

An Analysis of the Thematic Meaning of Illustrations in High School English Textbooks Based on Visual Grammar Theory

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Abstract: *As a significant multi-modal resource in English textbooks, illustrations can effectively facilitate English teaching. Based on Visual Grammar theory and thematic context requirements of new English curriculum for high school, the study analyzes the illustrations in the Reading and Thinking section of high school English textbooks (2019) for People's Education Press in term of thematic meaning construction. It is discovered that the overall design and selection of the illustrations in this section basically cover the three major thematic contexts, but there are still some problems--uneven coverage of the thematic clusters and a deficiency in the function of meaning construction. The study intends to provide the textbook editors and English teachers with useful advice on how to design, select and utilize illustrations.*

Keywords: *Visual Grammar Theory; Textbook Illustrations; Thematic Meaning; High School English*

1. Introduction

General Senior High School English Curriculum Standards (2017 edition) (new curriculum standards for short) emphasize that the exploration of thematic meaning should be regarded a central task in both teaching and learning. In classrooms led by thematic meaning, teachers are encouraged to fully explore the cultural information embodied within specific themes and to identify key points for developing students' thinking qualities^[1]. Serving as an essential tool to assist students in their learning process, illustrations provide a visual mode of expression that integrates textual information with graphics^[2]. Illustrations and text coexist within the same textbook text, and symbiotically inhabit the same educational context, jointly expressing subject knowledge^[3]. They work together to achieve the educational goals of the English curriculum. A textbook illustration is an integral part of the thematic meaning of a discourse, capable of visually reconstructing thematic contexts and effectively facilitating students' grasp of the potential meanings, thereby fostering English subject core competencies. However, there is a dearth of articles analyzing textbook illustrations from the perspective of thematic meaning, and there is an inadequate understanding of the grammatical analysis of illustrations and the analysis of thematic meaning within them. Visual grammar theory manifests how visual resources express meaning, clarifying the relationships between various elements within visual resources and the synergistic effects between visual and textual resources. It has been widely applied to the study of the design and use of visual resources in textbooks^[4]. Therefore, based the framework of visual grammar theory and the thematic context requirements, the study follow a mixed approach to analyze the illustrations in Reading and Thinking section of high school English textbook (2019) for People's Education Press in term of construction of thematic meaning, aiming to propose reasonable advice about design, selection, and use of textbook illustrations.

2. Research Design

2.1 Research Object

The study selects and analyzes the illustrations embodying thematic meaning of Reading and Thinking section from Compulsory Course I to III and Selective Compulsory Course I to IV, seven books of high school English textbook (2019) for People's Education Press. Reading and Thinking section proves the core of the English textbook, which highlights every unit theme and envelopes the key and difficult points. Compared with the 2004 edition, there is a distinct supplement and update in the discourses of the English textbook (2019), which presents characteristics of the new textbooks and

conception of new curriculum standards. Through analysis of the illustrations of Reading and Thinking section, the study can discern the general quality of illustrations in the textbooks of high school English textbook (2019) for People's Education Press.

2.2 Theoretical Framework

Based on three language metafunctions, Kress & Van Leeuwen (2006) proposed that visual grammar constitutes a set of visual "statements" used to analyze how characters and things depicted in images are combined into different degrees of complexity. It mainly exhibits the representation meaning, interactive meaning and composition meaning of illustrations, and is often used to explore the value of images. Representation meaning pertains to the ability of an image to objectively and truthfully replicate the real world, presenting the communicative relationships between various signs within it. The interactive meaning can manifest the relationships among the participants, viewers, and the symbolic system of the image. Composition meaning relates to the way an image integrates its representation and interactive meanings through the internal assembly of different elements, thereby forming a meaningful whole^[5]. Therefore, the three major meaning construction approaches offer a reference dimension for encoding the combination of elements in the textbook illustrations and the contextual construction effects they produce, as well as a novel perspective for comprehending the foreign language teaching value of image modalities.

Meanwhile, the study employs three thematic contexts in general high school English curriculum as the basic frame work. The thematic context encompasses man and self, man and nature, and man and society, which involve topics from the fields of humanities and social sciences as well as natural sciences, which provides topic and context for subject education. There are three thematic contexts: man and self, man and society, and man and nature. The theme "man and self" includes "life and learning" and "learning to be and learning to do". The theme "man and society" has the four thematic categories: "social services and interpersonal communication", "literature, art, and sports", "history, society, and culture", and "science and technology". The theme of "man and nature" has four thematic categories, namely, "natural ecology," "environmental protection," "disaster prevention," and "space exploration."

2.3 Encoding Rule

Relying on content requirements of thematic contexts, the illustrations are categorized into ten thematic clusters under three thematic context, man and self, man and society and man and nature. Then, using the three major meaning construction methods of visual grammar theory—representation, interaction, and composition meaning—and their sub-projects as coding criteria, the 103 illustrations were coded. The compulsory and selective compulsory textbooks are marked as "B1" and "XB1" respectively, with corresponding units labeled as "U1". Two coders independently conducted the coding, and any minor discrepancies in coding were resolved through consultation with a third expert coder. Data coding was performed using Excel 2019 for statistical analysis.

3. Research Results

3.1 Characteristics of Thematic Context Distribution in Textbook Illustrations

In line with the thematic context, thematic clusters, and corresponding content requirements of the new curriculum standards, the distribution of thematic contexts and clusters in the Reading and Thinking section of the high school English textbook (2019) for People's Education Press is as shown in Table 1. From Table 1, it can be noted that the illustrations cover all thematic clusters under the three thematic contexts, effectively reflecting the content requirements of the new curriculum standards. Among them, the illustrations categorized into "man and society" amount to 48, with the highest proportion at 46.60%; those belonging to "man and nature" come next, with 33 illustrations, accounting for 32.04%; and those belonging to "man and self" are the fewest, with 22 illustrations, representing 21.36%. Looking at the distribution of specific thematic clusters, there is an imbalance in their coverage; for instance, the compulsory textbooks from course I to III do not incorporate the thematic clusters of "learning to be and learning to do" and "science and technology", and the Selective Compulsory Course IV does not cover all thematic clusters belonging to "man and nature". Among the three thematic contexts, the proportion of thematic clusters in the Reading and Thinking section of the seven textbooks varies significantly, with each accentuating different aspects in their selection to highlight their respective focal points. In the "man and self", the thematic cluster "life and learning" is prominent, with "learning to be and learning to do"

being less represented; in the “man and society”, the thematic group “literature, art, and sports” is emphasized, with “science and technology” being the least represented; and in the “man and nature”, the thematic cluster “natural ecology” stands out, with “space exploration” being the least represented.

Table 1: Distribution of Thematic Contexts and Clusters of Illustrations in Reading and Thinking Section

Thematic contexts	Thematic clusters	B1	B2	B3	XB1	XB2	XB3	XB4	Total	Percentage
Man and self	Life and learning	9	0	1	0	1	6	2	19	18.45
	Learning to be and learning to do	0	0	0	0	0	0	3	3	2.91
Man and society	Social services and interpersonal communication	0	1	2	3	1	1	2	10	9.71
	Literature, art and sports	2	2	2	0	1	9	1	17	16.5
	History, society and culture	2	5	3	0	4	0	3	17	16.5
	Science and technology	0	0	0	1	0	1	2	4	3.88
Man and nature	Natural ecology	6	1	1	1	2	0	0	11	10.68
	Environmental protection	1	3	0	2	0	4	0	10	9.71
	Disaster prevention	2	0	0	0	5	0	0	7	6.8
	Space exploration	0	0	4	0	0	1	0	5	4.85

3.2 Visual Analysis of Thematic Meaning of Textbook Illustration

Textbook illustrations are selected in accordance with the characteristics of the discourse and the thematic content. The illustrations within each unit of the textbook are not isolated but are based in linguistic knowledge and closely linked to real-life situations, providing participatory, operable, and integrable content contexts for language practice activities^[6]. Through the integration of various internal elements, textbook illustrations constitute specific thematic contexts, guiding students to understand and learn within these contexts. The ideas, cultural connotations, emotions, attitudes, and values conveyed by specific thematic contexts are the thematic meanings inherent in those contexts^[7]. To better identify the thematic meanings reflected in the illustrations of the Reading and Thinking section of the textbooks, the following analysis will be carried out.

3.2.1 Representation Meaning

Representation meaning pertains to the utilization of visual symbols to depict the connection between objective reality and the external world within a specific context, that is, to convey the content intended by the image itself, which is divided into narrative representation and conceptual representation^[8]. Narrative representation expresses actions or events, processes of change, and transitions in spatial layout within the image, with a distinct vector, including action processes, reactive processes, speech, and psychological processes; conceptual representation, conversely, reflects stable, eternal classifications, structures, or essential information on the dimension of meaning, without vectors, including classification processes, analytical processes, and symbolic processes. A vector is a forceful diagonal line, including the lines formed by the gaze and movements of figures within the image^[9]. Based on this theory, a statistical analysis of 103 illustrations was conducted, and the distribution and weight statistics are presented in Table 2.

Table 2: Illustrations in Textbooks under Three Thematic Contexts Reflecting Representation Meaning

Thematic contexts	Representation meaning						Illustration number
	Narrative representation			Conceptual representation			
	Action process	Reactional process	Speech and mental process	Classification process	Analytical process	Symbolical process	
Man and nature	14	1	0	8	6	4	33
Man and society	9	13	0	7	8	11	48
Man and self	3	6	0	8	5	0	22
Total	26	20	0	23	19	15	103
Percentage	25.24	19.42	0	22.33	18.45	14.56	-

From Table 2, it is evident that in the process of constructing representation meaning, the majority of

thematic context illustrations belong to action processes within narrative representation, accounting for 25.24%. Action processes are composed of the “vectors” formed by specific actions of illustrated figures, directing the viewer’s gaze to particular areas^[8]. These vectors focus on the interaction between the actor and the object, allowing the reader to experience the thematic meaning and emotional attitudes. For instance, as shown in the illustration of Unit 5 of the Selective Compulsory Course I (see Figure 1), Yuan Longping holds hybrid rice with his hands, his arm naturally bent, forming a strong diagonal line that constitutes a “vector.” It draws the reader’s attention to a specific area, namely, the hands tightly holding a bundle of harvested rice, guiding the reader to contemplate the potential significance of the social achievements brought by outstanding figures in the agricultural field within the thematic context of “man and society”. It encourages readers to appreciate the thematic meaning behind the illustration, which is to recognize the profound impact of agricultural research and scientific and technological innovation on people’s livelihoods and the nation’s well-being, to be grateful for the efforts made by scientists, and to reflect on their future career choices.



Figure 1: Selective Compulsory Course I Unit 1 A Pioneer For All People

The reactional process is composed of vectors formed by the gaze of figures, with illustrations across the three thematic contexts frequently depicting characters communicating through eye contact or looking straight at the viewer. These vectors disclose the core emotions of the characters and their connection to the context, such as illustrations in the “man and society” that primarily engage the viewer’s gaze to convey subtle emotions. The construction of conceptual representation in these illustrations is mainly reflected through classification process, guiding readers to interpret the relationships between image elements and summarize their conceptual meaning. Textbook illustrations employ lines to connect subordinate sub-items, leading to higher-order concepts and highlighting the themes of the discourse. In analytical processes, elements are intertwined in form of whole-to part relationship and often appear in the form of diagrams, helping readers to organize the logical relationships within the text and permeating the thematic meaning. In symbolic processes, illustrations emphasize the inherent meaning and representation of elements within the image, such as illustrations in “man and society” that focus on the symbolic process by enlarging cultural carrier elements, which can convey the underlying cultural connotations, and reflect symbolic significance. Speech and psychological processes are primarily formed by vectors connecting thought or speech bubbles with participants. However, this section does not use speech and psychological processes to construct the representational meaning of illustrations.

3.2.2 Interactive Meaning

Images can establish specific relationships between the viewer and the world depicted therein. They interact with the viewer in sequence, suggesting attitudes towards the scenes being represented^[8]. This interactive meaning is achieved through contact, social distance, perspective, and modality. Kress & Van Leeuwen categorize contact into two parts: offer and demand, but these classifications do not fully capture the complexities encompassed in visual contact and gaze^[10]. To more comprehensively address the intricacies of visual contact, the study divides contact into two broad categories: direct contact (where image participants have direct eye contact with the viewer) and indirect contact (all other situations apart from direct contact)^[10]. Social distance focuses on the interaction between individuals, specifically the distance between the image participants and the viewers. Close-up shots refer to images that capture participants from the shoulders and above, medium shots include the participants from the knees up, and long shots cover the participants’ full bodies along with their environment. Perspective reflects the viewer’s attitude towards the image participants, with eye-level angles primarily indicating involvement, differentiated into direct view, upward view, and downward view^[5]. Modality within images is divided into high, medium, and low, reflecting the authenticity and credibility of the events depicted. Based on the interactive meaning, a statistical analysis of 103 illustrations was carried, with the distribution and weight statistics presented in Table 3.

Table 3: Illustrations in Textbooks under Three Thematic Contexts Reflecting Interactive Meaning

Thematic context	Interactive meaning											Illustration number
	Contact		Social distance			Perspective			Modality			
	Direct contact	Indirect contact	Close-up shot	Medium shot	Long shot	upward view	direct view	downward view	High	Medium	Low	
Man and nature	1	32	8	1	24	1	25	7	25	6	2	33
Man and society	8	40	10	14	24	3	42	3	30	14	4	48
Man and self	4	18	2	9	11	0	22	0	15	7	0	22
Total	13	90	20	24	59	4	89	10	70	27	6	103
Percentage	12.62	87.38	19.42	23.30	57.28	3.88	86.41	9.71	67.96	26.21	5.83	-

As indicated in Table 3, from the perspective of contact, the selected textbooks primarily focus on the narration of objective facts, hence the illustrations predominantly feature indirect contact, accounting for 87.38%. Both indirect and direct contact aim to convey certain thematic context information to the viewer, eliciting emotional resonance with the thematic meaning of the illustrations. For instance, the illustration in Unit 4 of the compulsory curriculum (see Figure 2) depicts rescue workers responding to an earthquake disaster. The central figures in the image do not make direct eye contact with the reader. Instead, by observing the characters amidst the rubble and their focused rescue efforts, the reader appreciates the tenacious spirit displayed by humanity in the context of “man and nature,” united and determined in the face of natural disasters.



Figure 2: Compulsory Course I Unit 4 The Night the Earth Didn't Sleep

From the perspective of social distance, long shots are the most prevalent in illustrations in the three thematic contexts, accounting for 57.28% (see Table 3). For instance, in Compulsory Course II Unit 5, an illustration introducing a virtual choir depicts the entire on-site choir and parts of the online choir in the background. The choir members, from various countries, different times and spaces, and various age stages, are connected through cameras and the internet to make music together. This long shot objectively and comprehensively recreates the situation, immersing readers in the experience and make them genuinely feel the connecting power of music and culture behind the virtual choir, which deepens the thematic significance. Close-ups often feature close-ups of people and objects, while medium shots mostly show interactions between people, which have a higher social intimacy with readers and a higher contextual immediacy. Overall, the distribution of illustration distances is relatively balanced, presenting details and the whole from multiple angles.

In terms of perspective selection, the chosen illustrations predominantly employ a direct view, which allows readers to interact with the participants in the images as objective observers and more readily immerse themselves in the thematic context, fostering emotional resonance. Direct view reflects power dynamics; an upward view indicates the viewer's power, while a downward view places the image participants in a dominant position^[11]. Both upward and downward views can create visual and psychological pressure for readers, hence their limited use in textbooks. In terms of modality, 67.96% of the illustrations use high modality, creating a strong visual stimulus that draws readers into the context of the illustration and encourages exploration of the underlying thematic meanings.

3.2.3 Composition Meaning

Composition meaning pertains to the designer's use of visual art techniques to combine compositional elements into an aesthetically valuable image, encompassing three aspects: information value, salience, and framing^[8]. Image elements attract the viewer's attention to varying degrees of salience through differences in position, relative size, and tonal contrast. The spatial arrangement of visual elements points to specific information values: the “top-bottom” distribution emphasizes the conflict between ideals and reality; the “center-periphery” emphasizes visual focus, magnifying the subject and highlighting the theme; the “left-right” distribution emphasizes the interactivity of information, with the left side as the

starting point and the right side showing corresponding continuous content. Framing pertains to the presence or absence of framing devices (achieved through the creation of dividing lines or actual framing edges), which separate or connect elements within the image, indicating their belonging or non-belonging in some sense^[8]. In continuous framing, the integration of elements is high, resulting in significant potential for overall meaning. Based on composition meaning theory, a statistical analysis of 103 illustrations was conducted, with the distribution and weight statistics presented in Table 4.

Table 4: Illustrations in Textbooks under Three Thematic Contexts Reflecting Composition Meaning

Thematic Context	Composition meaning							Illustration number
	Information value			Salience		Framing		
	Left-right	Center-periphery	Top-bottom	Low	High	continuity	division	
Man and nature	16	11	6	3	30	27	6	33
Man and society	16	23	9	6	42	42	6	48
Man and self	8	8	6	3	19	17	5	22
Total	40	42	21	12	91	86	17	103
Percentage	38.83	40.78	20.39	11.65	88.35	83.50	16.50	-

As shown in Table 4, in terms of composition meaning construction, the majority of illustrations in the three thematic contexts adopt a center-periphery layout, accounting for 40.78%. The top-bottom layout is less common, with a 20% proportion. Regarding salience and framing, the illustrations primarily employ high salience and continuity to highlight the main subjects and maintain the cohesion and harmony of image elements, naturally attracting the viewer's attention to key elements and prompting reflection on their underlying meanings. For instance, in Selective Compulsory Course III Unit 3, an illustration of a scientific expedition rescuing a polar bear, presents a continuous composition without distinct dividing lines, integrating the team members and the starving polar bear into a single entity to construct the "man and nature" thematic context. From salience, the illustration enhances prominence by reducing the background, increasing the proportion of the polar bear as the main subject, and placing it in the foreground. This technique focuses the viewer's attention on the starving polar bear, allowing them to tangibly perceive the threat posed by climate change and stimulating reflection on the relationship between human existence, societal development, and the environment.

4. Research Suggestions

Visual resources in textbooks play a significant role in constructing thematic contexts and exploring thematic meanings, which are crucial for learning. It is imperative for textbook editors to continuously refine their designs and for teachers to use them judiciously.

4.1 Suggestions for Textbook Editors

First, illustrations should cover thematic cluster evenly. The three thematic contexts in the curriculum standards define the thematic scope of language and cultural knowledge for high school students, providing meaningful contexts for language learning and a medium for cultivating emotions, attitudes, and values^[7]. "Man and nature", as a crucial component of these three thematic contexts, can help high school students internalize the core concept of harmonious coexistence with nature through language learning, fostering respect for, adaptation to, and protection of the natural world, thus forming a scientific view of nature. Consequently, the textbooks should emphasis on the "man and nature", consistently integrating it throughout the content of each volume.

Second, it is recommended to enrich the content of illustrations to mirror themes from multiple perspectives. Textbooks should capture the audience's attention with high-quality, aesthetically rich illustrations that are content-driven, enhancing the reading experience through content optimization. The essence of illustration quality lies in the refined content and themes of textbook illustrations^[3]. Based on visual grammar theory, it is necessary to scientifically consider the whole-and- part relationship of the elements in the image, their proportions, social distances, colors, and positions as well as utilize their representation, interactive, and composition meanings to reflect the themes from various angles.

Finally, illustration design should optimize composition to highlight thematic elements. As essential

resources for facilitating students' learning and comprehension, textbook illustrations are capable of transferring information, and present abstract and complex concepts or scenes in a visually intuitive fashion. Editors can enhance the salience of these elements by adjusting the proportion and positional relationships in accordance with thematic context requirements. Additionally, attention needs to be given the integrity of layout design, emphasizing and highlighting the implicit thematic meanings in a natural and harmonious way.

4.2 Suggestions for Teachers

First, teachers should consciously utilize illustrations and explore their thematic meaning. It is essential for them to recognize that illustrations are not merely embellishments and beautifications in textbooks, but play a role in promoting students' learning and comprehension. Additionally, teachers should have a thorough understanding of that as visual art forms, illustrations have an advantage over text in creating concrete and perceptible contexts. An illustration that accurately conveys the context of the text not only helps students grasp the overall tone of the material but also enables them to understand the author's implied messages through the specific details in the image. Teachers should consciously combine the themes of units or discourses to conduct in-depth analysis of textbook illustrations and uncover their metaphorical thematic meanings.

Second, teachers should thoroughly understand the characteristics of illustrations to enhance teaching. By systematically studying visual grammar theory, they can guide students to observe, analyze, and appreciate illustrations to grasp their deeper meanings, which can establish meaningful connections with teaching content. This approach exploits the instructional function of illustrations and highlights their moral value. Teachers can guide students to closely observe aspects such as the gaze and movements of the figures in the images, the relationships between elements and their parts, proportions, social distances, colors, and positions to extract information. This helps students appreciate the representation, interactive, and composition meaning of illustrations, thereby cultivating their viewing skills and enhancing their English subject core competencies.

Finally, teachers ought to deeply interpret the themes of the text and establish connections between texts and images. They must recognize that illustrations and texts are both part of the discourse, serving the realization of the discourse's thematic meaning. Based on an in-depth analysis of the text, they are capable of using visual grammar theory to analyze the representation meanings of the elements in the illustrations and their overall potential. Using the theme as a thread, teachers can establish meaningful connections between text and images.

5. Conclusions

Illustrations in Reading and Thinking section of high school English textbook (2019) for People's Education Press cover the three thematic contexts by means of constructing representation meaning, interactive meaning and composition meaning to embody profound thematic meaning. However, the study only starts with the illustrations in the Reading and Thinking section of the textbooks that reflect the thematic context to analyze the construction of meaning in images, and proposes design suggestions for textbook illustrations and teaching strategies. Further research is still needed on the actual use of textbook illustrations in the classroom.

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