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An Analysis of Multimodal Illustrations in Ecological Units of Junior High School English Textbooks

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Taking the Oxford Shanghai Junior High School English textbooks as a case study, this research explores the use and functions of textbook illustrations within ecological units. By examining the distribution of ecological units, the types of illustrations, and their applications, this study draws on multimodal theory to reveal the functions of these illustrations in facilitating students' acquisition of ecological knowledge and cultivating their environmental awareness. The findings aim to provide references for the effective utilization of textbook illustrations in English teaching, thereby contributing to the enhancement of instructional quality and the development of student competencies.

Keywords: English textbook illustrations, multimodality, ecological units, junior high school

Introduction

As environmental issues become increasingly important, ecological education now plays a significant role in fundamental education. English textbooks serve as key tools for delivering knowledge, and the illustrations in their ecological units are essential for helping students understand ecological concepts and develop their environmental awareness.

The English Curriculum Standards for Compulsory Education (2022 Edition) sets clear pedagogical goals for ecological education across grades in junior high school. In the sixth grade, with the help of textbook illustrations, students are expected to build vocabulary related to nature and ecology, and describe common natural phenomena and ecological scenes in English, which helps arouse their ecological concern. In the seventh and eighth grades, students need to expand their ecological knowledge, understand more complex relationships and humans' impact on environment, analyze related problems, and propose solutions. The purpose is to strengthen their environmental awareness and ability to discuss ecological topics in English. In the ninth grade, using textbook illustrations, students are expected to explore global ecological issues in greater depth. They should be able to find and interpret data, analyze and think critically, and form their own views. Meanwhile, they are encouraged to advocate for environmental protection and develop a sense of responsibility and a global perspective to help address ecological challenges.

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This study closely examines how illustrations are used in the ecology units of the junior high school English textbooks (Oxford Shanghai Edition, China), focusing on the types of illustrations, their distribution across grades, and how well they connect with the teaching contents. The goal is to explore how these illustrations help students build their understanding of ecology, encourage them to think about environmental issues, and offer suggestions for improving the design and use of textbook illustrations in English teaching.

Multiliteracy and Textbook Illustrations

With the diversification of communication methods, the traditional language-centered mode of meaning-making has gradually shifted to a multimodal one composed of various semiotic systems. The traditional model of literacy can no longer meet the communicative needs, prompting individuals to explore new modes of literacy. The New London Group (1996) introduced the concept of multiliteracy, and students are required to understand multimodal discourses. Visual elements, such as tables, graphics, symbols, and animations all fall under the category of multimodal discourses. These forms can enrich students' language input and broaden the channels for English teaching and learning (Zhang, 2009). According to multimodal theory, meaning is constructed through the interaction of various modalities (e.g., language, images, sounds, and actions), which work together to complement and enhance communication. In the context of textbook design, the text modality and the illustration modality constitute two highly significant meaning-generating resources.

In textbooks, modalities, such as text and illustrations collaborate to convey meaning. The image modality enjoys unique advantages, being capable of swiftly seizing attention, communicating information more intuitively, and enhancing students' learning interest and engagement. For instance, in ecological units, while the text expounds upon the principles of ecological phenomena, the illustrations present them in a visual mode. The symbiotic combination of the two communicates knowledge more accessible to students.

Currently, research on English textbook illustrations has made some progress. Some studies focus on the relationship between illustrations and text, emphasizing the synthesis of the two in teaching (Zheng & Yang, 2021). In terms of the functions of illustrations, many scholars agree that they help capture students' attention, support their understanding of the text, and increase their motivation to learn (Li, 2021). Zhang and Huang (2023) discuss the pedagogical problems of illustrations in junior high school English textbooks to develop students' thinking ability. Zhong (2024) analyzes illustrations in senior high school English textbooks from the perspective of cognitive psychology. However, very little research has focused specifically on the illustrations in the ecological sections of junior high school English textbooks. Gaps remain in comparing how these illustrations are used across different grades, what types appear, and whether they match curriculum requirements. This study aims to provide a comprehensive analysis and offer useful insights for using English textbook illustrations in junior high school ecological education.

Analysis of Illustrations in Textbook Ecological Units

Distribution of Ecological Units in Junior High School English Textbooks

As shown in Table 1, the Oxford Shanghai Edition Junior High School English textbooks include one ecology unit per grade, with the ecological themes becoming progressively more advanced from the sixth to the ninth grade. In the sixth grade, the focus is mainly on basic elements and phenomena of the natural world. For example, the unit "Windy weather" centers on weather, and the unit "Sea water and rain water" starts with

familiar forms of water, so the overall approach is relatively simple and concrete, aimed at giving students an initial understanding of nature. In the seventh grade, the content begins to explore natural elements and related phenomena more deeply. For instance, the unit "Water Festival" introduces the importance of water in human life from a cultural perspective, moving from natural phenomena to connections with human life, culture, and energy. In the eighth grade, the attention shifts more directly to the relationship between nature and the environment with a broader scope. For example, the unit "Trees" examines the role of trees in the ecosystem, and the unit "Water" explores environmental issues related to water resources. This reflects a clear pattern of gradual expansion and deepening of ecological themes, moving from simpler to more complex contents.

Table 1

Distribution of Ecological Units

Grade	Module	Module theme	Unit theme
6	M3	The natural world	Windy weather Sea water and rain water Forests and land Controlling fire
7	M3	The natural elements	The wind is blowing Water Festival Electricity
8	M1	Nature and environment	Trees Water Electricity
9	M1	Environment and life	Saving the Earth Life in the future

In teaching ecological units, texts can explain abstract ideas like ecological principles and concepts in detail. Meanwhile, illustrations can show concrete examples, visualize processes, or present data through charts. This approach helps students grasp abstract theories while also benefiting from visual examples, which deepens their understanding and improves retention. Ultimately, it supports students in building ecological knowledge, while also developing their broader skills and innovative thinking.

Classification of Textbook Illustrations

Textbook illustrations can be categorized into four major types based on their presentational modalities: cartoon, photograph, chart, and table. Each of these types serves a different but important function in the teaching process of junior high school English ecological units.

Cartoons use artistic techniques like exaggeration and anthropomorphism to create images full of fantasy and childlike charm. In ecological contexts, they bring natural elements to life, portraying animals and plants in vivid and engaging ways. As a result, cartoons more effectively capture students' attention and spark their interest in living organisms. Photographs, valued for their authenticity and immediacy, accurately capture natural landscapes, ecological phenomena, and how humans interact with nature. In ecology units, photos make students feel like they are actually in nature, giving them a sense of its beauty and wonder while building their awareness of the natural world. Charts, through concise and clear graphic symbols, take on the important task of explaining complex ecological knowledge. In junior high school ecological education, when students encounter numerous abstract concepts, principles, and processes, charts play a key role in simplifying complexity. Charts and diagrams

show complex ideas like energy flow, nutrient cycles, and biological evolution in a clear, visual way. By presenting information step by step, they help students organize what they learn and build a solid understanding of how ecosystems work. This gives students a strong foundation for future learning. Tables present ecological information by combining words and numbers in a clear format. They are especially useful for comparing different items, such as their quantities, features, or locations. Tables can also show how data change over time or how parts make up a whole. This enables students to understand the structure of ecosystems and the relative importance of each component from a broader perspective, thereby developing their data analysis skills and comprehensive understanding of ecological issues.

Functions of Illustrations in Ecological Units

Illustrations serve several important functions in junior high school English ecological units. In terms of presenting knowledge, illustrations work as effective tools for making abstract ecological ideas more concrete. Ecological knowledge includes many difficult concepts, principles, and processes that can be challenging for junior high school students to understand. Through clear visual imagery, illustrations can turn these abstract ideas into forms that are easier to grasp. They can show complex ecosystem structures, life cycles of organisms, and ecological processes in ways that students can more easily follow. This speeds up learning, boosts efficiency, and helps students build a richer understanding of how ecosystems work.

From the perspective of emotional impact, illustrations can evoke strong feelings in students. Beautiful images of natural landscapes can inspire students' love, curiosity, and appreciation for nature, which may help them develop sensitivity to its beauty and, in turn, foster a sense of respect and a willingness to protect it. Meanwhile, images that show environmental harm can send a powerful visual signal, which can raise students' awareness of ecological problems and strengthen their commitment to protecting the environment. In terms of conveying cultural meaning, illustrations can vividly show how people from different cultural backgrounds interact with nature, understand ecological concepts, and practice traditions that reflect respect for the natural world. Through these images, students are introduced to a wide range of ecological cultures around the world, which broadens their cultural horizons and fosters cross-cultural awareness and understanding.

Statistical Results and Discussion

Table 2 shows the distribution of textbook illustration types across grades. In sixth-grade textbooks, the distribution of illustration types is notably uneven. Cartoons account for the largest share at 87%, while photographs make up 13%. In contrast, charts and tables are not present. This pattern indicates a clear preference for using cartoons to present contents related to the natural world. A possible explanation is that cartoon illustrations are more effective at engaging students at this developmental stage and supporting their initial, visual understanding of nature. In seventh-grade textbooks, the distribution of illustration types is more varied. Cartoons account for 40%; photographs appear as a major category, representing 44% of the total. Charts make a modest appearance at 15%, while tables constitute a minimal share of 1%. This distribution suggests that in the seventh-grade textbook, a greater number of real-life images are introduced, likely to provide students with a more direct experience of the natural world, while cartoons are still used to support understanding.

In eighth-grade textbooks, cartoons remain the most frequently used type, though their proportion decreases to 58%. Photographs account for 32%, a decline from the previous grade. Charts maintain a consistent presence at 10%, while tables are in absence. This pattern shows that cartoons remain the dominant illustration type, while other formats are gradually added to match students' cognitive development. In the ninth-grade textbooks,

cartoons increase in frequency again, accounting for 64% of the total, but photographs decrease sharply to 4%. Charts rise substantially to 27%, while tables appear in small numbers, taking up 5%. This distribution indicates that cartoons remain common, while the use of charts has grown significantly. Such changes likely support students in grasping the abstract ideas presented at this learning stage.

Table 2

Distribution of Textbook Illustration Types Across Grades

Grade	Illustration types (percentage)			
	Cartoon (%)	Photograph (%)	Chart (%)	Table (%)
6	87	13	0	0
7	40	44	15	1
8	58	32	10	0
9	64	4	27	5

Across the four grade levels, cartoon illustrations consistently occupy a prominent position, although their proportions vary. Photographs reach their highest usage in the seventh grade and then gradually decline. Charts show an obvious increase in the ninth grade. Tables are absent in the sixth grade and appear occasionally in the ninth grade. The distribution of illustration types is adjusted according to the contents taught at each grade and students' cognitive development, in order to better meet the needs of education.

The cognitive abilities of sixth-grade students are still at an early stage of development. Cartoon illustrations can effectively capture their attention and support their understanding of new contents. Sixth-grade students may find charts difficult to understand. As students move to higher grades and their capacity for abstract thinking grows, their need for more intuitive form of illustration decreases. The introduction of charts in seventh grade likely coincides with the point at which students begin to engage with content that requires data interpretation and logical analysis. Seventh-graders, as their cognitive abilities develop, may benefit from more concrete real-world examples to support their learning. Photographs provide them with a direct look at actual situations, helping to build a perceptual foundation for knowledge. However, as academic demands increase in the eighth and the ninth grades, with greater focus on theoretical knowledge and logical analysis, the supporting role of photographs becomes less central. A shift in the focus of knowledge in the eighth grade may explain the decrease in chart usage during that year. By the ninth grade, as the demand for data analysis and logical reasoning skills increases, textbooks appear to increase the use of charts again to help students work with more complex materials. Regarding tables, sixth graders may struggle with this format. The small number of tables in the seventh grade likely aims to introduce students to basic data organization. In the eighth grade, the contents may not fit table formats well. The return of tables in the ninth grade may support the presentation of comparisons and categories, helping students organize their understanding.

In summary, the use of different illustration types changes across grade levels. Cartoons dominate in lower grades but decline as students advance. Photographs are used most frequently in the seventh grade and then decrease. Charts begin to appear in noticeable numbers in the seventh grade and continue with some variation afterward. Tables make up the smallest share of illustrations and their use tends to change frequently from grade to grade. These patterns suggest that textbook writers adjust their choice of illustrations based on students' cognitive development and learning needs at each grade level, in order to better support teaching and help students learn.

Conclusion

This study examined how textbook illustrations are used and what functions they serve in the ecological units of junior high school English textbooks across different grades, and clear differences in usage patterns have been found. Cartoon illustrations dominate in the lower grades and gradually decrease as grade level increases. Photographs reach their highest point of use in the seventh grade and then decline in the eighth and ninth grades. Charts first appear in the seventh grade and continue to be used throughout. Tables, however, account for a relatively small share in each grade and show frequent changes in use. These patterns suggest that textbook writers have taken students' cognitive development into consideration. However, textbook writers need to carefully choose the right types of illustrations to ensure that the contents of the images align well with the key learning points. Meanwhile, attention should be paid to the practical visual preferences and cognitive characteristics of students so as to optimize the presentation of illustrations in textbooks.

This study has only explored some of the patterns in textbook illustration use. It is hoped that future research can investigate the topic more comprehensively, thereby providing stronger theoretical support for educational practice and contributing to the advancement of education.

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