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Linguistic Analysis of Green Content in Italian High School English Textbooks: An Ecolinguistic Perspective

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Dedication

To the loving memory of my late father, Malik Sardar Ahmad Awan, I dedicate this dissertation to my father.

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Abstract

The ultimate objective of ecological education is to spread awareness regarding issues caused by damage to the ecosystem and how to protect it and endorse behaviors that play a contributing role in ecological sustainability. Nevertheless, traditional, conventional academic and educational content often falls short of tackling ecological sustainability, with minimum stress on green content. This dissertation intends to investigate green content in three Italian high school English textbooks that are representative of this genre, *English File*, *Empower* and *Speakout.* This dissertation is descriptive and qualitative in nature, it uses corpus-based deductive approach and content analysis by using Stibbe's (2015) ecolinguistic theory, notably its three stories, metaphors, evaluation and erasure, to dig out green content in the above-mentioned textbooks. Using the categorization framework of ecological discourse analysis (EDA), the study examines how ecological themes and contents are represented in English textbooks. This research addresses two main research questions 1) The first research question investigated if there is significant relationship between observed and expected frequency of green content related to words in selected textbooks 2) second research question explored significant relationship between observed and expected frequency of green content related to sentences in selected textbooks. The findings indicated that there is no significant difference between expected and observed frequency of the green content, which means that the three textbooks have not presented enough educational content related to environmental issues, and thus the null hypothesis are rejected. Methodologically, this study contributes to the existing literature on this topic by using both quantitative and qualitative techniques, and tests empirical data in an Italian context by adopting a corpus-based deductive approach. The theoretical implications of this dissertation are grounded in Stibbe's ecolinguistic framework and contribute to the domain of green linguistics and environmental educational discourse analysis. Recommendations for future research stress the need to extend the scope of green discourse and green communication as the incorporation of environmental and green content into language education is an initiative towards a more sustainable future, empowering learners to understand their relation to the natural world and motivating them to become responsible and active global citizens.

Keywords: Corpus, Content Analysis, Environment, Ecology, Green Content, Sustainability

1. Introduction

1.1 Background

1.1.1 Environmental education and ecolinguistics

Ecological and environmental education has a contributing and significant role in modern era and educational institutes. The main aim of ecological education is to foster awareness of environmental issues while endorsing sustainable attitudes and behaviors among learners and individuals. Ecological education is interdisciplinary, which not only combines natural sciences, social sciences, humanities and other disciplines to educate students, learners and human beings generally but also spread awareness about the interdependence of actions regarding individuals and the ecosystem. It can be said that the ultimate objective of ecological education is to spread awareness and shedding light on those issues that cause damage and harm to the ecosystem and how to guard it and endorse behaviors that play a contributing role in green practices and ecological sustainability. The development of ecology of language began with Haugen's (1972) "*ecology of language*" followed by Michael Halliday's (1992) work on the notion of the relationship between language, ecological, environmental, social issues and problems.

As far as ecolinguistics or green linguistics is concerned, it is a developing field within linguistic sciences and one of the sub-branches of applied linguistics, in which theories are tested and applied to real life situations to address problems in various areas of life and society. This dissertation deals with language, society, environment and green communication, specifically within educational content such as English textbooks play a significant role in spreading awareness regarding environmental sustainability and ecological behavior. When emphasizing that language impacts societal behavior, this research focuses on certain interconnected societal arenas. Firstly, the educational domain, where textbooks are main tools for conveying not merely language skills but also ethics, principles, ideologies and ecological knowledge to students. Secondly, the cultural and ideological sphere, in which frequent linguistic patterns contribute in determining public attitudes towards nature, consumption and sustainability. Thirdly, the policy and institutional domain, where curricular strategies and textbook content project and depict broader governmental and institutional commitments to ecological education. Finally, though the media and public discourse not directly related but textbooks sometimes resonate to the dominating ecological discourse or green narratives found in public communication. By focusing on language textbooks utilized in Italian high schools, this dissertation places itself at the connection of these arenas, with

specific attention to how educational content depicts as well as contributes to broader environmental narratives and behavior.

The present dissertation falls within the domain of ecolinguistics and focuses on green discourse and content analysis, which is one of the main approaches within the vast domain of applied language studies generally, and of ecolinguistics specifically. Language sheds light on cultural values and ideologies and, due to its potential, it can either promote sustainable or unsustainable practices. As there is growing global concern about natural degradation, there is also, at the same time, an imperative need to comprehend how language and communication influence ecological behaviors. Ecolinguistics fundamentally exams practical, empirical and experimental data and inspects the relationship between language, ecosystem and the environment. It scrutinizes how language portrays, constructs and affects human interactions with the natural world. This emerging sphere seeks to study the contributing role of language in inspiring or obstructing sustainable practices, with a special focus on evaluating narratives, metaphors and discourse that shape human behavior and attitudes towards ecological problems. Ecolinguistics unveils how language plays a substantial role in environmental awareness and how it may continue or challenge ecological and natural damage; it does so within several frameworks, e.g. ecological discourse analysis (EDA) and discourse representation theory (DRT), and it investigates many linguistic phenomena such as metaphors, evaluations and erasure in environmental education and themes. By examining ecological discourse to unveil underlying ideologies, researchers study the efficacy of pro-ecological communication, and dig out ways in which language can endorse green practices and mindfulness related to the natural environment. This field is grounded on the notion that language does not merely depicts, but also actively builds our reality, including our relation with our surroundings and natural environment.

Environmental or ecological sustainability encompasses/ includes practices that endorse long-term environmental health, ensuring that natural reserves and means are available for future generations. Sustainability covers different areas, including biodiversity conservation, climate change mitigation, resource management and waste reduction. In recent years, the idea has extended to include economic and social aspects, e.g. the fact that human well-being is interrelated with environmental or ecological well-being. To achieve ecological sustainability, education plays a vital role in raising mindfulness and endorsing behaviors that take care, protect and sustain our surroundings, the ecosystem and the environment. Language, as a main source for instruction and

teaching, transmitting cultural values and information, thus becomes an important tool in endorsing and supporting sustainable practices.

1.2 Context of the study

This section describes the settings and context of the study before discussing the data collection and tools used in this study. It is necessary to have an overview of the context, which in this study is Italy. As this dissertation examines and investigates the green content (constructive as well as destructive) discourse in English textbooks utilized in high schools in Italy, this section is of pivotal and vital importance to present a brief overview of the Italian education system to contextualize the function and contributing role of ecological education and its incorporation into the syllabus. The educational system plays an imperative role in shaping ecological mindfulness, green and linguistics practices among learners, who are main focus of this dissertation. Understanding how the system is systematized and structured plays a contributing role in providing a base for investigating how green education and ecolinguistics are combined into academic syllabus and education.

1.2.1 The education system in Italy

In order to investigate ecolinguistic representations in English language textbooks in Italian high schools, a brief overview of the Italian education system is necessary. Administration of the Italian education system is centralized (Faez, 2011). Although there have been several attempts and efforts towards decentralization, since the late 1970s, to regions and provinces, not much development has been made in this regard yet (Faez, 2011). There is a central overall and general administration that supervises elementary and secondary education, called "Ufficio Scolastico Regionale", responsible for primary as well as lower and upper level secondary schooling. This local school office takes the necessary decisions related to curriculum design and implementation, instructors' recruitment, funding and other academic matters, and forwards its suggestions and recommendations to the minister of public education (Faez, 2011). Public education in Italy is free and compulsory from 6 to 15/16 years (Faez, 2011). Children between 3 to 6 have an option of attending preschool or kindergarten for three years. Students who are 6 years old start their primary school for a duration of five years. At this stage, the educational curriculum is uniform. After primary school, pupils start their lower secondary or middle school at the age of 11, which consists of three years, at the end of which there is an exam. High school or secondary school lasts for five years, except for vocational high schools that usually offer a diploma after three years (Faez, 2011). There are numerous secondary schools that are differentiated by academic activities and subjects. The Organization for Economic Co-Operation and Development (OECD, 2006) ranks the Italian

secondary education system as the 36th in the world and it also endeavors to bridge the existing gaps between the results in Southern and Northern schools of the country (Faez, 2011). There are significant gaps in the educational results of schools situated in the South and North of Italy, and several factors contribute to this long-standing issue (Contini et al. 2020). The difference in academic results and outcomes between these two areas of the country are multidimensional and related with historical, economic, cultural and social factors (Contini et al. 2020). These factors, according to scholars and existing literature, have different causes and effects, which have significantly affected the Italian educational system (Contini et al. 2020; Odoardi & Muratore, 2019). One of the fundamental causes for the academic gaps in Italy is the socio-economic divergence between Northern and Southern Italy. Northern regions of Italy are generally wealthier and more industrialized as compared to the Southern part, as these regions have a higher level of unemployment. Students with lower economic status tend to have fewer academic opportunities, chances to obtain quality resources, and a higher a probability of dropping out of school in the South of Italy (Contini et al. 2020; Odoardi & Muratore, 2019). Another reason for educational and results gaps in Northern and Southern Italy is that Northern regions of Italy have the privilege of good infrastructure, transportation system, higher wages of teachers and access to more educational and school resources, whereas Southern regions are lagging behind in all these aspects (Contini et al. 2020; Odoardi & Muratore, 2019). The performance of students in Southern regions often results in poor results due to lack of resources (Contini et al. 2020). Historically, numerous individuals from the South of Italy have migrated to the North of Italy with the aim of getting better employment opportunities, which has resulted in a drain of human capital, including a loss of trained instructors and students. Some cultural factors, like parental educational status and role and social attitudes, have also impacted on students' performance in Southern Italy. Furthermore, some government policies, like funding opportunities, have supported Northern Italy more as compared to Southern Italy, thus resulting into unequal distribution of educational resources (Ballarino et al. 2014). Moreover, a lack of high-quality early childhood academic programs in the South of Italy has impacted children's performance and their long-term educational goals too (Ballarino et al. 2014; Federici et al. 2023).

It is also worth mentioning that the National Institute for the Evaluation of the Educational and Training System in Italy (hereafter INVALSI) is an important organization that is accountable for inspecting and examining the Italian educational system and it includes both school and vocational training, with the aim of improving the quality of education and providing data for educational policy makers across the country (Federici et al. 2023). The purpose of INVALSI is

to conduct consistent and standardized evaluations and tests across the country. These tests are intended to measure students' academic performance and gauge the effectiveness of the academic system. These tests consist of various subjects such as math, Italian language and science, and they are conducted at various grade levels. The main purpose of INVALSI is to collect data on students' academic performance and the performance of schools. The collected data is utilized to examine the trends, discrepancies and weak areas that are in desperate need of improvement. INVALSI collects data on students' results, instructors' qualification and resources of schools. INVALSI's evaluations play a significant role in shaping academic policies in both Northern and Southern Italian regions and provide valuable information to educators, curriculum designers and policy makers, allocation of teachers and information about other educational aspects (Federici et al., 2023).

At higher education level, universities offer degrees in various sectors including artistic and professional domains, such as technology, engineering, linguistics, fashion and industry (Faez, 2011). Students join universities after thirteen years of schooling upon obtainment of their secondary school leaving certificate, which is awarded after passing the relevant state examinations successfully. The Italian university system has a first-degree cycle, which is equivalent to a bachelor degree program, a second-degree cycle, that is equivalent to a two-year masters' degree and, finally, a third-degree cycle, which is a three-year doctorate degree (Faez, 2011). Universities work autonomously within the laws set by the central government. Admission to various degree programs has different requirements and may or may not include an evaluation of English language proficiency. The Declaration of Bologna, signed in Bologna by 29 European countries in 1999 , is a significant and important initiative in promoting higher education in Europe (Reinalda, 2008). It initiated the so-called Bologna process to harmonize the educational systems of the European continent, and since then it has been expanding to include more and more European countries. The Declaration of Bologna was named after the University of Bologna, the oldest university in Europe (founded in 1088) and first degree awarding university of higher education. The main aim and purpose of the Declaration of Bologna was to introduce and adopt a three-cycle degree program and it introduced a common framework for higher education qualifications that includes three-degree cycles i.e. first degree cycle (graduation), second degree cycle (Masters) and third degree cycle (doctorate or PhD). The declaration of Bologna also introduced the Establishment of the European Credit Transfer and Accumulation System (ECTS), which makes it possible to recognize and transfer academic credits between various European

universities and thus, makes it convenient for students to pursue their study abroad and academic credits to be recognizied (Reinalda, 2008).

1.2.1.1 Foreign language education in Italy

Italian is the official state language of Italy, whereas other languages (e.g. German, French, Greek, Catalan, Slovene) have been given the status of regional or minority languages along with official status. Since 2006, it has been mandatory for all students to learn two foreign languages starting at primary school level. English is compulsory as soon as students start their primary level at the age of 6. Italy is among the countries (after Spain) where the number of English language learners is increasing with every passing day, and students are taught English during their early education. It is common to find students at nursery level with English learning, but it is not mandatory at this level (Faez, 2011). Students have to learn a second foreign language at the lower secondary level, aged between 11 and 14, and it is compulsory at this level. At primary school level, English is usually taught by general instructors who do not receive any formal training to teach foreign or second languages, but they participate in on-service programs designed for professional development (Faez, 2011). Professional and qualified instructors teach foreign languages at the secondary level. Italy ranked the second highest country among the 27 member states of the EU for the number of students learning English language in upper secondary level (74%) after Greece (92%) in 2006. This percentage of students with English language at upper secondary level increased from 78.3% to 95.3% from 1998 to 2007 (Faez, 2011). The amount of time spent on foreign or English language teaching in every academic year is 80 hours at primary level, and it has remained the same from 2002 to 200. This time, instead, has increased noticeably at lower secondary level, from 70 hours to 165 hours per academic year. In 2023, the amount of total hours per week for English averages 3 hours weekly and 99 hours per year, and English is a mandatory subject in Italian schools (Verardi, 2023). Italy remains one of the countries with the highest number of hours of instruction dedicated to English language education. According to the curriculum guidelines that came into effect in 2007 in Italy, the use of the Common European Framework of Reference for Languages (CEFR) was emphasized and recommended for evaluation and assessment. The main and primary objective is for students to reach B2 level at the end of secondary school (Faez, 2011). In Italy, to improve the English proficiency level, Content and Language Integrated Learning (hereafter CLIL) has been introduced into the foreign language curriculum and it has got a significant amount of attention throughout Europe since its development in the mid-1990s (Serragiotto, 2017). It is a “dual focused” academic approach in which an additional language is utilized for learning and imparting knowledge of both content and

language (Serragiotto, 2017). The content of CLIL can be described in terms of three aspects, which can be useful from the background for any CLIL activity: concept, procedure and language. Interchange amongst these aspects of CLIL should take place regularly in CLIL academic settings and instructors should be prepared to decide which aspect should be given more preference depending on the circumstances and particular aims. Italian policy makers have encouraged teachers to use the CLIL approach to enhance language proficiency, as this approach has positively influenced students' motivation in learning the English language in other European countries (Serragiotto, 2017). According to the resolution of the European Union Council 1995, students of European member states should have an opportunity to learn at least two languages of the Union other than their first language(s) for a period of minimum two years during their mandatory schooling and, if possible, for a longer period (Europe, 2003). According to the study of Costa (2016), Italy, France and Spain have an average proficiency level in English and people with this level of English can carry out simple tasks such as writing professional emails about subjects they are familiar with, understand songs and lyrics, but cannot perform complex level tasks and conversation on every level. In spite of CLIL's integration in the language curriculum, the English proficiency level of Italian students is still low and there are several factors that contribute to this. One of the main factors is that Italy is a predominantly Italian-speaking country and Italian people usually speak their first language within home and outside and this linguistic isolation has given people less exposure to English language practice. Another reason for the generally low proficiency level of English in Italy is the fact that the Italian educational system significantly focuses on Italian language and culture and less on English language learning, although English is a mandatory subject in schools. The third factor that contributes to the low proficiency level in English is that instructors teaching English in schools are lacking in English proficiency themselves. In addition, there are some socio-cultural factors, like resistance from people with a strong Italian cultural identity to learn the English language.

1.2.1.2 Environmental education in textbooks

According Mliless & Larouz (2018); Zahoor & Janjua (2020) textbooks undoubtedly play a contributing role in teaching, imparting education, and language acquisition (Nahak et al., 2019). Considering diverse viewpoints and scopes of language skills, several books were designed and generated to enhance the language skills of learners, e.g. reading or speaking (Mliless & Larouz, 2018; Zahoor & Janjua, 2020). Furthermore, textbooks authors and scholars have endeavored to stress features and components of language learning, like grammar or vocabulary (Cunningsworth, 1995; Mukundan et al., 2011). Kress (2003), in his seminal work related to multimodality and

literacy, often investigates how various types of communication (i.e. text, images or layout) express meaning and how some meanings are stressed (gains) whereas others are restrained or omitted (losses). His seminal work is related to analyzing textbooks as multimodal piece of writing and texts. At later stages, some other aspects start being included in textbooks, such as cultural problems and issues (Nahak et al., 2019). With the advent of ecological and environmental education, many textbooks have tried to improve the insights and perceptions of young generations towards defending the environment. Textbooks evaluation is deemed a vital cause for evolving textbooks. Tomlinson (2003) affirms that textbook assessment is an applied linguistic task through which the impact of contents on individuals utilizing textbooks is considered mindfully by all people in the domain of education, such as instructors, administrators, supervisors and curriculum designers. Considering the status of EFL textbooks in teaching foreign languages, Cunningsworth, (1995); Mukundan et al., (2011) have tried to assess textbooks from various aspects to govern their efficacy. There is a dearth of literature examining the representation of green content in developing and designing materials for teaching English (Setyowati, Prayogo, et al., 2022). For example, Nkwetisama (2011) discovered inspecting English as a foreign language (EFL) instructors' perception of environmental education (EE) and an amalgamation of green education in English language teaching: they presented a detailed list of EE topics, like global warming, greenhouse gas, ozone depletion, species extinction, and deforestation. The results indicated that the presentation of ecolinguistics should not be limited to language textbooks but rather spread out over all courses taught. Furthermore, no study has investigated the representation of ecolinguistics and green content in developing textbooks for teaching English in Italy. As can be noticed, there are few studies conducted in this area in countries, including Far East and Asian countries, like Iran, China and Japan (Al-Jamal & Al-Omari, 2014; Brown, 2017; Qiu, 2013; Xiong, 2014) but, to the best of my knowledge, there is no research published in this area in the Italian context. This dissertation is, thus, significant in bridging this gap. Moreover, it is observed that there are only a few researchers' works available on ecolinguistics in general and specifically in the Italian context, where ecolinguistics has been given less attention so far (Mliless & Larouz, 2018; Zahoor & Janjua, 2020). Therefore, this dissertation intends to investigate green content (constructive and destructive) in three Italian high school English textbooks that are representative of this genre, *English File*, *Empower* and *Speakout*, the details of which will be provided in the following chapters.

1.3 Statement of the problem

Increasing ecological problems require that academic and education systems, tools and specifically textbooks, integrate adequate content to raise environmental awareness among learners and individuals. Nevertheless, traditional and conventional academic and educational content often falls short of tackling ecological sustainability, with minimum stress on green content. English language textbooks, for instance, may lack adequate green content or employ language that unintentionally normalizes unsustainable practices. This wide gulf not merely limits learners' exposure to ecological problems, but also fails to endorse and motivate critical perception about sustainability.

This dissertation is descriptive[1], qualitative in nature, and it relies on corpus-based deductive approach (where hypothesis and quantitative data are tested based on theory and starting point) and the present study used Sketch Engine for quantitative analysis and lastly the obtained data is represented qualitatively through content analysis and Stibbe's (2015) ecolinguistic theory, notably its three stories, metaphors, evaluation and erasure, to dig out green content in three[2] (*English File*, *Empower*, *Speakout*) textbooks. Using the categorization framework of ecological discourse analysis (EDA), the study has examined how ecological green contents (destructive & constructive) are represented in English textbooks (Cheng, 2022). By considering the extent and nature of green content, this dissertation aims to unveil whether the nominated textbooks contribute to ecological awareness and if they help learners to develop a sustainable approach. Moreover, it is also noticed that no study has explored the depiction of green linguistic discourse in developing textbooks for teaching English in Italy. As can be noticed, there are few studies conducted in this area in countries, including Far East and Asian countries, like Iran, China and Japan (Al-Jamal & Al-Omari, 2014; Brown, 2017; Qiu, 2013; Xiong, 2014) but, to the best of my knowledge, there is no research published in this area in the Italian context.

[1] Descriptive research analyses the data through statistical procedure but does not focus on providing evaluations or judgements: rather, it offers a comprehensive picture of the subject(s) under investigation.

[2] In this study, three English language (EFL) textbooks (publishers: Oxford University Press, Cambridge University Press and Pearson), recommended for 9th standard (age group: 14-15) in Italian high schools, were used as objects of this study. Initially, the researcher aimed to incorporate six textbooks into her dissertation. However, obtaining additional textbooks presented some challenges. Some books of the same series and publisher were not readily available at bookshops and, in certain cases, only workbooks were available, due to shortage of supply, whereas the main textbooks, which were the focus of this study, were missing in some bookstores.

1.4 Research significance

This research is important and vital for several reasons. First of all, it contributes to the growing body of green discourse and green linguistics by applying these notions and ideas to academic content, particularly English language textbooks. Secondly, the research aligns with universal endeavors to promote sustainability through education, as outlined by United Nations Sustainable Development Goals (SDGs), specifically goal 4 (regarding quality education) and goal 13 (related to climate action) (Filho et al., 2023). By shedding light on the existence or nonappearance of green discourse in academic materials, this dissertation can inform curriculum designers, policymakers, stakeholders and educators regarding the necessity to increase green content in textbooks. In addition, this dissertation has practical suggestions and implications for language education and educators, recommending ways that textbooks can incorporate green themes to foster green practices awareness among students. It provides visions and insights into how textbooks can be updated to include more ecologically conscious content, serving and assisting learners to engage critically with environmental problems. Lastly, this research intends to endorse the development of a curriculum that aligns with environmental values, preparing pupils to tackle ecological challenges with informed viewpoints.

1.5 Research aims

The main aim of this dissertation is to scrutinize and examine the depiction of green content (positive and negative or constructive and destructive) in English language textbooks (*English File*, *Empower*, *Speakout*) utilized in Italian high schools, with a special emphasis on environmental sustainability. The main aims and strategies of this research are:

- To investigate the observed and expected frequencies of words related to ecolinguistics in English language textbooks;

- To investigate the observed and expected frequencies of sentences related to ecolinguistics in English language textbooks.

1.5.1 Research questions

This study sets out to answer following research questions:

1. Is there any significant difference between expected and observed frequency regarding words related to ecolinguistics in the textbooks under examination (*English File, Empower, Speakout*) used in Italian high schools?
2. Is there any significant difference between expected and observed frequency regarding sentences related to ecolinguistics in the textbooks under examination (*English File, Empower, Speakout*) used in Italian high school?

Investigating the frequency of words and sentences regarding green content (positive and negative or constructive and destructive) and ecolinguistic analysis is vital as this dissertation is corpus-based deductive[3] approach which starts from the theory[4], and begins research by formulating a hypothesis (null hypothesis and alternative hypothesis) that is then tested on a set of data (in this study textbooks). These frequencies support in distinguishing patterns, gaps and trends in the illustration of green discourse and green practices, thus providing a basis for examining the extent to which the textbooks align with the aims and objectives of endorsing biological, natural environment mindfulness and sustainability. By thoroughly inspecting these frequencies, this dissertation can address important questions about the adequacy, significance and didactic value of green discourse in academic and educational setting.

1.5.2 Motivation for the present study

The motivation for conducting this research arises from the serious need to address global environmental issues through the lens of education. The motivation for conducting this doctoral research arises from the vital prerequisite to address and tackle universal green issues through the lens of education. The researcher participated in the PON scholarship program, funded by the European Research Council (ERC), and the main theme of PON scholarship for the 37th cycle was green practices and environmental sustainability across disciplines, providing a unique prospect to detect ecological issues from an interdisciplinary perspective. Moreover, being a doctoral researcher at the University of Bologna, a key university in endorsing research on green practices, provided invaluable access to libraries, academic content, resources and above all collaborative opportunities, as did the researcher's internship at Bi-Rex, a company in Bologna actively involved in green practices and innovation in technology. This experience enabled a hands-on connection

[3] Under a corpus-based deductive approach, researchers identify various linguistic features related to their hypothesis before starting their analysis. Then, they finally use corpus analysis tools and software (e.g. Sketch Engine) to search for and count those features. For instance, utilizing theoretical descriptions and cases on already collected data, researchers can generate a list of linguistic features related to their underpinning theory and then decide when and how these theory-related features are used in a corpus and their frequency of occurrence in a corpus. The obtained results would then support or reject the hypothesis.

[4] Present study has used ecolinguistics theory (its three stories; metaphor, evaluation, erasure) and (EDA, Ecological Discourse Analysis framework) for categorizing green data into (constructive and destructive).

between academic content and practical implementation of green practices, providing a strategic vantage point and motivation for exploring and examining the presentation of green content in Italian educational content, and contributing to a profound understanding of how the philosophies and ideologies of ecology of language or ecolinguistics can be integrated into academic contexts. It can be said that, considering the contributing role education plays in developing ecosystem awareness, this research aims to unveil how English language textbooks utilized in Italian high schools integrate green practices and sustainability concepts. This research is specifically relevant to Italy's commitment and pledge to the European Union's ecological sustainability objectives and aligns with the researcher's research and academic interests in green linguistics, which ultimately motivated her to conduct this study. Thus, this dissertation seeks to contribute to a broader understanding of how academic content can motivate and inspire sustainable practices among young students.

1.6 Structure of the dissertation

This dissertation is organized into six chapters.

Chapter One introduces the background of the study, the research problem, the significance of the research, the research aims and questions, and it provides details on the organization and structure of this dissertation.

Chapter Two is designed to review the literature linked to the topic of language ecology and the two different approaches represented by Haugen and Halliday, and it consists of definitions and a general overview of green linguistics, unfolding it as an evolving concept, with its six ecolinguistic turns. This chapter also sheds light on the previous studies related to green practices and discourse. Lastly, this chapter ends with a theoretical framework for this study.

Chapter Three deals with research methodology and its main purpose is to deliver a feasible and appropriate research methodology to create a body of knowledge related to the research aim and problem, and to provide solutions and answers for them. This chapter outlines the methodology adopted for this dissertation. The overall process justifies the selection of particular approaches and paradigms, strategy, statistical methods and tools. In order to fulfil the research aims, the research design utilized in this study is descriptive and qualitative in nature. This chapter also shows the data collection tools applied to the textbooks *English File* (4th Edition), *Empower* (2nd Edition) and *Speakout* (3rd Edition). Their analysis has been described in Chapter 4, which is about the results and outcomes of the study.

Chapter Four presents a complete analysis of the three textbooks under investigation, and reveals a significant gap in their integration of green content. Using a blend of qualitative and quantitative methods rooted in ecolinguistic theory, the research accurately divided the ecolinguistic analysis of these three textbooks.

Chapter Five delivers a qualitative debate of the findings offered in Chapter 4, shedding light on the analysis of green content as found in the three English textbooks under investigation (*English File, Empower, Speakout*). The details of the three stories of Stibbe's ecolinguistic theory with regards to these findings are discussed in this chapter, showing a minimal presence of green content that highlights the underrepresentation of ecological themes and suggests that current educational materials are not adequately addressing the critical issues of sustainability and environmental awareness. The discussion is encircled within Stibbe's ecolinguistic theory, which has assisted as the theoretical foundation to develop a framework to inspect green discourse in the current dissertation.

Chapter Six discusses the contribution made by this research from the theoretical, methodological and pedagogical perspective, including suggestions, limitations and perspectives for future research.

2 Literature Review

This chapter has seven sections. The first section, 2.1, aims to provide a background to the topic of language ecology and two different approaches represented by Haugen and Halliday. Section 2.2 consists of definitions and general overview of ecolinguistics. Section 2.3 describes ecolinguistics as an evolving concept. Section 2.4 describes six ecolinguistic turns. Section 2.5 is about previous studies related to ecolinguistics. Section 2.6 is the theoretical and conceptual framework of the study and the last section, 2.7, is the summary of the Chapter 2.

2.1 Background

Ecolinguistics investigates the interrelation between language, society, environment and their common inducing mechanism, appeared as part of a general "ecological turn" within the Humanities and social sciences (Stibbe, 2015: 7). There are two primary ideas in this domain: one is the study of the effect of the environment on language, which begins with Haugen's (1972) "*The Ecology of Language*", known as "language ecology" or "Haugenian approach"; and the second main approach is that of the effect of language on the environment, introduced by Halliday's (1990) seminal work "*New Ways of Meaning: The Challenges to Applied Linguistics*", which is called as "ecological linguistics" or "Hallidayan conceptual lineage" (Fill, 2001).

2.1.1 Haugenian approach to "The Ecology of Language"

The notion of the *ecology of language* was primarily pronounced by American sociolinguist Einar Haugen, often considered as a founding scientist of environmental concepts to language education. Haugen's pivotal work investigated the connections between languages in the human mind and in societies and societies across the globe are multilingual, where multiple languages exist across various social, cultural and institutional fields. Haugen's (1972) work and its contribution occurred within a wider intellectual and academic movement during the 1970s, when scholars like Labov (1977) in sociolinguistics, Hymes (1964) and Gumperz (1982) in the area of ethnography of communication, started reinforcing the strong connection between language, society and communication. Hence, these interdisciplinary notions paved the way for discerning language not as a secluded system, rather as rooted within complicated social, environmental and ecological phenomenon. Bundsgaard et al. (2012) say that ecology has become an important discipline of biology that studies populations and living beings interacting with each other and developing a

kind of unity with the environment. Furthermore, Haugen (1972) paved the way for researchers and scholars to explore the role of language in society, specifically the relationship that binds ecology and environment to language (Al-Jamal & Al-Omari, 2014; Brown, 2017; Qiu, 2013; Xiong, 2014). Later on, one of the branches of linguistics namely ecolinguistics, also called green linguistics, came into existence in the 1990s.

Ecology has been used as a metaphor by some researchers to describe the concept of "conservation" of small languages and with regards to protecting linguistic diversity on this globe (Chen, 2016; Zahoor & Janjua, 2020). Ecolinguistics has existed since the 1970s, when linguist Haugen (1972) conceptualized a framework with various scholars, compiled in *The Ecology of Language*. Haugen (1972) emphasizes that language ecology explores the existing inter-languages connections with the environment.

In the 1970s, Einar Haugen's seminal work proved to be a great advancement in the domain of linguistics. He discussed some of the flaws of "orthodox" linguistics, pinpointing that most of the work which had been done before the 1970s mostly focused on the key components of language as being phonetics, grammar, lexicon, history and geography of languages. Haugen (1972) discusses the defects of orthodox linguistics as "hardly does such an explanation reveal to the reader that what he should know with regards to the social status and function of the language in question". According to Haugen (1972), we could benefit from paying specific attention to this perspective, which has been investigated in detail in recent years by scholars working in cooperation with researchers from various domains. Haugen (1972) suggested several ideas and called for special attention to a new way of thinking and thus, coined the term "ecology of language", which he simply expresses as the study of relations between any given language and its environment and the real environment of a language in a society that utilizes it as one of its codes. Language is present in the minds of its speakers and it only works in relation to these individuals, to each other and to nature i.e. their social and natural environment. The ecology of language is thus, at least in part, psychological, i.e. as far as its interaction with other languages in the minds of bilinguals and multilinguals is concerned. Another part of the ecology of language is sociological, i.e. it concerns the communication of language with the society. In the same book, Haugen (1972) says that the analysis of ecology demands not merely that one explains the psychological processes of each language, but also their impact on the language itself. Based on the theoretical input of scholars, it can be said that the domain of green linguistics has certain limits that is interrelationship (language and environment interrelation), environment, and Haugen's

diversity of language and environment (Fill & Mühlhäusler, 2006). Moreover, according to Haugen (1972), ecolinguistics is associated with ten fields, i.e.

- How is the language classified in connection with other languages? This answer should be given by historical and descriptive linguistics;
- Who are its users? This question should be answered by linguistic demography locating its speakers with regards to class, religion or any other relevant grouping;
- What are its domains of use? This question is related to sociolinguistics;
- What concurrent languages are used by its speakers? This may fall under the domain of dialinguistics;
- What internal varieties does the language have? This is the function of dialectology that will identify not merely regional but also social and domain-specific dialects;
- What is the nature of its written traditions? This falls within the domain of philology, the study of written texts and their connection to speech;
- To what extent has its written form been standardized i.e. unified and codified? This is the function of descriptive linguistics;
- What type of institutional support has it won, either in government, education or private organizations? This may be located under the field of glottopolitics;
- What are the attitudes of its speakers towards the language? This may be called ethnolinguistics;
- Where does the language stand? And where is it going in comparison with other languages of the world? This comes under typology of ecological classification of languages.

Haugen's (1972) concepts and views were supported, but also criticized, during the 1980s. This is when a reassessment of ecological language started and gave rise to its Hallidayan concept. Halliday (2002) proposed that language is interrelated with whatever is taking place in the world, whether it is the progress or deterioration of the ecosystem or environment, social issues or any other problems that may happen. With this awareness, there has also been an increasing interest in research on ecological and environmental issues. Moreover, the connection between language and world knowledge and awareness, the concepts of anthropocentricism and ethnocentrisms of language are also described (Fill, 2007). Fill & Mühlhäusler (2006) affirm that ecolinguistics is applied linguistics that is cross-cutting (interdisciplinary) and has a wider scope of study than exploring syntax, semantics and pragmatics, as it sheds light on the ecological aspects of language and their nature from empirical perspective, in a similar way to biological studies, whereas the

interaction between language and cultural environment is described and studied as language ecology or linguistics ecology, and often as green linguistics (Hariati et al., 2022). According to Stibbe (2014), this can be defined as an effect of language use creating a link and relationship between individuals, other organisms and the physical environment that is related to and oriented towards the protection of sustainable relationships and life. Therefore, it can be said that ecolinguistics is closely associated to how language serves to grow, mold and develop, influence or destroy relationships between individuals, living conditions and the environment. According to Stibbe (2014), ecolinguistics grew as a result of human ecological progress connected with different systems (economic, social, religious, cultural, linguistic and ecosystem or environment) that are basically interrelated to each other in one way or the other.

Building upon the two concepts and approaches of Haugen (1972) and Halliday (2002), Mühlhäusler (2019) presented a comprehensive and detailed theory of the connection between language and ecosystem. Mühlhäusler (2019) reinforced Haugen's (1972) definition related to language ecology, and he further added that ecolinguistics is not merely a system made up of factors related to language, but it also includes broader ecological and environmental factors, because language is interrelated with the world and thus it constructs it, as well as it is constructed and built by it. Based on this environmental and ecological concept, more recent researchers have extended the framework further. For example, Mühlhäusler (2019), has stressed the environmental consequences of language endangerment and linguistic expansionism, reflecting the need to understand linguistic diversity as fundamental to wider ecological and social sustainability. Along with Mühlhäusler (2019), integrationists scholars for instance, Harris (1981) and (Labov, 1977) have contributed extensively to environmental education and thinking regarding language. These scholars challenges language as a fixed code and in its place, presented the conception that language is dynamic, context based actions shaped by individuals' interaction and positioned meaning-making progressions (Harris,1981; Labov, 1977). This notion closely aligns with environmental approaches and practices by emphasizing the interrelated connection of language, ecology and social practices. Hence, ecological thinking related to language denotes not only the co-occurrence of languages, rather to an active understanding of language as an adaptive, developing phenomenon, profoundly knotted with its sociocultural and ecological context (Harris,1981; Labov, 1977).

Moreover, he highlights that ecolinguistics is not particularly reserved for linguists, but it is a somewhat new theory waiting to be further described and explained by any scholar who has an

interest in ecological and environmental problems. According to Mühlhäusler (2019), as ecolinguistic theory is somehow new, what is ecological requires understanding, and he termed this understanding as "ecological thinking". For him, ecological thinking can be explained in five parameters:

- Awareness and risks of monoculturalism;
- Both system internal and broader ecological considerations;
- Awareness of the limits of natural as well as human resources;
- Long term ideas and vision;
- Recognition of factors that contribute to the health of ecologies and environment.

Mühlhäusler (2019) asserts that ecolinguistics is similar to all new theories, in so far as it covers and supports earlier building blocks that have been reused. Furthermore, he says that ecolinguistics still utilizes current linguistic concepts and ideas but in an innovative way and in a broader aspect, which at later stages can be extended to address several ecological and environmental limits. Mühlhäusler (2019) not merely utilizes a set of ideas from the linguistic domain, but he also uses concepts from outside this field and he justifies this on the basis that ecolinguistics is viewed as having interrelationships with the fields around it, and that parameters from outside the linguistic domain help a lot in the understanding of language interaction with the universe and vice versa.

2.1.2 Ecolinguistics: "proactive nature"

Ecolinguistic thinking being a parameter-rich theory, its other significant characteristic is its active nature. According to Zhou (2022), Haugen's and Mühlhäusler's ecological concept has a "practical and proactive nature" in which scholars are encouraged to be actively engaged rather than only be "objective observers". About the approaches of Haugen and Mühlhäusler, Zhou 2022) says that one may endeavour to recommend that language ecology should not just be the name of a descriptive science, but he recommends that it be applied as a measure for ecological and environmental science. Ecology is deemed a dynamic rather than statis science, that is more than just descriptive. For instance, one of its concerns includes investigating the function of small languages and how language diversity can benefit human beings (Haugen, 1972). As far as Mühlhäusler's (2000) ecological metaphor is concerned, it is action oriented. Therefore, ecolinguistics is a theory that demands linguists to work on languages and to be vigilantly engaged, rather than merely passive language users and observer.

The idea of language ecology has been under discussion and has taken several decades to develop, from the 1970s to the 1990s, and it has ultimately emerged as an established and

recognized sub-branch of linguistics. Since the 1970s, the concept of language ecology has greatly influenced the field of linguistics, it has progressed in many branches of linguistics and thus, at the turn of the 1990s, a novel and new branch of linguistics originated, known as "green linguistics" or "ecolinguistics" (Fill & Steffensen, 2014; Fill, 1997). Ecolinguistics then became a combined and integrated branch of linguistics that was related to ecology in one way or the other. According to Fill & Steffensen (2014), ecolinguistics has grown in four aspects: foundation linguistics, ecology as metaphor, language and environment and critical ecolinguistics. Furthermore, Fill & Steffensen (2014) stated that ecolinguistic theory as presented by Mühlhäusler (2019) is an endeavor to redefine the field of linguistics and gives a more detailed and varied ways of thinking for the system. Moreover, according to Fill & Steffensen (2014), this area of study is somewhat novel in nature, and efforts need to be put in in order to pursue and explore new questions, new ideas and concepts with regards to this theory. Therefore, theorizing attempts in this respect include the search for new theories related to language, the investigation of language systems and texts, the learning of universal features of language related to the crisis of eco and natural environment and other ecological problems, discovering the part of language in teaching ecological thoughts to young generations, children and adults. In spite of the high number of tasks involved, ecolinguistics provides sufficient background regarding theory and procedures, including new aspects and perspectives of world view for further exploration.

Haugen (1972) was also interested in multilingual communities. He proposed a novel, conceptually influential concept that he named "language ecology" and defined it as the study of the interaction of any given language and its environment. Haugen's (1972) language ecology focus was, in fact, common interaction, and the term has been utilized in many studies, frequently in specific connection with cultural studies and multilingual societies. Many researchers have failed to establish the complete theoretical framework of Haugen's (1972) proposal, possibly because there are two conceptual drawbacks in his book. On one hand, it is not evident if Haugen was proposing language ecology as an independent discipline, because in some cases he considers it as a distinctive field or sub-branch of linguistics, while in some other cases he views it as a supportive analogy, a set or series of aspects of multilingualism in society. According to some scholars, there are some financial or monetary, societal, ecological, language and dogmatic factors that support multilingualism in a society. Recent studies have revealed that linguistic research should no longer emphasize on the monolingual speaker, but rather on the bilingual speaker, who reproduces the realistic situation of the majority of native speakers. Numerous countries are distinguishing these new tendencies and are endeavoring to adjust their policies in order to

accommodate this change (Backus et al., 2013). Another issue is that Haugen's theoretical proposal rests on a metaphorical conception of language as an organism, and most studies derived from Haugen's in later years have failed to sort out these theoretic differences. Consequently, many studies related to the terms "language ecology", "linguistics ecology", "ecology of language" and "ecolinguistics" appear in the existing literature, but they project various and different approaches to what is actually found in Haugen's original proposal.

2.1.3 Language ecology

The expansion of the ecology of language began with Haugen's (1972) "ecology of language" followed by Michael Halliday's (1992) further progress on the notion on the relationship of language to ecological, environmental and social issues and problems. This progress led to the view that language expresses the roles of agent/ experiencer and recipient in the form grammatical structure i.e. subject, predicate and object (Steffensen & Fill, 2014). Gradually, language ecology was given much importance by Mühlhäusler (2019) and it grasped attention. Nevertheless, there was some condemnation to Haugen's concept and, later on, ecolinguistics progressed and came to the surface as proposed by Mühlhäusler (2019). The ecology of language can be utilized as a comprehensive explanatory model to address problems related to language (Bundsgaard et al., 2012). Taken originally from research in the natural sciences to protect endangered creatures and preserve diversity, the ecology of language was initially introduced into the linguistic domain to discover the interaction of a language with its environment, offered as the connection of a language with other languages in the minds of multi-lingual users and also with the culture and society in which these languages work as means of communication (Haugen, 1975). According to Steffensen (2007), the main concept behind the ecology of language is that language is not considered as a separate entity from a society that utilizes it to communicate. Ultimately, an ecological approach to linguistic phenomena attempts to explore the connection of languages to one another and to the society in which these languages exists, which consists of "the geographical, socioeconomic and cultural conditions in which users of the relevant language exist and also the broader linguistic phenomenon" (Bundsgaard et al., 2012).

In other words, the ecology of language approach examines the relationships between linguistic ecologies, social, historical, sociolinguistic and political affairs at various levels, including the people, community and society that constitute these ecologies. Therefore, from this perspective, language is viewed as part of larger and equally meaningful resources, including

physical, social and symbolic, permitting ecolinguists to map all perspectives of the ecological and language environment, ranging from sociological to psychological (Nahak et al., 2019).

2.1.4 Emergence and diffusion of the modern concept and term "ecology"

The evolution of the concept of ecology and the ecological perspective of thinking can be traced back in time, although the term itself is not confirmed until 1866 (Fill, 1997). The American scholar and naturalist Henry David Thoreau (1817-1862) had utilized the term even earlier, in a letter dated January 1, 1858 (Schneider, 1987). According to Bundsgaard et al., (2012), Thoreau was the first to utilize the term "ecology" within natural sciences. However, later on, it was indicated that Thoreau's writings were somehow difficult to interpret in science: for this reason, in 1965, Harding revised his previous reading of the word "Ecology" in Thoreau's letter, and Kluge (2011) added that "the alleged previous attestation in H.D. Thoreau is because of a certain misreading". Thus, Ernst Haeckel (1834-1919), German professor of zoology in Jena, was eventually considered to have coined the word "ecology" in analogy with the terms "economy" and "biology" and, in the initial volume of his work, he defines ecology as the science of the economy of the living organism, of their way of life, as well as of the outer and external world relations of organisms to each other.

In the 1980s, the term "ecology" gained a strong scientific foundation and began being accepted within biology. One of the significant contributors in this regard is Danish botanist Eugenius Warming (1841-1924) and his seminal work *Plantesamfund*, translated into English under the title *Oecology of plants*. Later on, from zoology and botany, the term of "ecology" was being utilized with other scientific domains too. In 1970, the American chemist Ellen Swallow Richards utilizes the term "human ecology" in a book about cleanliness in day-to-day life activities. By "human ecology", Swallow Richards means the surroundings of humans and the effects they cause on the lives of other human beings.

The numerous features of the ecosystem are natural, climate and artificially caused by human beings, like noise, sand, dirty water and unnatural and contaminated food. American sociologist Hawley (1944) highlighted an ecological perspective linking general ecology and the central problem of sociology. The field of psychology also used and adopted the term "ecology", as Brunswik (1943) used psychological ecology as a statistical analysis of intra-environmental relations (Bernat, 2008). The psychologist James Gibson's ecological theory of perception is also very well known. In linguistics, however, the term "language ecology" is widely known because

of Haugen (1972). Some scholars in the domain of ecology and language support the view that he was the main researcher who in fact associated the concept of ecology to linguistics (Ahmed et al., 2021) and, according to Fill & Penz (2017), the idea of ecology was applied to linguistics by Haugen in 1970. Even before Haugen, however, the word "ecology" had already been utilized by other linguists, like Carl Voegein and his co-authors in 1964 and 1967, and this has been supported by many scholars, including Haugen himself (Zhou, 2022). According to Grenoble (2021), the term "ecology" dates back to Voegelin et al. (1967), although it is generally associated with Haugen (1972). Figure 2.1 summarizes schematically some steps in the diffusion of the term "ecology" from sciences like zoology, botany to other sciences and disciplines.

Year	Biology, etc.	Sociology	Psychology	Linguistics
1866	Haeckel (zoology)	-	-	-
1885	Reiter (botany)	-	-	-
1895	Warming (botany)	-	-	-
1907	Richards uses the term human ecology in relation to the immediate human surroundings	-	-	-
1908	Goode (about the 'geographic conditions of human culture')	-	-	-
1921	-	Park & Burgess bring the term human ecology to prominence in sociology	-	-
1943, 1947, 1956	-	-	Brunswik: psychological ecology; ecological psychology, etc.	-
1950	-	Hawley's Human Ecology	-	-
1954	-	-	Barker & Wright: psychological ecology	-
1959	-	-	-	-
1964, 1967	-	-	-	-
1966 (cf. also 1979)	-	-	-	Trim's linguistic ecology (variation in the speech community)
1968, 1972	-	-	-	Voegelin's linguistic ecology (languages/dialects in contact in a

				given geographical area)
1971, 1972	-	-	-	Gibson: ecological optics; Horner: linguistic ecology; Haugen's ecology of language

Figure 2.1 The appearance of the term 'ecology' in biology and examples of its adoption by other scientific fields *Source: (Eliasson, 2015)*

2.1.5 The setting of Haugen's original presentation

The origin of Haugen's famous 1972 book was a talk entitled "On the ecology of languages", which he delivered at a conference at Burg Wartenstein, Austria, in 1970. According to Steffensen (2007), Norwegian-American linguist Haugen was greatly influenced by Haeckel's concept in the sphere of language, certainly under the influence of his well-known companion who was known as the father of deep ecology or ecological philosophy or (ecosophy), Norwegian philosopher Naess (2017). Steffensen (2007) asserts that Arne Naess (1912-2009) probably started elaborating ecological concepts even before Haugen, something that renders an impact chronologically possible. According to Drengson (2008), for example, since the mid 1906s, Naess had started making more efforts towards environmental and ecological questions, and it is sometimes assumed that Naess coined the expression "deep ecology" in September 1972, in a talk delivered in Bucharest. Although the corresponding article was actually published two years later than Haugen's book, it is commonly recognized that Naess was responsible for the international diffusion of the term "deep ecology"

2.1.6 The ecological metaphor

As Haugen (1972) introduced the term "language ecology" as a metaphor, therefore, later on scholars generally focused on this side of his proposal. It is worth noticing that Haugen highlights ecology in a biological perspective, as a science, but the scientific aspect of one academic area, of course, can be used as a metaphor in some another academic domain or discipline. However, according to Haugen (1972), the term "language ecology" is a metaphor rather than the name of a sub-branch of any discipline, and the concept of language ecology as a metaphor is a beneficial tool of thought providing one more perspective to the interdisciplinary field of sociolingusitics or sociology of language. Haugen (1972) considers language ecology more as a perspective than as

a specific scientific field or sub-discipline. Figure 2.2 summarizes metaphors in the language sciences according to Haugen (1972).

Metaphor	Definition	School
1. Biological metaphor	Language viewed as an organism, that lives, reproduces and dies	Historical-comparative linguistics during the 19th century onwards
2. Instrumental metaphor	Language as an instrument or as a tool	-
3. Structural metaphor	Language as a tightly organized system of mutually related parts	Structuralism and generative grammar
4. Ecological metaphor	Language seen as an organism in its natural environment	Haugen's own metaphor

Figure 2.2 Metaphors in the language sciences according to Haugen (1972, 326f.)

Source: (Eliasson, 2015)

Haugen's (1972) main focus in relation and comparison to Haeckel's definition of ecology is presented in the following figure. According to this ecology concept, there are three main key elements: organism, environment and interaction. According to this interpretation, the language connects to the organism. The environment corresponds – or equals, in a sociological perspective – the community, i.e. speech community to be more precise and, as far as the psychological sense is concerned, it equals the individual mind from a psychological perspective. Consequently, in his writings, Haugen combines the organism (i.e. language) and the environment (i.e. the speech community) by means of interaction. Figure 2.3 shows the central concepts in Haeckel's ecology and in Haugen's ecology of language.

Ecology	Organism	Abiotic environment Biotic environment	Relation
Language ecology	Language	Linguistic community Mind	Interaction

Figure 2.3 Central concepts in Haeckel's ecology and in Haugen's ecology of language

Source: (Eliasson, 2015)

According to Haugen (1972), the ecology of a language is in fact determined by the individuals who learn a language, utilize it and pass it on to others, whereas the language itself is passive. However, Haugen (1972) himself acknowledges that language is not an organism, and it is not an actor, so its connection to the external world is completely indirect via its speakers and individuals. There are often ambiguities in Haugen's writings as, on the one hand, we sometimes find hints to the physical world or environment, and also to the psychological environment i.e. the user's mind,

whereas on the other hand Haugen asserts that the real environment of the language is the society that utilizes it as one of its codes, and hence it remains ambiguous what the ecological linguistic environment actually consists of. To sum up, it can be said that language is not an organism and the constant interaction between language and its environment mitigates the impact on language by the society that is its linguistic community.

More recently, ecolinguistics has progressed as critical green linguistics, i.e. an embodiment of language ecology and critical discourse analysis (Stibbe, 2014). Critical ecolinguistics scrutinizes the natural, biological or ecological content, discourse and viewpoint that are related to people, ecosystem and environment. The usage of green speech vocabulary items greatly influences an individual's thoughts and perception, and this is logically fused in discourse, authors and readers (Nahak et al. 2019). According to ecolinguists following this model, if green communication is positive, then the speakers' attitude and behaviors to the environment will also be productive and encouraging whereas if green communication or discourse is not advantageous and constructive, then insights, actions or activities regarding the environment and ecosystem may get affected harmfully and become deteriorated (Nahak et al. 2019). Contrary to this, in the European context, ecolinguistics takes the term "ecology" in its literal sense, as it inspects the role and implication of language in the existing natural and environmental matters and problems. With the initiation of the green linguistic approach, linguistics has not only taken on an innovative task of creating awareness of the ecological and environmental crisis, but it has also restored the feeling of togetherness with all living creatures on the globe. With this consciousness, human language has appeared as a strong force in an attempt to propagate the motto of "live and let live", contrary to the mere survival of the strongest and fittest.

2.1.7 Hallidayan conceptual lineage "ecological linguistics"

If linguists and researchers have utilized an ecological metaphor in the Haugenian approach, many European researchers have recently come up with a new approach, in which ecology is intended in its original biological essence. For this paradigm, the recommended term is "ecolinguistics", described as the study of the relationship between a language, ecological and environmental issues. The first researcher to have supported this role for applied linguistics (without, nevertheless, utilizing the term "ecolinguistics") was Michael Halliday, who presented a talk entitled "New Ways of Meaning: The Challenge to Applied Linguistics" in 1990, at the AILA conference which took place in Thessaloniki. This talk has led many researchers to take up the challenge of ecolinguistics, so that many more conferences after AILA 1990 have included presentations on the

topic of green linguistics. According to Halliday (1992), classicism, growthism and devastation of innumerable mortals and species, contamination and many other ecological complications are not merely problems for environmentalists and physicists, but for the applied linguistic community too. As the notion of a linguistic community has conventionally been fundamental concept to sociolinguistic and environmental studies of language education, it has experienced considerable critique for assuming a stationary and same view of language groups. According to Gumperz (1982) and Silverstein (1996) discourse communities are considered as groups whose individuals share unrestrained objectives and norms but who may utilize different linguistic properties and whose practice develop over time. This shift stresses that language is not only incrementally varying within fixed groups, but instead constantly changed through social interaction and shifting discursive actions. As far as environmental education is concerned, recognizing the transformative nature of discourse analysis offers a more refined framework for assessing how language interacts with social and ecological settings.

Halliday presented several instances that indicate that the linguistic system advocates growth, as opposed to stagnation and decline, and that inanimate substances, animals and plants are treated in a different way than humans. After Halliday's famous talk, the German linguist Trampe (2006), in the book *Ökologische Linguistik*, mentions the concept of language-world system, where language and world interconnect ideally in such a manner as to maintain the diversity of all living creatures. According to Trampe (2006), how certain factors in language relate to ecological and environmental issues and how, by a reversal of the procedure, un-ecological language is used in its turn contributes to environmental deterioration and decline. The European ideology to green discourse is consequently the pointer of a sincere concern of scholars to discover the motives for the prevailing ecological and environmental issues and endeavor to find a solution to tackle them. Contrary to Haugen's ecology of language, which basically stresses the importance of the contact between languages in their allegorical, symbolic and metaphorical "environment", ecolinguistics assumes an interaction between language and universe in a more tangible and empirical fashion, in such a way that issues like the existence of various creatures and the maintenance of biodiversity are exposed to be accessible from the linguistic viewpoint.

2.2 Definitions and overview: What is ecolinguistics?

Ecolinguistics investigates environments and ecosystems that are an integral part and play an important role in the ecological system or human life system (ecology) which speakers utilize to

communicate in their ecological environment. In this regard, Fill & Mühlhäusler (2006) assert that the environment can be defined in three ways:

- physical environment that consists of geographical characteristics, for instance the topography of a country (e.g. beaches, valleys, hills, mountains, various weather conditions and the amount of the rainfall);
- economic environment that consists of basic human needs including wildlife, plants and mineral reservoirs;
- social environment that consists of diverse forces that exist in our society and environments that shape and outline the observations, views and thoughts of individuals in relation to each other.

Recent linguistic research has greatly affected the interdisciplinary science that is critical discourse analysis. The amalgamation of ecolinguistics and critical discourse analysis is labelled as critical ecolinguistics. Critical ecolinguistics explains the ecology in numerous forms of discourses, which are related to individuals, their cultural and surrounding environment. The ecological and green text (including oral text, written discourse and images) is often known as green discourse (Ludwig et al., 2019).

According to Bang & Trampe (2014) green linguistics is often divided into two aspects. One is traditional linguistics applied to situations and texts of ecological significance, while the other consists in more theoretical theories regarding language, inspired by the general approach of ecology. Besides, ecolinguistic texts shed light on the relationship between language and the environment, i.e.

- language is meaningful;
- language is creative and originated by the outside world;
- the outside world is shaped by language;
- language is dependent in the world. The mutual revolution between language and ecological environment is considered in studies performed through an ecolinguistic lens.

Just as there is a stability or an endeavor to survive among innumerable species of plants and animals in their natural world, there is a stability or struggle between different languages both in the mental perception of a multilingual person and in a culture that is diverse (in simple words, in the linguistic environment). The possible arenas of ecological language are, therefore, topics like

language contact, conflict of language, language death, growth of language, language planning and connections. Haugen's concept, with its symbolic or metaphoric usage of ecology, is endorsed by eminent scholars such as Denison (1982), Enninger (1987), Haarmann (2012) and Haynes (1980). Denison attempted to answer Haugen's question what should or will be the role of minority or small languages. According to Denison (1982), just as the sperm whale is worthy of special protection as a special and vulnerable animal in its biological development, then Gaelic must definitely be protected in its human linguistic progress and customs. Many scholars have utilized the ecological metaphor, and consider multilingualism as an active procedure equivalent to the growth and decline in animal populations (Bolinger, 2021; Makkai, 2013).

2.2.1 Anthropocentrism

Anthropocentrism and ecocentrism are two contrasting perspectives that reflect different attitudes toward the connection between humans and the ecosystem. One of the main thoughts in this environmental and ecological disaster is the "anthropocentricism of language." This term describes the fact that language is a component in human growth and progress that serves the supremacy and evolution of all that is human, as opposed to the rights of the rest of animate creatures. Some of the ways in which anthropocentricism exposes itself are utility naming, distancing, objectivization and euphemism. Some scholars have shed light on these concepts with examples from English (Chen, 2016).

2.2.1.1 Utility naming

Utility naming is described as the inclination of language to call the phenomena of the universe from the viewpoint of their usability for individuals. This approach is of course a completely natural quality of a communicative system created by human beings. The fact is that it is very difficult for speakers of any language to pinpoint this quality of their own language, explain it, and even overcome it: in other words, speakers are largely unaware of the language choices they make, and therefore also of the fact that the vocabulary they use to name certain entities may be belittling for these entities, or otherwise ideological. According to Fusari (2018b), people today are more aware than in the past that there is much in common between animals and humans in the way they are affected by the depletion of environmental assets in the Anthropocene; however, dichotomic representations opposing animals to humans continue to be deeply rooted in language. English examples of utility naming are the words like timber, firewood, useful animals, pests, wasteland and several others, which often include the use of mass nouns to identify "categories" of animals

(e.g. cattle) that in fact include many individuals belonging to that species (e.g. cows, bulls, calves, etc.).

2.2.1.2 Distancing

The terms "distancing" refers to animals and plants that are kept apart and distanced from humans from the linguistic point of view, as various words are utilized for similar phenomena. The term "distancing" is closely associated with "objectivization". Animals or plants are considered as an object from the linguistic point of view, to make it convenient for humans to utilize them or to hide the very fact that these animals and plants are being exploited by humans. In English, the vocabulary uses different mass nouns to identify kinds of "meat", like poultry, which neither indicate their affiliation to human "flesh" nor their origin from the slaughtered "animals". In fact, the euphemistic element emphasizes the industrial procedure in meat production instead of highlighting the animal killing. According to Halliday (2001), "production" is the key term that is used as a great semantic confidence trick, since we have animals that are used and transformed into something else, indicating no side effects for human beings. According to Fill (1997) animals and plants are specimens that occur or are abundant in a region where they have their habitats. We actually "clear" and not "kill" the trees which are also *logged* in order to "*produce*" wood that is useful for human beings in many ways. Livestock, cadaver or corpse and mess are other illustrations of this phenomenon, which specifies that language is capable of affording particular animal vocabulary words and, therefore, can justify human acts and to support the supremacy of humans.

2.2.1.3 Objectivization

Objectivization is very common in the language of hunting (Chen, 2016). It basically plays a significant role in transforming animals into painless or pain free items and objects which individuals may utilize for their leisure and sport. Various parts of animal bodies are given different names, and the procedure of dividing and killing are associated with particular technical terms that, in fact, turn this activity into something beneficial and useful for human beings. Some objects like brush, pad, slot and masks are names given to various animals and their bodies. The animals that are used for hunting are called quarry, and the prey's cut off parts are presented and given as trophies and special gifts on various occasions and events. According to many scholars, the language of hunting would be helpful in understanding this phenomenon from the ecolinguistic point of view. Other aspects where objectivization is specifically highlighted are the words mentioned above, like "meat production", "fur trade" and "animal experimentation", which in one

way or another have can be considered as instances of the fourth strand of language anthropocentricism, i.e. euphemism.

2.2.1.4 Euphemism

The term "euphemism" can be described as use of various words with polite and pleasant associations for the purpose of hiding the unpleasant or harsh effect of a particular word or multiword expression which is not considered good in society. Particular euphemisms are used for cruel acts and deeds committed by human beings in killing animals. In this regard, expressions like pest control, LD50 test, and other services related to animals' health, basically hide the bitter reality that they refer to the slaughtering of animals and organisms other than human beings, for the exclusive benefit of human beings. For example, an LD50 test is an experiment with animals in which, sadly, 50 percent of animals do not survive, where LD refers to the "lethal doses". Animal health service also indirectly has to do with the slaughtering and killing of animals, and veterinarians who provide these services actually ensure that meat is good for human beings to eat.

The above-mentioned four types of anthropocentricism are certainly not the only types: in fact, any type of "growthism" can be termed as an indirect form of anthropocentricism, as growth is considered to be growth of anything that is human, which is only possible at the cost of the rest of the creation. It is one way or another the obligation of ecologists to shed light on certain aspects of language to make its users are abreast of the sometimes subtle, sometimes more obvious mechanisms of anthropocentric language. In recent years, a countermovement to anthropocentrism has been observed in which animals and plants are linguistically brought closer to humans. An example of this is the now common use of human relationship terms for animals (e.g. brother, sister, aunt, and so on), and indeed the quite general use of "human" words for animals and plants (forest dieback, tree surgeon, animal language), a usage that, on the other hand, can be disapproved for its inherent anthropomorphism, since it imposes human categories on all other living beings. According to Fill (1997), an instance of this is the now common use of human connection terms and words for animals, and indeed the frequent utilization of the word "non-human" for other living beings. Furthermore, in English, there is also an increasing inclination to use "he", "she" or "they" instead of "it" when referring to animals. Ecolinguistics finds itself in the middle of a number of philosophical views, concepts and approaches, in which the answers to several questions are possible only after thorough investigation of the ethics of ecology. However, several hidden instances of anthropocentricism in our languages are yet to be explored. Several scholars (Chen, 2016, Jung, 2001) have taken different approaches to the connection between language and

ecological issues, examining the significant part ecological vocabulary plays in environmental topics and in discussion related to them. For example, Jung (2001) reveals how the growth and progress of technical vocabulary and terminology regarding the ecosystem and its pollution in previous decades has created an awareness of diverse environmental issues and how, on both sides concerned (industry and environmentalists), neologisms have been used to manipulate views. In the 1960s, German environmentalists utilized terms like Giftkrieg and Giftgas (poison war, poison gas) for pesticides used in agriculture, and these words have some ominous connections with Nazism and the second world war, while the industry avoided the term "gift" (poison) entirely and utilized learned euphemisms, like toxicity, insecticide etc.

2.2.2 Ecocentrism

Ecocentricism is an environmental concept that focuses on the well-being and welfare of the entire ecosystem, giving intrinsic value and significance to both living as well as non-living objects. It does not endorse the anthropocentric view that places human beings at the centre of universe: instead, it prioritizes interconnectedness and interdependence of all living creatures and elements. Ecocentrism seeks to protect and preserve ecosystems, biodiversity, and the Earth itself, not only for human benefit, but also for the inherent value of all living creatures and their habitats. It often promoters sustainable and general approaches to environmental issues. In summary, anthropocentrism prioritizes human interests and well-being at the centre of environmental considerations, while ecocentrism advocates a more inclusive and holistic viewpoint that values the entire ecosystem. These two concepts represent diverse approaches to environmental ethics and shape how individuals, societies, and policymakers approach issues related to nature and the environment.

2.3 Ecolinguistics as an evolving concept: Five sides

According to Jung (2001), ecolinguistics is a scientific field which primarily sheds light on the connection between nature and language. It is an approach to the society of the living system (including human society) and its main purpose is to focus on the connection between cultural environment and language. Stibbe (2014) asserts that ecolinguistics as a scientific discipline pronounces the consequence of language use that attempts to connect human beings, other species and the physical or natural environment that is persuaded to guard sustainability and keep relationships among human beings and other species in an ecosystem. Some scholars actually limit the objective of ecolinguistics to the description of ecological issues in texts, while others describe it from a wider perspective. According to Stibbe (2014), ecolinguistics investigates the ecological

issues and unveils the stories we live by, arbitrates those stories in a philosophical perspective, propagates the stories that oppose the ecological philosophy and contributes to discover new stories to live by. Ecolinguistics has emerged during the last five decades and, as an innovative and evolving concept, has become more varied and complicated in nature. The ecolinguistic idea can be explored with regards to five sides: geographical, conceptual, disciplinary, methodological and practical. Figure 2.4 indicates the five sides of ecolinguistics.

Five sides	Terms: ecolinguistics as
Geographical	Changing from a European idea to a global ideology
Conceptual	Changing from a subsequent term after the ideology of language to an umbrella term
Disciplinary	Diverse options: a sub-discipline, or a discipline, or a trans-discipline, or an inter-discipline, or a meta-discipline, or a multi-discipline
Methodological	Diverse options: an approach, or a paradigm, or a methodology
Practical	Diverse options: a pacesetter, or a platform, or a philosophy

Figure 2.4 Five sides of ecolinguistics

source: (Zhou, 2022)

2.3.1. The geographical side

Haugen's (1972) language ecology pre-dated the appearance of green linguistics. Nevertheless, geographically, green linguistics inaugurated as a European perception. Similarly, it was a group of European scholars, founded by Halliday (1992), who introduced an innovative ecolinguistic approach by taking up the task of raising realization regarding ecology and its issues. With the passage of time, green linguistics has established as a global and wide-reaching thought and concept, as research in this area of study has significantly spread to non-European countries like China, Korea, Africa and Brazil (Chen, 2016). Green linguistics has spread its focus of interest and research to numerous countries in which it did not formally exist and where it is set to function in a noteworthy role (Fill & Steffensen, 2014). Similarly, ecolinguistics is a strongly universal movement, with an influential and substantial role across the globe in all continents (Stibbe, 2015). In short, geographically, green linguistics is gaining importance for two main reasons. Firstly, the more it spreads worldwide, the more logical variety and diversity can be utilized as combined efforts to develop a strong sense of interdependency. Secondly, an increasing popularity of ecolinguistics as an emerging discipline and field can be associated to the severity of the environmental and ecological crisis.

2.3.2 The conceptual side

As far as the conceptual aspect is concerned, ecolinguistics as an idea has occurred and grown as a beginning from "the ecology of language", and has steadily become an umbrella term that covers any linguistic study or research that takes an eco-friendly approach or ecological study that contains language aspects (Stibbe, 2015). Contrary to the ecology of language, ecolinguistics is taken in its literal sense in European ecolinguistics, as it were, and has emphasised the role of language in the present-day issues regarding green practices and ecosystem (Fill & Steffensen, 2014). Thus, the term "ecolinguistics" has been deemed to be the most suitable to include all examples and notions related to language and ecology (Zhou, 2022). It can be said that the conceptual scope of ecolinguistics has extended to cover ecological language or the ecology of language.

2.3.3 The disciplinary side

The disciplinary aspect of ecolinguistics has placed it within the wider picture of academic grounds that consist of, for instance, ecological humanities and social sciences. According to Halliday (1992), a domain can be defined depending on the content it represents and on what it is that is in fact under investigation, as well as based on the scope, conceptual background and disciplinary relations to other domains. In the case of ecolinguistics, numerous understanding options can be found: for example, it has projected itself as a sub-discipline, trans-discipline, meta-discipline, inter-discipline or multi-discipline. Some scholars deem green linguistics as a sub-discipline within the main conventional context and framework of linguistics that scrutinizes the societal, ecological aspects of language (Ahmed et al., 2021). In the same vein, ecolinguistics can be deemed as a discipline of language study or an ecological or green discourse field as, for many, it studies the global features of language related to the environmental crisis (Ahmed et al., 2021; Halliday,1992; Stibbe, 2021). According to Bang & Trampe (2014), ecolinguistics has three sides or perspectives: biological, transdisciplinary and prescriptive. Transdisciplinary is a concept that produces experimental or practical hypotheses which examines the organization of linguistic actions in living creatures and ecological and environmental relations. Many researchers also deem ecolinguistics to be an interdisciplinary or multidisciplinary field where the natural sciences and social sciences interrelate or meet – a discipline within the framework of ecological discourse analysis (Ahmed et al., 2021; Halliday,1992; Stibbe, 2021). According to Steffensen & Fill (2014b), in spite of the fact that there is consensus among researchers with regards to the

disciplinary side of ecolinguistics, as it has connected two different disciplines, i.e. ecology and linguistics, there is a lack of research models that connect them.

2.3.4 The methodological side

From the methodological perspective, ecolinguistics can be taken as an example, or approach or method. As far as its understanding as a concept is concerned, ecolinguistics deals with critical discourse analysis as a broad and extensive practice related to the ecosystem. Scholars who hold this view consider critical discourse analysis as dominant and noteworthy to the domain (Ma & Stibbe, 2022). However, as an umbrella term, ecolinguistics can be utilized to discuss any field of study related to language and interaction that replicates stories we live by (Ma & Stibbe, 2022). Ecolinguistics can also be considered as a post-Newtonian linguistic approach that does not endorse the materialistic, deterministic approach of structuralism as traditional old linguistics. Ecolinguistics has developed as an innovative linguistics depicting general and comprehensive communication that adopts ecopsychology and transpersonal psychology to describe human communication as a life procedure (Zhou, 2022). The chief focus of ecolinguistics as a methodology is to generate practical and functional interconnections between various philosophical and pragmatic thoughts related to the ecosystem, then to apply a combined approach to tackle the practical issues experienced by speakers (Fill, 1997).

2.3.5 The practical side

From the practical point of view, ecolinguistics is deemed as an innovator which, as transdisciplinary, can help language science to get it into a new scientific era (Fill, 1997). Ecolinguistics as a paradigm may be considered as a launch-pad from which it can adopt many directions and allow us to study any language phenomena from a collective point of view (Zhou, 2022). At its core, ecolinguistics consists of inquiring and interrogating the stories that endorse our present unmaintainable civilization, reflecting the stories that are actually not useful, and are in fact leading to ecological devastation, social injustice, and discovering innovative and new stories that work well in the conditions of the world that we interact with and experience. Nevertheless, these are not stories in the conventional strictest sense of a narrative, but rather discourses, frames, metaphors and generally, collections of linguistic aspects and features that arise to express and convey specific points of view or world approaches. According to Halliday (1992), there is a syndrome of grammatical aspects which conspires to build reality in a specific manner and this a procedure that is in fact not constructive and good for our health as living

creatures. In critical discourse studies, most studies take ecology in its literal sense, as the life-sustaining connections of living creatures (humans) with other living creatures and the natural environment. The objects of analysis under consideration are thus discourses which have an outcome on how individuals behave towards each other, other living creatures and the physical environment in their surroundings.

Therefore, the object of analysis of ecolinguistics includes discourses like conversation, predominantly about the environment, ecologies but also discourses like neoclassical economic discourse, which in fact – through their eradication of any ecological considerations – can let human beings be treated in ways that are damaging and negative from an ecological point of view. Several discourses have been analysed from an ecolinguistic point of view e.g. advertising (El-Sheikh et al., 2022), economics (Stibbe, 2015), environmentalism (Alexander, 2010), natural resources (Grabowski, 2007), energy (Russell et al., 2011), wildlife (Stibbe, 2014), ecotourism (Lamb, 2021), climate change and green practices (Fill, 2007). Studies related to ecolinguistics are based on a numerous theoretical and ethical frameworks, but all endorse ecological and social perspectives.

Naess's (1990) term "ecosophy" is valuable to explaining the framework that studies related to ecolinguistics employ to analyse discourses. "Ecosophy" means a viewpoint that has at its centre ecological harmony, consisting of rules, instructions, and hypotheses regarding an ecological state of affairs. The details related to ecosophies will designate numerous variations because of important differences regarding not only the "facts", i.e. pollution, reservoirs, populations etc. but also the positive values of ecology (Naess, 1990). An ecosophy is informed by both a scientific understanding of how organisms (living beings, including human beings) depend on connections with other living beings and on a physical environment to flourish and survive, as well as by an ethical framework to decide why the survival and flourishing of the fittest matters and whose survival and flourishing matters. I think ecosophy is an approach to living better, to cultivating our subjectivities by recognizing them as interdependently embedded within social and material ecologies. My subjectivity is a product, or an expression of the webbed sociopolitical, economic, domestic, and technological environments I exist within. There are different ecosophies that broadly but not entirely line up. The varieties run from anthropocentric to ecocentric, optimistic, neoliberal, socialist, localist or anarchist. There is also "cornutopianism", a viewpoint or concept which supports that human creativity and ever increasing technology will overcome ecological and reserve difficulties and that we should push ahead with industrial progression for

human (and merely human) benefit (Lomborg, 2004). Then there a number of philosophies around sustainable development, which attempts to combine economic development and environmental protection, though often in ways that are less challenging to existing social structures (Baker, 2015). More fundamental is social ecology (Bookchin, 1982), where the roots of ecological devastation are seen as prevailing in social hierarchies. According to social ecology, human beings will not stop acting as a dominating species and treating each other as resources. Ecofeminism (Pandey, 2011) similarly locates the roots of the ecological crisis in domination, and specifically emphasizes the parallels between men's domination of women and the suppression of wild animals and the ecosystem. One of the main tasks of ecofeminism is breaking down barriers, so that the ecological understanding gained by women through their practical role in subsistence and community building is valued and utilized in reconstructing more ecological societies.

2.4 Six ecolinguistics turns

While shedding light on the significance and birth of ecolinguistics, one may consider its ecological as well as linguistic problems and issues. Nevertheless, ecolinguistics has proposed several turns that are considered important and critical (Halliday, 1992): environmental; ecological (Stibbe, 2015; Steffensen, 2007), epistemological (Kravchenko, 2020) and in addition to it, scientific (Finke, 2017). In recent years, Li et al. (2020) have introduced and proposed a radical turn. Each turn has contributed something to ecolinguistics and every turn is easier to identify than to explain (Zhou, 2022).

2.4.1 Turns in the 1990s

Steffensen & Fill (2014) claim that the critical turn in ecolinguistics occurred with the seminal work of Halliday (1992). Besides him, another prominent linguist is Mühlhäusler (2019), who contributed to ecolinguistics in the 1990s, emphasizing ecological and environmental issues specifically. Steffensen & Fill's (2014) work on ecolinguistics has inspired many scholars and linguists globally, who are concerned about the environmental and ecological issue. Steffensen & Fill (2014) work entitled "Ecolinguistics: The state of the Art and Future Horizons" leads towards the critical turn of ecolinguistics in the 1990s. Another noteworthy contribution for the critical turn in ecolinguistics was Michael Halliday's (1992) work entitled "New Ways of Meaning: the Challenge to applied Linguistics", which was presented at the 9th World Conference of Applied Linguistics in 1990 (Steffensen & Fill, 2014).

The question is what is actually critical turn? It can be labelled as a critical change towards questioning vital grounds of linguistic theories and procedures that contain three important aspects:

- thinking critically;
- researching critically;
- establishing or developing a critical ecolinguistic voice.

As far as thinking critically is concerned, a scholar is bound to take an epistemological standpoint that utilizes an eco-critical stance in re-examining the notions of language and the ultimate linguistic actions. One must be critical in this regard in one's research or, in simple words, adopt an ecolinguistic outlook that includes theories which fall within the framework of linguistics. Finally, one must have an eco-critical conversational or discursive perspective to discourses by shedding light on topics related to inequalities between humans and living beings. Significantly, this turn led towards the birth of critical ecolinguistics as well as systemic ecolinguistics (Halliday, 2002). With regards to the environmental turn, it can be understood in two ways, i.e. "environmental" and "turn". Harré et al. (1998) assert that the initial environmental idea can be understood by detecting and recognizing the risks of "greenspeak" in ecological and environmental discourses. As far as environmental studies are concerned, this is considered a linguistic "turn" that has several benefits, most importantly for environmental discourse analysis. According to Mühlhäusler & Peace (2001), in the second sense, greenspeak can indicate an environmental turn for linguistics and hence it can endorse metalinguistic consciousness among scholars and scientists. In recent decades, research has primarily emphasized the second sense (Zhou, 2022) and Mühlhäusler (2019) asserts that, with regards to the first sense, the results have not been satisfactory.

2.4.2 Three turns in the last two decades

A fundamental ecological turn occurred after the 1990s, when the term "ecological" began to be labelled in two perspectives, consisting of:

- the ecological concern and the ecological matters as depicted in dialectical linguistics (Steffensen & Fill, 2014);
- allowing disciplines of humanities and social sciences to discover ecological surrounding and human environmental dependence and also ecolinguistics (Stibbe, 2015).

Details of the ecological turn in both domains can justify what makes ecolinguistics not critical or environmental, but in fact ecological. With regards to ecological linguistics, Steffensen & Fill (2014) assert that, in the 1980s and 1990s, within the domain of dialectical linguistics, the ecological turn has supported the humanities, e.g. discourse analysis, in tacking and addressing issues related to the ecological crisis that mankind is experiencing in the twenty-first century.

The question that arises here is: should ecolinguistic view ecology as a metaphor or as an epistemology? Some scholars say that, by making the epistemological turn, language and connections are redefined from the cognitive-ecological feature and, for observers, there are numerous linguistic realities. According to Finke (2017), the scientific turn is observed in the context of a scientific change, and there is a "wind of change" driven by the realization that we cannot sort out an issue or problem like the climate crisis by utilizing the same procedures that originated it, so we need a scientific turn. The purpose of the scientific turn is in fact to stop current misconceptions of diversity, including scientific diversity itself, by practicing "connective knowledge and reconsideration of the function of diversity and a novel understanding of boundaries" (Finke, 2017). Fill & Penz (2017) assert that this turn is noteworthy and vital for the future of ecolinguistics because it gives ecolinguistics the function of an innovator in a transdisciplinary era. The new scientific era will be one in which disciplines combine, merge and lose their original boundaries, and ecolinguistics will be one of the key contributors to this progress and advancement.

2.4.3 The latest turn (2020)

According to Cowley (2019), a essential hypothesis, i.e. the extended ecology hypothesis, emphasizes that one can combine sociocultural and natural ecology into individuals' small-scale cognitive ecologies by spreading the significance of human values and meanings as part of the ecosystem. Steffensen & Fill (2014) assert that language can be studied in an ecolinguistic approach from three points of view, i.e. biological, ideological and sociological. From the biological perspective, human beings are a part of the living system in an ecosystem, so language is impacted by an interrelationship between human beings and environment. This environment is described as consisting of the topographic and geographical conditions, biotic and abiotic components, or climate system. The ideological perspective consists of beliefs, dogmas, values and norms within a society, and may vary from society to society, i.e. what is appropriate for one society may be inappropriate for another society. The last dimension is sociological, and it represents the existence of a connection and a relationship between humans as social beings, where

"social being" refers to the social status of people, based on their distinction in education, economy, job, position and culture.

In short, the three aspects are interconnected with each other. The ideological dimension signifies an individual mentality, collective mentality, cognitive, ideological systems and psychic or mental/emotional systems, whereas the sociological aspect is concerned with the way human beings manage and tackle their relationships with other humans while living in a society. Lastly, the biological dimension is related to the biological collectively of individuals who live side by side with other living creatures (e.g. animals, plants, land, sea, etc.).

2.5 Previous studies and ecolinguistic theories

Until a few decades ago, linguistics was limited to the scientific study of language (Mliless & Larouz, 2018; Zahoor & Janjua, 2020), with language seen as an object. Various linguistic schools of thought such as structural linguistics, generative transformational linguistics and cognitive linguistics specifically emphasized a limited set of aspects of language like phonetics, phonology, morphology, syntax, semantics, pragmatics, first language acquisition and second language learning, whereas some scholars focused on historical linguistics. Nevertheless, linguistics has drastically changed because of the influence and contribution of new disciplines. The integration of other fields and disciplines with linguistics paved the way, for example, for the amalgamation of psychology and linguistics that was later named psycholinguistics, the combination of sociology and linguistics that turned into sociolinguistics, and the use of computers for language analysis which is now computational linguistics (Rider, 2014). Within this context of amalgamation between linguistics and other disciplines, ecolinguistics has gained the attention of scholars globally as one of the emerging new branches of linguistics (Pratiwi et al., 2021).

Armiero & von Hardenberg (2013) state ecolinguistics as a difficult and complex network of relationships between languages, ecosystem and native speakers of these languages. The authors deemed the environment as a amalgamation of biological, physical and social environments that are inseparable from each other, and view ecolinguistics as the study of language according to the environment it is utilized in. According to Steffensen & Fill (2014), Haugen (1975) pronounced the natural environment of a language as the language user community. He stated that language essentially exists in the speaker's brain, and it also functions to link speakers with others, and with the natural surroundings, namely the social environment and the natural environment. In addition, Stibbe (2015) asserts that ecolinguistics is the ecological analysis of discourse and that the

connection between ecology and language is the way how our thoughts influence the way we deal with humans and the natural world, and in turn, how concepts, opinions, ideologies, and world views are formed through language. In short, Stibbe (2015) affirms that ecolinguistics is concerned with ecological studies of how words in a language connects to objects in the local environment. Many researchers have tried to establish significant conceptual bridges between the original vision of ecology and the contemporary movements of ecolinguistics (Ahmed et al., 2021; Armiero & von Hardenberg, 2013; Setyowati et al., 2022; Zahoor & Janjua, 2020).

There are only a few published studies that have dealt with teaching the ecology of language so far, including: a survey of international ELT textbooks by Jacobs & Goatly (2000), reporting a general lack of curricular activities related to environmental protection; a content analysis by Kirova & Stavreva Veselinovska (2004) of the EFL textbooks used in Macedonia, to investigate the frequency and treatment of ecological topics in them; a Critical Discourse Analysis (CDA) of Japanese EFL textbooks by Stibbe (2004), exposing shallow environmentalism in the examined textbooks; a CDA of a sample of EFL textbooks used in Iran by Amalsaleh et al., (2010) to analyse the linguistic and ideological construction of different social actors in the community; a CDA by Akcesme (2013) of a number of leading English coursebooks used globally, to find out in what ways nature is reflected and how the various representations of nature propagate eco-ideologies; Critical discourse analysis (CDA) is a distinctive concept to discourse studies that explores and examines the way in which language projects, replicate and challenges relations related to power in society. Fairclough (1992) is significantly considered as the founding scientist of critical discourse analysis (CDA), evolving a framework that theorizes discourse as a form of social practice that shapes as well as is shaped by social structures. In his seminal work Fairclough (1992) stressed the dialectical connection between language and society, endorsing that linguistic elements must be assessed in relation with larger sociopolitical contexts. As CDA has been widely influential, it has also invited considerable review and evaluation. Blommaert & Bulcaen (2000) have asserted that CDA often have dearth of methodological transparency and prone to overstate ideology at the cost of comprehensive linguistic analysis, and there is risk of CDA is getting too deterministic, recommending that a more nuanced notion is required to get the complexity of discursive practices across various social settings.

Al-Jamal & Al-Omari (2014)'s content analysis of state-sanctioned EFL textbooks used for 10th graders in Iran, pointing out the lack of global ecological themes in the textbooks; Xiong's (2014) study of EFL textbooks used in China, shedding light on the shallow environmentalism

propagated in them; and a study by Brown (2017) on the use of the relative pronoun 'who' to refer to non-human animals in English dictionaries and graded readers in the English as an Additional Language (EAL) context.

Many studies (Zahoor & Janjua, 2020) have used the ecopedagogical framework proposed by Greta Gaard (2008) in her essay entitled "Towards an ecopedagogy of children's environmental literature". According to Gaard (2008), environmental texts for children should address and challenge the anthropocentric point of view and spread eco-centric values, therefore assisting to build an equal, egalitarian or ecological child self. She further recommends that, from an ecopedagogical perspective, children's texts should be investigated by keeping three key points in mind:

- the place given to nature;
- the relation between human self or child and the natural order;
- the role given to the child/human self in connection to ecojustice problems and crisis.

Some scholars have supported the framework of Gaard (2008) for ecological analysis (Jabeen et al., 2014; Jacobs & Goatly, 2000; Xiong, 2014).

The ecolinguistic framework by Stibbe (2015), in its turn, supported by many researchers (Ahmed et al., 2021; Fusari, 2018; Fusari, 2017; Nahak et al., 2019), states that certain stories often mentioned as mental models or structures are prevalent around us and we are exposed to them without consciously selecting them or becoming aware of the fact that they are merely stories. Such stories are imbibed in our daily lives and have become stories we live by. Stibbe (2015) borrowed the expression "we live by" from Lakoff & Johnson (1980), which is considered the most important founding work of cognitive metaphor theory. The stories we live by are present around us all the time in our daily life, for instance in the news, advertisements, politics, law, medicine, in daily conversation and textbooks. These stories ultimately impact and affect individuals' behaviours and the choices they make in their lives. In his famous book, *Ecolinguistics, language, ecology and the stories we live by*, Stibbe (2015) asserts that ecolinguistics scrutinizes language to unveil the stories we live by, reveals those stories from an ecological perspective, discourage damaging stories and contributes to new stories to live by. Moreover, Stibbe (2015) adds that ecolinguistics is an umbrella term for a number of paradigms and approaches, with various aims and goals, and these stories are in fact in the minds of the people in a culture, which influences how they perceive, think, talk and act. There are eight kinds of

stories: ideologies, framings, metaphors, evaluations, identities, convictions, erasure and salience. About ideologies, Stibbe (2015) is of the view that ideologies reflect how the world was, is, and should be in the minds of the individuals of a group, and ideologies reflect themselves through discourses, which are characteristic types of language utilized by a community, group of individuals or organizations.

With regards to framing, Stibbe (2015) says it is the use of a source frame which forms a bulk or packet of knowledge to establish a target field, prompt or activate words that bring a specific source frame to mind. Therefore, rather than treating the climate problem as an environmental crisis, to be dealt with by environment and energy departments alone, it should be reframed as an alarming threat to national and universal security, which it is (Stibbe, 2015).

According to Stibbe (2015), metaphor is a kind of framing where the source frame belongs to a concretely imaginable area or background of life clearly different from the target domain. According to Solnit (2020), climate change is macro-scale violence, against places and living beings and against human beings as well. Framings are in fact stories about any particular area of life that utilize small packets of general knowledge known as frames. Hence, framings are stories about a specific area of life that make use of small packets of general knowledge called frames: for instance, climate change could be framed as an environmental issue, a security threat, a problem, or a predicament, and in each case how we think about climate change is different (Greer, 2016). Evaluation, according to Stibbe (2015), is a story in individuals' minds about whether a specific area of life is good or bad. Cognitive evaluations do not have a mindful weighing up of evidence about something, whether positive or negative or good or bad, rather they are associations that we have in mind: for instance, honesty is good and lying is bad and negative (Stibbe, 2015). The appraisal framework, which was developed by J.R.Martin and P.R.R White (2005), is a linguistic theory that focuses on how language is employed to evaluate, adopt stances and align with or disalign from others. It is a part of systemic functional linguistics and it can be broken down into various types of meanings:

1. Attitude: how individuals or speakers of any community express their emotions, judgements, or evaluations of people, events or things. It can be further divided into:
    - Affect: the way people feel (e.g. happy, sad, amazed or excited).
    - Judgement: how people evaluate behavior (for instance, anyone trustworthy, morally good or immoral).

- Appreciation: how people evaluate things, incidents, objects, events or phenomena (for example, nice, beautiful, dangerous, harmful).

2. Engagement: how individuals position themselves in connection to other perspectives or viewpoints (e.g. agreeing, disagreeing, supporting, endorsing, challenging).
3. Graduation: The scaling of attitudes, either increasing or weakening the evaluation (for instance, very good or somewhat good).

Evaluation patterns refer to how evaluations are systematically expressed and repeated throughout texts or discourses, establishing patterns of meaning. These patterns can be noticed by investigating the way people constantly utilize language to express positive or negative appraisals of certain areas of life. In simple words it can said that these patterns can have expressions of attitude, such as affect (emotions), judgment (moral or immoral) or admiration (aesthetic). For instance, in ecological and environmental discourse, common appraisal or evaluation patterns might include framing nature as delicate (utilizing words like vulnerable, or endangered) or human actions as destructive (contaminating, devastating). Here it is also important to mention the concept of growthism which was expounded by Halliday. Michael Halliday (2001), investigates how language both projects and supports societal ideologies. In his investigation, he introduces the concept of growthism, an ideology prevalent in modern societies that prefers continuous economic and material growth as fundamentally positive and essential. There are certain key aspects that define the concept of growthism:

- Ideology of continuous growth: this supports the concept that "more is better than less", meaning that continuous growth in production, consumption, and reserve utilization is required. It values "large over small" and "growth over shrinkage" relating size and increase with development and progress.
- Ignoring physical limits: this ideology ignores the limited nature of earth's reserves, suggesting that unlimited production is possible in spite of ecological and environmental constraints. This mindset and ideology can lead to promote unsustainable practices and environmental dilapidation and degradation.
- Language as a vehicle for ideology: according to Halliday, language plays an vital role in spreading growthism. Common expressions and metaphors in day-to-day language often glorify the notion of growth (for instance, booming economy, growth spurt, growing or expanding markets). Negative meanings are connected to terms like decline, deterioration,

recession or contraction, stressing the idea that any decrease is disagreeable and objectionable.

- Cultural dominance: the concept and ideology of growthism is tremendously rooted in cultural narratives and economic policies, making it a main instance that is seldom questioned within mainstream discourse.

The implications of growthism have some negative impacts too.

- Environmental impact: preferring economic growth over environmental sustainability, growthism contributes to problems such as resource depletion, pollution and climate change.
- Social consequences: growthism can aggravate social inequalities, e.g. the advantages of growth are not always fairly distributed.
- Need for reframing: Halliday recommends rethinking the language and metaphors we utilize to endorse a more sustainable and sensible worldview.

The seminal work by Feola & Jaworska (2019) investigates how various civil society organizations hypothesize sustainability changes. They discover different discourses that challenge the conventional concept and ideology of growthism, stressing the need for substitute pathways towards a sustainable future. Feola & Jaworska (2019)'s work is important to mention here with regards to the ideology of growthism:

- Multiplicity of transition discourses: their study shows that there is not a single story or narrative with regards to sustainability transitions, but several, sometimes contradictory discourses projected by civil society groups. These narratives range from promoting green growth to advocating degrowth or post-growth societies.
- Evaluation of growthism: several civil society proposals explicitly criticize the ideology of unlimited economic growth, reflecting its incompatibility with ecological and environmental limits and social well-being. They claim that growthism is a main root cause of ecological and environmental crisis and social and economic inequalities
- Alternative visions
    - Degrowth movement: it recommends purposely reducing or scaling down growth and consumption to attain ecological balance and improve the quality of life.
    - Transition towns: supporting and advocating for community building resilience and local self-sufficiency in response to the challenges of peak oil and climate change.

- Commons transitions: supporting the idea of a shift towards collective and shared means and collaborative governance models, moving away from profit-driven progress and growth.

- Role of language and discourse: Feola & Jaworska (2019) assert that language shapes our understanding of green practices and sustainability. By inspecting the word choices and metaphors utilized in various proposals, they unveil their implicit values and assumptions. For instance, expressions like "transformation", "resilience", and "well-being" are employed to frame sustainability in ways that contradict growth-centric language.

- Significance of civil society: civil society organizations play an important role in challenging key ideologies such as growthism and introducing alternate descriptions into public narrative and discourse. These organizations play a contributing role in enriching the discussions and constructive talks on how to get sustainable futures.

To sum up, it can be said that, according to Feola & Jaworska (2019), just as according to Stibbe (2015), evaluation is a story in people's minds with regards to an area of life is good or bad, and it is often depicted in evaluation patterns in language that unveil attitudes towards growth and sustainability. Positive evaluations are linked to ideas or concepts such as community, sufficiency and environmental balance, whereas negative evaluations target over-usage and unconstraint economic growth. Moreover, the concept of growthism, according to Halliday (2001), refers to the universal ideology that more economic development and growth are better, and that human societies progress is linked to continuous expansion of means, reserves and economies. Halliday (2001) sees this ideology as flawed, particularly from an environmental viewpoint as it ignores the physical limitations and resources of the planet. Continuous growth can lead to exhaustion and depletion of natural reservoirs and resources, ecological degradation, and unsustainable practices that are dangerous for ecosystems. This mindset reflects in societal preferences for bigger, larger, more extensive systems (as exemplified by the expression "bigger is better"), which often leads to prioritizing industrial and economic growth over ecosystems and ecological well-being.

As far as identities are concerned, they indicate stories regarding who we are as individuals and people, specifically about the groups that we connect and belong to and the place of these groups in society (Stibbe, 2015). According to Ahmed et al., (2021) advertisers often exploit identities when they endeavour to convince consumers and buyers that purchasing any specific products is essential not for the usefulness of the goods or items themselves but to become a special kind of person. With regards to conviction, Stibbe (2015) asserts that it is a story in a person's

mind if a specific explanation is true, certain, uncertain or false. According to Solnit (2020) the concept of anthropogenic climate change is misleading, do not share the view that the universe is getting warmer and that human activity is to some extent responsible for it. Stibbe (2015) holds the opposite view and strongly advocates that climate change is anthropogenic.

Another type of story, according to Stibbe (2015), is erasure, that is something that is insignificant or not important in a person's mind. Erasure patterns are patterns that erase or remove something from texts, and the story is revealed linguistically when something that is of much importance and significance exists in reality but it is deleted or erased systematically from text or language. The idea of erasure as used in this research, refers to the procedure by which some linguistic practices, communities or environmental connections are rendered indistinguishable and unseen or irrelevant within prominent discourses and this idea is depicted in the seminal work of Gal & Irvine (1995). Gal & Irvine (1995) views permit for a deeper connection and diversity of natural discourses about green and environmental issues similarly omit and erase the interrelatedness and diversity of ecosystem and human system, aligning with the wider theoretical shift from linguistic to discourse communities. The last story, according to Stibbe (2015), is salience, where stories in the mind of a person indicate something as obvious, significant, important and worthy of attention.

Departing from these philosophical concepts, the environment becomes one of the main contributing factors, and its significance cannot be denied in linguistics. It is actually impossible to discuss and even understand the mysteries of nature without taking language into consideration. Everything is at the mercy of language. Without language, a community cannot be constructed within society and, while utilizing language knowledge and experience, environmental facts are also articulated and constructed. Ultimately, language is an outcome of the conformation of the human mind with its ecology.

2.6 Theoretical framework of the study

In the present directed content analysis study, codes (labels) are assigned to parts of the text that represent green content and ecolinguistic concepts. This green content includes positive as well as negative discourse related to the environment. The researcher developed her own coding scheme (coding manual/codebook), listing categories and trying to keep consistency in coding according to the existing literature (Hsieh & Shannon, 2005). The development of coding was guided by various studies (Armat et al. 2018; Elo & Kyngäs, 2008; Samad, 2014). As the present study used

a deductive technique, the researcher arranged categories representing positive green content on the basis of eco-centric actions and negative green content.

One approach that constructs a negative or destructive discourse and ideology is erasure, which is one of the stories in the ecolinguistic framework of Stibbe's theory of ecolinguistics. According to Stibbe (2015), erasure is a strategy that is related with a negative discourse, causing the expulsion or sidelining of an otherwise significant area of life. In this perspective, linguistic elements including euphemism, passive voices and missing agents are evaluated and studied in their capacity to ignore, or "erase" from discourse, the human action in the destruction of the environment. Using the categorization framework of ecological discourse analysis (EDA) the study examines how ecological themes and contents are represented in English textbooks. The qualitative content analysis has been done through the EDA framework of categorization. In categorization, each unit of analysis must be coded, or allocated to one or more categories. For example, in the present study, the researcher divided green content into two categories, i.e. constructive green content and destructive green content of the three textbooks under investigation. Based on ecolinguistic theory and ecological framework analysis, the researcher developed her own model of the study, shown in Figure 2.5.

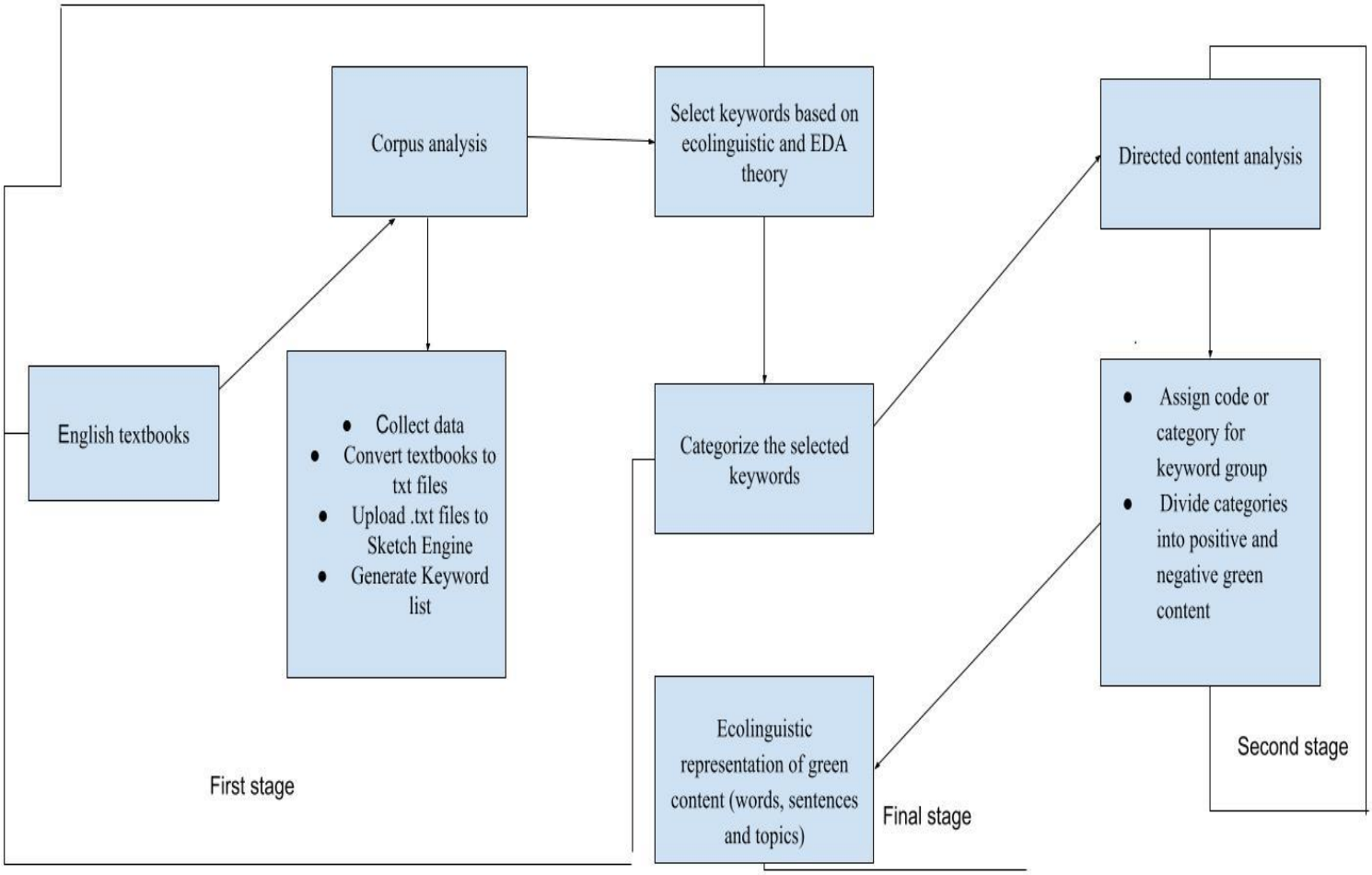


Figure 2.5 Theoretical framework of the study

2.7 Summary of the chapter

This chapter aimed to provide a background to the topic of language ecology and two different approaches represented by Haugen and Halliday. This chapter also highlighted a set of definitions and general overviews of ecolinguistics and described ecolinguistics as an evolving concept. The chapter also described six ecolinguistic turns and shed light on previous studies related to ecolinguistics. The last topic covered is the theoretical framework of the study done on the three English textbooks that are explored in more detail in the next chapters.

3 Research Methodology

This chapter 3 deals with research method that is utilized in this study to fulfil its aims. Section 3.1 sheds light on the research design of the study. Section 3.2 is about methodological approaches. Section 3.3 is about corpus-based research approaches. Section 3.4 is about content analysis and its types, and the type of content analysis this study has used. Section 3.5 is about textbooks and objects of the study. Section 3.6 sheds light on the data collection. Section 3.7 is about the research instruments used in this study. Section 3.8 is related to data analysis techniques. Section 3.9 is about ethical considerations and the last section, 3.10, is a summary of the chapter.

3.1 Research design

Research design can be described as the procedure the researcher uses to access data, analyze it, and ultimately provide answers to the main research problem. Research is about inquiring, investigating, seeking and finding out information to answer the questions that we ask. In simple words, a paradigm is an example or a model. Nevertheless, the term means something more particular when used in the context of research, specifically because of the work of Thomas Khun in 1960s and 1970s (Hammersley, 2007). A paradigm is a theoretical framework (Scheib, 2020), a loose collection of logically associated assumptions, ideas, and concepts that align thinking and research (Berhail, 2017), and ultimately a set of beliefs about the way in which specific issues exist and a set of agreements on how such issues can be examined and investigated. From this point of view, it is evident that our choice of a paradigm has a vital impact on the methodology we set for our research problem. The present study is descriptive, qualitative, and it relies on corpus-based deductive approach (hypothesis testing of quantitative data) and content analysis.

Descriptive research is related with describing, observing and exploring behaviours and other aspects of the phenomenon under investigation. According to Hennink, Hutter, & Bailey (2020), qualitative research is like a meeting between two individuals who transmit information and ideas through response and questions and, as a result, researchers exchange information and understanding of a specific issue and phenomenon. In the present study, textbooks are the source from which the author is obtaining her information from the learners' perspective.

The corpus-based deductive approach starts from the theory, and begins research by formulating a hypothesis that is then tested on a set of data. This approach is different from other

traditional empirical approaches in the sense that, in this approach, analysis is often done on a large and detailed corpus, which is an organized and structured collection of texts. This allows for a more in-depth and comprehensive investigation of language patterns, practice, usage and relationships within the text or corpus. Therefore, the main focus is on discovering the whole data available to get insights and make deductions whereas, in traditional empirical approaches, scholars may not have the privilege of analyzing data in its entirety, due to limitations such as time and resources. They might, instead, use samples, which often limit the exhaustiveness of their statistical procedure and analysis, while the corpus-base deductive approach is more exhaustive and may provide and unveil a detailed understanding of language phenomena. Secondly, the corpus-based deductive approach sometimes consists of quantitative procedures for analyzing linguistic data. In the corpus-based deductive approach, researchers may use statistical tools and various techniques to understand and identify patterns, frequencies and associations within the corpus. The stress on quantitative procedures endorses a level of objectivity to the corpus-deductive approach whereas, in traditional empirical approaches, quantitative methods are also used but, unlike in the corpus-deductive approach, their data or corpus are sometimes not as exhaustive, and the size of the sample may be small, which may affect the robustness of the ultimate findings. Ultimately, the corpus-based deductive approach is not restricted to limited data, as it typically relies on large corpora for analysis, and examination of a large sized corpus provides a detailed picture of linguistic phenomena, whereas traditional empirical approaches may experience limitations due to large scale data and availability.

Content analysis is extensively utilized in qualitative studies as a flexible method for textual analysis (Hsieh & Shannon, 2005). Besides, content analysis is feasible for interpretation of textual data through the systematic classification procedure of coding and subsequently identifying themes or patterns (Elo & Kyngäs, 2008).

3.2 Methodological approaches

3.2.1 Quantitative vs Qualitative research

Qualitative and quantitative research are the two most widely used research methods used by researchers in different domains (Samad et al. 2021). The goal of quantitative research is to collect arithmetic or numerical data and use statistical tools to comprehend the nature of the data and define phenomena. It mainly focuses on calculable data and variables. Quantitative data relies on structured methods like surveys and close-ended questions with pre-determined response options,

and usually include large sample size to ensure the generalizability of the obtained results. According to Schurink (2009), the main characteristic of data in a qualitative approach is its being descriptive, as data is taken from sources such as documents, audio-video recordings, transcripts, texts and images etc., and a descriptive qualitative research design is employed to describe any feature of a particular phenomenon or object of investigation. In simple words, this approach is valuable to describe the conditions of existence and categorizing of information (Lambert & Lambert, 2012). Researchers utilize a descriptive qualitative approach to understand the complexity of data in detail.

3.2.2 Descriptive vs prescriptive research

Descriptive and prescriptive research are two well-known approaches utilized in different fields of research, specifically, in social sciences (McGillivray, 2004). Both have different aims and objectives, e.g. descriptive research is fundamentally related with describing, observing and discovering behaviours and characteristics of the phenomenon under investigation. In descriptive research, the common methods that scholars use are surveys, interviews, observations, case-studies and content analysis (McGillivray, 2004). Descriptive research analyses the data through statistical procedure but does not focus on providing evaluations or judgements: rather, it offers a comprehensive picture of the subject(s) under investigation. On the other hand, prescriptive research emphases on providing recommendations, or solutions to tackle a particular issue. Its main purpose is to shed light on decision making, policy making or action (McGillivray, 2004). A prescriptive approach consists of experiments to test various scenarios, dig out the most appropriate solutions, and may involve suggestions and recommendations. As far as analysis procedures in prescriptive approaches are concerned, they mainly focus on evaluating a procedure, detecting suitable practices and suggesting policies. Their main aim is to guide policy-makers or stakeholders towards maximum options depending on the data and evidence (McGillivray, 2004).

Descriptive research design is helpful in identifying a research problem which is particularly complex and multifaceted. (Hollstein, 2011). Researchers in qualitative studies attempt to understand a situation by focusing on the entire picture rather than breaking it down into variables. The purpose is obtaining a complete picture and deep understanding rather than focusing on numeric analysis of data (Smythe, 2012). There are different software applications for qualitative analysis that researchers use to obtain results, such as NVivo, ATLAS and others. However, in the present study, the researcher undertook content analysis manually, due to a number of reasons. First of all, qualitative data consists of words that can be metaphorical as well as polysemic (words

with multiple meaning). For example, in the present study, the data includes several words or expressions, like “plastic pollution”, which is not only metaphorical but also polysemic, as it may include plastic bottles, plastic chemicals etc. From a metaphorical aspect, the expression “plastic pollution” can be described as a metonymy for environmental pollution and deterioration, as plastic can be used as a metaphor for our environmental decay, as its accumulation in rivers and oceans symbolically represents ecological degradation on a macro level, which is caused by humans. Polysemically, plastic pollution can be described as the presence of plastic in the ecological system, causing harm to the environment, wildlife as well as to humans, who consume harmful chemicals while using plastic materials and storing food in it. Qualitative analysis software, like NVivo and others, is considered to be usable for various types of analysis and is specifically designed to analyze textual or categorical data by recognizing patterns, various underlying themes and relationships within the given data. However, environmental issues such as climate change, plastic pollution and plastic chemical etc. are often interdisciplinary in nature and connecting aspects of sociology, biology, chemistry, physics and economics. Therefore, software for qualitative analysis may experience limitations, because ecological issues are dynamic and can change rapidly, whereas qualitative software is usually designed for more constant and fixed data sets. Therefore, the present study adopted a manual content analysis technique to provide a comprehensive picture of the data, representing positive and negative green discourse in the form of words, sentences and themes.

3.3 Approaches to corpus linguistics

The two main corpus approaches are corpus-based and corpus-driven. A brief description of each is given below.

3.3.1 Corpus-based approach and corpus-driven approach

According to existing literature, researchers use a corpus-based approach, mostly with quantitative methods, to test hypotheses empirically, often with a deductive approach (Berhail, 2017; Fusari & Luporini, 2017). Under a corpus-based approach, researchers identify various linguistic features related to their hypothesis before starting their analysis. Then, they finally use corpus analysis tools and software to search for and count those features. For instance, utilizing theoretical descriptions and cases on already collected data, researchers can generate a list of linguistic features related to their underpinning theory and then decide when and how these theory-related features are used in a corpus and their frequency of occurrence in a corpus. The obtained results would then support or reject the hypothesis. On the other hand, a corpus-driven approach is

inductive in nature and looks for research key words from the corpus by using various types of quantitative or qualitative analysis. The theory is not presupposed, but developed from corpus-driven analysis. Figure 3.1 shows the different approaches to corpus linguistics.

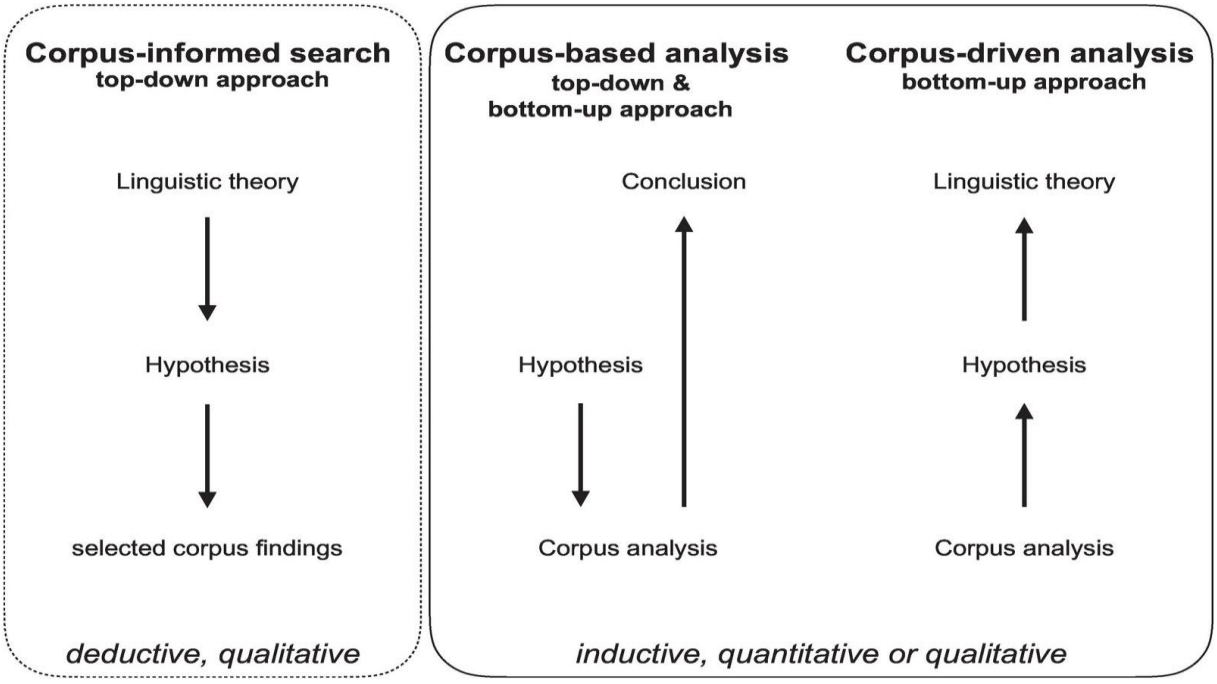


Figure 3.1 Different approaches of corpus linguistics

Source: Voelkel, S., & Kretzschmar, F. (2021).

3.3.1.1 What is a corpus?

The Oxford English Dictionary defines a 'corpus' as a 'body, and collection of writing'. According to many scholars, among these three synonymous terms, 'corpus', 'archive' and 'collection', only corpus is related to linguistics (McEnery & Hardie, 2011). It is generally described as a purposefully collected large body of text which is in a machine readable (computer readable) form (McEnery & Hardie, 2011). There is no maximum or minimum size of a corpus or any a priori requirement of what words it should contain: it could be anything from the match box to the constitution of a country or any other domain. It could be based on any written, spoken or multimedia corpus. According to scholars, there are several ways to define a corpus, but there is wide consensus that a corpus is a collection of 1) machine readable; 2) authentic texts (including transcripts of spoken data), which provide a 3) representation of a particular language or language variety (McEnery & Hardie, 2011).

3.3.1.2 Development and background of corpus studies

A number of large corpora have been accumulated in the last few years, but the idea itself is not innovative. It can date back to the German linguist Kading who, in 1897, utilized a big sized corpus of 11 million words in order to unite the frequencies and sequence of letters (McEnery & Hardie, 2011). This corpus, at that time, was notable by its size alone, and compares constructively with more modernized and updated corpora. In the late 20th century, some endeavours were made to advance a number of large electronic corpora of language. Early signs of the modern era of corpus linguistics are reported by McEnery & Wilson (1997), starting from 1960, when Quirk (1960) developed his Survey of English Usage (SEU). Simultaneously, Francis and Kucera started establishing the Brown corpus, which was developed over two decades. These researchers, at that time, were not globally recognized, as they were only a very small group, and they also came under attack by cognitivists, because of Chomsky's claim against empirical linguistics, as he gave more importance to innate and retrospective aspects (Chomsky, 1962). In 1975, however, Jan Svartvik started increasing the work of the SEU and the Brown corpus to design the London-Lund corpus. The current interest in corpora has been referred to as a corpus revolution (Leech, 2000). The most famous and well-known corpus in the UK is British National Corpus (BNC), which contains 100 million words of English and was the largest collection of English language when it was built in the 1990s. According to scholars, the BNC still offers a unique and convincing view of the state of the contemporary English language that has been organized so as to represent as many varieties of English as possible (Conrad, 2000). The British National Corpus is mostly based on written texts and approximately 10% is based on spoken language: therefore, just like language study to a great extent in general, it is still dominated by written discourse.

3.3.2 Types of corpora

With the passage of time and advancement in computer technologies, the use of corpora has become more and more convenient for scholars and researchers. There are various types of corpora. A brief description is presented below.

3.3.2.1 Generalized vs specialized corpora

A generalized corpus is also denoted as a general or reference corpus. A generalized corpus is initially a large collection of texts whose purpose is to signify a broad range of language use in a given language or languages. As compared to specialized corpora that focus only on particular domains, generalized corpora try to include numerous texts from different sources and genres to give a thorough view of the language. Some of the key features of generalized corpora are:

- Generalized corpora consist of texts from a variety of sources, genres and diverse contexts to capture the in-depth variability within the language.
- Their intention is to be the characteristic of the language, representing the linguistic patterns and rules utilized in daily communication.
- Generalized corpora are typically large in size, to ensure that they cover a huge portion of the language and its different registers.

Some well-known examples of generalized corpora are:

- British National Corpus (BNC): The BNC is a famous and globally recognized example of a generalized corpus of English. It was collected and organized in the early 1990s and includes a wide range of texts, mostly from written sources, but also including spoken ones, that are representative of British English.
- Corpus of Contemporary American English (COCA): The COCA is a well-known and widely used corpus that is a representative of American English. It includes a wide variety of texts from diverse genres, like newspapers, magazines, fiction, academic journals and spoken discourse.

Specialized corpora are collections of specific texts that focus on a particular field, area, or subject matter. Specialized corpora are utilized to inspect language use within a specific context, permitting scholars and researchers to get insights into language as used in a specific domain. This type of corpus is significant in discovering the language of particular domains. Some of the key features of specialized corpora are:

- Specialized corpora are domain-specific, such as medicine, law, arts, humanities, science or technology etc.
- As compared to generalized corpora, specialized corpora are narrow in focus, domain-specific and designed for in depth analysis of a specific type of discourse instead of the whole language.

Some examples of specialized corpora are

- Medical text corpora: these types of corpora have special texts regarding medical domain, including medical journals, textbooks, patient records and other health related documents.
- Legal text corpora: these include legal texts related to court decisions, legal opinions etc.

- Academic corpora: these focus on academic language, e.g. academic journals, research papers, conference papers and other texts related to academia.

Specialized corpora play a significant role in applied linguistics, computational linguistics and other language related domains. Scholars have utilized specialized corpora to examine language patters, vocabulary or jargons and discourse within specific professional or academic settings and communities. The principles of inconsistency in specialized corpora, with regards to sociolinguistic variation, are important for understanding how language grows and adjusts within particular contexts along the diatopic, diastratic, diamesic and diatypic dimension:

- Diachronic (time): Diachronic study in specialized corpora specifically focuses on changes in language over time. Specialized corpora with a diachronic aspect permit scholars and researchers to track language change within a particular area or field.
- Diatopic (geography): The diatopic dimension of sociolinguistic variation explores variation geographically, i.e. how language changes across different geographical locations and regions. Specialized corpora with a diatopic (geographic) focus can shed light on regional language preferences and linguistic aspects within a specific domain.
- Diastratic (social class): The diastratic (social class) dimension of sociolinguistic variation explores how language use changes across various social classes. Specialized corpora with a diastratic focus can unveil how language represents and shapes social changes within a particular domain.
- Diamesic (written, spoken, or multimedia): The diamesic aspect of sociolinguistic variation studies language transformations or differences across several modes of communication, like written, spoken or multimedia. Specialized corpora with a diamesic approach can represent different linguistic forms within a specific domain.
- Diatypic (register or text type): specialized corpora with a diatypic (register or text) focus investigate how language differs and fluctuates based on the context or text type. Specialized corpora of this type can reveal the linguistic features related with particular registers or text types within a field, domain or area. For instance, a diatypic corpus in the domain of law may be used to compare and contrast how language is used in normative legal documents and in academic articles discussing and commenting laws and judgments.

Scholars and researchers incorporate these sociolinguistic principles in their analysis of specialized corpora, as they increase the understanding of how language functions. Researchers can unveil and investigate patterns, trends and different aspects used in language, contributing their valuable

insights to the scientific study of linguistics, theory and practical implementations within specialized domains. As far as this dissertation is concerned, it focuses on inspecting the concept of ecolinguistic representation, i.e. words and sentences related to the environment in English language textbooks, and it involves looking at the certain register or text type utilized in academic and educational materials. The current study falls within the diatypic dimension of specialized corpora, and explores ecolinguistic representation in Italian high school English textbooks: thus, it also falls under the diatopic dimension, as the primary focus is on the analysis of English textbooks representing ecological discourse in a specific country: Italy. Therefore, the diatypic and diatopic dimensions of sociolinguistic variation are the most relevant for this study.

3.3.2.2 Comparable vs. parallel corpora

Comparable and parallel corpora are also named as translation corpora, as they have texts in more than one language. In simple words, comparable corpora consist of two or more corpora in several languages or language varieties, for instance, tourist brochures or job advertisements in different languages (Hunston, 2022). According to Hunston (2022), parallel corpora are two or more corpora in different languages, each consisting of texts that have been translated from one language to other (Hunston, 2022). Thus, a parallel corpus contains the same texts in their original and translated versions. These corpora can be employed to compare linguistic and discourse outlines across languages, and avoid distortions introduced by translations (Hunston, 2022). In short, a parallel corpus takes the identical text translated into two or more languages, whereas comparable corpora are similar texts in one or more languages or language varieties, but they are not in a translation relation. As far as the current study is concerned, it is monolingual in nature and investigates ecological and green content only in one language: therefore, cross-linguistic corpus comparison are not the aims and scope of the study.

3.3.2.3 Monitor corpora

In the context of corpus linguistics, a monitor corpus is considered as a large and well-organized and structured collection of texts, either written or spoken, that is constantly updated to represent the current state of a language. This kind of corpus is intended to monitor changes and advancement in language usage over time. The main purpose of a monitor corpus is to offer researchers an up-to-date resource for investigating, exploring and studying patterns of language, trends and changes. In the history of corpus linguistics, the most famous monitor corpus used to be the Bank of English, developed by John Sinclair at the University of Birmingham in the 1990s. Unfortunately, however, after Sinclair's retirement, the University decided to sell the corpus to

Collins, a British publisher, who has eventually gone on to privatize it, making the Bank of English inaccessible to anybody that does not work at Collins. So now the best monitor corpus is perhaps English Web 2021, belonging to the TenTen family of corpora that is available in the Sketch Engine, which is recommended as an alternative monitor corpus. There are a few reasons why monitor corpora are considered significant in language research:

- Monitor corpora help researchers and scholars keep abreast of present-day trends in language usage, reflecting advanced words, phrases and changes in linguistic patterns as they progress and arise in real time.
- Linguists can utilize monitor corpora to discover how languages develop over time, recognizing shifts in vocabulary, grammar and strategies of discourse.
- Monitor corpora also deliver insights into sociolinguistic phenomena by tracing language changes across various contexts, regions and social groups.
- Monitor corpora are convenient for language educators as they can benefit from incorporating current and authentic languages instances into teaching contents and methods, ensuring that learners are exposed to useful, relevant and up-to-date language usage.
- Educators and researchers can use monitor corpora to gauge and analyze language within certain fields, like business, technology, or education, approving a more targeted understanding of specialized vocabulary and communication patterns.
- Linguists utilize monitor corpora as a basis for different corpus linguistics methods, frequency analysis, collocation studies and concordance analysis, to unveil patterns and structures within the language.

3.3.2.4 Historical/ diachronic corpora

A historical or diachronic corpus comprises of texts that span a noteworthy period of time, permitting scholars and researchers to scrutinize and study linguistic changes and progress over a given time span. These corpora provide resources for inspecting and studying language development, understanding language shifts in usage and discovering the historical context of linguistic phenomena. The Corpus of Historical American English (COHA) is a eminent and widely researched historical corpus of English. It covers a vast range of texts in written form from the early 19th century to the present day, making it a significant source to study the development

of American English over time. The corpus of Historical American English (COHA) contains a variety of texts, such as fiction, non-fiction, newspapers, and magazines reflecting different genres and registers. The corpus is planned in such a way as to keep the balance across several time periods, confirming its role as a representative sample of language use throughout American history (Jucker, 2018). Scholars and researchers utilize the COHA to discover trends, word changes, shifts in syntactic structure and cultural impacts on language over time. This corpus supports researchers in getting understandings into how language has developed in response to historical events, social changes and technological growth and development.

The Helsinki corpus is another well-known historical corpus, particularly focusing on the English language from the late Middle Ages to the Early Modern era. It is a part of the bigger International Corpora of English (ICE) project, which features corpora from various genres, like religious texts, legal documents, scientific and literary texts. Historians and researchers use the Helsinki corpus to study changes in language during the transition from Middle English to Early Modern English. It aids historians and other researchers understand how linguistic structures and structures developed during this era, thus contributing to a wider and broader understanding of the evolution of the English language. In short, the COHA and Helsinki corpora provide rich data sets for inspecting language development and progress over time.

3.3.2.5 Learner corpus vs pedagogic corpora

Learner corpora and pedagogic corpora are two different kinds of corpora utilized in the domain of language learning and teaching. They are used for different aims and are designed to address particular needs in corpus linguistics, language education and the academia. A learner corpus is a language sample generated by language learners during their language learning process, and it can be either spoken, written, or both. The main aim of a learner corpus is to examine, inspect and comprehend the progress of language learners. Scholars, researchers and educators can investigate and study common errors, patterns of language use and stages of progress, so as to get insights into the challenges experienced by learners of a language. These insights can be helpful in devising language teaching methods and materials.

Pedagogic corpora, on the contrary, consist of resources related to language that are specially created for teaching objects and purposes. They may include textbooks, instructional texts and materials, language learning software and other valuable resources intended specifically to help in teaching and methodologies. Pedagogic corpora are employed to analyze and recover

materials related to teaching methodologies. By evaluating linguistic features, structures and content related to teaching, educators and instructors can gauge their influence and effectiveness in fulfilling and addressing language learning objectives. This assessment and analysis eventually aid in improving and developing instructional resources that are more relevant and in line with the needs of language learners. Both learner and pedagogic corpora contribute valuable insights in the domain of language, each serving a unique purpose in research and curriculum design and development.

As far as the present research is concerned, it aligns with the pedagogic definition presented by Hunston: "a corpus comprising of all the language a learner has been exposed to" (2002:16). This kind of corpus may include academic textbooks, transcripts of classroom interaction, or any other kinds of written texts or spoken transcripts that are formed in an educational setting. Thus, the significance of investigating and examining green content in English language textbooks aligns with the comprehensive goals of endorsing ecological and environmental awareness and sustainability among students.

3.3.3 Features of corpora

As seen, a corpus is a collection of 1) machine readable 2) authentic texts (including transcripts of spoken data) which is 3) sampled to be a 4) representation of a specific language or language variety (Zhang & Shi, 2023). There are numerous necessities that a corpus should fulfil. The first and foremost criterion is authenticity, which means that whatever material is selected for corpus analysis should be from real life situations of language in use. According to Halliday (1995), the starting point of linguistic enquiry is language in use, as selecting authentic texts helps validate the corpora under investigation for research purposes. The second requirement is representativeness, i.e. "A representative corpus is one sampled in such a way that it contains all the types of text, in the correct proportions, that are needed to make the contents of the corpus an accurate reflection of the whole of the language or variety that it samples" (McEnery & Wilson 1997, p. 250). As the corpus is an example from a bigger source, it should present it and, thus, benefit in the generalizability of the findings. The third condition is sampling. The sample selected for the corpus should be as long as possible, because a corpus made up of whole documents is open to a broader variety of linguistic research than a collection of short samples (Zhang & Shi, 2023). Furthermore, corpora should be in a machine readable form, as this makes it possible for corpora to be searched by computers, and this autogenerated means of investigation is much quicker and prone to fewer errors than any other methods (Zhang & Shi, 2023).

3.3.4 Application of corpora in several domains

The importance of corpora, their structures and different types of corpora have attracted the attention of numerous fields of linguistics. Corpora have been utilized by scholars and researchers belonging to different fields such as lexical and grammatical studies, language teaching, semantics, historical linguistics, stylistics, pragmatics, sociolinguistics and discourse analysis (Berhail, 2017; Hunston, 2022).

3.4 Content analysis

Content analysis is extensively used in qualitative studies as a flexible technique for textual analysis (Hsieh & Shannon, 2005). Besides, content analysis is feasible for subjective interpretation of textual data through the systematic classification procedure of coding and subsequently identifying themes or patterns (Elo & Kyngäs, 2008). There are three types of content analysis that are different in terms of their coding schemes and origin of codes (Hsieh & Shannon, 2005). Content analysis is also a procedure employed to analyze qualitative data. Content analysis is applied in almost every domain, including language studies, that is related with analyzing the content of issues and problems through classification, tabulation and evaluation (Smythe, 2012). Based on the above-mentioned paradigm, it can be concluded that the research design of the current study is categorized as descriptive and qualitative in nature, and it relies on corpus-based content analysis see Figure 3.2.

Method of content analysis	***Study Starts With***	***When To Define Codes Or Keywords***	***Source of Codes or Keywords***
Conventional content analysis	Observation	Code defined during data analysis	Codes are derived from data
Directed content analysis	Theory	Code defined before or during data analysis	Codes are derived from theory or relevant research findings
Summative content analysis	Keywords	Keywords defined before or during data analysis	Keywords are derived from interest of researchers or review of literature

Figure 3.2 Types of content analysis

Source: Delve, Ho, L., & Limpaecher, A. (2023c, February 4).

As indicated in above figure this study adopts directed content analysis in which theories and previous studies are employed to inform the codes and themes initially utilized in analysis (Elo & Kyngäs, 2008). Findings from directed content analysis are expected to build on the related existing knowledge base. This approach is very reasonable for the current study because it adopts a deductive approach and relies on an extensive body of existing knowledge.

3.4.1 Units of analysis

The unit of analysis in this study are themes (the basic unit of the text that will be classified) that can be expressed in various physical linguistic units, whether it is a single word, phrase, or a sentence (Malik et al., 2021). Thus, code was assigned to parts of the text that reflected an idea expressed in a theme related to the study (Malik et al., 2021). These themes were developed on the basis of deductive coding.

3.4.2 Deductive vs inductive reasoning

The approach used for this study is deductive. Inductive reasoning employs the data to generate ideas or hypothesis development, whereas a deductive approach starts with the idea and utilizes the data to confirm, support or negate the hypothesis (Malik et al., 2021). A deductive technique was employed mainly because it is part of directed content analysis (exploring how various ideas in the existing literature were observed in the qualitative data collected) to analyze data and dig out recurring themes (Malik et al., 2021).

3.4.3 A priori themes

"A priori themes" are defined as predefined themes or categories that scholars and researchers construct prior to conducting qualitative data analysis. In qualitative research, analysis of data usually involves detecting patterns, themes or categories within data. A priori themes are determined in advance, specifically based on existing theories, existing literature and the scholars' and researchers' prior information, knowledge and hypotheses (Malik et al., 2021). These predetermined themes provide guidance for the initial coding procedure in qualitative data analysis. Researchers utilize them as a theoretical framework to analyze and evaluate the collected data in an organized and systematic way. This approach is in contrast with inductive analysis, where themes develop from the target and collected data during the process of analysis. By recognizing and identifying a priori themes at an early stage, the researchers can rationalize the coding process and focus their attention on particular aspects of the data that align with their

research goals, objectives and theoretical framework. This can save time and provide a more organized and structured approach to the analysis, particularly in studies where researchers are already clear about their research goals or hypotheses and about the themes they expect to dig out from the data.

This study uses directed content analysis and thus demands early direction (Malik et al., 2021). Directed content analysis method is usually used for qualitative analysis that relies on predetermined categories or themes before analyzing the data (Malik et al., 2021). As compared to inductive content analysis, where categories emerge from the data during its analysis, in directed content analysis, the process begins with a predefined coding framework based on existing theories and literature or previous research (Malik et al., 2021). Early direction in directed content analysis is mandatory for several reasons:

- By deciding and establishing clear directions at the beginning, scholars can ensure that the analysis is mainly based on specific research aims and objectives. This aids in keeping relevance to the research objective and prevents the analysis from getting unfocused.
- Predetermining categories and themes or coding criteria increase the consistency of qualitative analysis. When more than one researcher is engaged or when the same analysis requires to be conducted at various time points, having a clear and early direction ensures that the coding procedure and process is reproducible or replicable.
- Directed content analysis usually relies on existing theories or concepts. Therefore, having a priori direction permits researchers to apply related theoretical frameworks to guide the analysis. This confirms that qualitative analysis is theoretically grounded and contributes to a wider understanding of the phenomena under examination and investigation.
- With a predetermined coding framework, researchers can competently process and scrutinize qualitative data. This is specifically noteworthy when dealing with large datasets. Early direction benefits in updating and rationalizing the coding process as well as in organizing the data into meaningful categories representing major themes.
- Without early direction, there are risks of being influenced by the data themselves while conducting the coding process. However, early direction aids in mitigating this risk by providing researchers with a clear-cut structure for data analysis.

- Using a set of predetermined categories and coding process enhances and promotes transparency in the qualitative analysis procedure. It permits other scholars to comprehend and criticize the concept, increasing the overall consistency of the research.

In short, the use of directed content analysis demands early direction to ensure a focused, theory-based, systematic and organized approach to conduct qualitative data analysis (Malik et al., 2021). This early direction enhances and contributes to the overall validity, reliability and quality of the final results.

3.4.4 Frequently occurring themes

The frequency of the words was favored over percentages, as recommended by many researchers (Hancock, Amankwaa, Revell, & Mueller, 2016; Rabiee, 2004). The themes that occurred repeatedly in the data related to green content, environment and ecological issues were arranged into a list as recommended in the existing literature, e.g. by Kitzinger (1995). The data was read repeatedly in order to get unexplored and hidden facts and factors to emerge (Creswell & Báez, 2020) for the thorough understanding of data and their underlying themes.

3.4.5 Developing the coding scheme

In the present directed content analysis study, codes (labels) are assigned to parts of the text representing green content and ecolinguistic concepts. This green content includes positive as well as negative discourse related to environment. The researcher developed her own coding scheme (coding manual/codebook), listing categories and trying to maintain consistency in coding according to the existing literature (Malik et al., 2021). The process of coding was guided by various studies (Armat et al. 2018; Elo & Kyngäs, 2008; Samad, 2014). By utilizing these codes and a priori themes, an initial codebook and coding scheme was identified and prepared to be used in the analysis. Each category represented one major theme. As the present study used a deductive technique, the researcher arranged categories representing positive green content on the basis of eco-centric actions and negative green content. One approach that constructs a negative or destructive discourse and ideology is erasure, which is one of the stories in the ecolinguistic framework of Stibbe's theory of ecolinguistics. According to Stibbe (2015), erasure is a strategy that constructs a negative discourse, causing the expulsion or marginalization of an otherwise significant area of life. In this context, linguistic elements including euphemism, passive voices and missing agents are gauged and scrutinized in their capacity to ignore, or "erase" from discourse, the human role in the destruction of the environment. Utilizing the categorization

framework of ecological discourse analysis (EDA), this dissertation has scrutinized how ecological themes and contents are denoted in English textbooks. The qualitative content analysis has been done through the EDA framework of categorization. In categorization[5] , each unit of analysis must be coded, or allocated to one or more categories. In the present study, the researcher divided green content into two categories[6] , i.e. constructive green content and destructive green content, for each of the three textbooks. The tables below indicate how the researcher coded and divided her data sets into two categories before corpus analysis, whereas details of the frequencies of words, sentences and topics related to green content are presented in Chapter 4.

3.4.5.1 Constructive green content/ green discourse

The following constructive or positive green content based on eco-centric actions was found in the textbooks under investigation (see Table 3-1).

[5] The insertion of sample categories and instances of coding in Chapter 3 was essential to project how the theoretical framework of ecolinguistics was empirically and practically applied to the collected data. The actual findings related to green discourse and application of three categories (metaphors, evaluation and erasure) including the (quantitative corpus-based analysis through Sketch Engine and qualitative interpretation of the findings through content analysis) are demonstrated in Chapter 4.

[6] In chapter 3, researcher has used coding scheme and included early categorization tables (constructive green discourse/content and destructive green discourse/content). The rationale behind including early categorization tables and instances obtained from theoretical framework of ecolinguistics by Stibbe (2015) and EDA (Ecological Discourse Analysis) to operationalize the methodology of this dissertation. The tables of green discourse were divided on (constructive as well as destructive green content; erasure comes under destructive discourse further highlighting (euphemism, passive voices, and missing agency) do not project the actual findings but were meant to illustrate and inform the readers about coding scheme and guided the green content within selected textbooks,

Constructive green content	traditional/conventional meaning
Clean environment	encourages to keep the environment clean
Trash bins	encourages to use trash bins
Recycling of plastic bags	encourages to act upon the rules of recycling plastic bags
poor plastic	encourages to ban the poor-quality plastic which is harmful for ecosystem.
recycle waste	encourages to recycle the garbage according to set rules
ecological landscape	suggests to keep the land fertile and protect it from getting barren
environmental pollution	encourages to keep the environment clean from serious problems and diseases due to food wastage
leftover food	encourages to recycle the leftover food properly and do not waste food and give it to poor and needy as it will protect the environment.
Plastic bags, bottles	encourages to avoid stuff in plastic packaging
OLIO	encourages to use an OLIO app and listen to Tessa Cook, co-founder of OLIO
Combat pollution	encourages individual participation and action on collective level to keep the environment clean and pollution free.

Table 3-1 Constructive green content in textbook1, *English File* 4th Edition

Constructive green content	Traditional/conventional meaning
People will care more about the environment	Suggests that people on earth will be paying more attention towards the natural environment and keep their surrounding cleaner and healthier.
Air pollution	Encourages individuals to tackle air pollution and reduce it with practical solutions.
Conservation projects	Encourages individuals to help protect animals and plants
Save natural environment	Encourages people to pay attention to ecosystem
Climate change	Suggests that all people on the planet should take care of climate change.
Environmentally friendly products	Encourages people to always buy products which cannot harm the ecosystem
Recycle glass and plastics	Encourages all individuals on this planet to recycle plastics properly to save the environment.
The Whitley Fund for Nature	The WFN is a UK-based charity that inspires people to support and help the environment in diverse parts of the world and gives money to the people who try to save their local environment from danger. Every year, they give awards of up to £45,000 to support people run projects that will bring long-term constructive change to the environment.
Ebo Forest Research Project	The Ebo Forest in Cameroon covers almost 2,000km^2 and is home to a unique mix of 11 primates, including gorillas, the Nigeria-Cameroon chimpanzee and Goliath frog, the largest frog in the world. The Ebo Forest Research Project has regular interaction with communities through environmental and protection education organizations, and endorses local people to be proud of the forest's unique bio-diversity and protect it. In addition, this project has been doing biological research in the forest.
Ekwoge Enang Abwe	Ekwoge Enang Abwe is a Cameroonian who have won Whitley award. His love for the natural environment and chimpanzees began at an early age. He played a contributing role in the area for over a decade and, since 2010,

	he has been organizing and supervising the Ebo-Forest Research Project.
Alexander Blanco	Alexander Blanco is a veterinary surgeon who has been awarded the Whitley prize for working since 1996 to save birds in Brazil and Ecuador, as well as in his home country of Venezuela. He leads the national program to guard these species.
Cagan Sekercioglu	Cagan Sekercioglu, from Turkey, is the first environmentalist to win two Whitley Gold Awards, in 2008 and 2013 respectively, for his contributing role to defend the natural environment around Lake Kuyucuk.
Environmental Project	Discussion of an environmental project in Costa Rica.
If nature can do it, we can copy it	Suggests that some mutual objects were developed by humans but actually inspired by nature.
Liz Kerr	Liz Kerr is an environmental journalist who helps take care of whales that have come ashore.

Table 3-2 Constructive green content in textbook 2, *Empower 2nd Edition*

Constructive green content/ green discourse	Traditional/conventional meaning
Remove waste	School children remove waste from a beach to protect the environment.
Plastic, tin cans and paper cups	Over a hundred children spent the day collecting plastic, tin cans and paper cups from a beach in Cornwall, UK.
Natural world	Ten-year-old May Jones said, “The natural world is our responsibility”.
Save whales	A fishing company has given $10,000 to a group that works to save whales.
Recycle	A small town in New Zealand is taking old cars and using their parts to create works of art.
Recycle waste	Encourages to develop laws and rules to keep the environment clean and have people recycle accordingly.
Planting trees	Encourages people to take part in planting trees to keep the environment clean and pollution free.
Single-use plastic bags	The governor said that Bali would ban single-use plastic bags to protect the environment.
Reducing pollution	Encourages to tackle pollution effectively and have better public transport to keep the environment healthy and clean.
Clean-up projects	Encourages to organize groups of young people to do clean-up projects to clean the beach on the first and third Saturdays of every month.
More rubbish-bins	Encourages local government to provide more rubbish bins to keep the environment clean.
Recycling-project	Encourages to start recycling projects to collect plastic bottles from the beach and send it to a place where it can be used again.

Table 3-3 Constructive green content in textbook 3, Speakout 3rd Edition

3.4.5.2 Destructive green content/ discourse

One approach that constructs a negative or destructive discourse and ideology is erasure, which is one of the stories in the ecolinguistic framework of Stibbe's theory of ecolinguistics. According to Stibbe (2015), erasure is a strategy that constructs a negative discourse, i.e. expulsion or marginalization of an otherwise significant area of life. In this context, linguistic elements including euphemism, passive voices and missing agents are evaluated to analyze how they contribute to ignoring the role of humans in the destruction of the environment.

3.4.5.2.1 Euphemism

The ecolinguistic analysis of *English File*, *Empower*, *Speakout* indicates that there are there very few euphemistic terminologies in the textbook, and the use of softened terms discourages negative behavior. The following tables, Table 3-4, Table 3-5, Table 3-6, indicate some terms related to euphemism that have been found in the textbooks under investigation.

Euphemism	Conventional meaning
Garbage	Human beings and their actions are main reason for throwing Rubbish.
Environmental pollution	Human beings are the primary cause of industrial waste and chemicals.
Plastic waste	Human beings and their activities are main source of dangerous chemicals and waste in the river.
Noise pollution	Noise caused by vehicles and drivers.
Climate change	Global warming and overall climate change are affecting ecosystem and human activities are primary reason.

Table 3-4 Euphemism in *English File*

Euphemism	Conventional meaning
Air pollution	Human actions, their transportation, industrial waste, and cutting down trees by them are main contributing factors.
Endangered wildlife and environments	Hunting and killing caused by human beings.

Many parts of the land are threatened by construction of dams and roads	Expansion and demolishing of building, infrastructure caused by human beings are source of damage for ecosystem.
Pollution will continue to get worse in big cities	Human actions, man made vehicles and industries are main causes of pollution
It takes quite a long time for forests to recover	Human beings and their actions of cutting down trees are main contributing factors for irreparable loss of forests and greenery.
There is more rubbish in lakes than on beaches	Human actions and their activities of throwing waste are main reasons of contaminated water in lakes.
Eating plastic can make animals and birds ill	Individuals, their actions and industries are responsible for plastic pollution and animals' illness.
Water pollution is worse than air pollution	Water pollution is caused by human actions, industrial waste and dangerous chemicals.

Table 3-5 Euphemism in *Empower*

Euphemism	Conventional meaning
There is increasing pollution in many cities around the world.	Man-made industries and chemicals are main causes of increasing pollution.

Table 3-6 Euphemism in *Speakout*

3.4.5.2.2 Passive voices

Some scholars say that passivization disguises the agency of human beings while emphasizing the significance of the action (Naz et al., 2022). Consequently, passives fail to unveil the actual wrongdoers behind environmental degradation, damage and destruction. In *English File*, *Empower and Speakout*, a few passive voices hide the real culprit behind environmental issues (see Table 3-7, Table 3-8, Table 3-9).

Passive voice	Conventional meaning
25% of the world's fresh water supply is used to grow food which is never eaten	Human beings are primary cause of food wastage.

Over 1/3 of all food produced globally goes to waste.	Wastage of food is caused by human actions.

Table 3-7 Passive voices in *English File*

Passive voice	Conventional meaning
Forgotten bits of fishing can kill fish	Fish killing is caused by human actions and throwing of plastics in rivers.
Beautiful beaches can become covered in rubbish	Beautiful beaches are damaged by human beings and their actions of throwing garbage.
When fish sees a plastic bottle they may think it is food. However, when they try and eat the bottle, it can get caught in their mouth or stomach and stop them from eating anything else	Water pollution and plastic pollution are caused by humans and which ultimately leads to the destruction of sea creatures.

Table 3-8 Passive voices in *Empower*

Passive voice	Conventional meaning
It is thought that the increasing number of cars in cities is to blame for air pollution	Air pollution is caused by humans, their vehicles and industrial waste.
The main problem is that Bawlyn Beach has become polluted	Bawlyn Beach is polluted by humans and their actions.

Table 3-9 Passive voices in *Speakout*

3.4.5.2.3 Missing agency

The current study assumes that the nonappearance of agency in textbooks extracts the agent or person's responsibility unidentifiable. This influences ecological education because it makes it impossible for the reader to understand ecological issues, as it hides the role of the perpetrators of environmental destruction and degradation (see Table 3-10, Table 3-11, Table 3-12).

Missing agency	Conventional meaning
Fishing boats leave bits of fishing net behind in the water	Fishing net is often left in water by negligence of human beings and their actions.

Rivers and lakes have some plastic bottles floating in them	Rivers and lakes are contaminated by plastic bottles.

Table 3-10 Missing agency in *English File*

Missing agency	Conventional meaning
Bawlyn beach has become extremely polluted	Bawlyn beach is particularly contaminated by plastic pollution and wastage of food.
There is lack of rubbish bins on the beach	Beaches often do not have recycling bins of garbage.

Table 3-11 Missing agency in *Empower*

Missing agency	Conventional meaning
Some containers have parts which cannot be recycled.	Certain containers and items do not have proper instructions of recycling on them for some parts.
Proper information is not provided by food industries regarding recycling.	Food industries often neglect in providing complete information of recycling.

Table 3-12 Missing agency in *Speakout*

Thus, based on the theoretical framework of Stibbe and the categorization framework of ecological discourse analysis (EDA), the study has examined how ecological or ecolinguistic words, sentences and topics are represented in these textbooks. The words that were non-ecological or not representing any green content were eliminated (Şen & Hülya, 2020). In the words of Creswell & Báez (2020), there is no single procedure which is the best for conducting qualitative analysis, but there are different ways and approaches to analyze data in a systematic way. Qualitative data analysis comprises three phases, i.e. data reduction, data demonstration and conclusion. Qualitative data was thus divided into sections, by coding and labelling it for the purpose of obtaining meaningful conclusions.

3.4.6 Reliability

There are three types of reliability:

- stability, which represents the coder's use of categories or codes as it changes with the passage of time (Malik et al., 2021) for example, in this type of reliability, words such as "plastic" have been used as a positive or constructive discourse as well as a negative or destructive green content.
- accuracy, where a gold standard coding scheme is already developed with maximum reliability and the rest of the coding schemes is developed for comparison with it;
- reproducibility across coders, sometimes called intercoder reliability, whose main concern is whether different coders would code the same data in almost the same way throughout the process (Malik et al., 2021).

This study has used the first and second categories, as the researcher herself repeatedly developed a coding scheme to ensure that nothing was missed, and the third category was not applied as the researcher worked independently. The coding consists of particular words or phrases that represent a specific construct and can be associated with the relevant code category (Malik et al., 2021). The phase of data analysis made the data practicable and meaningful. After organizing the data and analysis, conclusions were finally drawn.

3.5 Textbooks /Objects of the study

In this study, three English language (EFL) textbooks (publishers: Oxford University Press, Cambridge University Press and Pearson), recommended for 9th standard (age group: 14-15) in Italian high schools, were used as objects of this study. These EFL books were used in the current study as instruments to dig out ecolinguistic representation. This is not intended as fieldwork: thus, there were no participants in this study. All the EFL selected books were designed for high school level in Italy. Table 3-13 below briefly describes the EFL textbooks analyzed in this study.

No.	Level of education	Name of the textbook	Year of Publication
1	High School	*English File* (4thEdition) (Oxford student textbook)	2022

2	High School	*Empower* (2nd Edition) (Cambridge student textbook)	2022
3	High School	*Speakout* (3rd Edition) (Pearson student textbook)	2023

Table 3-13 EFL textbooks used in this study

The reasons behind selecting these books from three different publishers (Oxford, Cambridge, Pearson) are that:

- like many other countries, in Italy too these publishers of English language textbooks hold a special significance with regards to EFL and providing high-quality educational material, and their widespread usage in Italian high schools can be associated to various factors. The first and foremost reason is that these publishers are highly reputable in the domain of EFL and have an old history of providing high-quality materials that are accepted and respected by everybody in the educational sector.
- these publishers provide an inclusive range of topics and well-organized content that covers diverse aspects and features of EFL including productive and receptive skills and other grammatical aspects.
- the usage of textbooks from well-known publishers benefits standardized EFL education across various schools and regions. This endorses that students take a reliable and consistent level of education and coaching irrespective of their location and region. Almost every educational system, including Italian, requires schools to adopt particular guidelines, aims and objectives for EFL learning. Therefore, textbooks from these known publishers are typically designed to align with these syllabus requirements. It makes it suitable for EFL instructors to fulfil the instructive objectives set by the authorities.
- these publishers offer a variety of further resources like workbooks, online resources teacher book, listening and audio material. These educational materials can increase the efficacy of the instructional and learning experience thus, providing extra practice and support to both instructors and pupils.
- English is an international language, and proficiency in English is considered beneficial in many ways for communication, travelling, employment and professional career. Textbooks from globally recognized publishers like Oxford, Cambridge and Pearson are

usually planned and designed in such a way as to benefit students, making them achieve English proficiency levels that are acknowledged globally.

- Oxford, Cambridge and Pearson design their content based on pedagogical research and the best possible practices in EFL, thus confirming that their educational content is up to the mark and according to latest trends.
- these publishers have experienced curriculum designers, language educators who design educational content that is sound from teaching point of view and engaging for students.

Initially, the researcher aimed to incorporate six textbooks into her dissertation. However, obtaining additional textbooks presented some challenges. Some books of the same series and publisher were not readily available at bookshops and, in certain cases, only workbooks were available, due to shortage of supply, whereas the main textbooks, which were the focus of my study, were missing in some bookstores. Moreover, the researcher had to wait for the ethical approval of the publishers' educational consultants, as these textbooks are not publicly available on the Internet. Some of the educational consultants declined the request due to copyright issues. Another reason was that some educational consultants were on a long leave during their summer break, which delayed the process of collecting and analyzing data. Consequently, after waiting for the educational consultants' response, the researcher obtained approval for three textbooks, which were eventually selected for analysis.

In short, the selection of the above-mentioned textbooks

by Oxford, Cambridge and Pearson in Italian high schools represents a sound commitment to offering students high quality EFL content that is consistent with international standards and best educational EFL practices.

3.6 Data collection technique

The data for the current study was collected from the textbooks *English File* (4th Edition), *Empower* (2nd Edition) and *Speakout* (3rd Edition). Since the source of the data was in the form of written documents, i.e. books, the method employed to collect data is called documentation method. The researcher contacted the educational consultants of all three publishers, i.e. Oxford, Cambridge and Pearson, for digital and PDF forms of the textbooks. After the approval of the relevant educational consultants, permission was granted to use the books in digital form. In the next step, the researcher converted all PDFs or digital books into TXT files through Online OCR software to process the collected data.

3.7 Research instruments

The main instruments employed in this study were the three above-mentioned textbooks, and the researcher used one methodological instrument, i.e. content analysis, as a way of collecting data by observing some information or inspecting the data related to the context of the study. In this regard, the researcher scrutinized the EFL textbooks as the objects of the study by utilizing content analysis to explore the data to address the problem, aims and objectives of this research.

3.8 Data analysis technique

Words and sentences related to green and environmental issues were selected from the three textbooks. Each page was carefully examined through a close reading of the textbooks. The data collected were evaluated by the software tools Sketch Engine and Microsoft Excel. The collected data was described through the underpinning theory of Stibbe's ecolinguistic theory. The current study investigated some linguistic structures (adjectives, metaphors and passive voice) in Italian high school EFL textbooks. Specifically, it endeavored to shed light on how the exaggerated or overstated utilization of evaluation, erasure, metaphor and over-usage of adjectives could affect meaning in ecological and green content texts by assessing and evaluating if they are positive or negative for the environment (Naz et al., 2022). The data was analyzed, results were generated and the researcher then used Microsoft Excel to work out a Chi square test. According to statisticians, the main purpose of statistical procedures and methods is to support the acceptability and likelihood of the theoretical model and to evaluate the extent to which various factors seem to be affecting the dependent variable (Naz et al., 2022).

3.8.1 Sketch Engine for linguistic analysis

The present study used Sketch Engine for its corpus analysis for several reasons. The first and foremost reason for selecting and using Sketch Engine for linguistic analysis is that, as a doctoral researcher at the University of Bologna, the author was granted access to use this powerful linguistic tool by the University, using its academic subscription. Sketch Engine is a well-known corpus tool worldwide, utilized by researchers, linguists and institutions for linguistic analysis, that grants access to different corpora in various languages, and its advanced features include concordance analysis, collocation analysis and the ability to generate custom corpora. The most popular alternative to the Sketch Engine, AntConc, is also used for linguistic analysis, and it is freely available online, so some users prefer to use it, and it is mostly used by them for basic

linguistic analysis. However, AntConc lacks some advanced features which are available in Sketch Engine: therefore, the present study used Sketch Engine for its linguistic analysis, due to the presence of advanced features, its availability through university access and its user-friendly interface.

3.8.2 Microsoft Excel for Chi Square

According to statisticians, the main purpose of statistical procedures and methods is to support the acceptability and likelihood of their theoretical model and to evaluate the extent to which various factors seem to be affecting the dependent variable (Naz et al., 2022). This study employed the Pearson correlation coefficient, a descriptive statistical measure in Microsoft Excel; Pearson correlation, also called "Karl Pearson's coefficient of correlation", is used. This correlation was introduced by Karl Pearson (Pearson, 1895) as a measure of whether and how strongly pairs of variables are related, and it basically tests and measures the relationship between two variables. Three possible relations can be concluded, i.e. positive relationship, negative relationship, or no relationship at all. Correlation is denoted by small "r" and the value of "r" can be from -1 to +1. If "r" is equal to zero, it means there is no relationship between variables. At a first stage, the data were analyzed descriptively (corpus analysis) in Sketch Engine. The researcher inserted the observed frequencies of each textbook obtained from this descriptive analysis in Sketch Engine and then the formula of expected frequencies was used to calculate the expected frequencies, i.e. expected frequency = row total*column total/Grand total in an Excel spreadsheet. After obtaining the expected and observed frequencies, in the last phase, the Chi-Square function was used to find out if there is a significant relation between expected and observed frequencies. The details of this analysis will be reported in Chapter 4.

3.9 Ethical considerations

Research ethics is described as the procedure of ensuring the privacy of the participants in research study, the confidentiality of the respondents' answers and participation, and also of determining that no harm is done to the participants of the intended research (Chilisa & Preece, 2005). Though every piece of research is required to take ethical considerations into account, language and social sciences research must consider them particularly, as they involve humans as respondents and the researcher investigates their point of views and perceptions (Connelly, 2014). According to Hill (2012), ethical research involves getting the informed consent of those you are going to elicit answers from in a survey or an interview, to observe or to obtain any required material from. As

a starting point, ethical approval was obtained from the educational consultants of the textbooks used in this study as, in the present study, no humans are involved, but the relevant publishers and educational consultants granted their ethical approval to analyze the data (i.e. the selected texts books) solely for the purposes of my PhD research.

3.10 Summary of the chapter

The main aim of research methodology is to originate systematic research into the phenomenon under discussion. Therefore, the main purpose of this chapter was to deliver a feasible and appropriate research methodology to create a body of knowledge related to the research aim, problem, solution and answer for it. This chapter has provided an outline of the methodology employed for the current research. The overall procedure justifies the selection of particular approaches and paradigms, strategy, statistical methods and tools. In order to fulfil the research aims, the research design utilized in this study is descriptive and qualitative in nature. The data for the current study was collected from the textbooks *English File* (4th Edition), *Empower* (2nd Edition) and *Speakout* (3rd Edition). Their analysis will be described in Chapter 4, which is about the results and outcomes of the study.

4 Research Findings

This chapter demonstrates the research findings and discussions about the data evaluation in the selected EFL textbooks *English File, Empower,* and *Speakout*. The researcher conducted content analysis of the collected data to dig out green content and ecolinguistic representation in the textbooks, based on Stibbe's theoretical framework of ecolinguistics. This chapter starts with a descriptive qualitative content analysis based on a corpus-based deductive approach, as discussed in Chapter 3. Section 4.1 illustrates the word lists generated from the three books; Section 4.2 is about their concordance analysis; Section 4.3 is about frequency and testing hypothesis. Lastly, Section 4.4 contains a summary of the chapter.

4.1 Word list

The Word list tool in Sketch Engine was used to generate an initial list of all words found in the target textbooks of this study (*English File, Empower, Speakout*). All the PDF files were converted into TXT files using the function plain txt file of the program Nitro Pro. Nitro Pro is a powerful and multipurpose PDF-editing software that permits its users to develop, edit, convert, sign or share PDF documents. It is commercial software, which requires either purchase or subscription for complete access to its features. Nitro Pro is widely recognized to have robust features in handling PDF documents, including advance editing functions, OCR (Optical Character Recognition) and protected document sharing options. At this phase, txt files had numerous unwanted letters, numbers or missing and misspelled words, which were eliminated manually one by one from each file.

4.1.1 Generation of the initial word list

After converting the PDFs into txt files, the next step was generating a word list with Sketch Engine. Initially, the list included all words, both grammatical and content words, from all three textbooks (*English File, Empower, Speakout*). This simple list of words can be sorted either alphabetically or by frequency, and this provides readers with a basic overview of the vocabulary present in the selected corpus. A word lists in a corpus can be filtered by different criteria, for instance as part of speech, lemma (or base form), word length and others, permitting scholars and researchers to focus on particular subsets of vocabulary within the selected corpus (Tianson & Yanasugondha, 2021). The present study used the criteria of frequency to generate an initial word

list and overview of the most common words used. Table 4-1 represents a general overview of the word count, tokens[7] and number of sentences in the three textbooks.

Tokens	55,182
Words	43,642
Sentences	1,751

Table 4-1 General overview of *English File* in terms of tokens, words and sentences

The above table 4-1 reflects that the overall count of tokens found in the textbook *English File* is 55,182: there are 43,642 words, including green and non-green, and 1,751 sentences overall.

Tokens	86,468
Words	68,705
Sentences	3,195

Table 4-2 General overview of *Empower* in terms of tokens, words and sentences

The above table 4-2 indicates that the textbook *Empower* has a total of 86,468 tokens: there are 68,705 words, including green and non-green, and there are 3,195 sentences in the whole textbook.

Tokens	106,500
Words	84,059
Sentences	4,689

Table 4-3 General overview of *Speakout* in terms of tokens, words and sentences

[7] Tokens are words you can query in Sketch Engine, but they also include punctuation, Arabic numbers, and other non-word items that are searchable in Sketch Engine without necessarily being words. So, the correct figure to evaluate corpus, or book size, is the second row of this table, entitled "Words".

Table 4-3 indicates that the textbook *Speakout* has 106,500 tokens, 84,059 total words, including green and non-green words, and 4,689 sentences.

Total tokens in all three textbooks (green & non-green) 248,150
Total words in all three textbooks (green & non-green) 196,406
Total sentences in all three textbooks (green & non-green) 9,635

Table 4-4 General overview of all three textbooks

Table 4-4 above indicates that the overall count of token in all three textbooks is 248,150, the word count in all three textbooks is 196,406 and there are 9,635 sentences. This information in all three textbooks includes green as well as non-green content and provides an overview of all three-textbooks, including all green and non-green content.

4.1.2 General description and key features of textbooks

- *English File* (Published by *Oxford University Press*)

The authors of this textbook are Christina Latham-Koenig, Clive Oxenden and Kate Chomacki. The fourth edition of *English File* was analysed: the series includes seven levels, i.e. beginner, elementary, pre-intermediate, intermediate, intermediate plus, upper intermediate and advanced according to the Common European Framework of Reference for Languages (CEFR). The *English File* series is well recognized all over the world and its learning materials are used at all levels. The fourth edition of *English File* B1+/B2, which was analysed in this dissertation, is designed for high school students (aged 14-15). This book contains ten units, each separated into two parts, A and B, followed by grammar, vocabulary, pronunciation and, at the end of each unit, there are practical English revision and check exercises. The fourth edition of *English File* is built upon a verified methodology. The communicative methodology, also called communicative language teaching (CTL), is an approach to language teaching that sheds light on the implication of interaction and communication as both the means and eventual objective of language learning. The major purpose of this teaching methodology is to grow students' ability to communicate effectively in day-to-day life situations. This includes practicing speaking, reading, listening and writing and provides motivating academic content and activities, such as listening exercises related

to conversations, finding answers to comprehension questions, role playing exercises for real life situations, such as ordering food or asking for directions, passages related to reading, based on current events or historical figures with follow-up questions, writing emails or vocabulary and grammar exercises and group projects etc. The *English file* series provides a variety of materials that can be tailored to learners' needs. The Student's Book with Online Practice, for example, permits learners to practice and increase their language proficiency and learning skills with the content mentioned above. The student's language proficiency can be enhanced through various activities, e.g. students listen to native speaker's audio clips reporting day-to-day conversations and, after listening, they complete written exercises such true or false or fill in the blanks. Their writing skills can be improved by writing opinion essays, including on environmental issues. The workbook provides supporting material to each lesson and can be utilized as additional practice during class or at home. Additional video content is integrated into the Student's Book, with video-aided listening exercises in each section, aimed to improve students' pronunciation. The pronunciation model taught primarily represents British English, particularly Received Pronunciation (RP). Nevertheless, there are also examples of regional pronunciations included in the materials. This inclusion of different English accents favours a more inclusive approach to English teaching, representing various linguistic backgrounds and assisting students in becoming acquainted with various varieties of English.

Besides, the Teacher's Guide, together with the Teacher's Resource Center, offers a set of effective resources required to create flexible lessons for students. This flexibility, in fact, indicates that lessons can be adjusted according to the students' proficiency levels, learning styles, interests, and classroom dynamics. Furthermore, there are quick tests and file tests for each section: quick tests are brief evaluations designs to be administered consistently, typically after each chapter or unit, whereas file tests are more detailed than quick tests and are designed to evaluate or assess a wider range of content covered over many chapters or units. Progress tests are conducted periodically throughout the course to track the students' performance over time and are more extensive than quick tests. Lastly, the end-of-course test and an entry test that can used at the beginning of the course.

- *Empower* (published by *Cambridge University Press*)

Empower 2nd edition is a six-level general English course for adult and young learners, taking students from beginner to advanced level (CEFR A1 to C1). *Empower* combines course content from Cambridge University Press with validated assessment from experts at Cambridge

Assessment English. The content of the textbook not only informs but also motivates learner engagement, with clear learning goals, thought-provoking images, texts and speaking activities, plus video content, to arouse curiosity. For example, each unit in the textbook begins with a list of clear learning objectives, like what students are expected to achieve by the end of each unit: unit 5, for example, is about the natural world and has goals such as understanding the main vocabulary regarding ecology and green practices. The text has several images and texts that engage students to think critically and participate in constructive discussions. It can be said that, unlike many other EFL textbooks which teach grammatical topics (e.g. modal verbs) through exercises focused on these topics in a straightforward way, this textbook incorporates these grammatical topics into a larger context, making the learning experience more engaging. *Empower* B1+ is designed for high school students aged 14-15, and is often used to teach English as a foreign language (EFL) in Italian high schools.

- *Speakout* (published by *Pearson*)

Speakout 3rd edition is an eight-level general English course for adults, developed in association with BBC Studios and completely revised based on feedback from *Speakout* users from all over the world. This book is based on the Global Scale of English, the GSE scale developed by Pearson, which ranges from 10 to 8, with each point representing a small increment in language proficiency. The CEFR is a widely recognized framework which is used to describe language proficiency across six levels: A1, A2, B1, B2, C1 and C2. The GSE is still aligned with CEFR, meaning that GSE scores can be mapped to CEFR levels: for instance, a GSE score of 35 might correspond to A2 level of the CEFR. The *Speakout* series is available along with a student e-book with online practice and an access code, which is a unique alphanumeric code provided upon purchase of the *Speakout* textbook or e-book workbook and split editions. The access code grants students access to extra online resources and content for practice. Students can log into the platform which provides access for practicing and recording, directly connected with *Speakout*. Split editions actually divide the content of a complete textbook into two separate parts, referred to as "Part A" and "Part B". Therefore, the split edition of *Speakout* makes its content more manageable and less confusing for students by providing a precise, concise and focused set of chapters or units at a time. The *Speakout* series also has enhanced pronunciation sections with recording features that permit readers or learners to practice their speaking and pronunciation skills, and these features are merged into the e-book and online practice platform. The *Speakout* textbooks use both Received Pronunciation (RP) and General American (GA) as their models for pronunciation practice, offering learners exposure to these two standard varieties of English. After doing their own recording, the students can play

them back and compare their phonetics with native speakers' recordings that are provided in the textbook audio exercises. In some platforms, students can even submit their recordings to their teacher to obtain feedback for their response. The book also contains exercises aimed to develop students' unified skills for employability, including contemplation lessons and "future skills" drill to aid learners prepare for the changing world of work. These exercises are accompanied by listening tasks where students follow simple instructions for mindfulness practices. This helps improve their listening skills and promotes mental well-being, which is important for maintaining concentration. Information and a general overview of each book chapter by chapter, is provided in tables below. See (Table 4-5, Table 4-6, Table 4-7).

Chapter	Topic	Theme	Pages
1A	Why did they call you that?	Names	6
1B	Life in colour	Adjectives	14
2A	A get ready! Get set! Go!	Packing	16
2B	Go to checkout	Shops and services	16
3A	Grow up!	Stages of life	20
3B	Photo albums	Photography	26
4A	Donot throw it away!	Rubbish & recycling	30
4B	Put it on your CV	Study & work	36
5A	Screen time	Television	46
5B	A quiet life?	The country	50
6A	What the waiter really thinks	The restaurant	56
6B	Do it yourself	DIY & repairs	60
7A	Take your cash	Cash machines	66
7B	Shall we go out or stay in?	Live entertainment	70
8A	Treat yourself	Looking after yourself	76
8B	Sites & sights	Vars & battles, historic building	80
9A	Total recall	Word building	86
9B	Here comes the bride	Weddings	90
10A	The land of the free?	British & American English	96
10B	Please turn over your papers	Exams	104

Table 4-5 List of chapters, topics and themes in *English File* 4th Edition

Chapter	Topic	Theme	Pages
1	Talk about friendship and communication	Friendship and communication	
1A	Describe experiences in the present	Gradable and extreme adjectives	8
1B	Dive and respond to opinions	Word groups	17
1C	Write a guide	What kind of learner are you?	
2	Modern life	Work	19-30
2A	Talk about experiences of work and training	Technology	
2B	Talk about technology	Sentence stress	
2C	Make and respond to suggestions	An email about a new job	
3	Relationships	Relationships	32-42
3A	Talk about a friendship	Multi-word verbs	
3B	Talk about families	Stress in word groups	
3C	Tell a story	A biography describing time	
4	Personality	Modal and phrases of ability	44-54
4A	Describe people and their abilities	Personality adjectives	
4B	Describe feelings	Intonation in question tags	
5	The natural world	Environmental issues	55-66
5A	Talk about the future	The natural world	
5B	Talk about if and when	Voiced and unvoiced consonants	
5C	Give reasons, results and examples	An essay about water pollution	
6	Different cultures	Modals of obligation	68-78
6A	Talk about advice and rules	Comparatives and superlatives	
6B	Describe food	Asking for and giving recommendations	
6C	Ask for and give recommendations	Positive and negative language adverbs	
7	House and home	Modals of deduction	80-90
7A	Describe a building	Quantifiers	
7B	Describe a town or city	Making offers and requests	
8	Information	Sharing information	91-102
8A	Talk about podcasts	Reporting verbs	
8B	Talk about what other people say	Generalizing and being vague	
9	Entertainment	The passive	104-114
9A	Talk about films and TV	Relative clauses	
10	Talk about new things	Second conditional	115-127
10A	Talk about imagined past events	Third conditional	
10B	Talk about possible problems	Second conditional	
10C	Reassure someone	Third conditional	
10D	write an email with advice	sounding sure & unsure voluterring	

Table 4-6 List of chapters, topics and themes in *Empower* 2nd Edition

Chapter	Topic	Theme	Pages
1			
1 A	Who are you?	People and relationships, personality adjectives	8-16
1 B	Good people	Job work, verb patterns	
1 C	Let's talk	Conversation topics	
1 D	Lifestyle	Modifiers	
2			
2 A	What happened?	Shops and services, adjectives for feelings	
2 B	Story telling	Story words, types of films	
2 C	A likely story	How to apologize and give reasons, write a review of a place/time prepositions	20-28
2 D	The story of a place		
3			
3 A	Questions Facts and figures	Knowledge, verbs and nouns	
3 B	Decisions	Future plans and intentions Facilities, places in a city	32-40
3 C	Can I ask you?	Write an outline forum comment/phrasal verb	
3 D	What matters most?		
4			
4 A	Winners	Goal-settings/ Modals for rules and advice Technology collocations/ Articles	44-52
4			
4 B	First!	Sports and games	
4 C	Taking part	Memorable journey/present perfect/superlative	
4 D	Top Gear: Nepal		
5			
5 A	Fake news	News and social media	56-64
5 B	Newsmakers	Social issues: the environment	
5 C	Good news	Will/might/ be going	
5 D	The future of news		
6			
6 A	The two Pablos	The arts; the arts: people, places, things	
6 B	Be creative	Creativity; word building, Extreme adjectives	68-76
6 C	Why do you think that?	Present perfect+ for, since and yet	
6 D	An artist at work		
7			
7 A	Good tourists	Travel and tourism	80-88
7 B	Globetrotters	New experience; the natural world	
7 C	You must see!	Essay about why we travel/ reflexive pronouns	
7 D	Go solo?		
8			
8 A	Doers and dreamers	Can, could, be able to	92-100
8 B	Video everywhere	Active and passive voice	
8 C	Help!	Technical problems; technology 2 Write a forum comment about language learning	
8 D	A gifted learner		

Table 4-7 List of chapters, topics and themes in *Speakout*

4.1.3 Word list filtering criteria

The initial word lists generated by using Sketch Engine were edited and filtered, and grammatical words were excluded so as to concentrate mainly on content words specifically related to green practices, green content, environment and ecology. Many scholars have used word list filtering criteria, either based on the frequency of content words or parts of speech, lemma or other specific categories, depending on the goal and objectives of their studies (Brookes & McEnery, 2020; Meyer, 2023).

4.1.4 Selection of frequently occurring green vocabulary

From the filtered list, words representing green content, e.g. related to the ecosystem, ecological issues or environmental sustainability were identified. The rationale and selection criteria for these green words were guided by Stibbe's (2015) ecolinguistic theory and his three stories, which are erasure (certain concepts are deliberately omitted from texts, e.g. the responsibility of human beings in environmental degradation), metaphor (some linguistic structures that readers can recognize as related to particularly widespread cognitive metaphors) and evaluation. Cognitive metaphors, as defined by Lakoff and Johnson (1980), are conceptual metaphors[8] that structure our understanding and perception of the world. A common example of cognitive metaphor is "Time is Money", meaning that time should be used efficiently to maximize advantages and minimize losses, both financially and in other areas of life. The third story is evaluation (whether any area of life is good or bad), used along with the ecological discourse analysis (EDA) framework of categorization. Hence, the researcher selected green words based on the above-mentioned criteria and arranged their list alphabetically for all three textbooks. The rationale behind arranging words alphabetically was that different green words have varying frequencies in each textbook: therefore, an alphabetical arrangement ensures a standardized and unbiased presentation of green words. This method also permits a clear and systematic comparison of green content across the textbooks. In addition, eminent scholars have endorsed this method, among many other criteria available to sort a word list (Green & Lambert, 2018).

[8] According to Prof. Gerard Steen's project at VU University Amsterdam (2010), metaphor use can be signaled by metaphor markers such as "like", "as", "as if", "so-called" etc., making it possible to search metaphors on previously annotated corpora. This method, known as MIPVU (Metaphor Identification Procedure VU), provides a systematic approach to identifying metaphors in language, which is of vital importance for conducting a thorough ecolinguistic analysis. The incorporation of Steen's methodology into my research has permitted a more precise identification and analysis of metaphors within the selected EFL textbooks. By utilizing MIPVU, this study has systematically tried to identify metaphorical language that contributes to the green content and narratives within the educational content. This connection is crucial as it provides a robust framework for analysing how metaphors shape learners' understanding of environmental concepts and problems, hence connecting Stibbe's theory with practical linguistic analysis tools (Steen et al., 2010).

4.2 Concordance

Concordance is a list of all occurrences of a specific word or phrase in a given text, represented within its context. It reveals how the word is utilized in different sentences of the corpus. The main objective of a concordance is to provide a comprehensive view of how that particular word is used in its real contexts of use, permitting its in-depth analysis. Each occurrence of the selected word is represented with a few words or lines of text before and after it. The surrounding text is called "context", "co-text", or also KWIC (an acronym, widely used in corpus linguistics, which stands for "Key Word in Context"), and can be sorted in different ways, e.g. alphabetically or according to the words immediately before or after the selected word, to help understand patterns of usage. Many scholars have used concordance to understand how words are utilized in various contexts, which helps in understanding meanings, collocations and grammatical patterns in various contexts (Brookes & McEnery, 2020b; Fusari, 2018). The present study has used concordance in Sketch Engine for content analysis, to investigate green discourse or content as used in the three textbooks.

4.2.1 Green word list and concordance in *English File*

Table 4-8 below shows the number of green words in *English File*, its grand total, frequency and percentage. The first column (*n*) indicates the absolute frequency or actual frequency of green words extracted based on the criteria described in section generation of the initial word list.

Words representing green content		*English File*	
Green vocabulary		Absolute frequencies (*n*)	Percentage (%)
1	Climate	1	0.88%
2	Environmental, Environment	3	2.65%
3	Green	12	10.62%
4	Pollution	2	1.77%
5	Plastic	24	21.24%
6	Packaging	10	8.85%
7	Rubbish	8	7.08%
8	Recycle, Recycling	13	11.50%
9	Tree, Trees	5	4.42%
10	Waste (N+V)	14	12.39%
11	Water	17	15.04%
12	Weather	4	3.54%
Grand Total		113	

Table 4-8 Green vocabulary in English File

*n= representing absolute (actual) or observed frequencies in table

*N=represents noun whereas *V represents verb

indicates the total words found related to ecology and green practices in *English File*. It is important to note that, while there may be additional green words present in the textbook, the 113 terms identified are those that fit the specific criteria established and detailed in section 4.1.3. This selection was guided by Stibbe's (2015) ecolinguistic theory and his three stories, along with the ecological discourse analysis (EDA) framework of categorization.

Table 4-9 below, the first column indicates the total green words in *English File*, while the percentage (*%*) shows the proportion of green words relative to the total occurrences of all words in the word list.

Total words	43,642 (Green & Non-green)
Total green words	113
Percentage of green vocabulary in *English File*	0.258%

Table 4-9 Total words in *English File* (green & non-green*)*

Table 4-9 above table indicates that green words appear 113 times as a whole in the textbook *English File*, which appears to be only 0.258% of the total words in the textbook.

4.2.2 Green word list and concordance in *Empower*

Table 4-10 below shows the number of green words in the textbook *Empower*, its grand total, frequency and percentage.

Words representing green content		*Empower*	
Green vocabulary		Absolute frequencies (*n*)	Percentage (%)
1	Atmosphere	8	5.6%
2	Climate	4	2.81%
3	Environment, Environmental	12	8.4%
4	Forest	8	5.6%
5	Green	6	4.2%
6	Nature	6	4.2%
7	Pollution	18	12.6%
8	Plastic	9	6.3%
10	Rubbish	9	6.3%
11	Recycle, Recycling	4	2.81%
12	Tree, Trees	5	3.5%
13	Water	40	28.16%
14	Waste (N+V)	3	2.11%
15	Weather	10	7.04%
Grand Total		142	

Table 4-10 Green vocabulary in *Empower*

n= representing absolute (actual) or observed frequencies in table

**N*=represents noun whereas **V* represents verb

The absolute numbers (*n*) represent how many times each green word occurs, while the percentage (%) shows the proportion of each green word relative to the total occurrences of all words in the word list.

Total words	68,705 (Green & Non-green)
Total Green words	142
Percentage of the green words in *Empower*	0.206%

Table 4-11 Total words in *Empower* (green & non-green)

Table 4-11 indicates that Em*power* has a total of 68,705 words, out of which green words appear 142 times. Again, there might be more green words, but these have been identified based on the criteria expounded in table below. If we observe the percentage of green words in *Empower*, it appears to be only 0.206% of the total words in the textbook, so again, just as we have seen for *English File*, this percentage appears to be quite small.

4.2.3 Green word list and concordance in *Speakout*

Table 4-12 below shows the number of green words in the textbook *Speakout*, its grand total, frequency and percentage.

Words representing green content			*Speakout*
Green vocabulary		Absolute frequencies (*n*)	Percentage (%)
1	Atmosphere	3	1.6%
2	Climate	9	5.0%
3	Environment, Environmental	23	12.84%
4	Forest	3	1.6%
5	Green	6	3.3%
6	Nature	15	8.3%
7	Pollution	12	6.7%
8	Plastic	14	7.8%
10	Rubbish	16	8.9%
11	Recycle, Recycling	18	10.05%
13	Tree, Trees	3	1.6%
14	Water	27	15.08%
15	Waste (N+V)	16	8.9%
16	Weather	14	7.8%
Grand Total		179	

Table 4-12 Green vocabulary in *Speakout*

**n*= representing absolute (actual) or observed frequencies in table

**N*=represents noun whereas **V* represents verb

Above Table 4-12 indicates that there are 179 words related to ecology and green practices in the textbook *Speakout.* The first column (n) indicates the absolute frequency of the various ecological words in the textbook, while the percentage shows the proportion of each green word relative to the total occurrences of all words in the word list.

Total words	84,059 (Green & Non-green)
Total Green words	179
Percentage of the green words in *Speakout*	0.212 %

Table 4-13 Total words in *Speakout* (green & non-green)

Table 4-13 indicates that *Speakout* has a total of 84,059 words, out of which 179 are green words. If we observe the percentage of the green words in *Speakout*, it appears to be only 0.212% of the total words in the textbook.

It can therefore be concluded that the percentages of green content are fairly close, although there are some distinctions. *English File* contains the highest percentage of green content at 0.258%, followed by *Speakout* with 0.212%, and *Empower* with the lowest at 0.206%**.** Although these percentages are very close to one another, *English File* stands out slightly as having the highest percentage of green content, while *Empower* has the lowest. However, the differences are minimal, indicating that all three textbooks have a relatively similar proportion of green content.

4.3 Frequency

One of the main objectives of the present study is to investigate the difference between observed and expected frequencies with regards to words and sentences of three textbooks, after conducting content analysis. Before performing this frequency function, it is important to understand some concepts: frequencies and chi-square test are based on a hypothesis. In statistics, frequency refers to the number of times a specific word or phrase occurs within a given corpus or selected texts (Mliless & Larouz, 2018; Li & Fernandez Deocampo, 2022). It is the real data that a researcher collects or observes during an experimental study. Frequency is a fundamental concept in corpus linguistics, it is utilized extensively in Sketch Engine to analyze language use patterns, and many scholars in their seminal works have used it (Mliless & Larouz, 2018; Li & Fernandez Deocampo, 2022). There are two key points about frequency discussed below.

4.3.1 Observed frequency

Observed frequency is the actual count of a word as it occurs in a text. For example, if one is investigating the frequency of the word “climate” in a textbook, and it appears 30 times in Sketch Engine, then the observed (raw or actual) frequency of the word “climate” is 30.

4.3.2. Expected frequency

Expected frequency is the count of occurrences one would expect to find or investigate for a particular event or characteristic if a certain hypothesis or a theoretical count based on a particular hypothesis or assumption is true. It is calculated based on the supposition that there is no substantial difference between observed and expected frequencies. For example, if we assume that the word “climate” should occur consistently across several chapters of a textbook, and there are 10 chapters, you might expect the word

to appear 2 times per chapter. If a chapter has 500 words and there are 10 chapters, and "climate" is expected to occur 1% of the time, expected frequency might be 5 times in a chapter of 500 words. If you expect "climate" to appear 4 times per chapter based on the book's length and content, then 4 is your expected frequency. In other words, expected frequency is what you would expect to find if the word "climate" was evenly spread out across all chapters.

4.3.3 Difference between expected and observed frequencies

The difference between expected and observed frequencies reveals whether the observed data deviate from what is expected. The difference is mandatory for statistical tests such as the chi-square test, e.g. if you find 5 (observed) but expected 4 (expected), the difference is 1. The formula for finding out expected frequencies in simple words and for conducting analysis in an Excel sheet is:

Expected frequencies (E) = Row total ✕ Column total ÷ Grand total

- Row total: the total count of observations in that row
- Column total: the total count of observations in that column
- Grand total: the total count of all observations in the table

Previous studies that have used expected and observed frequencies techniques in their work include Faramarzi & Janfeshan (2021) and Meyer (2023).

4.3.4. Chi Square test

The chi-square test is used to see if these differences (between what you observe and what you expected) occur just by chance or if they are significant, indicating something meaningful about how a word, e.g. "climate", is used in a particular book. In simpler terms, the chi-square test helps to check whether the differences we see in our data are due to chance or if they indicate a statistically relevant pattern.

Chi-Square test : $\chi 2 = \Sigma \frac{(O-E)^2}{E}$

O: observed frequency

E: Expected frequency

Σ: Sum of over all categories

In Sketch Engine, observed frequencies indicate how often a word actually appears, whereas expected frequencies assist you in understanding if this is more or less than you would typically expect, guiding research conclusions. The chi-square test is a tool to statistically verify these findings (Meyer, 2023).

Degrees of freedom in a Chi-Square Test reflect how much variability is allowed in the data. They adjust the Chi-Square calculation to account for the size of the table and the number of categories (Meyer, 2023). For instance, imagine you are at a party with 10 friends. If you know that 6 of them like chocolate ice cream and 4 like vanilla, this is your observed data. Now, let us say you expect that half should like chocolate and half should like vanilla based on no particular preference (expected data). The Chi-Square test compares what you observed (6 chocolate, 4 vanilla) with what you expected (5 chocolate, 5 vanilla).

- df = (number of categories−1) = (2−1) = 1.

4.3.5 Hypothesis of the study

The hypotheses that were formulated for this study are listed below.

Hypothesis 1

- **H_1:** there is significant difference between expected and observed frequency regarding words related to ecolinguistics in the textbooks under examination (*English File, Empower, Speakout*).
- **H_0:** there is no significant difference between expected and observed frequency regarding words related to ecolinguistics in the textbooks under examination (*English File, Empower, Speakout*).

Hypothesis 2

- **H_2:** there is significant difference between expected and observed frequency regarding sentences related to ecolinguistics in the textbooks under examination (*English File, Empower, Speakout*).
- **H_0:** there is no significant difference between expected and observed frequency regarding sentences related to ecolinguistics in the textbooks under examination (*English File, Empower, Speakout*).

In this study, the first research question asks if there is a significant difference between expected and observed frequency regarding words related to ecolinguistics in the Italian high school English textbooks

English File, Empower and *Speakout*. Firstly, the frequency of words and topics related to green content was generated in Sketch Engine. Table 4-14 below indicates the frequency of words representing green content in three textbooks.

Words representing green content	*English File*		*Empower*		*Speakout*		Grand total
Atmosphere	0	0	8	5.6%	3	1.6%	11
Climate	1	0.88%	4	2.81%	9	5.0%	14
Environment, Environmental	3	2.65%	12	8.4%	23	12.84%	37
Forest	-	-	8	5.6%	3	1.6%	11
Green	12	10.62%	6	4.2%	6	3.3%	24
Nature	0	0	6	4.2%	15	8.3%	21
Pollution	2	1.77%	18	12.6%	12	6.7%	32
Plastic	24	21.24%	9	6.3%	14	7.8%	47
Packaging	10	8.85%	-	-	-	-	10
Rubbish	8	7.08%	9	6.3%	16	8.9%	33
Recycle, Recycling	13	11.50%	4	2.81%	18	10.05%	35
Tree, Trees	5	4.42%	5	3.5%	3	1.6%	10
Water	17	15.04%	40	28.16%	27	15.08%	84
Waste (N+V)	14	12.39%	3	2.11%	16	8.9%	33
Weather	4	3.54%	10	7.04%	14	7.8%	28
Grand Total	113	100%	142	100%	179	100%	430

Table 4-14 Observed frequencies of green vocabulary/ words in textbooks

The above Table 4-14 illustrates the most frequently occurring words related to green content in *English File, Empower* and *Speakout*. The discussion below will concern only the most frequently occurring words, while words whose frequency is below 10 will not be discussed, as they are too tiny by corpus linguistics standards. It should also be specified that the current study is not a corpus linguistic analysis properly, but it is a content analysis assisted by corpora: in any case, very rare words do not provide enough data for a thorough discussion of their meaning in context, so they have been excluded from detailed interpretation, while still being shown in the tables to give an idea of their presence and relative frequency.

In the first textbook, *English File*, the most frequently occurring green vocabulary is “plastic”, “water”, “waste” (includes both noun and verb) and “recycle” (all lemma forms have been taken into consideration, including e.g. “recycling”). The content analysis of these words is shown below.

The results indicate that, in *English File*, the most frequently occurring word is "plastic" with an absolute frequency of 24 and 21.24% of the total green related words recognized in this textbook, which recommends that action should be taken upon the rules to reprocess plastic bags, ban poor-quality plastic which is damaging for ecosystem and avoid wrapping products in plastic packaging. This advocates that plastic items should be recycled, and highlights the differences between various types of plastic components. Specifically, the textbook notes that plastic bottles are recyclable, stressing their possibility to be processed and reused rather than contributing to plastic waste. The illustration of plastic in this textbook exposes a dual narrative. On one hand, plastic is portrayed as a substantial environmental problem, particularly when it comes to waste management and pollution. The frequent mention of plastic waste and the need for recycling underscores the negative impact of plastic on the environment, highlighting issues such as landfill overflow, marine pollution, and the long degradation period of plastics. On the other hand, the recyclability of plastic bottles is presented as a problem-solving measure. The ability to recycle plastic bottles advises a feasible solution to mitigate the environmental damage caused by plastic waste. This twofold depiction indicates that while plastic itself is problematic, effective recycling practices can significantly lessen its adverse effects. The ease of recycling is depicted with some inconsistency depending on the type of plastic. For example, plastic bottles, typically made from PET (polyethylene terephthalate), are often highlighted as readily recyclable, reflecting their widespread acceptance of recycling programs and the established infrastructure for their processing. In contrast, other types of plastics, such as those utilized in packaging and single-use items, may not be as easily recyclable, due to their chemical composition, contamination issues, or lack of recycling facilities equipped to handle them. The analysis of these instances goes beyond merely noting the frequency of green words. It delves into how the textbook frames the environmental narrative around plastic use and recycling. The frequent mention of recyclable plastic bottles serves as a starting point for a deeper examination of the texts' broader discourse on environmental sustainability and consumer responsibility. In conclusion, the textbook presents a nuanced view of plastic: it is both a significant environmental challenge and a material with the potential for sustainable management through effective recycling practices. By emphasizing the recyclability of plastic bottles and the difficulties of recycling diverse types of plastics, the textbook endorses a more up-to-date and practical approach to plastic use and waste management.

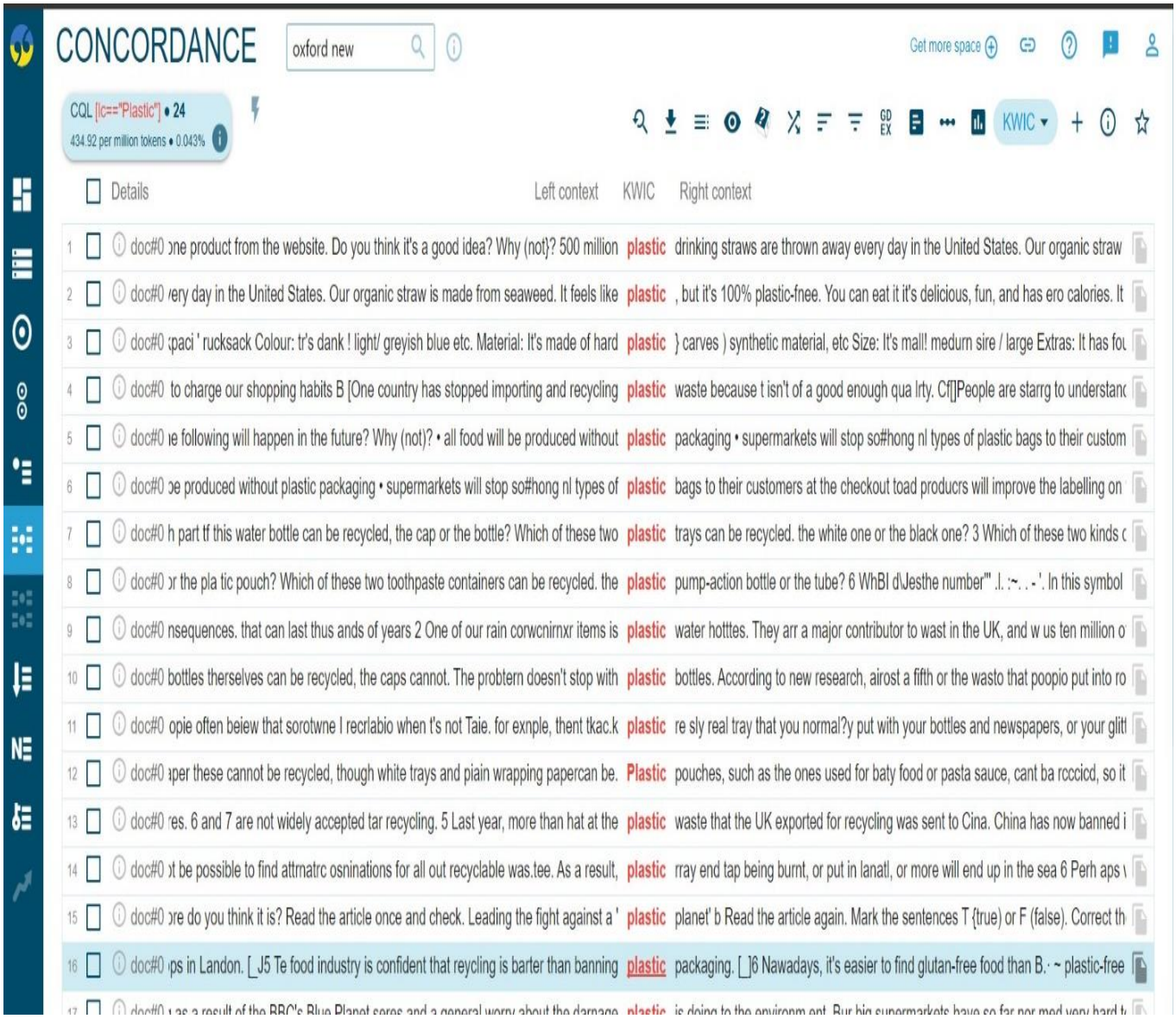


Figure 4.1 Concordance lines of "plastic" in *English File*

The second most frequent word in green vocabulary, "water", occurs 17 times, amounting to 15.04% of the total green vocabulary related to green practices, while the third and fourth most frequently occurring words in *English File*'s green vocabulary are "waste" and "recycle", emerging 14 and 13 times respectively, amounting respectively to 12.39% and 11.50% of the total green related words recognized in this textbook.

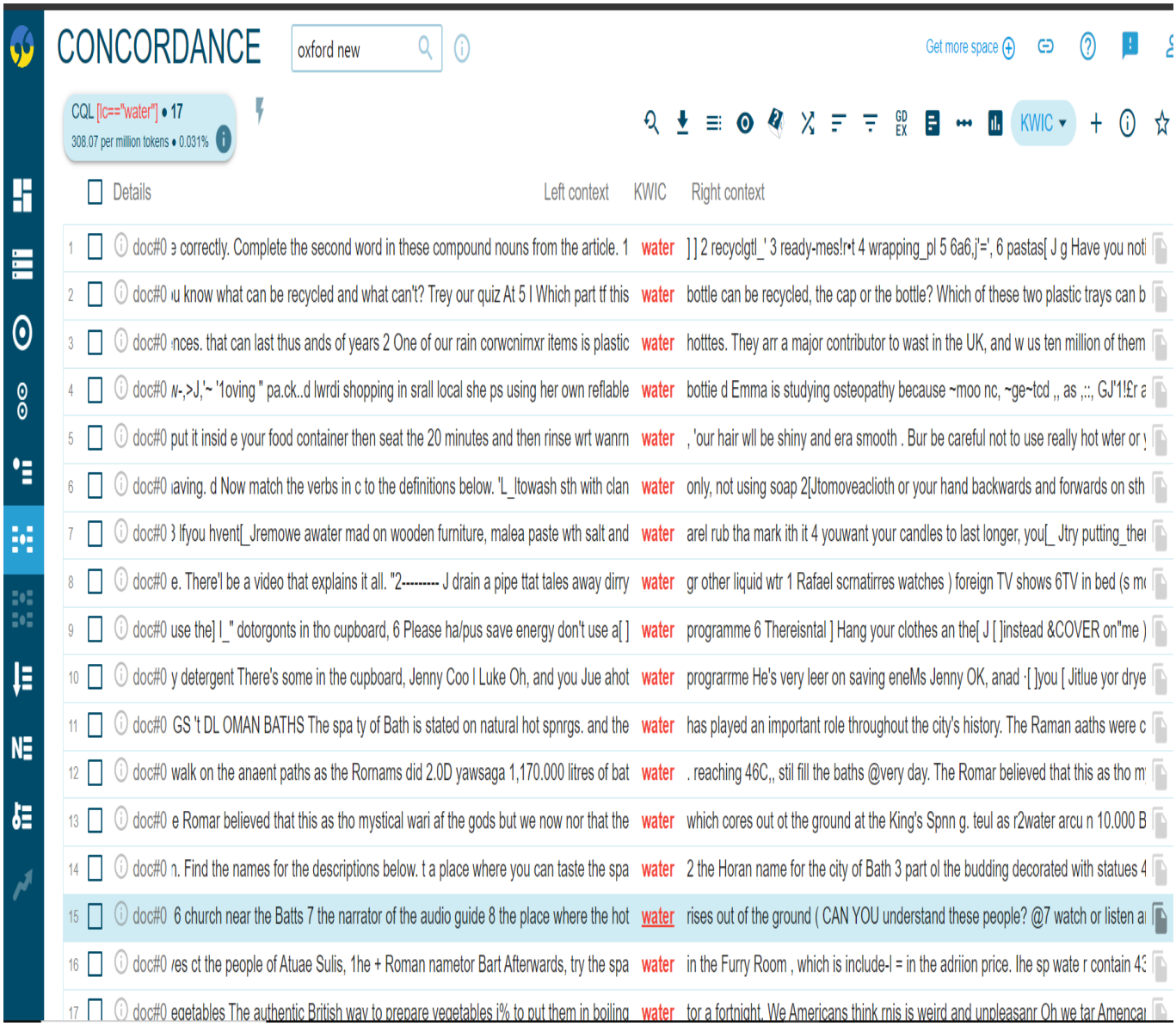


Figure 4.2 Concordance lines of "water" in *English File*

This frequency reflects an important focus on an essential element of life, suggesting its significance in the educational context of the textbook. An analysis of the concordance lines where the word "water" appears shows various thematic areas in which this natural element is discussed mainly as a natural resource, explicitly ecological significance of natural water for whole ecosystem, but at the same time, also in other contexts, such as related to daily life, sustainability and history.

The most important context in which "water" is discussed is as a natural resource. The concordance lines related to water in *English File* indicate that "water is an important natural resource" and it also show that water has been mentioned in relation with ecosystem and green practices. The principal focus aligns with bigger educational purposes, highlighting the significance of ecological

awareness and sustainable utilization of natural resources. The analysis of results shows that the word "water" is projected as an essential element for ecosystems and their survival. The textbook utilizes descriptive and explanatory language to shed light on the importance of water in supporting life and protecting diverse ecosystems. This approach plays an important role and serves to educate learners about the vital role of water in ecosystems and the need to save it for future generations. For instance, references to water in natural contexts, like the context of "hot springs" or "the spa at Bath" reflects water's association to natural phenomena and its role in cultural and historical perspectives. These discussions include descriptions of how water emerges from natural springs, its historical importance in bathing practices, and its continuing cultural significance. By making these references, the textbook connects learners' understanding of water to both ecological and historical knowledge.

Another important context in which "water" appears in the textbook is in connection to everyday life activities and practical uses. The concordance lines reveal that "water" is sometimes mentioned in daily chores, such as "rinsing with water", "using hot water", or "draining water from a pipe". The textbook also uses instructional language, guiding students on how to utilize water effectively and safely in different circumstances and situations. The utilization of water in these contexts is sometimes coupled with other activities like cleaning, cooking or maintaining hygiene, projecting its significant role in daily life. This practical focus on water emphasizes its significance in learners' life, and encourages them to think critically about their own water usage and the more implications of how water is managed, utilized and well-maintained in society.

The textbook also utilizes "water" in cultural and historical perspectives, as observed in references to Bath, which is well-known for its Roman baths and hot springs. These references not only shed light on the historical importance of water as a natural resource, but also on its role in shaping cultural practices and societal progress and development and it is very important to take care of our ecosystem and environment by preserving natural resources. The textbook employs both deep and narrative language to define how ancient civilizations valued and used water, drawing connections between past and present supportable practices. By discussing water in these contexts, the textbook provides students with a broader understanding of how water has influenced human history and culture. It also stresses the need to preserve water reserves, not only for their environmental value but also for their cultural and historical significance. On the whole, *English File's* discussion of "water" serves to promote ecological awareness and conservation. By shedding light on water's role as a natural reservoir and element, its practical uses in everyday life, and its cultural importance, the book boosts learners to grow a multifaceted understanding of this natural resource. By integrating water into various thematic

areas, *English File* emphasizes its significance not only in the natural world but also in human history and daily life, thus encouraging students to develop a full understanding of water and its importance.

In the textbook *English File*, the representation and contextualization of the term "waste" are critically scrutinized to explain the complex nature of waste management. This analysis spans educational, global, and perceptual aspects, offering a complete view of how "waste" is addressed in an educational setting. The term "waste" in *English File* largely refers to food waste in department stores and supermarkets. This focus on food waste is predominantly relevant given the significant amounts of eatable goods that are discarded daily. By highlighting this issue, the textbook aims to increase mindfulness among students about the suggestions of food waste, inspiring them to adopt more sustainable consumption practices. Moreover, the concordance of this lemma (waste as a noun and as a verb) extends the discussion to the global effects of water and food waste. It presents a wider perspective, connecting local waste issues to global environmental and societal challenges. For example, the wastage of water resources is not merely a local concern but a global crisis, contributing to water scarcity and ecological damage worldwide. By integrating these global effects, the textbook fosters a sense of interconnectedness and responsibility among students. Additionally, the textbook addresses problems related to plastic waste and recycling initiatives. The discussion incorporates the environmental threats posed by plastic waste and the obligation for effective recycling practices. This focus on plastic waste is crucial, given its long-lasting impact on ecosystems and human health. The textbook's approach intends to educate students about the importance of recycling and the role individuals, so therefore students as well, can play in mitigating plastic pollution. The textbook employs various collocations to frame the discussion on waste, each playing a specific purpose in enhancing students' understanding of food waste. This term is used to describe the waste of food in different contexts, such as supermarkets, restaurants, and households. By highlighting food waste, the textbook stresses the need for better food management practices and the ethical implications of wasting food while millions face hunger globally. The expression "plastic waste" is used to refer to the removal of plastic materials and the urgent need for proper recycling measures. The textbook discusses the prevalent problem of plastic pollution, advising students to consider their feeding patterns and the importance of reducing plastic use. By giving data on total food waste, the textbook aims to make the problem more concrete and pressing for students. The expression "water waste" highlights the wastage of water resources and the environmental damage it causes. The textbook discusses the critical importance of conserving water, framing it as a finite and valuable resource that requires careful management. The expression "zero waste" is also used, as a classifying noun premodifier (e.g. "zero waste shop"), to describe initiatives aiming to eliminate waste

production. The “zero waste” concept is introduced to inspire students to aspire towards minimal waste in their daily lives, promoting sustainability and environmental stewardship.

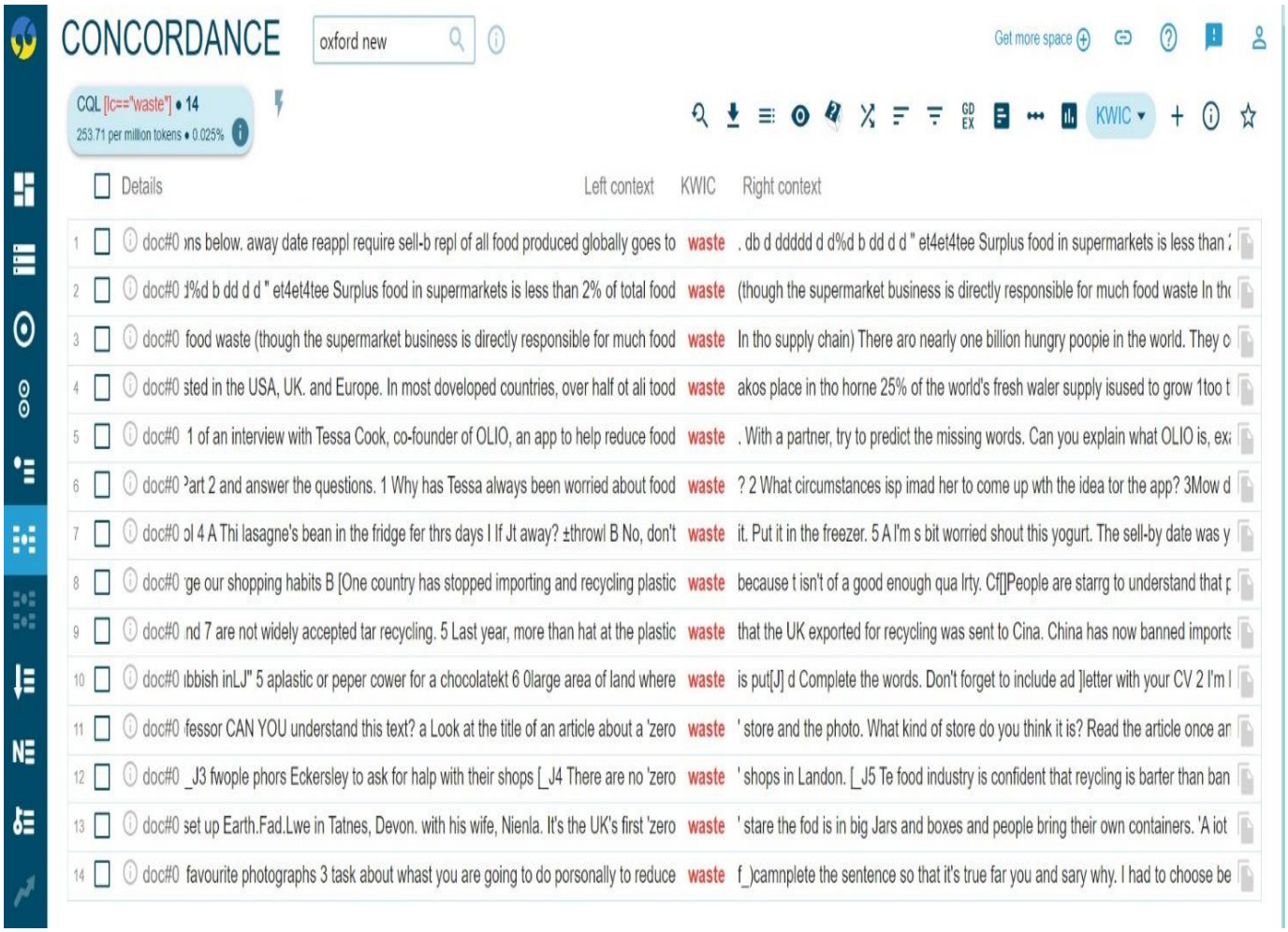


Figure 4.3 Concordance lines of “waste in *English File*

The textbook *English File* includes activities such as tests and articles about recycling, intended at educating readers about maintainable practices. These activities are designed to make learning about recycling appealing and interactive, thereby supporting the importance of recycling in achieving environmental sustainability. By discussing the export of waste for recycling, the textbook sheds light on the global nature of recycling efforts. It raises awareness about the monetary or economic and environmental implications of exporting waste, including the benefits of utilizing more efficient recycling systems abroad and the potential ethical alarms regarding waste management practices in different countries. The mention of the recycling symbol and public misperception about the meaning of various symbols used in recycling and waste collection points out a critical issue in recycling education. Many people are ambiguous about what materials are recyclable, which can lead to inappropriate recycling practices. The textbook intends to clarify these reservations by providing clear

examples and explanations, thus endorsing better recycling habits among readers. The predominant theme of recycling in the textbook is its impact on the environment. By stressing the importance of recycling in reducing waste and saving resources, the text endorses readers to adopt more environmentally friendly practices. It also discusses the challenges and restrictions of current recycling systems, urging readers to consider both the benefits and the intricacies of recycling. The textbook uses the concepts of "recycle" and "recycling" to educate and inform readers about the importance of waste management and sustainability. To sum up, the comprehensive analysis of "recycle" and other forms of this lemma (noun+verb) in *English File* reveals a many-sided approach to waste education, encompassing educational, global, and perceptual aspects. By highlighting the local and global impacts of waste, and using specific collocations to frame the discussion, the textbook aims to educate environmentally conscious individuals. However, there is room for further improvement in engaging students practically and expanding the range of waste topics covered. This comprehensive approach can eventually contribute to more operative and sustainable waste management practices globally.

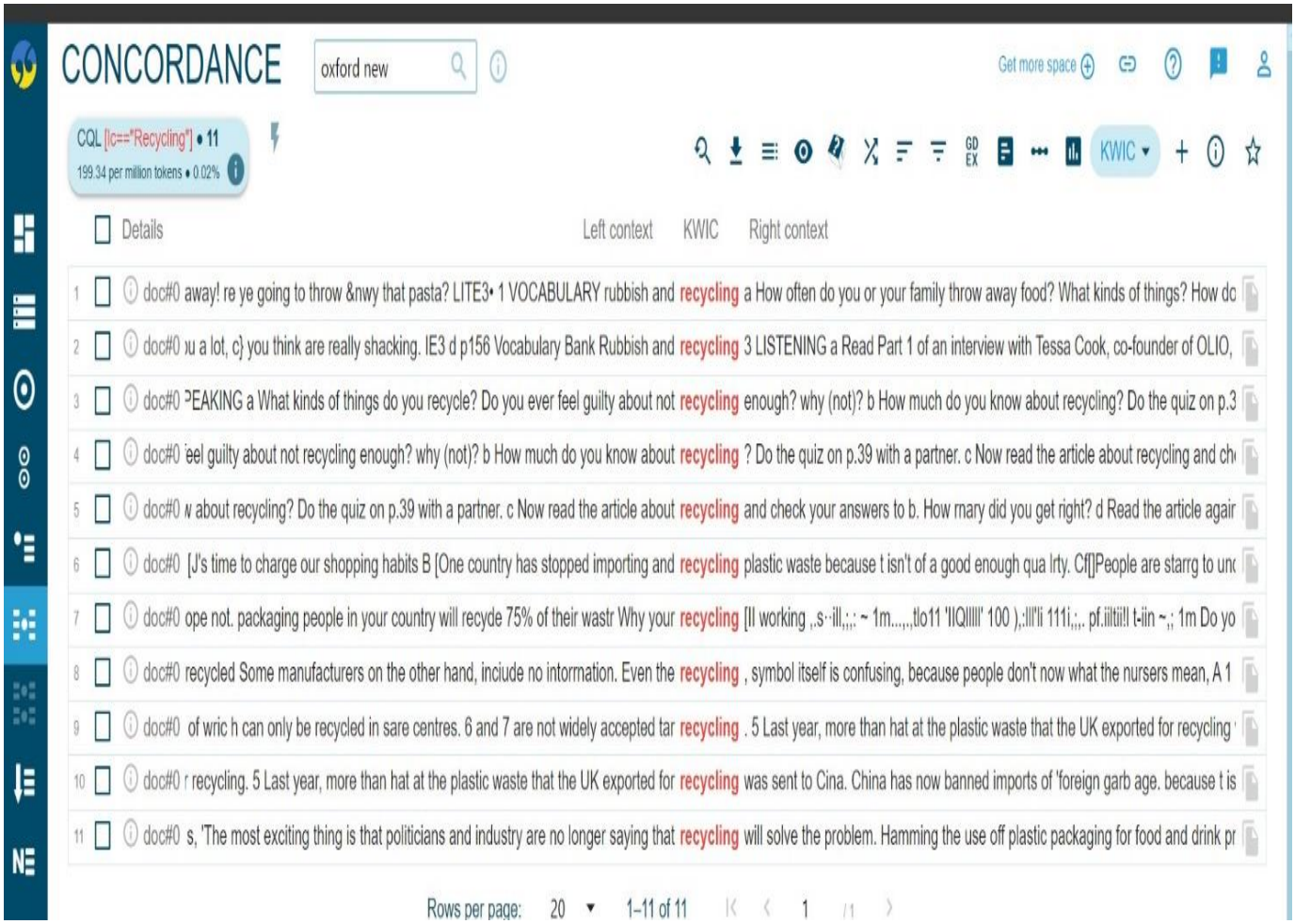


Figure 4.4 Concordance lines of "recycling" in *English File*

The next most frequently occurring word in *English File* is “packaging”, which occurs 10 times, amounting to a frequency of 8.85% of the total green related words acknowledged in this textbook. The analysis shows that the textbook addresses the issue of excessive packaging and its ecological effects. This focus is predominantly relevant in today’s consumer-driven society, where packaging waste contributes significantly to environmental pollution. By stressing the overemployment of packaging, the textbook intends to raise mindfulness among students about the need to reduce packaging usage and adopt better recycling practices. Furthermore, it also stresses the significance of future packaging and predictions about its elimination by departmental stores and shopkeepers. This forward-looking perspective encourages students to think about advanced solutions and sustainable practices that can mitigate the environmental impact of packaging. By presenting these predictions, the textbook raises a sense of urgency and accountability towards sustainable consumption. Some expressions, like “plastic packaging”, “excessive packaging” and “recyclable packaging”, stress the significance of utilizing materials that can be recycled effortlessly to reduce waste. The inclusion of packaging-related content in the *English File* textbook is both necessary and impactful. Given the ever-increasing environmental crisis, it is imperative that educational materials address the issue of packaging waste comprehensively. By doing so, the textbook not only educates students but also empowers them to take action towards a more sustainable future. This comprehensive approach is crucial in nurturing a generation that is knowledgeable and positive about packaging waste management and environmental conservation.

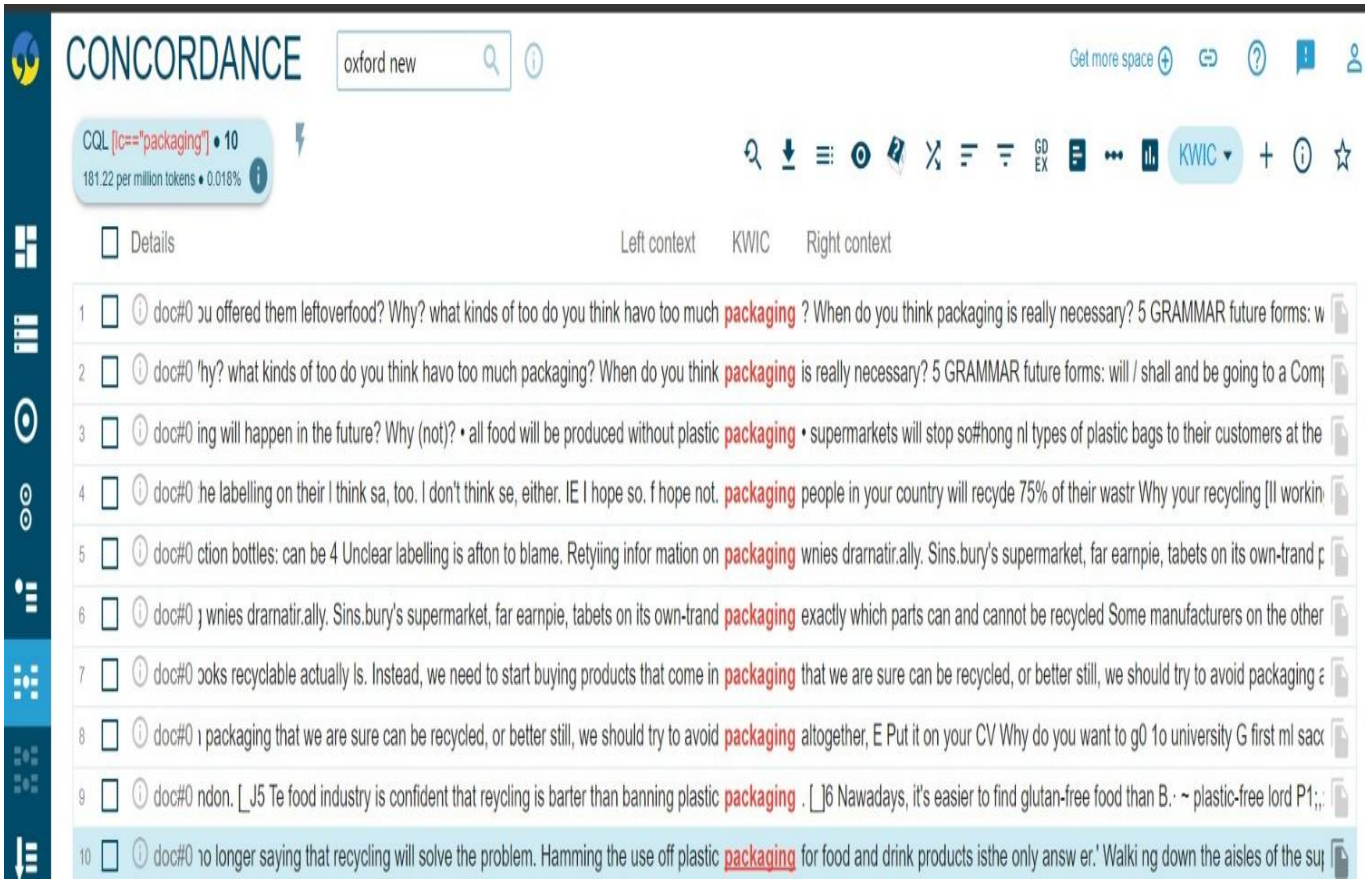


Figure 4.5 Concordance lines of "packaging" in *English File*

In the next textbook, *Empower*, the most frequently occurring word related to environmental issues is "water", occurring 40 times, or 28.16% of the total green related words acknowledged in this textbook. The term "water" is used in several contexts, reflecting its complex role in natural processes, human activities, and ecological concerns. Water is depicted as an essential element in various natural phenomena, such as the water cycle, and as a vital resource for human survival and activities. The textbook narrows down to explicit issues like water recycling, drinking water, and notably, water pollution. These contexts stress the central role of water in daily life and environmental sustainability. The emphasis on water pollution sheds light the rising environmental challenges linked with pollution and its impact on ecosystems and human health. The textbook employs several collocations and noun pre- and post-modifications to demonstrate different aspects of water usage and its implications such as "drink water" which denotes to the essential human activity of consuming water, and emphasizes the necessity of clean and safe drinking water for health and well-being. Then, the expression "water recycling", which mentions to the process of treating and reusing water, discusses water recycling as a sustainable practice that aids conserve this precious resource and reduce environmental impact. The most important issue discussed is "water pollution", which highlights the contamination of water basins, affecting all living organisms. The discussion around water pollution serves to educate students about

the sources, consequences, and mitigation strategies of water contamination, underlining its critical influence on the environment. The textbook emphasizes water's essential role in ecosystems, the environment, and human life. By highlighting the significance of clean water and sustainable practices, the content endorses an understanding of water preservation as a critical environmental priority. The textbook also uses euphemism to convey critical environmental messages. For instance, the sentence "water pollution is worse than air pollution" slightly points to human activities as the primary cause of water contamination, without overtly specifying that the source of this pollution is human. This euphemistic approach helps to highlight the underlying issue of human influence on the environment while keeping a focus on educational and positive discourse. While the textbook emphasizes the positive aspects of water, such as its necessity and the benefits of recycling, it does not shy away from addressing the negative impacts of water pollution. This balanced discourse is indispensable in providing students with a truthful understanding of water-related issues and preparing them to engage in sustainable practices.

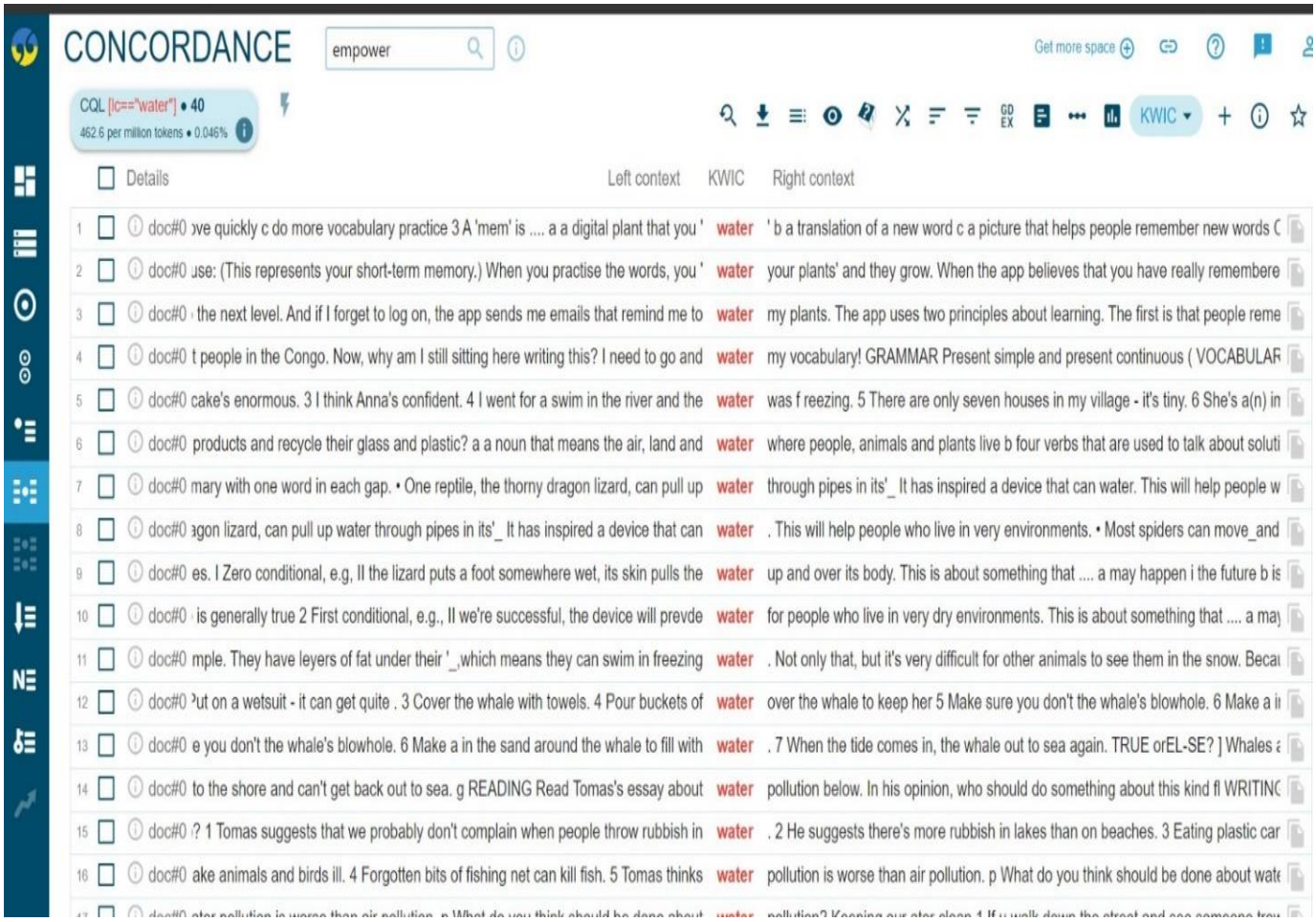


Figure 4.6 Concordance lines of "water" in *Empower*

The second most frequently occurring word in *Empower* is “pollution” (occurring 18 times), amounting to 12.6% of the total green related words recognized in this textbook, and it is pivotal in discussing environmental issues, representing a link of problems and solutions within ecological discourse. The word “pollution” symbolises both constructive and destructive elements of green discourse. The textbook sheds light on various types of pollution, such as water and air pollution, listing the distinct problems each type poses. This dual contextualization, general and specific, serves to broaden the reader’s understanding of pollution’s universal impact while also zooming in on the specific challenges it presents. The phrase “air pollution” shows the worsening of air quality due to pollutants, stressing the urgent need to talk the sources of air contamination. The collocation “water pollution” refers to polluted water basins, drawing attention to the critical issue of water safety and the health threats posed by polluted water, whereas “land pollution” denotes the contamination of earthly areas and emphasizes the prevalent nature of pollution disturbing soils and ecosystems. The textbook also uses the expression “pollution problem”, a more general phrase that summarizes the broad issue of pollution, calling for comprehensive strategies to tackle environmental degradation. In addition, the expression “preventing pollution” indicates practical measures and policies aimed at mitigating pollution, stressing the importance of defensive action in environmental conservation. The textbook’s statement that “pollution will continue to get worse in big cities” slightly uses euphemism to address the human causes of pollution. This indirect approach highlights the anthropogenic nature of pollution without overtly assigning blame, making the message more pleasant while still conveying the severity of the issue. This use of euphemism is a strategic rhetorical device that eases engagement with the topic, actually encouraging more people to admit and address the problem. The word “pollution” in *Empower* captures both the destructive impact of environmental degradation and the constructive potential of green practices. Its usage in various contexts, coupled with significant collocations and noun modifications, offers a inclusive understanding of the issue. The representation of green content boosts practical measures, while the deliberate use of euphemism fosters broader acceptance and engagement. Therefore, “pollution” serves as a critical term that bridges awareness and action, explaining the complex changing aspects of environmental discourse.

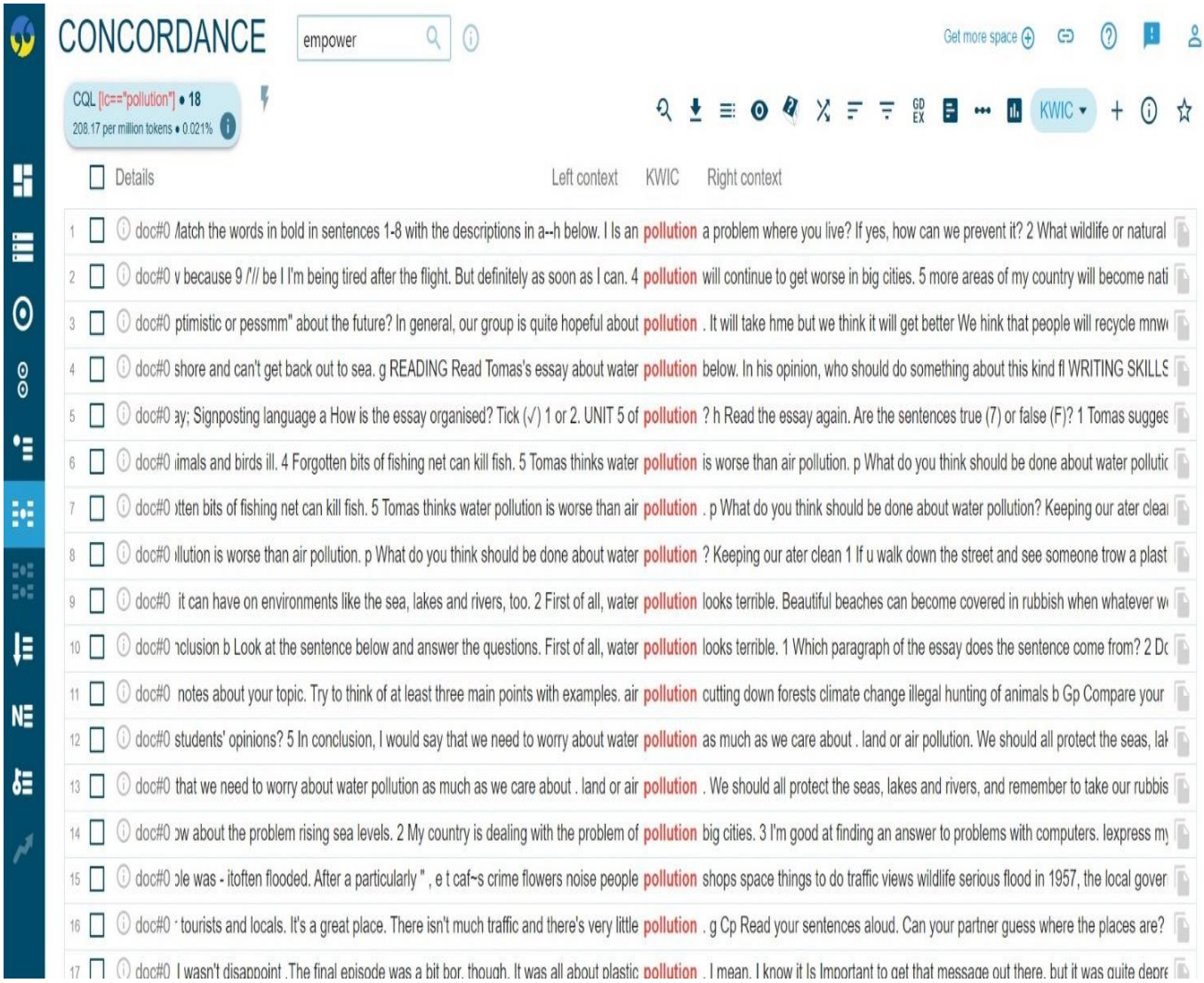


Figure 4.7 Concordance lines of "pollution" in *Empower*

The third most frequently occurring word (12 occurrences) is "environment", amounting to 8.4% of the total green related words identified in this textbook, a keystone in discussions about sustainability, climate change, and human influence on the natural world. In *Empower*, "environment" arises as a multi-layered concept used to educate and raise mindfulness about various ecological issues. The textbook highlights several key points, such as human activities and nature, emphasizing how different human activities, like industrialization, deforestation, and pollution, disturb the natural environment. In addition, the textbook uses the word "environment" to spread awareness about persistent environmental issues like pollution, deforestation, and loss of biodiversity. Moreover, the textbook also discourses the critical problem of climate change, stressing its damaging effects on the environment. This includes rising global temperatures, melting ice caps, and increasing frequency of life-threatening weather events. Furthermore, the expression "natural environment" refers to the untouched, original aspects of nature, including ecosystems, wildlife habitats, and natural resources, stressing the importance of protecting

these areas. The expression “environmental issue” brings attention to many problems distressing the environment, such as air and water pollution, climate change, and habitat destruction. The book stresses the importance of safeguarding natural habitats and ecosystems from human-induced harm, e.g. by encouraging sustainable practices, such as recycling, conservation, and the use of renewable energy sources, to mitigate environmental degradation. By concentrating on environmental issues, *Empower* attempts to educate readers about the importance of the natural world and the inevitability to protect it. The reassurance of sustainable actions reflects a positive stance towards environmental conservation. The discussion also acknowledges the hostile effects of human doings on the environment, emphasizing the need for significant behavioural changes. The emphasis on climate change highlights a critical, ongoing threat that demands urgent attention.

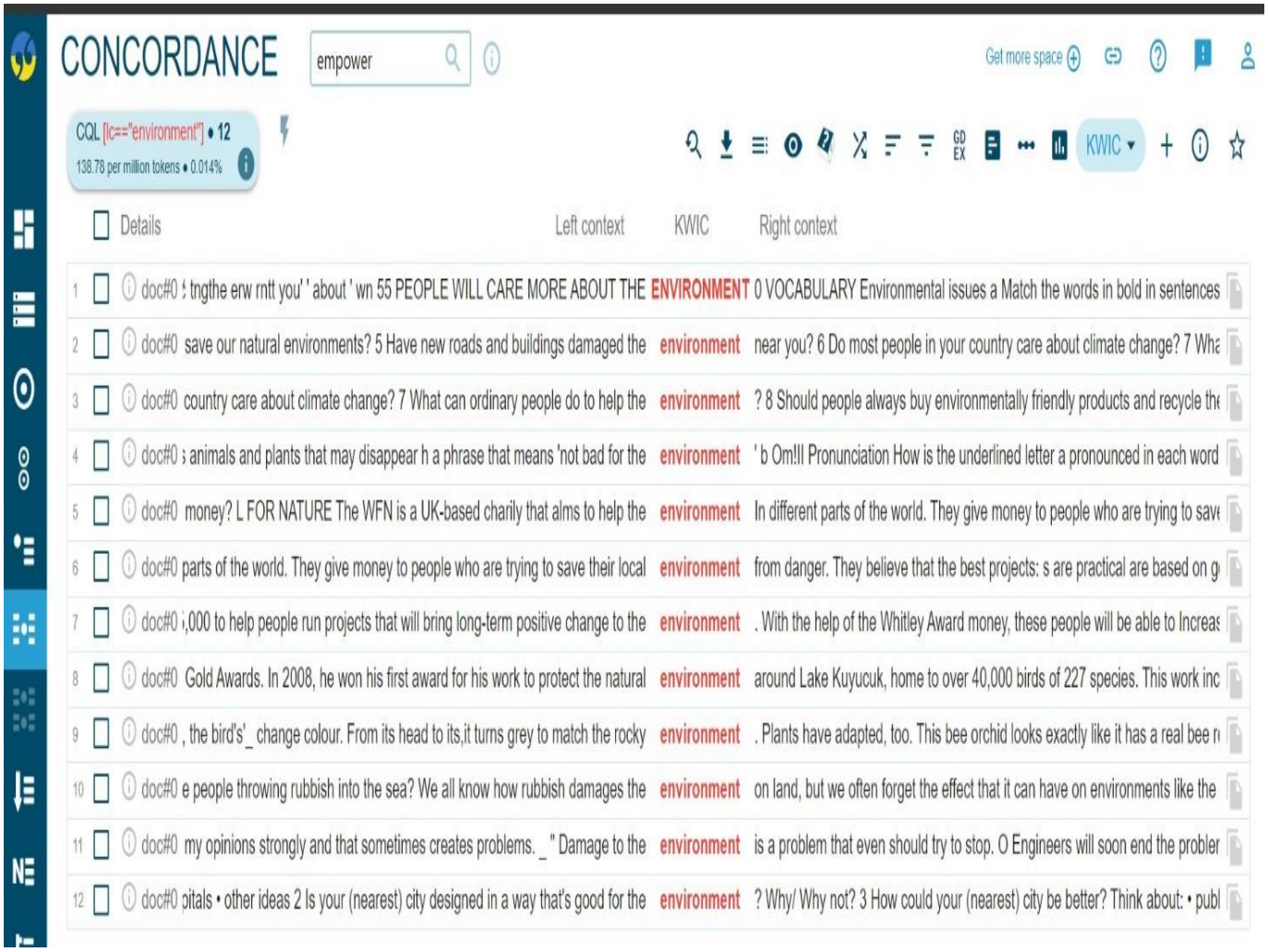


Figure 4.8 Concordance lines of “environment” in *Empower*

In the third textbook, *Speakout*, the most frequently occurring green words are “water”, “environment”, “recycle”, “rubbish”, “plastic”, “waste” and finally “pollution”.

The content analysis of the word “water” shows that it appears 27 times in *Speakout*, reflecting the highest frequency among all green words and constituting 15.08% of the total green words recognized in this textbook. In the textbook *Speakout*, the word “water” is utilized in a multidimensional manner, reflecting its significance in many contexts, in a similar way to what happens in *Empower*, where it appeared 40 times, the highest as compared to *English File* and *Speakout*, where it appeared 17 and 27 times respectively. The textbook stresses the role of water in the ecosystem by shedding light on natural issues and water-related activities, such as fishing. This discourse positions water not only as a resource but also as a vital constituent of natural habitats and ecosystems. It emphasizes the interconnectedness of water with biodiversity and ecological balance, endorsing an understanding of environmental stewardship. By discussing activities like fishing, the text implicitly conveys the dependence of human and wildlife communities on water bodies. This outlook is educational, pointing to develop a sense of obligation towards preserving water resources. The textbook uses descriptive language to paint vivid pictures of these interactions, helping readers appreciate the complexities of water ecosystems, revealing it as a critical element in survival scenarios, and stressing the essential nature of water for human sustenance and well-being. The textbook also discusses situations where access to clean and safe water is dominant for survival, thereby raising awareness about the worldwide water crisis and the requirement for clean water availability. In this context, the textbook employs descriptive and insightful functions to explain the challenges faced by individuals and communities in water-scarce regions. By bringing these survival circumstances to light, the textbook aims to persuade compassion and a positive attitude towards water conservation and support for affected populations. In the textbook, expressions such as “fish out of water,” “leisure activities,” “water and electricity,” “warm water,” “drinking water,” and “running water” provide a diverse linguistic framework that enriches the text’s narrative. Each collocation serves a distinct purpose, illustrating different aspects of water’s role in daily life and leisure. For instance, the idiomatic expression “fish out of water” is used metaphorically to describe a situation where someone feels out of place, while leisure activities, such as swimming or boating, highlight the recreational value of water. The expression “water and electricity” touches upon safety considerations, emphasizing the dangers of combining the two. “Warm water” and “drinking water” reflect everyday uses, reinforcing the idea that water is indispensable in various contexts. The textbook argues that water is an essential natural resource, indispensable for survival, ecological balance, and daily life. This argument is supported by discussions on survival circumstances, where access to clean water is depicted as a central human right. The text effectively highlights the discrepancy in water

availability across different regions, emphasizing the need for impartial distribution and access to safe water. This multidimensional approach is both educational and persuasive, encouraging readers to value and protect this essential resource.

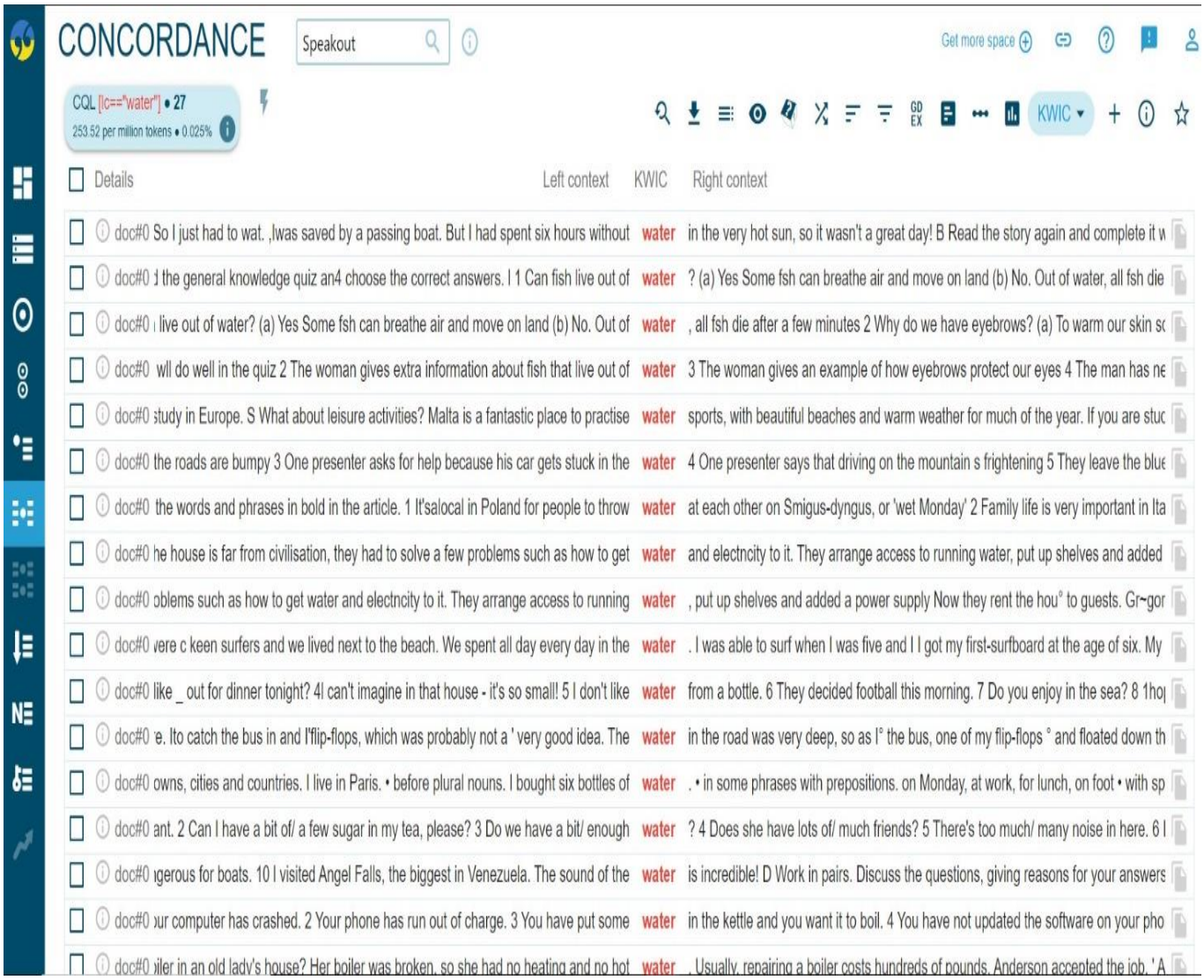


Figure 4.9 Concordance lines of "water" in *Speakout*

The second most frequent environment-related word in *Speakout* is "environment", with 23 occurrences, or 12.84% of the whole green content in the textbook. This word will be discussed along with "pollution", as the environment is consistently represented as being affected by pollution, highlighting the damaging effects of various pollutants on the environment. Discussions typically involve air, water, and soil pollution and the subsequent impact on human health, wildlife, and natural ecosystems. Pollution is often framed as a consequence of industrialization, urbanization, and unmanageable practices. The discourse revolves around sources of pollution, such as factories, automobiles, and agricultural activities. The textbook also reflects the global nature of pollution and its far-reaching

impacts, emphasizing the need for international cooperation to address these issues. Involvement plays a crucial role in driving social change towards more sustainable practices and policies, including efforts by individuals and organizations to promote environmental protection through protests, awareness campaigns, and policy advocacy. The discourse around ecological activism often emphasizes the power of collective action and grassroots movements: activists are actually portrayed as crucial agents of change, pushing for stricter environmental regulations, conservation efforts, and sustainable development. The narrative highlights success stories, such as the banning of harmful substances (e.g. DDT) and the establishment of protected areas. Environmental education is vital in raising awareness and understanding of environmental issues among students, and it aims to equip future generations with the knowledge and skills needed to tackle environmental challenges. The discourse here emphasizes the importance of integrating environmental education into school curricula at all levels. It discusses pedagogical strategies, such as experiential learning and interdisciplinary approaches, to make environmental education more effective. There is a focus on fostering critical thinking, problem-solving skills, and a sense of stewardship among students, underscoring the pressing need to address pollution to safeguard the environment and public health. In summary, in *Speakout*, the word "environment" is used to engage with multiple dimensions of environmental issues, from pollution and activism to education and practical initiatives. The broad and argumentative analysis reveals a complete understanding of the importance of environmental protection and the various strategies needed to achieve it.

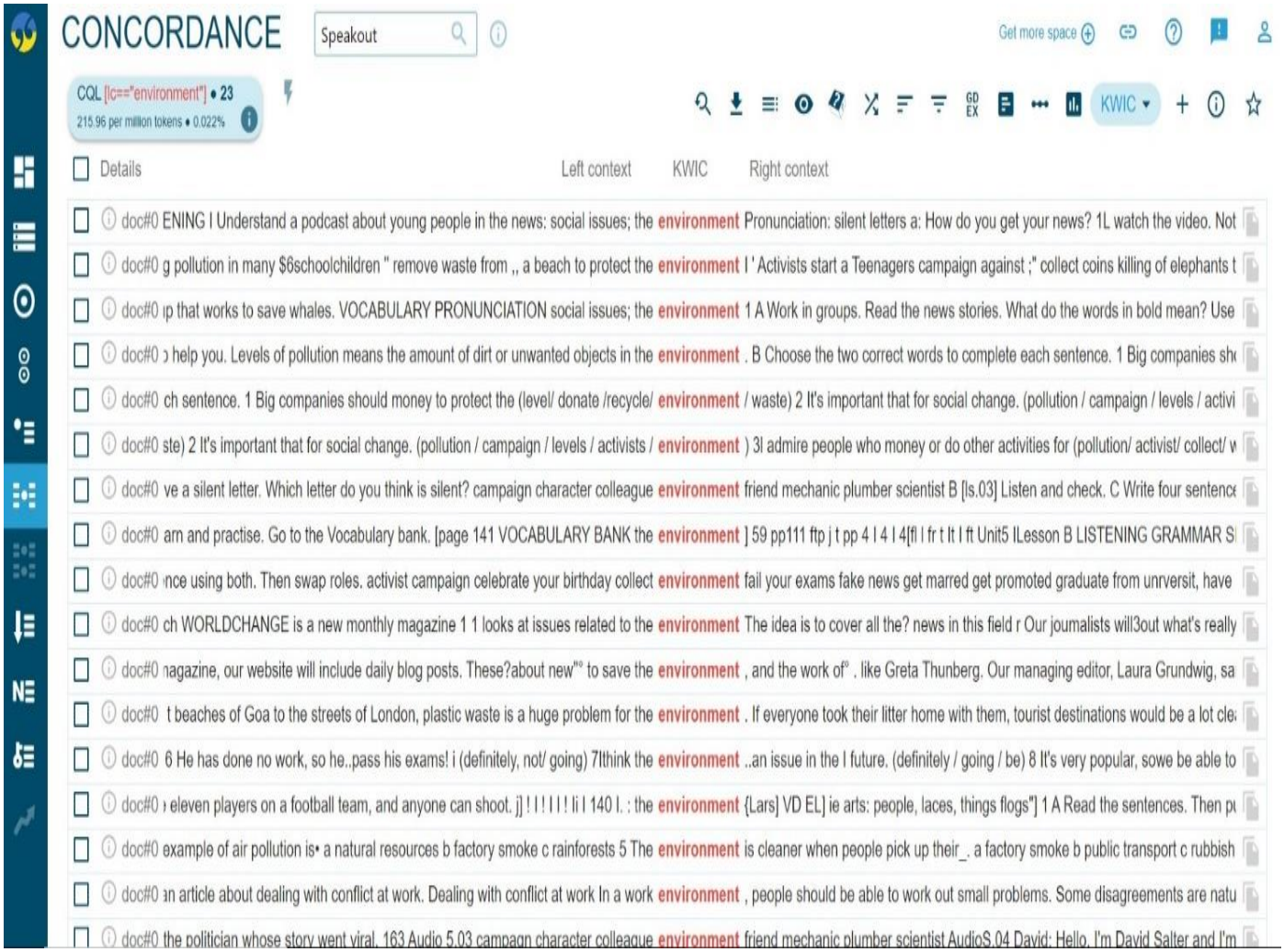


Figure 4.10 Concordance lines of "environment" in *Speakout*

The next most frequent word belonging to the "green" vocabulary in *Speakout* is "recycling" (including other lemma forms, like "recycle") which occurs 18 times, with 10.05% of the whole green content in the textbook. Somehow, recycling cannot be separated from waste, rubbish and pollution (plastic), so these words will be analysed together instead of discussing them separately. The textbook discusses how recycling plays a crucial role in reducing waste, conserving natural resources, and minimizing environmental pollution. It emphasizes the environmental benefits of recycling, such as reducing landfill use and decreasing greenhouse gas emissions. Recycling is presented as a key strategy for sustainable waste management. The discourse underscores the importance of recycling in mitigating the adverse effects of human activities on the environment. It often highlights success stories and data showing the positive impacts of recycling programs. Various campaigns and initiatives aimed at promoting recycling are highlighted. These efforts may include government policies, community programs, and corporate responsibility initiatives. The narrative details the strategies used to encourage recycling, such as public awareness campaigns, incentives for recycling, and educational programs. It also discusses the role of

different stakeholders, including individuals, communities, businesses, and governments, in promoting and implementing recycling practices. The expression “recycling project” describes specific initiatives or programs designed to facilitate recycling efforts. “Recycling centre” refers to facilities where materials are collected, sorted, and processed for recycling. “Recycling waste” highlights the process of converting waste materials into new, usable products. Recycling is critical for reducing waste and conserving natural resources, thereby protecting the environment. The results also indicate that recycling reduces the amount of waste sent to landfills, conserves natural resources like timber and water, and decreases pollution by cutting down on the need for raw material extraction.

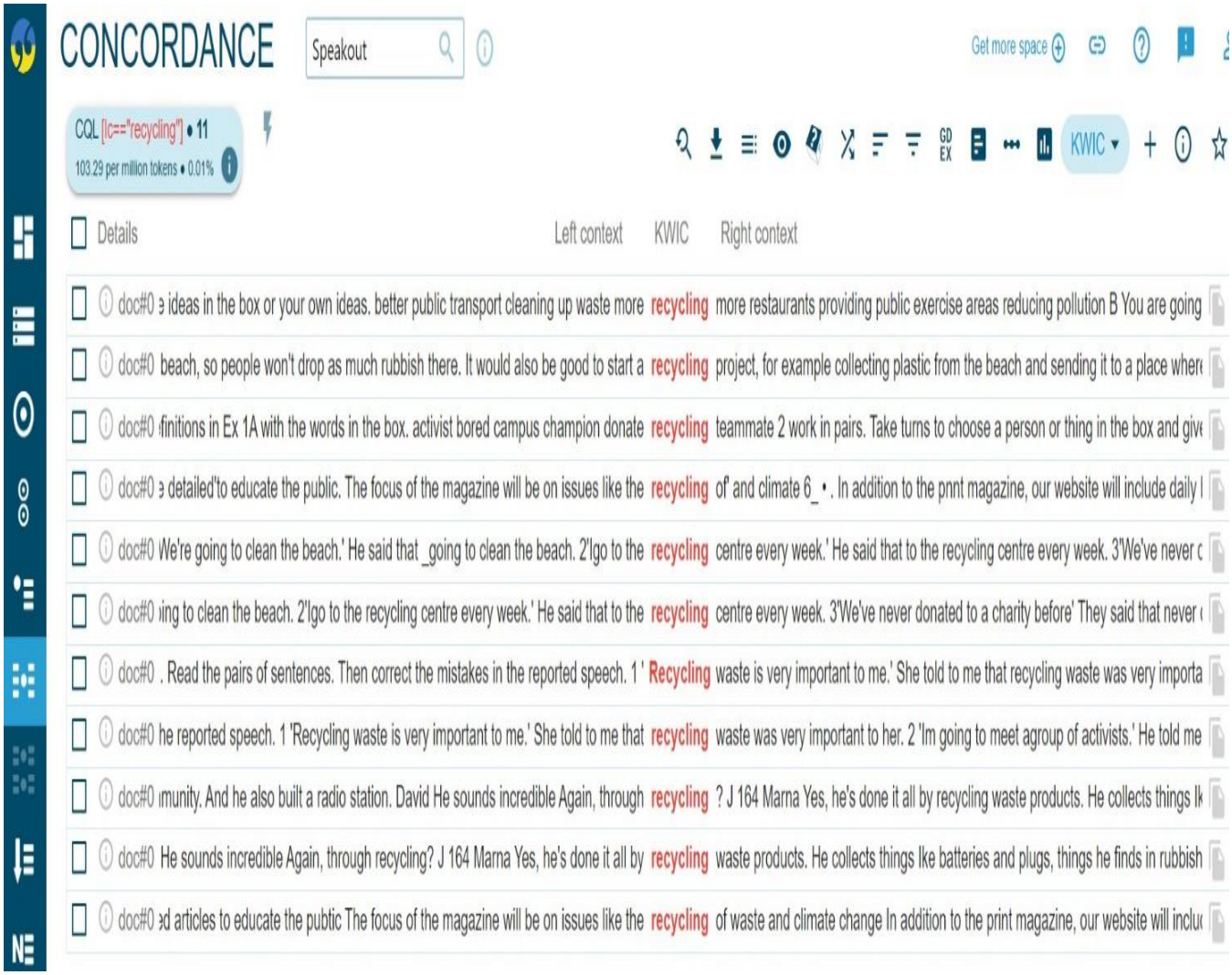


Figure 4.11 Concordance lines of “recycling” in *Speakout*

Figure 4.12 Concordance lines of "recycle" in *Speakout*

After this analysis of the most frequent "green" words in context, the Chi-square test will be conducted in order to test the hypothesis if there is a significant difference between actual or observed and expected frequencies. See table below that illustrates the expected frequencies.

green content	*English File*	*Empower*	*Speakout*	Grand total
Atmosphere	2.89	3.63	4.58	11
Climate	3.69	4.63	5.84	14
Environment, Environmental	9.72	12.21	15.39	37
Forest	2.89	3.63	4.58	11
Green	6.30	7.92	9.99	24
Nature	5.52	6.93	8.74	21
Pollution	8.41	10.56	13.32	32
Plastic	12.35	15.52	19.56	47
Packaging	2.63	3.31	4.32	10
Rubbish	6.67	10.89	14.26	33

Recycle, Recycling	9.20	11.55	5.62	35
Tree, Trees	2.63	3.31	4.32	10
Water	22.06	27.74	28.96	84
Waste (N+V)	8.67	10.89	14.26	33
Weather	7.35	9.24	12.1	28
Grand Total	113	142	179	430

Table 4-15 Expected frequency of words representing green content in textbooks

To calculate the overall chi-square, the present study summed up all the individual chi-square values of all three textbooks. Table 4-15 shows the overall chi-square value of words related to green discourse: thus, in order to determine the *p* value for the chi-square test, the present study used chi-square distribution in Excel with the degree of freedom (*d f*) calculated as follows:

$$d\,f = (r-1)\,(c-1)$$

r= number of rows (categories or words)
c= number of columns (*English file*, *Empower*, *Speakout*)

green content	*English File*	*Empower*	*Speakout*	Grand total
Atmosphere	2.89	3.63	2.54	9.06
Climate	1.96	0.09	1.71	3.76
Environment, Environmental	4.64	0.00	3.74	8.38
Forest	2.89	3.63	2.54	9.06
Green	5.13	0.47	1.59	7.19
Nature	5.52	0.12	4.53	10.17
Pollution	4.88	5.24	0.13	10.25
Plastic	10.79	2.74	1.58	15.11
Packaging	20.58	3.31	4.32	28.21
Rubbish	0.26	0.33	0.23	0.82
*Recycle, Recycling	1.57	4.93	0.82	7.32
Trees, Tree	2.20	0.85	0.40	3.45
Water	1.16	5.45	0.13	6.74
Waste (N+V)	3.32	5.72	0.23	9.27
Weather	1.53	0.06	0.30	1.89
Grand Total				130.68

Table 4-16 Chi Square values of all words representing green content in textbooks

*Note*For Recycle & Recycling, the chi-square has been obtained separately but the two forms of the lemma have been analyzed as one word in the analysis.*

The above table shows words related to green content, with 15 categories (words in rows) and three columns (representing three textbooks). Therefore, $r = 15$ and $c = 3$, hence the degrees of freedom $df = (15-1) \times (3-1) = 14 \times 2 = 28$. For the critical value, or *CV*, the researcher used Excel, by inserting the formula *Critical value (CV)* = CHISQ.INV.RT (probability, deg_freedom).

Chi-square distribution table for $df = 28$ at $\alpha = 0.05$ is approximately 41.337

where probability or significance level is 0.05 and degree of freedom is 28. For $\alpha = 0.05$ (which is common hypothesis testing) and $df = 28$:The critical value from the

Critical value (CV) = (0.05,28)

= 41.337

To determine whether the observed Chi-square value is significant, we compared it to a critical value from the Chi-square distribution table. The critical value depends on the degrees of freedom and the significance level (α).

Test statistics	
Textbooks	*English File* *Empower* *Speakout*
Chi-Square	130.68
df	28
p-value	.00

Table 4-17 Chi-Square test for the ecolinguistic words in textbooks

Table 4-17 indicate $\chi^2 = 130.68$, which is greater than critical value *CV* = 41.337 and *p* value is less than 0.05. Therefore, it is concluded that the first null hypothesis is rejected, as there is significant difference between expected and observed frequency regarding the words related to ecolinguistics in the Italian high school English textbooks *English File, Empower* and *Speakout* as the results of Chi-square show that most of the content and chapters of all three textbooks have not included green content in textbooks. This means that the first null hypothesis of no difference can be rejected at the *0.05* level of significance and thus, we reject the null hypothesis.

The second research question was if there is significant difference between expected and observed frequencies regarding sentences related to ecolinguistics in the Italian high school English textbooks *English File, Empower* and *Speakout*. Table 4-18 indicates total sentences in three textbooks.

Textbook	Total number of sentences in the book
English File	1,751
Empower	3,195
Speakout	4,689

Table 4-18 Total sentences in textbooks

sentences representing green content related to green words	*English File*		*Empower*		*Speakout*		Grand total
Atmosphere	1	1.47 %	4	5.97%	1	1.28%	6
Climate	1	1.47%	4	5.97%	4	5.12%	9
Environment, Environmental	1	1.47%	9	13.43%	9	11.53%	19
Forest	0	0%	6	8.95%	2	2.56%	8
Green	2	2.94%	2	2.98%	3	3.84%	7
Nature	0	0	5	7.46%	4	5.12%	9
Pollution	1	1.47%	9	13.43%	6	7.69%	16
Plastic	21	30.88%	8	11.94%	7	8.97%	36
Packaging	5	7.35%	0	0%	0	0%	5
Rubbish	4	5.88%	5	7.46%	7	8.97%	16
Recycle, Recycling	6	8.82%	3	4.47%	11	14.10%	20
Trees, Tree	1	1.47%	3	4.47%	1	1.28%	5
Water	14	20.58%	7	10.44%	10	12.82%	31
Waste(N+V)	10	14.70%	1	1.49%	7	8.97%	18
Weather	1	1.47%	1	1.49%	6	7.69%	8
Grand Total	68	100%	67	100%	78	100%	213

Table 4-19 Total sentences related to green vocabulary

Words representing green content in sentences	*English File*	*Empower*	*Speakout*	Grand total
Atmosphere	1.92	1.89	2.19	6
Climate	2.87	2.83	3.29	9
Environment, Environmental	6.07	5.98	6.95	19
Forest	2.55	2.52	2.92	8
Green	2.23	2.2	2.56	7
Nature	2.87	2.83	3.29	9
Pollution	5.11	5.03	5.85	16
Plastic	11.49	11.32	13.18	36
Packaging	1.6	1.57	1.83	5
Rubbish	5.11	5.03	5.85	16
Recycle, Recycling	6.38	6.29	7.32	9
Trees, Tree	1.6	1.57	1.83	5
Water	9.9	9.75	11.35	17
Waste(N+V)	5.75	5.66	6.59	18
Weather	2.55	2.52	2.92	8
Grand Total	68	67	78	198

Table 4-20 Expected frequencies of the words in sentences

Table 4-20 above shows expected frequencies of the words in sentences that represent green content in textbooks . The researcher applied the formula of expected and observed frequencies in Excel to obtain the expected frequencies of all three textbooks. According to this table, the highest expected frequency is related to the word “plastic”, which has an overall frequency of 36 occurrences. The least expected frequencies are in sentences that contain the words “trees” and “packaging” (5 occurrences each).

In order to ascertain if there is significant relation between observed and expected frequencies of sentences representing green content words, the researcher conducted a chi-square test again.

green content	*English File*	*Empower*	*Speakout*	Grand total
Atmosphere	0.44	2.35	0.64	3.44
Climate	1.21	0.48	0.15	1.85
Environment, Environmental	4.23	1.52	0.60	6.36
Forest	2.55	4.80	0.28	7.64
Green	0.02	0.01	0.07	0.11
Nature	2.87	1.66	0.15	4.68
Pollution	3.30	3.13	0.00	6.44
Plastic	7.87	0.97	2.89	11.74
Packaging	7.22	1.57	1.83	10.62
Rubbish	0.24	0.00	0.22	0.46
Recycle, Recycling	0.02	1.72	1.85	3.59
Tree, Trees	0.22	1.30	0.37	1.90
Water	1.69	0.77	0.16	2.63
Waste	3.14	3.83	0.02	7.00
Weather	0.94	0.91	3.24	5.10
Grand Total				73.63

Table 4-21 Chi Square test values in all three textbooks representing green content in sentences

shows the overall chi-square value of the above table representing words related to green content in sentences indicates that it is 73.63. In order to determine the *p* value for the chi-square test, the present study used chi-square distribution in Excel with the degree of freedom calculated as follows:

$$d\,f = (r-1)\,(c-1)$$

r= number of rows (words representing green content in sentences)

c= number of columns (*English file*, *Empower*, *Speakout*).

Table 34 representing words related to green content has 15 categories (words in rows) and three columns (representing three textbooks) therefore,

$r = 16$ and $c = 3$ so, the degrees of freedom $d\,f = (15-1)\,(3-1) = 14*2 = 28$.

For the critical value or *CV* the researcher used Excel by inserting the formula

Critical value (CV) = CHISQ.INV.RT (probability, deg_freedom)

To determine whether the observed Chi-square value is significant, we compared it to a critical value from the Chi-square distribution table. The critical value depends on the degrees of freedom and the significance level *(α).*

For α = 0.05 (which is common hypothesis testing) and *d f* =28, the critical value from the Chi-square distribution table for *d f =28* at α= 0.05 is approximately 41.337

where probability or significance level is 0.05 and degree of freedom is 28.

Critical value (CV) = (0.05,28)

= 41.337

The calculated Chi-square value 73.63 is much greater than the critical value 41.337**.**

Test statistics	
Textbooks	*English File* *Empower* *Speakout*
Chi-Square	73.63
d f	28
p-value	.00

Table 4-22 Chi square results of sentences

The chi-square results of table 4-22 indicates that χ^2 = 73.63, which is greater than critical value *CV* = 41.337 and *p* value is less than 0.05. Therefore, it is concluded that the second null hypothesis, according to which there is sufficient evidence to reject the second null hypothesis that there is there is no significant difference between expected and observed frequency, which means that the three textbooks have not presented enough educational content related to environmental issues, and thus the null hypothesis is rejected.

4.4. Summary of the chapter

The comprehensive analysis conducted in this chapter reveals a significant gap in the incorporation of green content within high school English textbooks. The study scrutinized the presence and frequency of ecologically related content in three widely used textbooks: *English File*, *Empower*, and *Speakout*. Using a mixture of qualitative and quantitative methods rooted in ecolinguistic theory, the research methodically dissected the ecolinguistic analysis of these three textbooks. The details of the three stories of Stibbe's ecolinguistic theory with regards to findings will be discussed

in Chapter 5. Despite the total word count, reaching 196,406 words across 9,635 sentences in the three textbooks, green content constituted a mere 0.2%. This minimal presence emphasizes the underrepresentation of ecological themes and recommends that current educational materials are not adequately addressing the critical issues of sustainability and environmental awareness. Ecosophy, or ecological philosophy, refers to a complete and integrative approach to understanding the relationship between humans and the natural world: it encompasses ethical, aesthetic, and practical dimensions of ecological thinking. In the context of the textbooks under examination, the ecosophy can be construed through the analysis of how lexical items related to environmental themes contribute to shaping an ecological consciousness among students. Use of adjectives like "sustainable," "green," "eco-friendly," and "renewable" helps in framing the discourse around positive environmental practices. These adjectives imbue the text with an underlying ethos that promotes appreciation and respect for the environment. Evaluative language plays a crucial role in creating vivid imagery and emotional engagement. For instance, describing a forest as "lush and vibrant" versus "degraded and barren" can evoke different emotional responses and attitudes toward conservation efforts. Symbolic language can elevate the importance of ecological balance and the dire consequences of neglecting environmental stewardship. For instance, referring to pollution as "poisoning our planet" can provoke a stronger reaction than merely stating that "pollution is harmful." The use of nominalized verbs like "recycling," "conservation," and "sustainability" shifts the focus away from the actual processes and objectifies them, thus making the discourse more objective, science-like and credible. This linguistic choice emphasizes the ongoing nature of environmental efforts and the need for continuous action. Action-oriented language encourages proactive behaviour. Expressions such as "take action," "make a difference," and "join the movement" can inspire students to engage in environmental initiatives and adopt sustainable practices in their daily lives. The presence of green content, even if minimal, lays the foundation for an ecosophy that integrates ecological thinking into educational discourse. By presenting environmental issues alongside traditional subjects, textbooks can promote a holistic understanding of the world. An ecosophical approach in education encourages critical thinking about human-nature relationships. It challenges students to question anthropocentric views and consider the broader environmental impacts of their actions. The next chapter is a discussion of these results with reference to Stibbe's three stories.

5 Discussion of the Findings

This chapter provides a qualitative discussion of the findings presented in Chapter 4, shedding light on the analysis of green content as found in three English textbooks (*English File*, *Empower*, *Speakout*) used in Italian high schools. The discussion is framed within Stibbe's ecolinguistic theory which has served as the theoretical foundation for developing a framework to investigate environmental discourse in the current dissertation specifically, Stibbe's three stories are metaphor, evaluation and erasure.

5.1 Types of stories

5.1.1Metaphor (What it is)

Drawing the notion from Lakoff & Johnson (1980), Stibbe (2015) views metaphor as a form of framing in which the source frame originates from a concretely possible sphere of existence that is different but bears some analogy with the target domain in the speakers' minds. For example, argument is war, love is a journey are classic metaphors that frame abstract ideas in perspective of more concrete experiences. In the same way, the earth is our home frames the planet as a living or dwelling place we must and should take care and protect our plane. Whereas time is money reflects time as a limited resource that can used wisely or wasted uselessly. In ecological discourse metaphors such as our land or earth is drowning in plastic suggests imagery of suffocation to project the crisis of plastic pollution and rivers are the veins of the land or earth like water systems are essential to a living body's circulatory system and survival. Investigating how particular frames and metaphors endorse environmentally beneficial or damaging behavior has been one of the most prolific areas of green communication research.

The phrase "metaphors we live by", coined by Lakoff and Johnson in 1980, is rephrased by Romaine (1996) and Nerlich and Jaspal (2012) as "metaphors we die by" denoting metaphors that provoke us to destroy the natural systems that are important for our survival. In previously conducted studies some scholars (Rudenko & Morozova, 2024; Tyutyunnik et al., 2024) have indeed investigated metaphors and framings in particular discourses, studies often emphasized on a specific context such as related to politics, mass media, economy or education. Nevertheless, there are examples where cognitive structures and metaphorical framings function across several various discourses simultaneously. For instance, Musolff (2012) throws light on metaphorical expressions like

“political body” or “nation as a family”, which transcend individual discourse types, impacting public, political and cultural discussions. This suggests that metaphorical expressions are not merely embedded in isolated discourses but also play their role across different fields and disciplines and connecting cognitive structures within and across various contexts. The “political body” metaphorical expression in the above example refers to the concept of a nation or society being like a human body, with various parts (like government, citizens, institutions) working or functioning collectively like the organs or limbs of a body. It is an old metaphor from ancient times, originating in politics, and it suggests that, just as the body requires all its parts to work properly, a nation or society is dependent on all its members or institutions for working smoothly and harmoniously. If any part of the body (nation) is sick, then whole system collapses or suffers. Thus, it can be said that, in this metaphor, society is actually conceptualized as a living organism, and the metaphor means that political issues are like diseases in the body. This metaphor, or similar ones, are often used to convey how essential it is for various parts of a nation to support and function well collectively.

Various discourses and commonplace ways of perceiving climate change project the frame that climate change is a serious issue to be resolved. This gives the message that, once a solution is found, the problem of climate change will no longer exist. Nevertheless, this is not the only way to conceptualize climate change. These discourses determine frames mainly in terms of whether they stimulate extrinsic values – such as profit, status and self-interest, which are associated with ecologically destructive and harmful behavior – or intrinsic values, like empathy – which are connected to ecocentric behavior. In recognizing and understanding metaphors in texts, it is of great importance that scholars look for words or phrases that provoke the source domain or (underpinning frame) of the metaphor. The most prevalent metaphor in ecological discourse, for example, is “the earth is our home”, where earth is the target domain while home is the source. Words such as “home”, “protect”, “care for” and “shelter” projects the framing of the planet requiring to be looked for just like home. This metaphor endorses a sense of personal responsibility and stewardship as we specifically see our homes as places to care for and preserve. Moreover, in terms of pollution, metaphors often highlight the scale of ecological harm. For instance, in the case of plastic pollution, clauses like the “oceans are drowning in the plastic” frame the issue as devastating, utilizing words such as “suffocation” or “engulfment” to provoke a cognitive response of urgency and crisis. These metaphors help in shaping how we perceive and think ecological and environmental issues and problems whether by framing the earth as a homeland that needs protection or by projecting pollution as a universal life-threatening force. Hence, cognitive responses refer to the mental

processes that are activated or generated when we come across certain information, ideas or stimuli. With respect to metaphors, cognitive responses involve how our brain understands, interprets and makes sense of that particular metaphor. When we utilize metaphors, we draw on familiar ideas and concepts (the source domain) to assist our understanding of more abstract or difficult and complex concepts (the target domain).

5.1.2 Evaluation (What it is)

According to Stibbe (2015), evaluation is a story in individuals' minds whether an area of life is good or bad, and is often reflected in systematic patterns of language that express evaluation, known as appraisal patterns and these patterns according to White (2005) focuses on how language is employed to evaluate, adopt stances and align with or disalign from others. Evaluation patterns refer to how evaluations are systematically expressed and repeated throughout texts or discourses, establishing patterns of meaning. These patterns can be noticed by investigating the way people constantly utilize language to express positive or negative appraisals of certain areas of life. Evaluation patterns refer to how evaluations are systematically expressed and repeated throughout texts or discourses, establishing patterns of meaning. These patterns can be noticed by investigating the way people constantly utilize language to express positive or negative appraisals of certain areas of life. In simple words it can said that these patterns can have expressions of attitude, such as affect (emotions), judgment (moral or immoral) or admiration (aesthetic). Furthermore, according to Feola & Jaworska (2019), just as according to Stibbe (2015), evaluation is a story in people's minds with regards to an area of life is good or bad, and it is often depicted in evaluation patterns in language that unveil attitudes towards growth and sustainability. Positive evaluations are linked to ideas or concepts such as community, sufficiency and environmental balance, whereas negative evaluations target over-usage and unconstraint economic growth. The ultimate purpose of green communication and ecolinguistics is to identify which areas of life or human activity are consistently regarded as good or bad and to determine if they are really beneficial or bad for those who want to maintain the ecosystems. In order to identify these evaluation patterns, items that might be looked for in texts include the use of language patterns that reflect things positively or negatively, i.e. appraisal patterns. For instance, one may consider how economic recessions or declines are often projected in ecological discourse. Expressions like "low sales", dropping figures" or "market slump" are frequently accompanied adjectives such as "terrible" or "disastrous", framing them negatively. Nevertheless, in discussions related to environmental or ecological sustainability, "a decline in sales" might be framed in a positive way if it is associated to reduced usage of dangerous or harmful

products. Adjectives such as “encouraging”, “hopeful”, or “sustainable” can be utilized to reframe traditionally and conventionally negative ideas and concepts into positive ones within ecological and environmental discourse. To further highlight the discussion of appraisal patterns and adjectives, some more examples are shown below:

- Plastic pollution

Negative appraisal: words for example, “toxic”, “hazardous”, and “catastrophic” are utilized to shed light on the impact of plastic pollution. For instance, “the toxic buildup of plastic in oceans is catastrophic for marine life” employs adjectives like toxic and catastrophic to provoke the destructive and harmful impact of plastic waste.

Positive reframing: on the other hand, initiatives to tackle plastic pollution might be appraised positively, utilizing adjectives such as “innovative”, “progressive”, or “groundbreaking”. For instance, innovative solutions to plastic waste management are building a cleaner and more sustainable future” shifts the discourse or narrative with positive adjectives.

- Water conservation

Negative appraisal: water scarcity is sometimes highlighted utilizing adjectives such as “dire”, “alarming”, or “severe”. For example, “The alarming condition of water depletion is a severe threat to global ecosystems”, the adjectives used emphasize the gravity of the situation.

Positive reframing: on the contrary, initiatives aimed at water conservation may utilize positive adjectives such as “effective”, “efficient” or “promising”. For instance, “effective water-saving techniques are offering promising solutions to combat water depletion or shortages”.

- Deforestation

Negative appraisal: deforestation is sometimes described with adjectives like “devastating”, “destructive”, or “irreversible”. For instance, “the destructive deforestation practices in the Amazon have irreparable consequences for biodiversity”. These adjectives emphasize the negative effects of deforestation.

Positive reframing: attempts and efforts to prevent deforestation might be described utilizing adjectives such as “sustainable”, “restorative”, or “vital”. For example, sustainable forest management practices are essential for protecting ecosystems and biodiversity.

- Climate change

Negative appraisal: climate change is often projected with adjectives such as “unprecedented”, “catastrophic”, or “devastating”, e.g. “the unprecedented rise in worldwide temperatures is having catastrophic impacts on weather patterns”.

Positive reframing”: on the contrary, attempts to tackle climate change are sometimes appraised utilizing adjectives such as “resilient”, “innovative”, or “transformative”. For example, “innovative green technologies are proving to be transformative in the fight against climate change”.

In short, the usage of particular adjectives can widely alter the appraisal of certain actions, events, situations or phenomena, either stressing their harmful effects or highlighting the advantages of sustainable practices.

5.1.3 Erasure (What it is)

According to Stibbe (2015), erasure is a concept that a some particular characteristic of life is monotonous or does not deserve attention. An erasure pattern is one which, through the utilization of certain stylistics devices, e.g. by intended omission or distortion, reflects a certain area of life as not noteworthy. Language can be employed to shed light on some features of events while overlooking and disregarding others. A critical reader should always be able to distinguish, and identify not only what is shown obviously or on the surface level, but also things which are implicit, hidden or ignored too. Stibbe (2015 p.146) stresses that, in using the term “erasure”, he feels a touch of grief, as it means the disappearance of something important and the main aim is to identify and reject any narratives that harm the ecosystem, in an endeavor to shed light on eco-friendly stories. Such positive and constructive discourses are endorsed by Stibbe’s ecolinguistic model, to generate further narratives and create more consonant ecosophies of the environment.

5.2 Discussion of *English File*

This section investigates the use of metaphor, evaluation and erasure strategies in the three high school English textbooks analyzed in this study, to unveil the deletion or replacement of agents, the identification of adjectives, metaphors and their connection to environment and ecology.

5.2.1 Green content overview

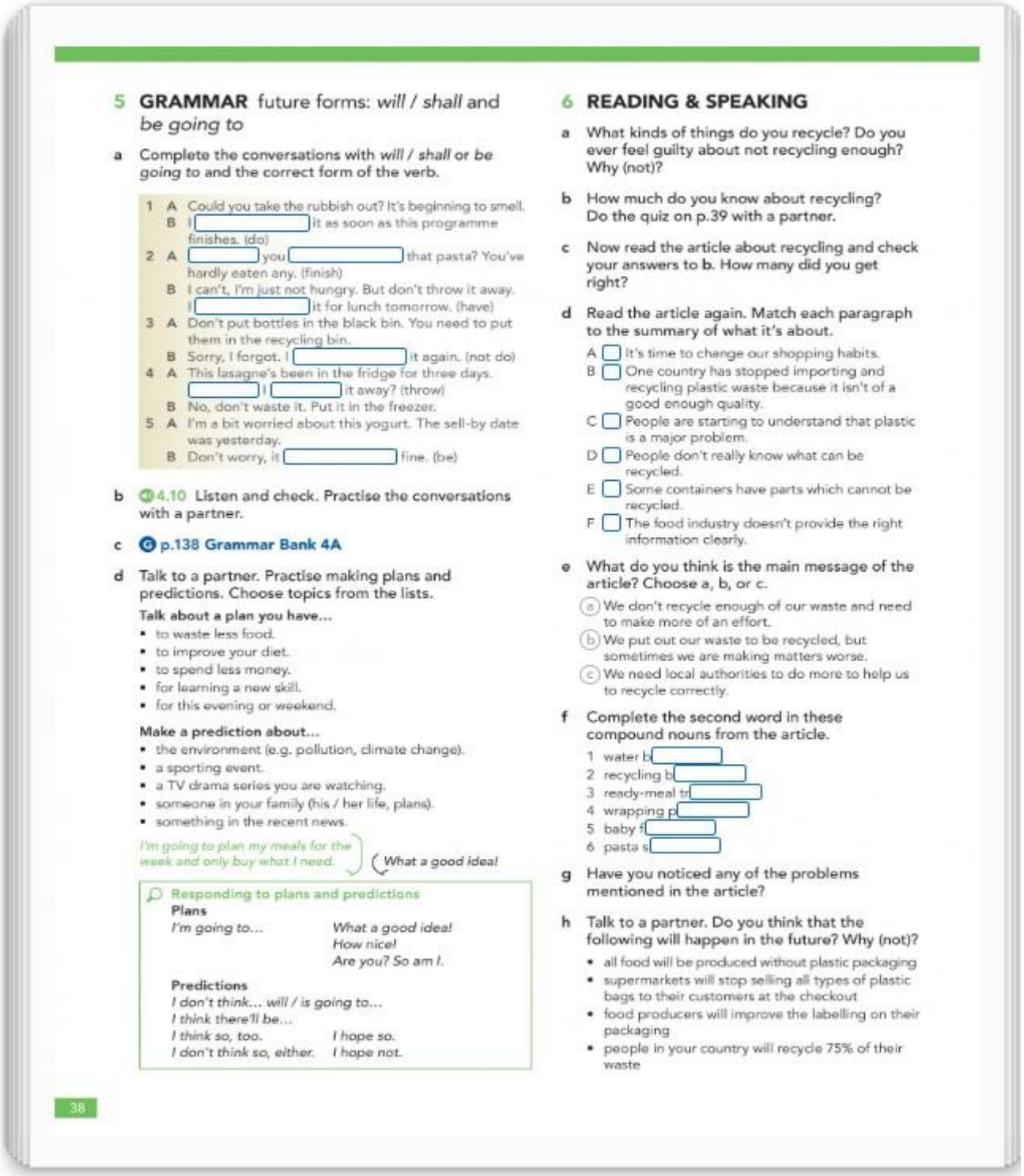
The textbook *English File* consists of total 43,642 words and 1,751 sentences. The green vocabulary or content, as recognized through key ecological terms, consists of 113 words, which make up almost 0.258% of the total word count. This minimal percentage shows that ecological issues are not a main focus of the textbook. In terms of sentences representation, 68 sentences are directly linked to green discourse and content, amounting to 3.88% of the total sentences in textbook.

5.2.2 Metaphor

In *English File*, metaphors regarding the ecosystem and ecological problems are used sparingly, but they play an important role in framing the narrative. The analysis indicated that metaphors in *English File* often reflect an anthropocentric perspective, where ecological issues are projected in terms that give preference to human actions, interests and control over nature.

On page 38, Unit 4 "Don't throw it away" part D (seeFigure 5.1 *Third page of* English File's *Unit A*), an exercise consists in making predictions about the environment. Expressions like "pollution" and "climate change" invite learners to engage with ecological problems by perceiving future consequences or scenarios with regards to climate change or pollution. The inclusion of the topics of waste management and recycling suggests that, although apparently no metaphorical expressions like combat climate change or tackling pollution are visible, the textbook *English File* presents these problems in a factual way without embedding any apparently metaphorical framing such as "fighting climate change or tackling pollution". Although the textbook does not support an anthropocentric approach or conflict-oriented metaphorical framing in this particular activity, yet it is worth noticing that asking learners to "predict" ecological issues could still invite debates that frame these issues as a crisis needing human intervention. Predictions about climate change or pollutions sometimes revolves around human activities whether successful or not endorsing human agency. This framing reflects a world view where the ecosystem is something to be controlled by human actions rather than a system in which humans are participants and co-dependents. This metaphorical framing can affect learners by supporting the idea that human interference is the primary solution to ecological issues, potentially overshadowing the significance of systemic changes or the need for a more harmonious connection with nature. However, the book still maintains its focus on human agency and intervention, emphasizing an anthropocentric view where nature is something to be fixed by human effort. The usage of these metaphors in *English File* reveals a moderate presence of the metaphor story, with an inclination towards anthropocentricism.

Thus, it can be said that framing the environment in this way could lead towards discussions that project common anthropocentric framings, even if the textbook itself does not openly and overtly utilize metaphorical language such as “tackling”, “fighting” or “combating”.



5 GRAMMAR future forms: *will / shall* and *be going to*

a Complete the conversations with *will / shall* or *be going to* and the correct form of the verb.

1 A Could you take the rubbish out? It's beginning to smell.
B I [ ] it as soon as this programme finishes. (do)
2 A [ ] you [ ] that pasta? You've hardly eaten any. (finish)
B I can't, I'm just not hungry. But don't throw it away. I [ ] it for lunch tomorrow. (have)
3 A Don't put bottles in the black bin. You need to put them in the recycling bin.
B Sorry, I forgot. I [ ] it again. (not do)
4 A This lasagne's been in the fridge for three days. [ ] I [ ] it away? (throw)
B No, don't waste it. Put it in the freezer.
5 A I'm a bit worried about this yogurt. The sell-by date was yesterday.
B Don't worry, it [ ] fine. (be)

b 4.10 Listen and check. Practise the conversations with a partner.

c p.138 Grammar Bank 4A

d Talk to a partner. Practise making plans and predictions. Choose topics from the lists.

Talk about a plan you have...
- to waste less food.
- to improve your diet.
- to spend less money.
- for learning a new skill.
- for this evening or weekend.

Make a prediction about...
- the environment (e.g. pollution, climate change).
- a sporting event.
- a TV drama series you are watching.
- someone in your family (his / her life, plans).
- something in the recent news.

I'm going to plan my meals for the week and only buy what I need. — *What a good idea!*

Responding to plans and predictions

Plans

I'm going to...	*What a good idea!*
	How nice!
	Are you? So am I.

Predictions

I don't think... will / is going to...
I think there'll be...

I think so, too.	*I hope so.*
I don't think so, either.	*I hope not.*

6 READING & SPEAKING

a What kinds of things do you recycle? Do you ever feel guilty about not recycling enough? Why (not)?

b How much do you know about recycling? Do the quiz on p.39 with a partner.

c Now read the article about recycling and check your answers to **b**. How many did you get right?

d Read the article again. Match each paragraph to the summary of what it's about.

A [ ] It's time to change our shopping habits.
B [ ] One country has stopped importing and recycling plastic waste because it isn't of a good enough quality.
C [ ] People are starting to understand that plastic is a major problem.
D [ ] People don't really know what can be recycled.
E [ ] Some containers have parts which cannot be recycled.
F [ ] The food industry doesn't provide the right information clearly.

e What do you think is the main message of the article? Choose a, b, or c.

(a) We don't recycle enough of our waste and need to make more of an effort.
(b) We put out our waste to be recycled, but sometimes we are making matters worse.
(c) We need local authorities to do more to help us to recycle correctly.

f Complete the second word in these compound nouns from the article.

1 water b[ ]
2 recycling b[ ]
3 ready-meal tr[ ]
4 wrapping p[ ]
5 baby f[ ]
6 pasta s[ ]

g Have you noticed any of the problems mentioned in the article?

h Talk to a partner. Do you think that the following will happen in the future? Why (not)?
- all food will be produced without plastic packaging
- supermarkets will stop selling all types of plastic bags to their customers at the checkout
- food producers will improve the labelling on their packaging
- people in your country will recycle 75% of their waste

38

Figure 5.1 Third page of *English File*'s Unit A

5.2.3 Evaluation

Evaluative language in *English File* tends to lean more on the positive side when discussing ecological problems. Terms such as “important”, “necessary” and “urgent” and are utilized to reflect actions regarding protection of ecosystem. In exercise 4 on page 37, see (Figure 5.2), students are asked what kind of food they think has too much packaging, and when they think packaging is really necessary. Evaluative language in *English File* is prone towards a neutral or positive framing when stressing environmental issues. Terms such as “necessary” are used to reflect actions regarding the protection of the ecosystem, e.g. in the context of deciding when packaging is really necessary.

3 LISTENING

a Read Part 1 of an interview with Tessa Cook, co-founder of OLIO, an app to help reduce food waste. With a partner, try to predict the missing words.

Tessa Cook

Can you explain what OLIO is, exactly?

So, OLIO is a free app which connects [1]n_____ with each other and with local [2]b_____ so that surplus food can be shared and not thrown away.

What kinds of food?

It could be food that's near its [3]s_____-_____ d_____ in local shops, or home-grown vegetables that you're not going to eat, or bread from your [4]b_____ that hasn't been sold at the end of the day, or the food that's in your [5]f_____ when you're about to go away. Any food that people have that they're not going to use.

And how does the app work?

It's super easy! If you have some food that you want to [6]sh_____, you simply open the app, add a [7]ph_____ and a description, and say when and where the food can be collected from. And if you're looking for some food, you just put in your postcode and send a [8]m_____ to the person who's offering the food you want, and then you arrange a time to go and collect it.

b 4.7 Listen to Part 1 and check your answers to a.

c 4.8 Now listen to Part 2 and answer the questions.

1 Why has Tessa always been worried about food waste?
2 What circumstances inspired her to come up with the idea for the app?
3 How did her friend Saasha react when Tessa told her about the idea?

d 4.9 Finally, listen to Part 3. Why does Tessa mention the following?

£700 worth of food | one in three people | 12 people | two weeks | half a bag of onions | 9th July 2015 | 41 countries | within an hour

e Do you think the app is a good idea? Would you use it? Why (not)?

4 SPEAKING

a Read the questions and think about your answers.

b Discuss the questions in groups of three or four.

- What three things could you and your family do in order to throw away less food?
- Do you ever eat anything that's past its sell-by date? Why (not)? Has anything ever happened?
- Do you ever buy special food offers of the type 'Buy one, get one free'? Do you usually finish both?
- Do you ever take leftover food home from a restaurant?
- What do you think restaurants or supermarkets in your town should do with unused food? Do you know if any of them ever do it?
- How would your neighbours react if you offered them leftover food? Why?
- What kinds of food do you think have too much packaging? When do you think packaging is really necessary?

37

Figure 5.2 Second page of *English File*'s Unit A4

In the case of plastic pollution, the word “urgent” draws attention towards a stronger sense of immediacy and alarm, e.g. in the statement “Sutherland, founder of the campaign ‘a plastic planet’ ... says that when everything from pizza to fresh fruit and vegetables is covered in plastic, urgent action is needed” (see*Figure 5.3* Page 45 of *English File’s* Unit A4). The term “urgent” stresses the critical nature of the problem and signals that the issue has reached an emergency level. This evaluative choice reminds learners to view these phenomena as dire, encouraging them to view plastic pollution as a critical problem that demands swift action. While this conveys emotional intensity, it is one of the few sentences where strong evaluative language is utilized to highlight the seriousness of the ecological issues presented. These findings are in line with the concept of growthism where Feola & Jaworska (2019) shed light on growthism through the lens of sustainability. Their research advocates that modern sustainability discourses and narratives often challenge the concept of unlimited economic growth and resources, and societal transitions should prefer more and focus on models like degrowth, which actually prioritizes environmental balance, mitigating consumption, and scaling back human influence on earth. These alternative models stress systemic change over constant expansion, endorsing more equitable and sustainable ways of managing means within the ecological limits of ecosystem.

CAN YOU understand this text?

a Look at the title of an article about a 'zero waste' store and the photo. What kind of store do you think it is? Read the article once and check.

Leading the fight against a 'plastic planet'

In the past few weeks, Richard Eckersley has noticed a change in the type of people who come into his shop. In 2017, the former Manchester United footballer set up Earth.Food.Love in Totnes, Devon, with his wife, Nicola. It's the UK's first 'zero waste' store – the food is in big jars and boxes and people bring their own containers. 'A lot of new people are coming in – people who have not necessarily been interested in environmental issues before', he says.

Recently, the government called for supermarkets to introduce plastic-free aisles. But Eckersley says many consumers are already way ahead of politicians. 'We are getting calls every week from people who want to do something similar.' He and Nicola have helped people set up stores in Wales, Birmingham, and Bristol. Ingrid Caldironi had a similar idea. She set up a plastic-free shop in London last year, which has been so popular that it is soon moving to a bigger site.

Eckersley and Caldironi are members of an anti-plastics movement in the UK that has been growing as a result of the BBC's *Blue Planet* series and a general worry about the damage plastic is doing to the environment. But big supermarkets have so far not tried very hard to reduce their plastic waste. Sian Sutherland, founder of the campaign 'A Plastic Planet', says, 'The most exciting thing is that politicians and industry are no longer saying that recycling will solve the problem. Banning the use of plastic packaging for food and drink products is the only answer.' Walking down the aisles of the supermarket where everything from pizza to fresh fruit and vegetables is covered in plastic, Sutherland says urgent action is needed. 'It is really quite overwhelming,' she says. 'I can buy gluten-free, fat-free, African food, Asian food, but I can't buy food without plastic.'

Plastic pollution is causing widespread global damage. More than one million plastic bottles are bought around the world every minute, and most end up in landfill or the sea. The contamination is so extensive that tap water around the world also contains plastic. Back in Devon, Eckersley says, 'After my daughter was born, it made me think about what future lies ahead for her. I wanted to say that at least I tried to make a difference.'

Adapted from The Guardian

b Read the article again. Mark the sentences **T** (true) or **F** (false). Correct the **F** sentences.

- ☐ 1 Richard Eckersley gives away boxes of food.
- ☐ 2 All the new customers at Earth.Food.Love are people who are active in fighting for the environment.
- ☐ 3 People phone Eckersley to ask for help with their shops.
- ☐ 4 There are no 'zero waste' shops in London.
- ☐ 5 The food industry is confident that recycling is better than banning plastic packaging.
- ☐ 6 Nowadays, it's easier to find gluten-free food than plastic-free food.
- ☐ 7 Plastic bottles are one of the biggest problems.
- ☐ 8 Eckersley became more interested in environmental issues after he became a father.

CAN YOU understand these people?

4.22 Watch or listen and choose a, b, or c.

Erica Keith Shreeya Emma Thomas

1 Erica ____ when she was a child.
- (a) used to annoy people
- (b) has stopped being as inquisitive as
- (c) has completely changed from

2 Keith ____.
- (a) usually uses a normal camera
- (b) takes more videos than photos nowadays
- (c) only takes photos of his children

3 Shreeya tries to avoid using plastic by ____.
- (a) always having a packed lunch
- (b) shopping in small local shops
- (c) using her own refillable water bottle

4 Emma is studying osteopathy because ____.
- (a) someone suggested it as a career
- (b) a family member was an osteopath
- (c) she recovered from injuries thanks to osteopathy

5 Thomas says that ____.
- (a) he rarely met interesting people
- (b) customers often treat waiters quite badly
- (c) he didn't enjoy his part-time jobs

CAN YOU say this in English?

Tick (✓) the box if you can do these things.

Can you...?

1 ◯ talk about what you were like as a child
2 ◯ describe one of your favourite photographs
3 ◯ talk about what you are going to do personally to reduce waste
4 ◯ complete the sentence so that it's true for you and say why. *If I had to choose between going to university or getting a job, I would...*

Figure 5.3 Page 45 of *English File's* Unit A4

Nevertheless, evaluation often lacks depth, with only a few examples of strong constructive or negative language that could ignite a more emotional or critical response from learners. For example, as the textbook acknowledges the importance of recycling and mitigating waste, it does so in a manner that reflects these actions as options rather than mandatory or imperatives. In one example in unit 4 (Don't throw it away), learners are asked: "what kinds of items or things do you recycle? Do you ever feel guilty about not recycling enough? Why (not)?" These questions project recycling as a personal choice, stressing individual responsibility without positioning it as a general, societal and ecological necessity. Consequently, learners are not explicitly encouraged to see recycling as an urgent and moral obligation to address the environmental crisis. The lack of strong evaluative language and stories could make learners think less positively or constructively in perceiving ecological issues. Even when evaluation is neutral, it indicates an implicit anthropocentric approach, where the ecosystem and environment are discussed mainly in terms of their efficacy or benefits to human beings. At the same time, it is also observed that *English File* also endorses an ecocentric approach: for instance, Unit A4 (Figure 5.4) is entitled "Don't throw it away", which literally refers to waste disposal, but also implicitly suggests that humans should avoid destroying the ecosystem with their actions.

4A Don't throw it away!

Are you going to throw away that pasta?

No, I'll have it for dinner.

G future forms: *will / shall* and *be going to* V rubbish and recycling P /aʊ/ and /eɪ/

1 VOCABULARY rubbish and recycling

a How often do you or your family throw away food? What kinds of things? How do you feel about it?

b Read the infographic. Then match the highlighted words and phrases to the definitions below.

1 _____ food that is no longer needed and is thrown away
2 _____ is thrown away
3 _____ the amount of sth that is available to be used
4 _____ the process from when sth is first made to when it is bought or used
5 _____ an amount that is extra or more than you need

c With a partner, discuss which facts a) didn't surprise you, b) surprised you a lot, c) you think are really shocking.

d V p.156 **Vocabulary Bank** Rubbish and recycling

2 PRONUNCIATION /aɪ/ and /eɪ/

a Look at the sound pictures. What are the words and sounds? Write the words from the list in the correct column.

away date reapply recycle replay require sell-by site supply tray waste

b 4.5 Listen and check. Practise saying the words.

c Complete the rules with the phonetic symbols /aɪ/ or /eɪ/.

/aɪ/ and /eɪ/
ay is always pronounced ☐.
a + consonant + e is usually pronounced ☐.
i + consonant + e is usually pronounced ☐.
Consonant + final -y in a stressed syllable is usually pronounced ☐.

d Look at more words containing the sounds /aɪ/ or /eɪ/ which have irregular spellings. How do you pronounce them?

break buy climate eyes flight guy height neighbour straight survey weight wi-fi

e 4.6 Listen and check. Practise saying the words.

Figure 5.4 First page of *English File's* Unit A4

In, Figure 5.4 the green table on the left-hand side of the page indicates some statistics and facts about food waste, recycling and the ecological effects of wasted items. The figure indicates that over 1/3 of the overall food produced worldwide goes to waste and 25% of the globe's fresh water supply is utilized to grow food that is never used or eaten. These statistics reveal the severity of food waste and its direct link to the ecological crisis. Nevertheless, the language utilized is somewhat neutral, reflecting the problem as a matter of fact rather than provoking any strong emotional responses or framing it as a crisis that needs urgent or collective action. The textbook also reflects ideological implications, as the emphasis on quantifying waste through numbers and statistical figures recommends that the solution to the issue lies in individual awareness and behavior changes. Although this figure provides significant data, it does not apparently advocate any systemic change or challenge the broader structures that are playing a contributing role in the food waste issue. It frames the crisis in terms of individual and personal responsibility, emphasizing individual consumer choices without addressing the role of corporations, government or policies in combating these problems. The image on the bottom right-hand side corner of figure 5.4 shows a pile of organic waste, like vegetable peelings and fruit, suggesting that the waste has been rightly sorted prior to disposal. This implicitly implies that waste sorting is common as well as simple and easy. Figure 5.4 also serves a metonymical role or function, where the sorted organic waste stands for waste in general. It actually idealizes waste management, reflecting it as something that is easily managed and presenting it as the norm. This is sadly not so, especially in larger cities where waste sorting and collection present substantial challenges and structural problems many communities experience in waste management. Some inhabitants still find the system baffling and lack sufficient facilities for sorting and collection, which can lead to unsuitable disposal and inconsistent sorting practices.

5.2.4 Erasure

The third and last story which has been investigated in *English File* is "erasure", which is unusually present in this textbook, especially in the omission or underrepresentation of some serious ecological problems. In spite of shedding light on vital topics like climate change and pollution, the textbook largely omits discussions on biodiversity, the effect of industrial agriculture, and the deeper systemic reasons for ecological degradation. The presence of erasure in *English File* suggests that, while the textbook describes some ecological issues, it does so in a way that simplifies or downplays the full extent of these issues, and this could contribute to a merely superficial engagement with ecological and environmental education, where learners are exposed to the symptoms of environmental issues without fully understanding their causes or broader implications.

Some sentences in Unit 4, such as “containers have parts which cannot be recycled” suggest that human beings are missing in this statement, as if the impossibility to recycle these containers was independent of human will or technology, and just a fact that has to be faced. Specifically, the textbook notes that plastic bottles are recyclable, stressing their potential to be processed and reused rather than contributing to plastic waste. Another example, “according to new research, almost a fifth of the waste that people put into recycling bins cannot in fact, be recycled” highlights a key problem in the recycling system, i.e. the disorganization in present waste management practices, unveiling that even when people try to recycle, their endeavors may not be effective. The representation of plastic in this textbook exposes a dual narrative. On one hand, plastic is described as a significant environmental problem, particularly when it comes to waste management and pollution. The frequent mention of plastic waste and the need to recycle it highlights the negative impact of plastic on the environment, highlighting issues such as landfill overflow, marine pollution, and the long degradation period of plastics. On the other hand, the recyclability of plastic bottles is presented as a problem-solving measure.

5.2.5 Overall assessment

To sum up, *English File* presents a mixed approach to green content. While it includes some coverage of environmental issues, the leading narrative is anthropocentric, as projected in the use of metaphors and the evaluation of environmental actions. The analyzed examples shed light on the crucial ecological issue of plastic waste. The use of the word “lethal”, for example, stresses the gravity of the issue, adding a sense of urgency. Nevertheless, overall, the evaluation remains neutral, describing information without a deeper sentimental or critical appeal that could further engage students in understanding the environmental issue.

To sum up, it can be said that *English File* has a mixed approach to green practices, with some coverage of ecological problems. While the textbook unveils significant topics, such as plastic and food waste, it is prone towards a factual tone that may limit its ability to deeply engage its learners in serious ecological thinking. As far as metaphor is concerned, ecological problems are often framed as something to be tackled or solved by human intervention and, although some issues are represented as “urgent”, this happens quite rarely: much of the tone of the textbook is actually neutral, as observed in the discussion of recycling and plastic waste, where learners are encouraged to think of recycling as a personal habit, and there is no deep emotional engagement, which may leave them with a superficial understanding of the ecosystem and its issues. As far as erasure is concerned, it seems to be a prominent issue in this textbook. By shedding light on individual

responsibility and unveiling the crucial issue of waste management in bigger cities, however, it overlooks discussions of the systemic causes of ecological issues like governmental regulations or corporate practices. The textbook tends to present waste management as a personal problem, omitting the broader social and political dimensions of ecological sustainability.

The significant presence of erasure further indicates that *English File* offers a limited view of the ecological landscape, potentially leaving learners with a superficial understanding of environmental issues. Among Stibbe's stories, erasure appears to be the most prominent, followed by metaphor, with evaluation being the least emphasized. This suggests that, while the textbook acknowledges environmental issues, it does so in a way that may not fully engage learners in a critical or comprehensive understanding of these topics.

5.3 Discussion of *Empower*

5.3.1 Green content overview

The textbook *Empower* consists of 68,705 words and 3,195 sentences, with 142 green words identified, accounting for 0.206% of the total word count. The number of sentences regarding green content is 67, which makes up 2.10% of the overall sentences in textbook. The slightly lower percentage as compared to *English File* reveals that ecological issues are not the main focus of this textbook. Nevertheless, the presence of Unit 5, dedicated to ecological topics, suggests an effort to incorporate ecological and green content although in a limited scope.

5.3.2 Metaphor

In *Empower*, metaphors regarding ecological themes appear less frequently or almost as much as in *English file*, but carry important implications. The metaphors identified generally indicate a collective responsibility towards the ecosystem and environmental preservation. For instance, Unit 5, entitled "The natural world", talks about environmental issues and the natural world, emphasizes the consequences of waste and the significance of recycling. The metaphorical language used in this unit often positions the environment as a shared resource that requires collective stewardship, with sentences like "if nature can do it, we can copy it", underscoring the need for communal efforts in environmental conservation, and the fact that nature itself could provide a model for effective strategies to tackle the environmental crisis as reflected in title of sub-unit 5B (Figure 5.5).

This eco-centric framing endorses an awareness that ecological issues are not the sole responsibility of governments or corporations, but demand action at the individual level. Although

metaphors do not dominate the text in *Empower*, when present, they are potent in conveying the message of shared responsibility. Figure 5.5 is particularly representative of green content and metaphorical use of language in this unit. The expression "if nature can do it, we can copy it" projects an idea called biomimicry where humans look up to nature itself for sorting out problems or for innovations. Figure 5.5 , for example, shows that Velcro was inspired by the way plant seeds attach to animal fur, stressing that nature itself provides models for sorting out issues, and recommending that humans draw inspiration from natural processes to tackle ecological issues. This instance of biomimicry underscores the concept that nature has developed effective systems over millions of years, which can guide human innovation in more ecologically friendly ways. The Figure also shows that seashell structures have inspired inventions such as water collection devices, again connecting nature's solutions with sustainable technologies. Nature itself is thus reflected as a model for efficient strategies in ecological conservation.

5B IF NATURE CAN DO IT, WE CAN COPY IT

Learn to talk about *if* and *when*

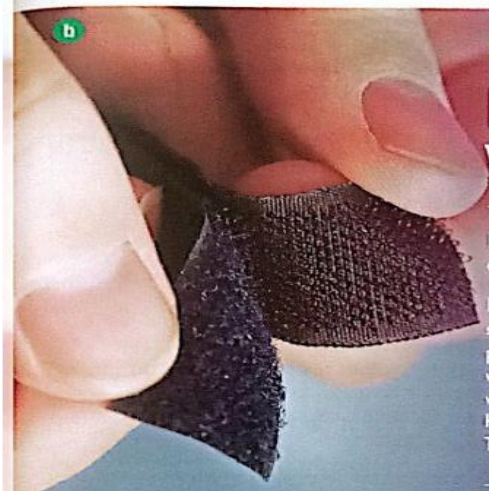
- G Zero and first conditionals
- V The natural world

1 LISTENING

a Look at photos a and b and discuss the questions.

1 What do you think each photo shows?
2 What is the material in photo b used for?
3 What is the connection between the things in the two photos?

b Read the TV guide and check your ideas.



SPOTLIGHT ON ...

IF NATURE CAN DO IT, WE CAN COPY IT

In this series, Professor Leslie Cook takes a closer look at common objects that were invented by humans but inspired by nature.

Episode 1: Professor Cook explores Velcro, a material we use every day on our shoes, clothes and bags. It was inspired by the 'hook and loop' system that some plants use to move their seeds. In 1948, Swiss engineer George de Mestral was walking with his dog in the country when he noticed that little seeds from a plant were sticking to his dog's fur. He studied the plants more closely and saw how the hooks on the plant attached themselves to the loops and curls of an animal's fur. This gave him the idea for making Velcro

WATCH NOW ▶ SAVE FOR LATER

c Match the things from the natural world (1–3) with the related objects (a–c).

d 05.07 Listen to part of the TV programme and check your answers.

e 05.07 Listen again and complete the summary with one word in each gap.

- One reptile, the thorny dragon lizard, can pull up water through pipes in its [1]_____. It has inspired a device that can [2]_____ water. This will help people who live in very [3]_____ environments.
- Most spiders can move [4]_____ and make themselves very small. This has inspired the invention of a [5]_____ robot, which will help people who are trapped in [6]_____ spaces.
- Seashells are very [7]_____ and light. This has inspired the production of material for safety [8]_____ such as gloves and helmets.

f Which of the inventions do you think is the most useful? Why?

g Compare your ideas in 1f. Do you agree about the most useful invention?

59

Figure 5.5 Page 59 unit 5B of *Empower*

5.3.3 Evaluation

Evaluative language in *Empower* tends to be neutral, similar to *English File*, but with examples of more affecting terms that convey the seriousness of ecological issues. For instance, words like "important" and "essential" appear in discussions about waste management and recycling, e.g. "it is important to care more about the environment to prevent further damage to natural habitats" and "conservation projects are essential to protect endangered species and reduce environmental harm". Here, the use of the words "important" and "essential" indicates the necessity of action, but somehow in a neutral way, again using a factual rather than evaluative tone. Overall, the tone is instructive rather than urgent and, although the evaluative language encourages learners to understand the importance of ecological actions and the dire consequences of inaction, just like *English File*, *Empower,* does not make frequent use of strong evaluative language across all ecological related content. Whereas some problems, such as waste management, are highlighted with a sense of urgency, others, like climate change, are discussed in a more passive way, e.g. "do most people in your country care about climate change?", which may lessen their perceived significance among learners.

5.3.4 Erasure

Erasure in *Empower* is clearly seen through the selective coverage of ecological green content. Whereas the textbook discusses and addresses waste management and recycling widely in Unit 5, it omits or only slightly highlights some broader ecological problems, such as climate change and biodiversity loss. This selective approach limits the depth and breadth of ecological education, which therefore turns out to be narrow in scope and, more specifically, leads to a limited understanding of environmental problems. The use of erasure may actually result in learners' developing a weak or incomplete understanding of the ecosystem, focusing more on surface-level actions rather than tackling the root causes of environmental issues.

5.3.5 Overall assessment

Overall, *Empower* sheds light on a slightly more eco-centric approach as compared to *English File*, specifically through its usage of metaphors that emphasize collective responsibility. Nevertheless, its inconsistency in the use of evaluative language and its noteworthy erasure of some critical ecological problems suggest that the textbook does not completely engage learners in a detailed understanding of green practices. Among Stibbe's stories, metaphor is slightly more prominent in *Empower*, but erasure remains a concern, as it limits the scope of environmental education.

5.4 Discussion of *Speakout*

5.4.1 Green content overview

Speakout comprises 84,059 words and 4,689 sentences, with 179 words identified as related to green content, representing approximately 0.212% of the total word count. The textbook contains 78 sentences dedicated to ecological issues and green practices, which accounts for about 1.66% of the total sentences. This might seem to mean that there is slightly more green content in terms of ecological sentences: *Speakout* actually has total 78 sentences as compared to *Empower* and *English File* that have 67 and 68 respectively but, in terms of percentages, it is still *English File* that has the highest percentage of green ecological sentences (3.88%), while *Empower* comes second (2.10%), so *Speakout* is actually the textbook that has the lowest number of sentences about the environment.

5.4.2 Metaphor

Despite the comparatively lower frequency of ecological content, *Speakout* utilizes metaphors more often than the other two textbooks, with these metaphors often framing green issues within the context of moral responsibility and global citizenship. For example, in Unit 5, one sub-unit 5B focuses on "Rubbish and Recycling", with expressions such as "the fight against a plastic" and "cleaning up our waste" highlights the ethical dimensions of ecological stewardship. The textbook does not contain any explicitly metaphorical long sentences and passages, but sometimes uses expressions that frame the ecological crisis as a battle or conflict, with human beings placed as leaders in a battle to protect and save the earth from plastic waste to preserve the ecosystem, encouraging learners to view themselves as active participants in this universal endeavor. These metaphors suggest that learners are not only passive recipients of environmental knowledge but are instead positioned as active participants in a global endeavor and effort to tackle and address environmental degradation. This framing supports an eco-centric perspective, encouraging students to consider their personal influence and impact on the planet and to adopt behaviors that contribute to a more sustainable future.

Metaphors in *Speakout* are more varied and impactful than those in *English File* and *Empower*. For example, in Unit 5-B, at the beginning of the page, there is a picture of big whale with plastics and footwear in its mouth, which suggests sea animals are in danger because of plastic pollution. In *English File,* examples like "combating climate change" or "talking pollution" are more neutral and task-oriented, and emphasis is placed on the technical perspective of sorting out ecological issues without engaging leaners emotionally. In the same way, in *Empower*, the metaphor

“if nature can do it, we can copy it” endorses collective action but lacks the emotional weight and personal obligation stressed in *Speakout*. Consequently, *Speakout* utilizes metaphor more efficiently to promote active engagement and a sense of universal citizenship. This suggests that *Speakout* uses metaphor as a more powerful tool to reinforce the importance of environmental action and global responsibility.

5B

5B Newsmakers

GRAMMAR | reported speech
VOCABULARY | social issues; the environment
PRONUNCIATION | silent letters

High levels of pollution found in cities
Scientists report that there is increasing pollution in many cities around the world. It is thought that the increasing number of cars in cities is to blame.

Town makes plan to recycle old car parts
A small town in New Zealand is taking old cars and using their parts to create works of art.

Schoolchildren remove waste from a beach to protect the environment
Over a hundred children spent the day collecting plastic, tin cans and paper cups from a beach in Cornwall, UK. Ten-year-old May Jones said, 'The natural world is our responsibility'.

Activists start a campaign against killing of elephants
Yesterday thousands of people walked through the streets of Nairobi, Kenya, calling for new laws to protect elephants.

Local company donates $10,000 to charity
A fishing company has given $10,000 to a group that works to save whales.

Teenagers collect coins for charity
Magda Kowalski, 14, and Jan Bartosz, 15, of Katowice raised over €2,500 for two charities, Children in Need and Food for the Poor, by asking for coins.

VOCABULARY

social issues; the environment

1 A Work in groups. Read the news stories. What do the words in bold mean? Use the context to help you.

Levels of pollution means the amount of dirt or unwanted objects in the environment.

B Choose the two correct words to complete each sentence.

1 Big companies should _____ money to protect the _____.
(level / donate / recycle / environment / waste)

2 It's important that _____ for social change.
(pollution / campaign / levels / activists / environment)

3 I admire people who _____ money or do other activities for _____.
(pollution / activist / collect / waste / charity)

4 There should be a law that makes people _____ their _____.
(charity / waste / campaign / levels / recycle)

5 There are high _____ of _____ because we buy too many things we don't need, and then throw them away.
(campaign / recycle / levels / charity / pollution)

C Work in groups. Do you agree with the opinions in Ex 1B? Give reasons and examples.

I agree that big companies often damage natural places, so they should pay to clean them again.

PRONUNCIATION

2 A | silent letters | Work in pairs. The words in the box each have a silent letter. Which letter do you think is silent?

campaign character colleague environment
friend mechanic plumber scientist

B 5.03 | Listen and check.

C Write four sentences. In each sentence, use two words from Ex 2A. Read your sentences to a partner. Be careful with silent letters!

My friend is a scientist.

D Read the Future Skills box and discuss the questions.

FUTURE SKILLS
Self-management

When you record new vocabulary, it is important to record the meaning and also extra information that will help you use the word in the future, e.g. the pronunciation.

What information do you record when you note down new vocabulary? What other information would it be useful to record?

E Learn and practise. Go to the Vocabulary bank.

page 141 **VOCABULARY BANK** the environment

59

Figure 5.6 page 59, Unit 5B of *Speakout*

5.4.3 Evaluation

As seen, evaluative language in *Speakout* tends to be more emotionally charged as compared to *English File* and *Empower*, making it more convincing, due to its combination of emotionally charged terms and logical appeals. Words like "critical," "vital," and "urgent" are used in discussions of environmental challenges, not only to emphasize the seriousness of these issues, but also to evoke a sense of personal responsibility. This language is supported by logical arguments and hard data, such as statistics on plastic pollution, which make the arguments more persuasive by providing concrete evidence alongside emotional appeals. In contrast, while *English File* and *Empower* use similar evaluative language, their tone tends to be more neutral and factual, lacking the emotional depth that makes *Speakout* more impactful and motivating.

This strong evaluative language serves to heighten the perceived significance of these issues, potentially motivating learners to take action. Moreover, *Speakout* also incorporates positive evaluations of eco-friendly practices, such as praising efforts to reduce waste or use renewable resources. This positive reinforcement could help to build a more proactive attitude towards environmental sustainability among learners, encouraging them to view environmental responsibility as both necessary and achievable. However, it should be noted that, while *Speakout* uses strong evaluative language, it sometimes focuses predominantly on individual actions rather than addressing larger systemic issues. This could lead to an overemphasis on personal responsibility, potentially overshadowing the need for broader societal and structural changes.

5.4.4 Erasure

Erasure in *Speakout* is less pronounced than in the other textbooks, but it is still present. While the textbook covers topics like recycling and waste reduction in some detail, it does not sufficiently address broader issues such as climate change, biodiversity loss, or the socio-economic factors contributing to environmental degradation. This selective focus on certain aspects of environmentalism may limit learners' understanding of the full scope of ecological issues. For instance, while Unit 5 does a commendable job of discussing the importance of reducing plastic waste, it does not delve deep into the systemic issues that contribute to plastic production and consumption at a global scale. This omission represents a form of erasure, where the complexity of environmental problems is simplified or ignored, potentially leading to a narrower perspective on environmental challenges.

5.4.5 Overall assessment

Overall, *Speakout* presents a more dynamic and engaging approach to ecolinguistics compared to *English File* and *Empower*. The textbook effectively uses metaphors to frame environmental issues within a moral and global context, encouraging learners to see themselves as part of a larger ecological movement. The strong evaluative language used in *Speakout* as compared with *English File* and *Empower* reinforces the importance of environmental action, though the focus on individual responsibility could overshadow the need for systemic change. Erasure is present but less severe than in the other textbooks, with *Speakout* covering a broader range of environmental issues, albeit still leaving some critical topics underexplored. As this study falls within the scope of foreign and environmental education and textbook analysis, it is significant to acknowledge the multimodal and educational aspects of the stuff under examination. As the primary theoretical foundation is taken from Stibbe's (2015) ecolinguistic theory, reflecting how language forms and shapes ecological connections , it also finds resonance with Kress (2003), in his seminal work related to meaning making in academic settings. Kress (2003) notion endorse the idea that how environmental meanings and texts are developed, stressed or omitted within English language textbooks. Among Stibbe's stories, metaphor and evaluation are the most prominent in *Speakout*, contributing to a more eco-centric narrative, while erasure remains a concern, albeit to a lesser extent than in *English File* and *Empower*.

5.5 Comparative analysis

5.5.1 Comparison of metaphors

Across the three textbooks, *Speakout* emerges as the most effective in utilizing metaphors to convey environmental messages. Metaphors in *Speakout* not only encourage learners to take personal responsibility but also position them as part of a global community with shared ecological duties. In contrast, *English File* tends to use metaphors that emphasize human control over nature, promoting a more anthropocentric view. *Empower*, while using metaphors less frequently, aligns more closely with *Speakout* in promoting collective responsibility, though with less emphasis on the moral dimensions of environmental issues. For example, the clause *"*leading the fight against a plastic planet" presents the environmental crisis as a global battle, positioning humans as warriors fighting against the damage caused by plastic pollution. This metaphor invokes a sense of urgency and collective action, suggesting that we are all involved in a struggle to save the planet.

In contrast, the expression “combating climate change” used in *English File* frames the issue as a battle or conflict that humans must win, emphasizing human intervention and control over nature, rather than a cooperative relationship with the environment. *Empower*, while using metaphors less frequently, aligns more closely with *Speakout* in promoting collective responsibility, though with less emphasis on the moral dimensions of environmental issues. For example, “If nature can do it, we can copy it,” reflects the idea of biomimicry, suggesting that humans can learn from and replicate nature’s systems. This metaphor emphasizes collaboration with nature, but without the emotionally charged moral responsibility present in *Speakout*.

5.5.2 Comparison of evaluation

Speakout also stands out for its use of evaluative language, using strong, emotive terms to emphasize the urgency and importance of environmental issues. *Empower* uses evaluative language moderately, with occasional strong terms, but tends to be more neutral overall. *English File* is the most restrained in its use of evaluation, often presenting environmental issues in a neutral tone, which may reduce the perceived immediacy of these topics among learners.

Speakout stands out in its use of evaluative language, using strong, emotive terms to emphasize the urgency and importance of environmental issues. For example, In Unit 5, terms like “critical,” “vital,” and “urgent” are used in sentences such as “It is vital to reduce plastic waste to prevent irreversible damage to our oceans.” The use of such strong evaluative language creates a sense of urgency and engages learners by emphasizing the potential consequences of inaction. *Empower* uses evaluative language moderately, with occasional strong terms, but tends to be more neutral overall. For example, the sentence “It is important to recycle to reduce environmental harm” conveys the necessity of recycling but does so in a neutral tone, without the emotional impact that might inspire immediate action. The term “important” is less powerful than “vital” or “urgent,” which are more commonly used in *Speakout. English File* is the most restrained in its use of evaluation, often presenting environmental issues in a neutral tone, which may reduce the perceived immediacy of these topics among learners. For instance, “Recycling is necessary for reducing waste in landfills,” while factual, lacks emotional depth and does not convey the urgency of the environmental crisis. Terms like “necessary” and “important” are used without the strong emotional appeal found in *Speakout*.

5.5.3 Comparison of erasure

Erasure is present in all three textbooks, but is most prominent in *English File*, where significant environmental topics are either omitted or minimally addressed. *Empower* also exhibits erasure, particularly in its limited discussion of broader environmental issues beyond waste management. *Speakout* has the least erasure, offering a more comprehensive, though still incomplete, coverage of environmental issues. However, even in *Speakout*, some critical topics, like climate change and biodiversity, are not as thoroughly explored as they could be.

Erasure is present in all three textbooks, but it is most prominent in *English File*, where significant environmental topics are either omitted or minimally addressed. For example, *English File* often focuses on waste management and recycling, but climate change – one of the most pressing global environmental issues – receives very little attention. The discussion is generally limited to personal actions, with few references to systemic causes or the global impact of climate change. While *English File* mentions waste management and encourages recycling, climate change is only briefly touched upon, without any in-depth exploration of its causes or effects. In contrast, *Speakout* dedicates a section to plastic pollution and positions it as part of a broader conversation about climate change and global environmental stewardship.

Empower also exhibits erasure, particularly in its limited discussion of broader environmental issues beyond waste management. While it touches on biomimicry and recycling, it does not delve deeply into topics such as deforestation, climate change, or biodiversity loss. In *Empower*, the metaphor of biomimicry is used to discuss how humans can learn from nature to solve environmental problems. However, while this promotes a collective responsibility toward the environment, the textbook does not engage deeply with larger, systemic environmental crises such as deforestation or biodiversity loss, which are essential components of any comprehensive environmental discussion.

Speakout has the least erasure, offering a more comprehensive, though still incomplete, coverage of environmental issues. For example, *Speakout* includes discussions on plastic pollution, recycling, and climate change, positioning learners as part of a global community that shares the responsibility for addressing these issues. However, even in *Speakout*, some critical topics, like biodiversity and the disproportionate impact of climate change on marginalized communities, are not explored in depth. While *Speakout* addresses plastic pollution and its link to climate change, it

does not extensively cover the impact of biodiversity loss, which is a critical issue in environmental discourse but remains underrepresented in all three textbooks.

5.5.4 Green vocabulary analysis

When analyzing sentences related to green content, *Speakout* again demonstrates a more eco-centric approach than *English File* and *Empower*, although all three textbooks show discrepancies between observed and expected frequencies. As seen in Chapter 4, the Chi-square results indicate that none of the textbooks fully meet the expected coverage of environmental issues, with *Speakout* coming closest but still falling short in certain areas, such as waste management and water pollution.

5.5.5 Ecosophy and Anthropocentrism vs. Ecocentrism

The overarching ecosophy that emerges from these textbooks is one that balances between anthropocentric and eco-centric perspectives. *Speakout* leans more towards an eco-centric approach, encouraging global citizenship and moral responsibility towards the environment. *Empower* also promotes collective responsibility but with less emphasis on ethical implications. *English File* remains more anthropocentric, focusing on human control and management of environmental issues rather than fostering a deep, interconnected relationship with nature.

5.6 Summary

To sum up, the analysis of *English File*, *Empower*, and *Speakout* reveals varying degrees of engagement with ecolinguistic principles. *Speakout* emerges as the most eco-centric of the three, using metaphors and evaluative language to create a compelling narrative around environmental issues, though it still exhibits some erasure. *Empower* offers a moderate approach, balancing between eco-centric and anthropocentric perspectives, while *English File* is the most limited in its coverage, with significant erasure and a more neutral evaluative stance. The findings suggest that, while these textbooks are beginning to incorporate environmental education, there is still much room for improvement. Future EFL materials should aim for a more comprehensive and balanced representation of environmental issues, with a stronger emphasis on systemic change and global responsibility.

6 Conclusion

The main aim of this dissertation was to examine green content in Italian high school English textbooks from an ecolinguistic perspective, particularly emphasizing how environmental themes are presented from a linguistic perspective. This research examined ecolinguistic content in three widely used EFL textbooks, i.e. *English File*, *Empower* and *Speakout.* The fact that these books are published by well-known EFL education publishers (*Oxford, Cambridge and Pearson*) guarantees that students receive a reliable and consistent level of education and coaching irrespective of their location and region. Almost every educational system, including Italian, requires schools to adopt particular guidelines, aims and objectives for EFL learning. It makes it convenient for EFL instructors to fulfil the pedagogical objectives set by the authorities, so textbooks from these recognized publishers are usually designed to align with these syllabus requirements.

This dissertation utilized quantitative as well as qualitative analyses, and adopted Stibbe's ecolinguistic framework, with the purpose to investigate to what extent green content and practices were incorporated in textbooks and the nature of their depiction. The findings of the analysis revealed significant gaps in the presence and importance of environmental discourse and green content in the analyzed textbooks, which constitutes a missed opportunity in language education to encourage environmental awareness and values of sustainability among young learners. In this last chapter, the major findings, theoretical and practical implications and recommendations and directions for future research are presented.

6.1 Summary of research findings

The findings of this dissertation indicated significant differences in the incorporation of discourse and content in the selected three textbooks. They also revealed that, in spite of the fact that the total word count of the three textbooks was 196,406, and there were as many as 9,645 sentences, green content was found to be only 0.2%.

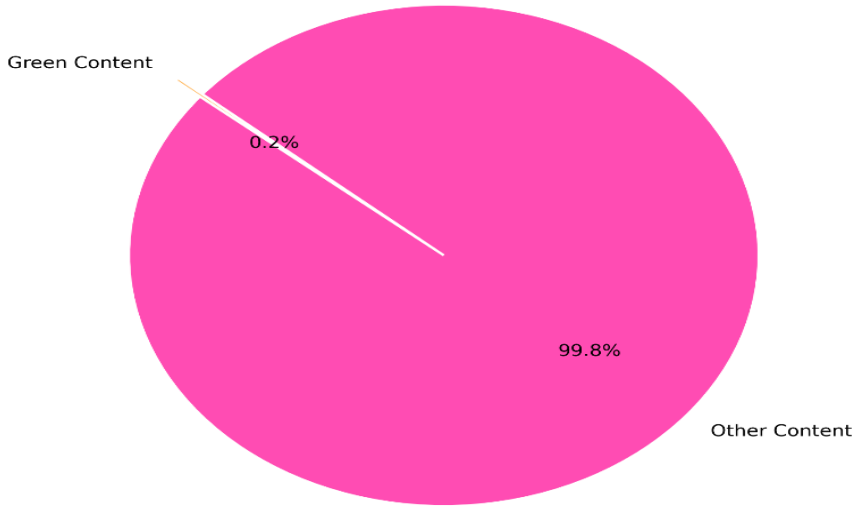


Figure 6.1 The proportion of overall green content in three textbooks

This minimal percentage of green content suggests that it is not sufficient to address the critical problems related to environmental and ecological sustainability and the ecosystem. The summary of the major findings is briefly reported below.

6.2 Quantitative findings

In this section, frequency of green vocabulary and chi-square analysis are discussed. The corpus analysis of the three selected textbooks (*English File, Empower, Speakout*) indicated that green content is not particularly frequent. In *English File*, only 113 words related to green practices were identified, which consisted of almost 0.258% of the total words in this textbook. *Empower* had 142 words related to green discourse, which is 0.206% of the total words. *Speakout*, the third and last textbook, had 179 words related to green content, i.e. 0.212%. It is also noted that the textbooks under investigation differ slightly in the proportion of the content related to green practices and environmental sustainability: the overall proportion remains very low, reflecting inadequate emphasis on environmental issues, as these frequencies are far below the expected levels for promoting environmental awareness in educational content. This reflects that, while some green content is present, its overall presentation is very low, not to say minimal, which could prevent the capability of students to engage meaningfully with green practices, environmental issues, and other related topics.

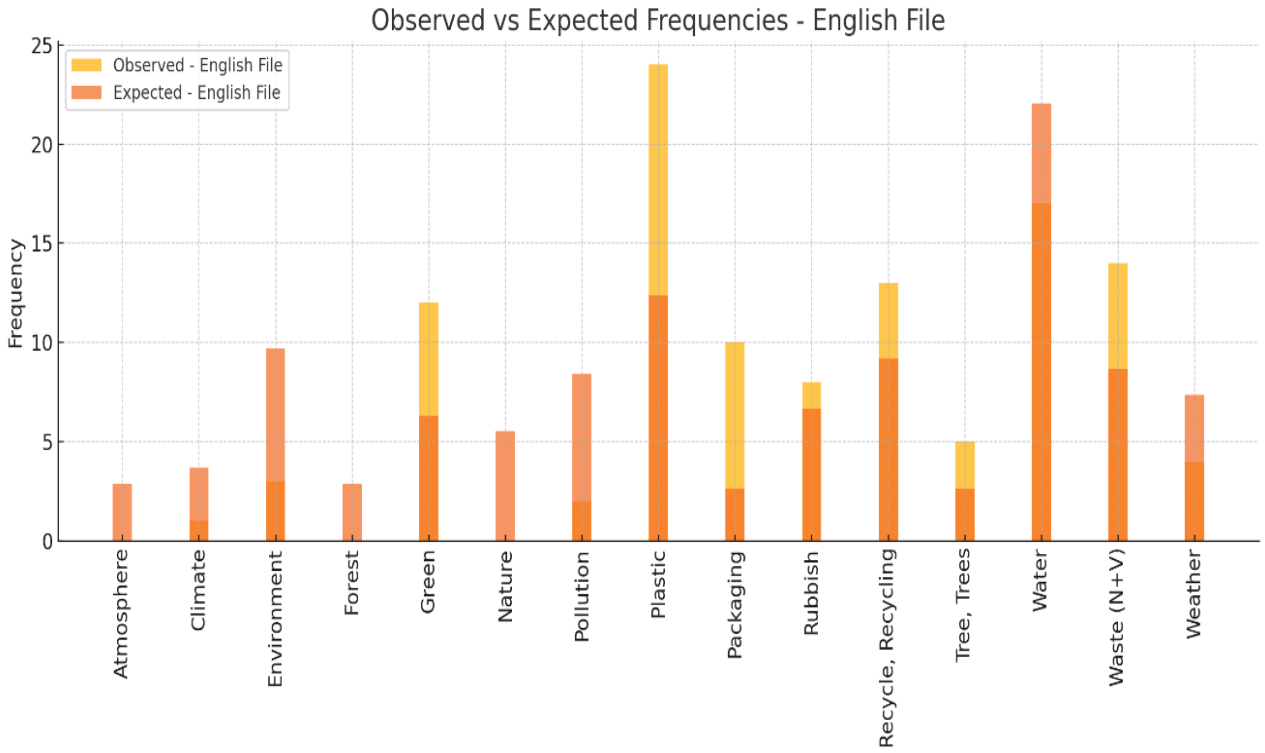


Figure 6.2 Observed & expected frequency in *English File*

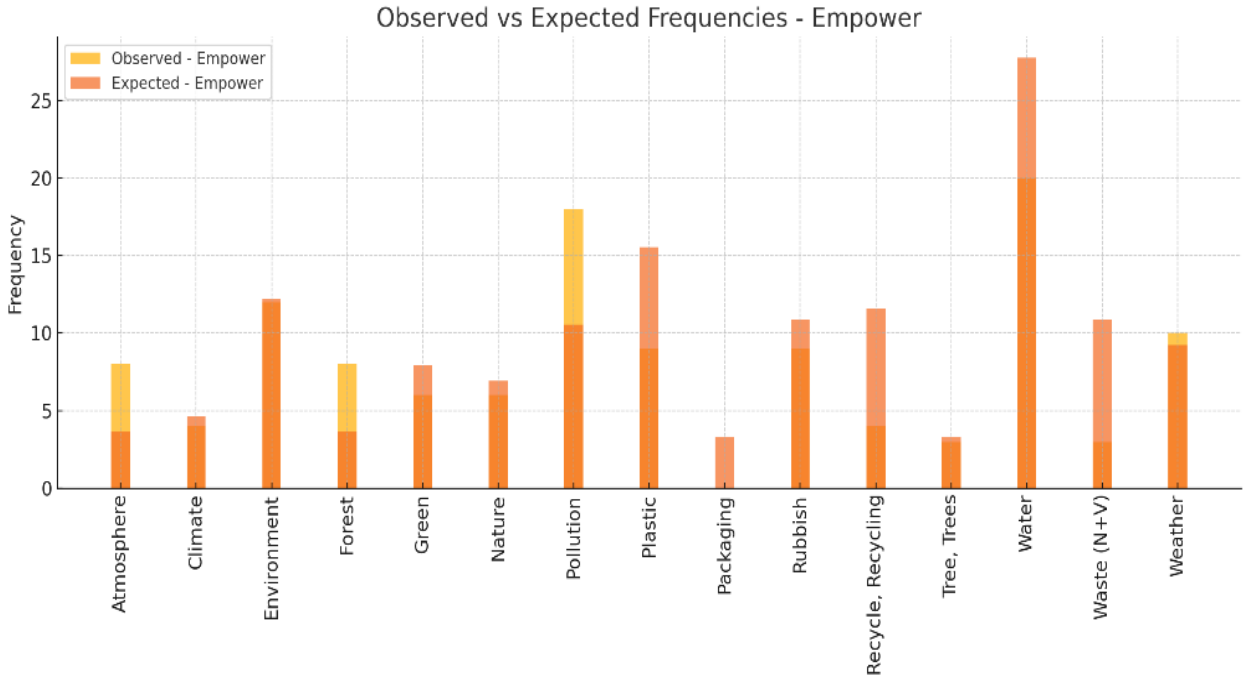


Figure 6.3 Observed & expected frequency in *Empower*

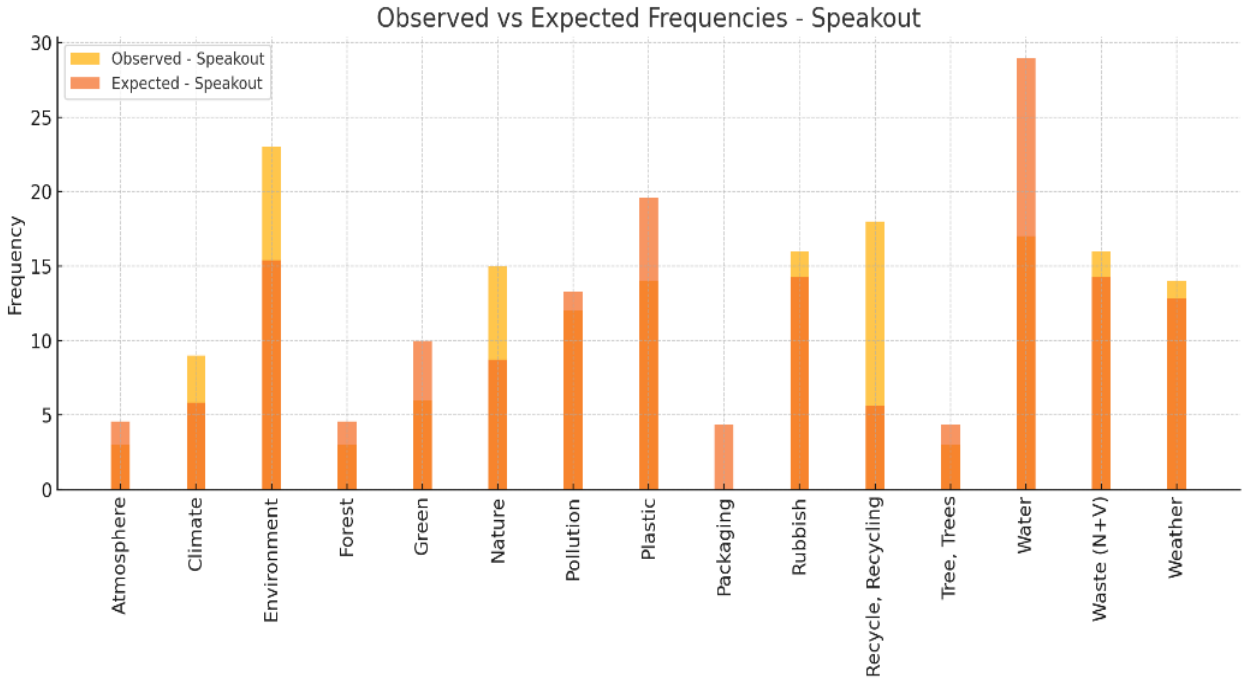


Figure 6.4 Observed & expected frequency in *Speakout*

Figure 6.2, Figure 6.3, Figure 6.4 show that expected frequencies of green content related to words are higher than the observed or actual frequencies in all three textbooks. In this dissertation, the results of this statistical analysis revealed a significant difference between observed and expected frequencies of green content related to words in all three textbooks, and confirmed that the representation of green and environmental content is considerably lower than expected. This reflects that, while some vocabulary related to green practices is present, its representation is minimal, and this could hamper the ability of students to engage with the green practices and other related topics.

English File: The expected frequency of words related to green content was slightly higher than the observed frequencies for most words, such as "plastic" (expected 12.35, observed: 24), "water" (expected: 22.06, observed: 17), "pollution" (expected: 8.41, observed: 2), "recycling" (expected: 9.20, observed: 13).

Empower: the obtained results for *Empower* indicated that expected frequencies were found to be higher than the observed frequencies, with "plastic" expected to appear 15.52 times, while it was actually observed only 9 times. The word "pollution" was expected to appear 10.56 times whereas it was observed 18.

Speakout: in the same way, *Speakout* unveiled lower observed frequencies as compared to expected frequencies for some green related words such as "climate" (expected: 5.84, observed: 9), and "pollution" (expected 13.32, observed: 12).

To sum up, expected frequencies were higher than the observed ones for ecolinguistic terms in general, leading us to the conclusion that green discourse and content is understated in the textbooks as compared to what one might expect for meaningful environmental education.

The analysis of sentences representing green content indicated that the highest expected frequency is related to the word "plastic", while the least expected frequencies are in sentences that contain the words "trees" and "packaging" (5 occurrences each).

A summary of the most interesting results related to sentence analysis is reported below.

English File: 68 sentences, with major words like "plastic" (21 sentences) and "water" (14 sentences) indicating that these were prominent words.

Empower: 67 sentences, with "pollution" (expected: 5.03, observed: 9) and "recycle /recycling" (expected: 6.29, observed: 3), indicating some emphasis on sustainability. However, the total presence of green content, as far as the number of sentences is concerned, remains low.

Speakout: the results indicated that 78 sentences were related to green content and, out of these, 36 were related to "plastic" and 14 to "recycling", reflecting some focus on the ecosystem and green practices. Nevertheless, again, the total overall green representation remains low, like in the other textbooks. The grand total of observed sentences for all three textbooks is 213, which still reflects only a small fraction of the total sentences in the selected textbooks, thus emphasizing a very low-frequency representation of green content at sentence level.

6.2.1 Research findings related to chi-square

To further investigate the first and second research questions, related to green content in words and sentences, a chi-square test was applied to determine if there is a significant difference between expected and observed frequencies related to green practices and content across three textbooks. The results indicated significant inconsistencies and differences between observed and expected frequencies, supporting the conclusion that the selected textbooks do not provide adequate green content related to environment and green practices.

Overall, high Chi-square values for the main "green" words in *English File, Empower and Speakout* was 130.68, which suggest that the observed results of green practices and content falls

significantly below what would be expected for meaningful environmental education in academic settings. This, in fact, is above the critical value *(CV)* of 41.337 at 0.05 significance level. This statistically significant result confirms that the representation of green discourse in the textbooks under investigation is not aligned with the expected levels. As, in this dissertation, the *p-value* was less than 0.05, the first null hypothesis was rejected, meaning that there was a significant difference between expected and observed frequencies of words related to green practices. These results support the conclusion that the target textbooks have insufficient content related to environmental and ecological awareness and this has important implications for ecological education.

The second research question asked if there was a significant difference between expected and observed frequencies of sentences within ecolinguistics content. The total Chi-square value for the green discourse related to sentences in all three textbooks was 73.63, which is above the critical value (*CV*) of 41.337 at the 0.05 significance level. With regards to *p-value*, which was 0.00, the obtained results confirmed that the differences between observed and expected frequencies of green sentences are statistically significant. The results also confirmed that the second null hypothesis (which assumed no difference between expected and observed frequencies) was rejected. This shows a statistically significant deficit and gap in the inclusion of green content at sentence level in all three textbooks under investigation. These results may serve as a foundation to understand how much of the overall content of these textbooks has been dedicated to environmental issues and green practices. The results actually demonstrate that these textbooks do not present sufficient environmental content, at both word and sentence level. Thus, it can be concluded that, based on obtained data, the textbooks fall short of promoting the kind of ecological awareness that is essential to raise environmental awareness through language education.

6.3 Qualitative findings

The same data were analyzed qualitatively using Stibbe's ecolinguistic theory, as summarized below.

6.3.1 Metaphors and evaluative language

After analyzing the data quantitatively, it was also interpreted qualitatively. It was thus noticed that *Speakout* employed more eco-centric language, including metaphors and evaluative language that endorsed environmental thinking. Across the three textbooks, *Speakout* appears as the most effective and impactful in employing metaphors to convey ecological messages.

Only in *Speakout* do metaphors help learners to take personal responsibility and position themselves as part of a global community with shared ecological duties. In contrast, *English File* tends to use metaphors that give more significance to human control over nature, endorsing a more anthropocentric view. Finally, *Empower*, while utilizing metaphors less frequently, aligns more closely with *Speakout* in promoting collective responsibility, though with less emphasis on the moral dimensions of environmental issues. It is also noticed that *English File* uses some very effective metaphors to convey ecological awareness. For instance, the sentence "leading the fight against a plastic planet", used in *English File* within the context of eco-centric view in unit 4B presents the ecological crisis as a universal battle, placing individuals as warriors fighting against the damage caused by plastic pollution. This metaphor signifies a sense of urgency and collective action, recommending that we all engage in an endeavor to save the planet. However, *English File* still utilizes metaphors that presuppose human control over nature, encouraging a more anthropocentric view. For instance, the expression "combating climate change" frames the issue as a battle or conflict that individuals or humans must win, stressing human intervention and control over nature rather than a cooperative relationship with the ecosystem. *Empower,* while utilizing metaphors less frequently, aligns more closely with *Speakout* in endorsing collective responsibility, though with less emphasis on the moral aspects of ecological problems. For instance, "if nature can do it, we can copy it", represents the concept of biomimicry, suggesting that humans can learn from and replicate nature's systems. This metaphor stresses collaboration with nature, but without the emotionally charged moral responsibility present in *Speakout*.

Speakout does not uses many distinctive words like "vital" or "necessary" in its utilization of evaluative language, issues related to the ecosystem and ecology. *Empower* uses evaluative language more moderately, with occasionally strong terms, but it is more neutral overall, For example, the sentence "It is important and necessary to recycle to reduce environmental harm" conveys the necessity of recycling, but does so in a neutral tone, without the emotional impact that might inspire immediate action. Finally, *English File* also uses evaluative language, but often projecting ecological problems in a neutral way, potentially reducing the perceived urgency of these topics, e.g. the factual statement that "recycling is necessary for reducing waste in landfills" lacks emotional depth and does not convey the urgency of the environmental crisis.

6.3.2 Comparison of erasure

Erasure is present in all three textbooks, but it is most prominent in *English File*, where important ecological topics are either eliminated or addressed minimally by the authors. *Empower* reflects

erasure too, specifically in its limited discussion of broader ecological issues beyond waste management. *Speakout* has the least usage of erasure, although some very important topics have not been discussed by this textbook either, such as biodiversity.

English File, for its part, often focuses on waste management and recycling, but climate change – one of the most pressing global environmental issues – receives very little attention. The discussion is generally limited to personal actions, with only a few references to systemic causes or the universal influence of climate change. While *English File* mentions waste management and encourages recycling, climate change is only briefly touched upon, without any in-depth exploration of its causes or effects. In contrast, *Speakout* dedicates a section to plastic pollution and positions it as part of a broader conversation about climate change and global environmental stewardship.

In *Empower*, the metaphor of biomimicry is used to discuss how humans can learn from nature to solve environmental problems. However, while this promotes a collective responsibility towards the environment, the textbook does not engage deeply with larger, systemic ecological crises such as deforestation or biodiversity loss, which are important components of any wide-ranging environmental discussion.

Speakout has the least erasure, offering a more comprehensive, though still incomplete, coverage of environmental issues. For example, *Speakout* includes discussions on plastic pollution, recycling, and climate change, positioning learners as part of a global community that shares responsibility for addressing these issues. However, even in *Speakout*, some critical topics, like biodiversity and the disproportionate impact of climate change on marginalized communities, are not explored in depth.

In short, it can be stated that *Speakout* appears as the most eco-centric of the three textbooks analyzed, *Empower* represents a moderate level engagement with green discourse, balancing between an eco-centric and an anthropocentric attitude to the ecosystem. Finally, *English File* includes the least green content, with a more neutral evaluative perspective and important examples of erasure.

This study is based on Stibbe's *Ecolinguistics: Language, Ecology and the Stories We Live By* (2015), in which this dissertation used three stories to scrutinize texts with green content, and the way erasure, evaluation, and metaphors can be useful to foreground climate change and endeavour to expose ecological ideologies in this regard (Khalil, 2023). This analysis further

confirmed the actual and everyday value of erasure, metaphor, and evaluation when used as frameworks for ecological analysis and to unearth ideologies. By scrutinizing these three textbooks, the researcher revealed that it depends on each of us to take care of the planet and act responsibly to tackle green issues. Additionally, this study calls on linguists to employ ecological analysis to illuminate the connection between language and ecological phenomena, inspire people to adopt an ecological ideology, and help them develop a newly found appreciation for nature (Khalil, 2023).

Thus, ecolinguistic analysis is very interdisciplinary and applies reflections from various fields to the analysis of texts, including ethics, the environment, ecology, economics and society. It demands shifting the focus of critical discourse analysis away from the subjugation of some human groups by other human groups and towards a comprehensive understanding of the impact of language on how we treat the ecosystems on which all life depends.

6.4 Theoretical implications

The theoretical implications of this dissertation are grounded in Stibbe (2015)'s ecolinguistic framework and contribute to the domain of ecolinguistic and educational discourse analysis.

6.4.1 Contribution to ecolinguistic theory

The research findings endorse the concept of erasure, an approach identified by Stibbe (2015) as either omitting or sidelining important green discourse and environmental elements. The constant use of the passive voice and euphemisms and the absence of agents who are considered to be the cause of ecological damage in theses textbooks indicate how erasure shapes the content, sometimes removing accountability and culprits who are responsible for damaging the ecosystem. This dissertation reflects how evaluative language can impact students' perception of ecological problems. The fact that strong evaluative words stressing ecological damage are not commonly used suggests a lack of emphasis on the urgency of environmental problems.

6.4.2 Framework for Ecological discourse analysis (EDA)

This dissertation also contributes to the broader domain of environmental or ecological discourse analysis (EDA) by reflecting how textbooks can be evaluated for their environmental representation, quantitively as well as qualitatively. The deductive approach used for this dissertation can serve as a model for future studies seeking to examine green discourse in educational content. The practical suggestions of this dissertation are valuable for numerous stakeholders, including textbook developers, educators and policy makers.

- For textbook developers: there is an urgent need to enhance green discourse in EFL textbooks. They should integrate more content that emphasize ecological and green practices and sustainability, including exercises that investigate the consequences of ecological (in)action, the significance of biodiversity and the contributing role of human beings in tackling climate change. The use of constructive ecolinguistic language, such as metaphors related to eco-centric metaphors, positive evaluative language, and explicit depiction of human actions should be prioritized to endorse environmental awareness.
- For educators: Educators and instructors play a significant role in bridging the gap between textbook content and learners' understanding of ecological problems. Educators have the opportunity to increase the currently inadequate green content in textbooks with supplementary or extra materials, e.g. articles on global warming, case studies on successful maintenance efforts, and collaborating activities that engage students with environmental problems. Educators should also critically evaluate and investigate the language utilized in textbooks, shedding light on examples of erasure and promoting discussions around liability and the ecological impact of human actions.
- For policy makers: Educators should also give priority to making sure that there is at least a minimum percentage of green content in language education textbooks and materials. Given the worldwide emphasis on sustainability and climate action, academic policies should ponder over these priorities by confirming that language textbooks play a contributing role to building an environmentally aware society. Ecological education should be combined into the curriculum across subjects, not merely within science-related disciplines, but also in language learning, social sciences, humanities and arts too.

6.5 Methodological contribution

Methodologically, this dissertation has adopted a corpus-based deductive approach that starts from the theory, and begins research by formulating a hypothesis that is then tested on a set of data.

This dissertation has addressed two main research questions by using directed content analysis as well as corpus analysis. Both research questions aimed to investigate the difference between expected and observed frequency of green content or ecolinguistic content within the target textbooks. The chi-square analysis indicated a statistically significant difference between the observed and expected frequencies of ecolinguistic words. This reflects a considerable underrepresentation of environmental vocabulary, confirming, after hypothesis testing, that the

selected textbooks do not meet the expectation that textbooks should incorporate ecolinguistic ideas and concepts. This confirms the need for considerable inclusion of contextually rich green content to inculcate a more detailed understanding of environmental sustainability among learners.

Methodologically, this study has thus contributed to the existing literature by using both quantitative and qualitative techniques and by testing empirical data in the Italian context.

6.6 Recommendations for future research

This dissertation sheds light on some avenues for future research:

- Cross-cultural analysis: future research could investigate how green practices are depicted in textbooks across various cultural contexts. This would permit a comparative analysis of how different educational systems give preference to ecological education and the differences in the representation of green content.
- Longitudinal studies: conducting longitudinal studies that track the development and growth of green linguistic depiction in textbooks over various editions could provide insights into whether sustainability themes develop and grow over time, and what the contributing factors to these variations and changes are.
- Impact studies: future research could examine the influence of green content on learners' attitudes and behaviors towards ecological problems. This type of research could determine whether the presence of green discourse in textbooks effectively develops environmental awareness and drives learners towards sustainable actions.
- Broader scope of educational materials: while this study has focused on language textbooks, future research could analyze other academic and educational content, e.g. workbooks, digital learning tools, and academic and classroom resources, to assess their contribution to green linguistics and discourse.

6.6.1 Reflections on limitations

Acknowledging the limitations of this dissertation is vital to understand the context within which the main research findings should be interpreted.

- Limited sample size: the study was limited to three English language textbooks (*English File*, *Empower*, *Speakout*) which are quite widely used in Italian high schools. Although

these textbooks represent a substantial portion of the curriculum, a larger sample would provide a more detailed picture of ecolinguistic representation across different educational content and countries.

- Manual coding limitations: although the procedure of converting PDF files through OCR was conducted by using specific software, Nitro Pro, the data files were also subsequently cleaned manually. In spite of efforts to ensure accuracy, there may have been errors, as automated methods are not always 100% reliable. Automated methods could become more reliable in the future, improving this aspect of research.
- Focus on high school: this dissertation focused entirely on textbooks addressed to high school students. Extending and expanding the research to include content for various age groups, like primary or tertiary education, will likely provide a more thorough understanding of the topics dealt with in this research.

6.6.2 Final remarks

To conclude, this dissertation has shed light on some important gaps in the integration of green content within Italian high school textbooks. In spite of increasing recognition of the significance of ecological education, the representation of environmental themes in the selected textbooks (*English File*, *Empower*, *Speakout*) is slight, not to say minimal, and amounts to a small percentage of the whole content. The findings indicated that the ecological content present is inadequate to efficiently develop environmental awareness and inspire green and sustainable practices among learners. By applying Stibbe's ecolinguistic framework, this dissertation has indicated that, while some positive ecolinguistic representation exists, there is still an important reliance on erasure and neutral evaluative language, which destabilizes the potential effect of ecological education. The utilization of positive environmental metaphors and evaluative language is more typical of *Speakout*, but was not predominant across all three textbooks, so it does not turn out to have a significant influence on learners' environmental awareness. The practical implications of this research are evident. Textbook developers should pay more attention to the inclusion of detailed and consistent green content. Educators should also be pro-active, utilizing additional materials to enhance the limited green content that is currently presented in textbooks. Policy makers should ponder over setting standards to include environmental content in academic resources, ensuring that learners are exposed to environmental and green language across disciplines.

Recommendations for future research stress the need to extend the scope of green discourse and green communication, no matter whether this is done through cross-cultural comparisons, longitudinal analysis or impact studies. Discerning how various cultural and academic systems handle green content can provide valuable insights into effective strategies to develop ecological awareness in academic settings. Finally, this dissertation intends to contribute to the ongoing dialogue on sustainability and green communication by promoting the integration of green discourse and ecolinguistic principles into language education. Language textbooks are not only an effective source for teaching vocabulary, phonetics, grammar and other strictly linguistic skills, but they are also cultural tools that shape learners' understanding of the world too. By ensuring that green content is well represented, educators can contribute to fostering a generation of students who are not only fluent in language but also conscious of ecological and environmental challenges. It is vital that education contributes to train conscious and responsible citizens capable of tackling and mitigating ecological issues that threaten our planet. This conclusion does not only summarize the findings of this dissertation, but it also shows the crucial role of education in fostering ecological awareness. The incorporation of environmental and green content into language education is an initiative towards a more sustainable future, empowering learners to understand their relation to the natural world and motivating them to become responsible, active global citizens.

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