.

Options	Total	Proportion
Reflects Completely	106	42.4%
Reflects Partially	103	41.2%
Uncertain	32	12.8%
Reflects Minimally	9	3.6%
Does Not Reflect	0	0%

Table 17. Whether reading the three ecological discourses helps cultivate ecological awareness.

Options	Total	Proportion
Extremely Helpful	139	55.6%
Somewhat Helpful	77	30.8%
Uncertain	21	8.4%
Not Very Helpful	8	3.2%
Not Helpful at All	5	2%

Table 18. Whether ecological discourses in textbooks need to be optimized.

Options	Total	Proportion
Needs significant improvement	49	19.6%
Needs some improvement	25	10%
Uncertain	84	33.6%
Not needed	92	36.8%

Regarding student perceptions and suggestions on the textbooks, 42.4% of the respondents believed that the course materials accurately reflected reality, were relevant to their lives, and that the ecological discussions in the readings contributed to the development of their ecological consciousness. 19.6% of the respondents suggested that the textbooks be optimized by covering a wider range of environmental issues, providing clearer explanations with vivid pictures, and presenting the latest research findings and advanced environmental ideas.

6. Conclusion

This study analyzes the distribution of attitude resources and ecological discourse orientations in the reading texts of the "Human and Nature" theme and conducts a questionnaire survey among high school students to assess learners' awareness of ecological discoursesand the impact of the reading materials on their ecological consciousness. The findings are as follows.

First, through the attitudinal expressions and contexts, certain ecological values can be imparted to the learners. The content and purpose of these nine texts regarding human-nature interactions can explain the frequent use of the appreciation resource, followed by the judgment and affect resources. Overall, the use of attitudinal resources in these texts reflects the textbook writers'goals of promoting environmental awareness and protection, and the varying frequency of these resources indicates their degree of effectiveness in achieving these goals.The predominant use of the appreciation resource indicates the textbook writers' intent to convey the positive characteristics of the natural environment, such as its beauty, valueand significance, and encourages readers to recognize and protect it.

Second, in terms of the distribution of ecological discourses in the textbooks, beneficial discourse, which accounts for the highest proportion in the corpus reflects the concept of "living". Ambivalent discourse which accounts for the second highest proportion not only reflects the ecological concept of "living" in which humans live in harmony with nature, but also the negative stereotypes of the natural environment due to social and cultural influences, such as the association of emotions with the weather and the hostility towards carbon dioxide gas, which is not conducive to building sustainable development. Destructive discourse which accounts for the lowest proportion but is still prevalent expresses negative values such as the destruction of the environment, arbitrary interference with nature, waste of resources, anthropocentrism, etc. It serves as a reminder for learners to reflect on their own ecological awareness and behavior.

Third, high school students can recognize beneficial discourses, but a very small percentage cannot, so teachers still need to provide timely guidance. With regard to ambivalent discourses, high school students can recognize their positive aspects but often overlook their negative aspects,

which may influence their ecological decisions or behaviors in the future. With regard to destructive discourses, most students were unable to identify them, presumably because they still hold anthropocentric values, therefore the ecological concepts in the statements need to be strengthened. Regarding the willingness to translate beneficial ecological ideas into practice or to stop ecologically destructive behavior, most students chose a favorable attitude, but a small number were unwilling to do so. Therefore, the motivations behind the choices need to be understood in order to awaken students' ecological feelings and guide them in their ecological behavior.

Since instructional materials are one of the primary means by which students learn, they have the potential to influence how students perceive ecological conservation and other environmental issues. If the ecological values in the textbooks are inaccurate, incomplete or simply missing, they may mislead students or render them indifferent to environmental issues. To stimulate students' interest in learning and boost their motivation, course materials should cover a broader spectrum of ecological issues and associated knowledge. Students can havea firmer grasp of ecological knowledge if additional case studies are included. More pertinent images can be added to the textbooks to make it more engaging for learning and relevant to students' daily lives.

The selection of nine reading texts under one theme is not necessarily representative of all ecologically relevant discourses in the course materials. Besides, the sample size of student surveys is not large enough. To gain a holistic understanding of students' abilities and knowledge regarding ecological literacy, it is advisable to compare the results of different levels of students within the same school or across different schools. This would allow for a more nuanced analysis of how ecological literacy varies across different academic levels or educational contexts.

Future studies could also incorporate first-hand information from teachers by conducting interviews or observing lessons to gain a better understanding of the teaching and learning processes related to ecological literacy. This would provide additional insights into how students develop their ecological literacy skills and how teachers can support this process.

Author Contributions

Conceptualization, J.X.; methodology, J.X. & X.L.; software, J.X.; validation, X.L. & J.X.; formal analysis, J.X. & X.L.; investigation, J.X. & X.L.; resources, J.X.; data curation, J.X.; writing—J.X.; writing—review and editing, X.L.; visualization, J.X. & X.L.; supervision, X.L. All authors have read and agreed to the published version of the manuscript.

Funding

This work received no external funding.

Institutional Review Board Statement

The study was reviewed and approved by the Ethics Committee of Shanghai International Studies University.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

All relevant data are within the paper.

Conflicts of Interest

The authors declare no conflict of interest.

Appendix A

Questionnaire

Dear students, this questionnaire is about the distributionof ecological discourse in the reading materials of high school English textbooks (Shanghai Foreign Language Education Press Edition). The purpose of this study is to understand senior high school students' understanding of ecological discourses and related ecological consciousness.

There is no right or wrong answer to the questions in this questionnaire. Your privacy will be ensured at all times. The information and data are for research purposes only.

Please feel free to fill in the form according to your

actual situation. Thank you for taking the time to help us complete the questionnaire. Your cooperation will provide important reference materials for the study of the topic.

Before filling in the questionnaire, you need to understand the concepts involved in the questionnaire.

There are three categories of ecological discourse: ecologically beneficial discourse, ecologically destructive discourse and ecologically ambivalent discourse.

Ecologically beneficial discourse refers to the discourse which emphasizes the harmonious coexistence between humans and nature and the conscious protection of the environment.

Ecologically destructive discourse refers to the discourse which is not conducive to the harmonious coexistence between humans and nature and conscious protection of the environment.

Ecologically ambivalent discourse refers to the discourse which objectively portrays the natural environment and human activities, presenting both positive and negative aspects of the human-environment relationship.

1. Do you think you will identify ecologically beneficial discourses in the materials you have learned?
   A. Definitely will B. Perhaps will C. Uncertain D. Perhaps won't E. Definitely won't
2. Do you think you will identify ecologically ambivalent discourses in the materials you have learned?
   A. Definitely will B. Perhaps will C. Uncertain D. Perhaps won't E. Definitely won't
3. Do you think you will identify ecologically destructive discourses in the materials you have learned?
   A. Definitely will B. Perhaps will C. Uncertain D. Perhaps won't E. Definitely won't

Based on your first impression, which do you think the following discourses belong to: ecologically beneficial discourse, ecologically destructive discourse and ecologically ambivalent discourse? (The higher the score, the closer to the target discourse.) [0–10 points, 0 = ecologically destructive discourse, 5 = ecologically ambivalent discourse, 10 = ecologically beneficial discourse]

4. As six species of sea turtles are already threatened with extinction, this is a big problem.
5. When it is sunny and bright outside, we feel cheerful inside.
6. When it is cloudy and rainy, we often feel gloomy.
7. Joao cleaned the oil off the penguin's feathers and fed him a daily diet of fish to get his strength up
8. When a timid flower pushes through the frozen ground, new hope will always come to us.
9. In those gardens lived thousands of creatures representing hundreds of different species.
10. In many Chinese landscape paintings, waterfalls and mountain peaks make up much of the painting while humans often have a place. They are participants in the natural scene, but they do not dominate it.

Do you agree with the following statements?

11. Learning to become more aware of nature can truly have a positive effect on our lives in the way we look at things and in the way we feel about ourselves
    A. Strongly agree B. Partly agree C. Uncertain D. Partly disagree E. Strongly disagree
12. Less packaging and fewer products are a step on the way to more sustainable development.
    A. Strongly agree B. Partly agree C. Uncertain D. Partly disagree E. Strongly disagree
13. When it is sunny and bright outside, we feel cheerful inside.
    A. Strongly agree B. Partly agree C. Uncertain D. Partly disagree E. Strongly disagree
14. When it is cloudy and rainy, we often feel gloomy.
    A. Strongly agree B. Fairly agree C. Uncertain D. Fairly disagree E. Strongly disagree
15. So, he had the withered tree cut down and replaced with elaborate fountains.
    A. Strongly agree B. Fairly agree C. Uncertain D. Fairly disagree E. Strongly disagree
16. Nature is truly an intrinsic part of our lives.
    A. Strongly agree B. Fairly agree C. Uncertain D. Fairly disagree E. Strongly disagree

17. Some animals become unhappy in zoos because there isn't enough space.
    A. Strongly agree B. Fairly agree C. Uncertain D. Fairly disagree E. Strongly disagree
18. Due to threats such as illegal hunting, there are many species which would be extinct if they weren't kept in zoos.
    A. Strongly agree B. Fairly agree C. Uncertain D. Fairly disagree E. Strongly disagree
19. A trip to the zoo is both educational and fun—I'll definitely continue to visit zoos!
    A. Strongly agree B. Fairly agree C. Uncertain D. Fairly disagree E. Strongly disagree
20. Will you practice the speech or behavior in an ecologically beneficial discourse?
    A. Definitely will B. Perhaps will C. Uncertain D. Perhaps won't E. Definitely won't
21. Will you stop the speech or behavior in an ecologically destructive discourse?
    A. Definitely will B. Perhaps will C. Uncertain D. Perhaps won't E. Definitely won't
22. Will you prefer the beneficial part to the destructive part in an ecologically ambivalent discourse?
    A. Definitely will B. Perhaps will C. Uncertain D. Perhaps won't E. Definitely won't
23. Do you think the three types of ecological discourse reflect reality?
    A. Reflect completely B. Reflect partially C. Uncertain D. Reflect minimally E. Does not reflect
24. Do you think reading the three types of ecological discourse is helpful in cultivating your own ecological awareness?
    A. Extremely helpful B. Somewhat helpful C. Uncertain D. Not very helpful E. Not helpful at all
25. I think the arrangement of ecological discourses in textbooks needs to be improved.
    A. Needs significant improvement B. Needs some improvement C. Uncertain D. Not needed.

References

[1] Ministry of Education of the People's Republic of China, 2017. Compulsory English Curriculum Standards. Beijing, China: Beijing Normal University Press.

[2] Stibbe, A., 2015. Ecolinguistics: Language, Ecology and the Stories We Live by. Routledge: London, UK.

[3] Huang, G.W., Chen, Y., 2016. Ecosophy and ecological analysis of discourse. Foreign Language and Literature. 32(06), 55–61.

[4] Huang, G.W., 2017. Assumptions and principles in analyzing ecological discourse and behavior). Foreign Language Teaching and Research. 49(06), 880–889+960.

[5] Zhao, R.H., Huang, G.W., 2021. Harmonious discourse analysis framework and its application. Foreign Language Teaching and Research. 53(01), 42–53+159–160.

[6] He, W., Liu, J.H., 2020. Diversity and harmony, interaction and co-existence: Construction and development of ecosophy. Shandong Foreign Language Teaching. 41(01), 12–24.

[7] Pan, X.X., 2010. Analyses of Attitudes in Story Genres from English Textbooks for Senior High Schools [Unpublished Master's Thesis]. Shanghai, China: Shanghai Jiao Tong University.

[8] Liu, Q., 2015. A Study of Attitudinal Resources in Narratives of English Textbooks for Senior High Schools [Unpublished Master's Thesis]. Changchun, China: Northeast Normal University.

[9] Yang, S.N., 2022. Research on Moral Education of PEP Primary School English Textbooks Based on Attitude System in Appraisal Theory [Unpublished Master's Thesis]. Guangzhou, China: Guangzhou University.

[10] Liu, M.O., 2020. Ecological Discourse Analysis of Beijing Normal University Press' Senior High English Textbooks [Unpublished Master's Thesis]. Changchun, China: Jilin International Studies University.

[11] Wang, W.Y., Shi, X.L., 2022. Ecological discourse analysis of high school english textbooks: A study of attitudinal system from the perspective of ecolinguistics. English Square. 17, 123–127.

[12] Martin, J.R., 2000. Beyond exchange: Appraisal in English. In: Hunston, S., Thompson, G. (eds.). Evaluation in Text: Authorial Stance and the Construction of Discourse. Oxford University Press: Oxford, UK.

[13] Martin, J.R., White, P.R.R., 2005. The Language of Evaluation: Appraisal in English. Palgrave Macmillan: Hampshire, UK.