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Constructing Dual-Carbon Narratives and Value Orientation in Senior High School English Textbooks: An Ecolinguistic Perspective

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Abstract

Against the backdrop of global climate change and the building of a community with a shared future for mankind, China has actively pursued its carbon peaking and carbon neutrality goals as part of ecological civilization and national development. As key texts for fostering virtue and spreading ecological ideas, senior high English textbooks shape teenagers' ecological values and boost their recognition of national strategies through content and narrative design. Drawing on ecolinguistics and the Big Idea oriented text analysis method, this paper makes a critical comparison of Carbon Footprint (Unit 3, PEP Selective Compulsory Book 4) and Climate Crisis: Who to Blame? (Unit 5, FLTRP Compulsory Book 3). The two units adopt different metaphor systems, narrative structures and subject positions to construct two sub ideas: individual oriented technological governance and global systemic justice, which jointly underpin the core Big Idea of multi dimensional, interconnected ecological responsibility. Their narrative logic echoes the dialectical thinking of combining top level design with public participation in Xi Jinping Thought on Ecological Civilization for a New Era. Therefore, ideological political instruction in English classes should go beyond superficial environmental discussions. A four stage teaching framework (deconstruction connection reconstruction output) can integrate language competence, critical thinking and recognition of the dual carbon strategy, cultivating young people with global vision, patriotism and a strong sense of mission for national rejuvenation.

Keywords

Dual-Carbon Narratives; Ecolinguistics; Textbook Analysis; Curriculum-Based Ideological and Political Education; Senior High School English

1. Introduction

1.1. Research Background

General Secretary Xi Jinping has explicitly stated that achieving carbon peaking and carbon neutrality entails an extensive and profound systemic transformation of the

economy and society, and has incorporated these goals into the overall framework of ecological civilization. The report to the 20th National Congress of the Communist Party of China further identified harmony between humanity and nature as an important feature of Chinese modernization and called for promoting green development and fostering harmony between humanity and nature. Based on China's new stage of building a modern socialist country in all respects and advancing toward the Second Centenary Goal, this constitutes a major strategic arrangement for building a Beautiful China (Ren, 2022). Within this context, education bears the critical responsibility of cultivating a new generation with ecological literacy. Owing to its cross-cultural communicative orientation, senior high school English is an important vehicle for communicating China's concepts of ecological governance, critically examining international ecological discourses, and guiding students toward sound ecological values. An ecolinguistic analysis of dual-carbon narratives in senior high school English textbooks and their discursive construction and value-orienting functions therefore has both theoretical significance and practical urgency.

1.2. Research Objectives and Significance

1.2.1. Research Objectives

Using ecolinguistics as its theoretical framework, this study conducts a critical discourse analysis of texts concerning the dual-carbon goals and climate issues in major senior high school English textbooks used in China. It seeks to reveal systematically how particular lexical, grammatical, textual, and metaphorical resources construct a core Big Idea concerning the dual-carbon goals and the climate crisis, together with a network of subsidiary ideas. It then examines the internal connections and mechanisms of value correspondence between this conceptual system and Xi Jinping Thought on Ecological Civilization for a New Era. Finally, the study explores how this linguistic analysis and value interpretation can be translated into an operational and systematic pathway for implementing ideological and political education in English courses. In doing so, it provides a theoretical basis and practical reference for fulfilling the fundamental educational task of fostering virtue through education and for cultivating students' ecological literacy and political identification through English teaching.

1.2.2. Research Significance

(1)Theoretical significance: By introducing the critical analytical tools of ecolinguistics into textbook research, this study moves beyond a superficial and descriptive review of content related to the dual-carbon goals and deconstructs the ideological frames and cognitive models embedded in the texts. This approach deepens the theoretical understanding of textbooks as vehicles of values and instruments of ideological construction, extends the application of ecolinguistics in

education, and offers an integrated analytical paradigm linking linguistic form, conceptual construction, and value orientation. It thereby addresses the limited linguistic depth and insufficient systematic integration of ideas in existing research.

(2) Practical significance: Through a detailed examination of specific textbook units, the study provides frontline English teachers with a linguistic lens through which to identify the deeper value structures of texts and recognize the ideological and political elements embedded in dual-carbon narratives with greater awareness and precision. The proposed Big Idea-oriented instructional design and implementation recommendations integrate value orientation into the development of language competence, promoting the deepening and internalization of ideological and political education in English classrooms. They consequently serve the core objective of cultivating students' awareness of ecological civilization, commitment to their country, and sense of global responsibility, while facilitating the effective fulfillment of the fundamental educational task of fostering virtue through education at the subject-teaching level.

1.3. Research Methods

1.3.1. Text Selection and Comparative Analysis

Purposive sampling was used to select Unit 3, “Carbon Footprint,” from Selective Compulsory Book 4 of the People's Education Press English series and Unit 5,“Climate Crisis: Who to Blame?,”from Compulsory Book 3 of the Foreign Language Teaching and Research Press English series as the principal texts for analysis. A parallel comparison across editions and units was conducted to identify commonalities and differences in how the two textbooks construct narratives around the same broad issues, namely the dual-carbon goals and the climate crisis, thereby enhancing the comparative rigor and explanatory power of the analysis.

1.3.2. Ecolinguistics-Informed Critical Discourse Analysis

(1) Lexicogrammatical analysis: The recurrence, collocations, and classification systems of keywords such as carbon footprint, crisis, blame, responsibility, and solution were examined to identify the semantic fields and cognitive frames they construct.

(2) Metaphor analysis: Dominant conceptual metaphors, such as THE CRISIS IS AN ENEMY, THE EARTH IS A HOME, and EMISSIONS REDUCTION IS A JOURNEY OR RACE, were identified and interpreted to reveal the deeper cognitive patterns and value orientations they shape.

(3) Narrative and discourse-structure analysis: The analysis examined narrative perspectives, including individualized and collective narratives, narrative logics such as problem-solution and attribution patterns, and the macrostructure of the discourse to determine how the texts establish issues, assign responsibility, and present courses of action.

(4) Subject positioning and intertextuality analysis: The analysis considered the subject positions assigned to student readers through discourse, such as those of responsible consumers and critically engaged global citizens. It also investigated how the texts establish intertextual connections with broader social discourses, including policy, scientific, and ethical discourses, through citation, resonance, and related practices.

1.3.3. Theoretical Interpretation and Model Construction

The findings from the linguistic analysis were placed in dialogue with the core principles of Xi Jinping Thought on Ecological Civilization for a New Era, including green development, a community with a shared future for humanity, and public participation. This process clarified the national strategic implications and the logic of value orientation embedded in the textbook narratives and informed the construction of an enhanced implementation model for ideological and political education in English courses, oriented toward the fundamental task of fostering virtue through education.

2. Theoretical Foundations

2.1. Ecolinguistics

This study primarily adopts the critical paradigm of ecolinguistics. Rooted in Halliday's systemic functional linguistics, this paradigm maintains that language does not passively reflect reality but actively constructs understandings of ecological relationships through particular grammatical and semantic choices. Its principal analytical dimensions include the following. First, the metaphor system examines whether nature is conceptualized as a resource or as a web of life, a distinction that directly reflects anthropocentric or ecocentric orientations (Stibbe, 2021). Second, the transitivity system considers how language represents processes, including whether nature is positioned as a goal that passively undergoes human action or as a participant with agency, thereby revealing latent power relations and allocations of responsibility within discourse (Halliday, 1994; Stibbe, 2021). Third, the modality system analyzes modal resources such as must, should, and may to determine how discourse communicates the attribution of ecological responsibility, the urgency of action, and the scope of possibility, all of which directly convey value orientation (Huang & Chen, 2017). Together, these linguistic tools provide a microanalytical pathway for deconstructing how textbook texts shape particular cognitive patterns concerning the dual-carbon goals.

2.2. Sociology of Textbooks

Textbooks are specialized texts produced through institutional processes and subject to state review. Their selection of content and organization of discourse are, in essence, processes of ideological selection and value transmission (Apple, 1990).

With regard to ecological issues, textbooks not only communicate ecological knowledge but also serve as crucial vehicles for shaping adolescents' ecological values, political identification, and understanding of national strategies (Hao, 2020). The United Nations Educational, Scientific and Cultural Organization framework for Education for Sustainable Development further emphasizes that education should cultivate values and behavioral patterns consistent with the Sustainable Development Goals. This framework provides a macro-theoretical basis for critically examining the value-orienting function of textbook texts within the broader contexts of China's national strategy, particularly Xi Jinping Thought on Ecological Civilization for a New Era, and the global agenda of education for sustainable development.

2.3. Big Idea-Based Instruction

Although linguistic analysis can reveal discursive features, it cannot fully explain how these features coalesce into deep, transferable cognitive structures with enduring influence. Big Idea theory provides an essential complement in this regard. A Big Idea is a core concept, principle, or theory located at the heart of a discipline, possessing lasting value beyond the classroom and facilitating understanding and transfer. As students develop an understanding of Big Ideas, they gradually acquire discipline-specific modes of thinking and cognitive strategies in English, thereby progressing from knowledge acquisition to the development of individual competence (Wang & Wei, 2025). Wang Qiang (2021) further argues that Big Ideas serve as pivotal anchors for integrating knowledge acquisition, language development, cognitive growth, and value formation. In ecological education, instruction organized around Big Ideas can help students integrate fragmented environmental knowledge into a systematic and profound ecological understanding, which is more likely to lead to responsible environmental behavior.

3. Analysis of the Research Topic

3.1. Current State of the Problem

Although scholarly discussion of dual-carbon narratives in senior high school English textbooks has begun to emerge, existing research displays several notable limitations:

(1) Insufficient analytical depth: Most studies remain at the level of cataloguing environmental themes and vocabulary. They have not systematically applied the critical tools of ecolinguistics to deconstruct how textbooks implicitly construct cognitive frames and ideologies through linguistic mechanisms such as metaphor and transitivity.

(2) Lack of systematic integration: Existing analyses are often fragmented and do not use Big Idea theory to organize, extract, and connect dispersed content. Consequently, they struggle to reveal the deep and transferable structures of

ecological understanding that the textbooks seek to develop.

(3) Disconnection from pedagogical application: Existing research often ends with textual analysis. It neither effectively connects the national dual-carbon strategy with the requirements of ideological and political education across the curriculum nor proposes specific instructional pathways integrating language learning, conceptual construction, and value identification. As a result, value orientation can easily become superficial.

4. Analysis and Findings

4.1. Analytical Process

4.1.1. Critical Discursive Deconstruction of the Texts

(1) People's Education Press, Unit 3, “Carbon Footprint”: The text repeatedly uses words such as calculate, reduce, offset, lifestyle, and choice, with collocations concentrated on the quantitative relationship between individual behavior and emissions. Its dominant metaphors are A CARBON FOOTPRINT IS A PERSONAL ACCOUNT and EMISSIONS REDUCTION IS A HOUSEHOLD ENERGY-SAVING COMPETITION. The narrative perspective is highly individualized and follows a clear linear problem-solution structure, moving from high emissions to low-carbon choices. Transitivity analysis shows that the grammatical subjects are predominantly you or individuals, whereas nature is commonly positioned as a goal to be measured and managed. This construction assigns readers the subject position of responsible consumers expected to engage in meticulous self-management.

(2) Foreign Language Teaching and Research Press, Unit 5,“Climate Crisis: Who to Blame?”: The central lexical set consists of crisis, justice, responsibility, policy, system, and global. The dominant metaphors are THE CLIMATE CRISIS IS AN UNJUST TRIAL and THE EARTH IS A FRAGILE SHARED HOME. A multivoiced debate structure presents multiple perspectives concerning historical responsibility, the right to development, and intergenerational equity. In the transitivity system, grammatical subjects frequently include developed countries, governments, and the system, foregrounding systemic actors. The text thus positions readers as rational citizens capable of critical inquiry and advocacy for global justice.

4.1.2. Theoretical Integration of the Big Idea System

The two units converge on an overarching Big Idea: responding to the climate crisis requires a pluralistic, multilevel, and interconnected understanding of ecological responsibility. This idea emphasizes the diversity and interdependence of responsible actors and pathways for action.

This overarching Big Idea is supported by two distinct yet complementary subsidiary ideas. First, the People's Education Press unit constructs the idea of individual technological governance, emphasizing the management of personal lifestyles through quantitative understanding and green technologies. Second, the

Foreign Language Teaching and Research Press unit constructs the idea of global systemic justice, emphasizing the examination of responsibility allocation and a just transition from historical, political, and economic perspectives. Operating at the respective levels of micro-level action and macro-level structure, the two ideas jointly enrich the understanding of ecological responsibility.

4.1.3. Interpretation of Value Connections with National Strategy

The findings indicate that the subsidiary idea of individual technological governance closely corresponds to the call for public participation through simple, moderate, green, and low-carbon lifestyles. The subsidiary idea of global systemic justice, meanwhile, embodies the principle of common but differentiated responsibilities and the vision of building a community with a shared future for humanity in global governance. Their dialectical unity illustrates the practical logic of combining top-down design with bottom-up public participation in the construction of ecological civilization.

4.1.4. Construction of an Enhanced Pathway for Curriculum-Based Ideological and Political Education

Ecolinguistic tools are used to deconstruct the discourse of the texts and guide students in connecting personal experience with national strategies and global issues. Through dialogue among multiple ideas, students reconstruct a systematic and critical understanding of ecological responsibility. Project-based learning and related approaches then enable them to move from cognition to the value-laden practice of responsible expression and advocacy.

4.2. Concluding Findings

First, the textbooks construct complementary dual-carbon narratives and cognitive frames through distinct linguistic strategies. The People's Education Press text foregrounds quantitative and technical vocabulary, individualized metaphors, and a solution-oriented narrative to construct an ethic of micro-level action. By contrast, the Foreign Language Teaching and Research Press text foregrounds systemic and political vocabulary, ethically oriented metaphors, and critical inquiry to construct a macro-level systemic perspective.

Second, the differentiated narratives jointly serve an integrative and multilevel Big Idea of responsibility. Rather than providing a single answer, the textbooks present individual and systemic dimensions of responsibility, guiding students to form a complex, multidimensional, and interconnected structure of ecological understanding that transcends simplistic either-or thinking.

Third, the textbook narratives are organically embedded in the value system of China's thought on ecological civilization. The two subsidiary ideas respectively correspond to and communicate the domestic practical dimension of green living and the international dimension of fairness and justice. In this way, the values

underpinning the dual-carbon strategy are contextualized and made concrete within subject teaching.

Fourth, effective value orientation depends on a systematic instructional design that progresses from discourse analysis to practical transformation. The pedagogical pathway constructed in this study provides an operational framework for transforming the static dual-carbon narratives of textbooks into a dynamic practice of curriculum-based ideological and political education that promotes the coordinated development of language competence, thinking quality, and value identification.

5. Conclusions and Prospects

5.1. Conclusions

By integrating the critical paradigm of ecolinguistics with Big Idea-based instruction, this study systematically examines dual-carbon narratives in senior high school English textbooks to reveal their mechanisms of discursive construction, cognitive shaping, and value orientation. The principal findings and conclusions are as follows.

The analysis first demonstrates that senior high school English textbooks are not neutral vehicles for knowledge about the dual-carbon goals. Instead, they actively construct particular cognitive frames through highly selective and strategic discursive practices. Specifically, through the central metaphor of the carbon footprint and an individualized narrative, the People's Education Press textbook constructs a subsidiary idea of individual technological governance centered on quantitative understanding, technological solutions, and personal responsibility. The Foreign Language Teaching and Research Press textbook, in contrast, develops a subsidiary idea of global systemic justice through an ethical framework of accountability for the climate crisis and a systemic analysis that emphasizes historical responsibility, global equity, and collective action. Although these narrative modes differ markedly in their linguistic features, they are dialectically unified at the conceptual level. Together, they support and point toward a more fundamental Big Idea: responding to the climate crisis requires a pluralistic, multilevel, and interconnected system of ecological responsibility.

Building on these findings, the study moves beyond textual critique and constructs a four-stage pathway for deepening curriculum-based ideological and political education through deconstruction, connection, reconstruction, and output. This pathway provides clear and operational methodological support for teachers seeking to integrate the development of language competence, critical thinking, concepts of ecological civilization, and commitment to one's country within English instruction. It thereby responds directly to the need to fulfill the fundamental educational task of fostering virtue through education at the subject-teaching level.

5.2. Limitations and Prospects

5.2.1. Limitations

The scope and methodology of the study impose three principal limitations.

First, sample coverage is limited. To enable an in-depth comparative analysis, only the most representative unit from each of two textbook series was selected as a core sample. Although this choice facilitates a detailed account of narrative mechanisms, the generalizability of the conclusions remains to be tested. Related texts in different grades and modules may construct more complex or differentiated ideas. A comprehensive account of dual-carbon narratives across the textbooks therefore requires a broader survey of texts.

Second, the methodology requires further validation. The study primarily employs qualitative textual analysis, and its conclusions derive from theoretical interpretation and discursive deconstruction. Although the argument is internally coherent and closely aligned with the theoretical framework, it lacks support from quantitative data, such as surveys of students' reception of different narrative modes, and from empirical evidence of instructional outcomes. The effectiveness of the proposed pedagogical pathway consequently remains at the stage of theoretical reasoning and design and requires further practical validation.

Third, the analytical dimensions are necessarily focused. The study concentrates on the static discursive construction of textbook texts and does not fully examine how teacher-student interaction dynamically reinterprets, negotiates, or challenges the ideas and subject positions presupposed by those texts. The value-orienting function of textbook narratives is ultimately realized in classroom practice, yet the complexity of this implementation process lies beyond the central scope of the present analysis.

5.3. Future Directions

By analyzing senior high school English textbooks, this study has examined how dual-carbon narratives are represented and discursively constructed in basic education, providing textual evidence for a deeper understanding of how China's national dual-carbon strategy is incorporated into education. In light of the core findings and limitations, future research can further develop this line of inquiry in close alignment with national strategic priorities through the following directions.

First, longitudinal and cross-disciplinary comparative research should be conducted. Future studies can systematically trace the diachronic evolution of dual-carbon narratives across different textbook series and reveal how national strategic discourse is incorporated into and adapted within textbooks. The research scope can also be extended to textbooks in history, geography, Chinese language, and other subjects for cross-textual comparison. Such work would enable a holistic assessment of the extent to which the dual-carbon goals permeate the education system and of the mechanisms of coordination among subjects, thereby showing

how national top-level design is represented across the curriculum.

Second, empirical research and the evaluation of instructional outcomes should be advanced. Future work should combine theoretical analysis with empirical validation. Questionnaires and interviews can be used to investigate students' understanding and reception of dual-carbon narratives, while instructional experiments can test the effectiveness of relevant content in enhancing ecological awareness, strengthening identification with national strategies, and developing integrated language competence. This would shift dual-carbon education from curriculum design toward outcome validation and support the national objectives of talent cultivation and ecological civilization.

Third, greater attention should be paid to classroom practice and the development of teachers' discursive competence. Classroom observation and discourse analysis can be used to investigate how teachers interpret, communicate, and reconstruct the dual-carbon narratives in textbooks, as well as how students understand and internalize this national issue through interaction. Such studies would not only test the conclusions of textual analysis but also highlight teachers' critical role in educating students about national strategies, thereby providing an empirical basis for targeted professional development and stronger instructional competence in relation to dual-carbon issues.

In conclusion, this study offers an analytical perspective and preliminary findings on how textbooks carry and communicate China's national dual-carbon strategy. Its full value, however, must be tested and extended through subsequent research that is more closely connected to educational practice and national strategic needs. Only through the organic integration of textual narratives, classroom practice, and national strategic planning can dual-carbon education be effectively implemented at the stage of basic education.

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