

# The Use and Analysis of Image Resources in Junior High School English Textbooks under the Framework of Intersemiotic Complementarity Theory

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**Abstract:** Based on the theory of intersemiotic complementarity, this paper probes into the current situation of the use of image resources in junior high school English textbooks and the interactive relationship between image resources and texts. By analyzing the types, functions and text-image interaction modes of image resources, this paper puts forward optimization methods and strategies for the application of image resources in English textbooks. The rational use of image resources can effectively enhance students' interest in English learning, which is of great theoretical and practical significance for junior high school English teaching. However, due to the limitations of teachers' professional development and other factors, the use of image resources in English textbooks by front-line teachers is still in the initial stage. Most teachers fail to tap the profound educational value behind image resources, and there is no unified cognition on the new ideas and methods of using image resources proposed in curriculum standards. In this context, this paper intends to put forward targeted application strategies for front-line English teachers to properly use image resources in English textbooks, so as to help teachers correctly understand and use image resources in textbooks.

**Keywords:** Intersemiotic Complementarity Theory; Junior High School English; Textbook; Image Resources

## 1. Introduction

Image resources are an important component of junior high school English textbooks, and their important position has become increasingly prominent with the continuous development of multimedia and digital resources. However, there are still prominent problems in the actual use of image resources in teaching practice: many teachers ignore the educational value of

image resources in textbooks, only regard them as simple decorative or auxiliary teaching tools, and fail to deeply explore the inherent complementary relationship between image resources and text content. Even when using image resources, teachers only guide students to describe the surface information of images, and do not further use images to help students understand the deep meaning of texts.

Intersemiotic Complementarity Theory is a classic multimodal discourse analysis theory proposed by Royce [1], which is based on systemic functional linguistics and sociosemiotics, and focuses on the complementary relationship between linguistic signs and visual signs in multimodal discourse. The core of the theory is to emphasize the semantic cooperation between image modality and text modality to jointly construct a unified and coherent discourse system. The theory mainly consists of three core dimensions:

(1) Ideational Intersemiotic Complementarity: It focuses on the complementary relationship between images and texts at the conceptual meaning level, and mainly analyzes semantic relations such as repetition, synonymy, antonymy and collocation between visual elements and textual words.

(2) Interpersonal Intersemiotic Complementarity: It studies the interactive relationship between images and texts at the interpersonal meaning level, and realizes the joint expression of evaluative meaning through the combination of visual elements and linguistic expressions.

(3) It explores the complementary relationship between images and texts at the discourse structure level, and realizes discourse integration through information value, salience, visual frame and other factors.

When the conceptual, interpersonal and compositional meanings of image and text modalities are interrelated in a specific way, the discourse forms intersemiotic complementarity, which is the core connotation of the theory.

Xiong et al. [2] also conducted targeted research on the analysis and application of image resources in English textbooks under the intersemiotic complementarity theory, which provides a solid theoretical and practical basis for this paper.

## **2. Literature Review**

The theory of intersemiotic complementarity has been widely applied in the field of multimodal discourse analysis, and scholars have used this theory to analyze how images and texts jointly construct meaning in different discourse types. In the field of cultural communication, Liang and Jiang [3] used this theory to analyze the collaborative mechanism of words and images in tourism publicity posters, and explored the ways and characteristics of cultural communication in multimodal discourse; in the field of language landscape research, Yang [4] analyzed the image-text relationship on the wishing board from the perspective of intersemiotic complementarity theory, and found the characteristics of multilingualism and multimodality in this type of discourse; in the field of legal communication, the theory has also been used to analyze the joint construction of legal concepts by images and texts in legal cartoons, revealing the communication value of multimodal texts in the legal field.

In the field of English education, the application of intersemiotic complementarity theory has also gradually deepened. Liu and Zong [5] took the third-grade starting English textbook Unit 6 How do you feel? as an example to explore the method of analyzing the thematic meaning of primary school English textbook texts under the framework of this theory; Pan and Zhou [6] took the text of Unit 4 of Senior High School English Compulsory 3 as an example to explore the interaction between images and texts in the meaning generation process of English textbooks, and put forward specific implementation steps of English multimodal reading teaching.

While the theory has achieved rich research results in multimodal research, there are still obvious shortcomings in current research. First, the research method is single, with most studies focusing on qualitative analysis and lacking quantitative research on the image-text relationship, which makes research conclusions lack data support; second, the research scope is limited, with few cross-cultural studies on the

application of the theory, and the image-text relationship characteristics under different cultural backgrounds need to be further explored; third, the research object is relatively static, with most studies focusing on static texts such as textbooks and posters, and few studies on dynamic multimodal discourse such as videos and animations.

At present, research on image resources in English textbooks is still insufficient, and the selection, design and use of image resources in textbooks mostly rely on compilers' experience, lacking systematic theoretical guidance. With the popularization of multimodal teaching concepts, image resources, as important multimodal teaching resources, are playing an increasingly important role in English teaching, and their rational design and use are of great significance for improving teaching effects, cultivating students' multimodal literacy and comprehensive language application ability.

There are various types of image resources in English textbooks, including photos, comics, cartoons, tables, flowcharts and maps, which play three main functions in teaching: decorating the layout, promoting text understanding and providing learning content. Cui's [7] research on senior high school English textbooks published by People's Education Press found that photos are the most used image type in textbooks, followed by cartoons, but about half of the image resources only play a decorative role, and the correlation between many image resources and text content is not high, which fails to exert their due educational value.

The relationship between images and texts is the core research content of image resources in English textbooks from the multimodal perspective. Martinec and Salway put forward a classic image-text relationship analysis framework, which divides image-text relationships into status relations (independent and complementary) and logical semantic relations (extension and projection). On this basis, many scholars have carried out empirical research: Wang and Jiang [8] found that there are obvious differences in the image-text relationship of primary school English textbooks published by People's Education Press in different grades.

In addition, scholars have conducted in-depth research on the functional classification of image resources: dividing the image functions of science textbooks into decoration, enhancement,

interpretation, and other types; And divide them into three categories: decoration, promoting text understanding, and disseminating knowledge; Further refine the functions into decoration, character shaping, and organization.

Current research on image resources in English textbooks still has some deficiencies: most studies stay at the theoretical level, and research results are not easy to be applied by textbook compilers and front-line teachers in practice; most studies adopt a single research perspective, lacking the combination of linguistics and language teaching perspectives. At the same time, there are many problems in the design and use of image resources in English textbooks: the number of image resources with substantive learning value is small, the number of decorative images is too large; the types of image resources are single, and the characteristics and roles of different types of images are not fully explored; the collocation between images and texts is unreasonable, and the design refinement of image resources is not high.

In view of the inherent limitations of textbooks that cannot adapt to diverse teaching scenarios and differentiated learning needs, teachers need to optimize the use of image resources through systematic analysis and targeted adjustment. The rational use of image resources in English textbooks needs to go through three core processes: analysis, adjustment and application, which is the basic path for teachers to exert the educational value of image resources.

### **2.1 Analysis**

Before using image resources, teachers need to conduct a comprehensive and systematic analysis of image resources, which is the premise of rational use of image resources.

Firstly, analyze the basic characteristics of images, including physical characteristics (size, shape, color, composition, etc.), image types (physical map, character map, schematic map, scene map, etc.) and image organization forms (independent, divergent, sequential, multi-layered, etc.). Different types of images have different teaching values: physical maps can visually show the appearance and details of objects, while schematic maps are more conducive to explaining abstract concepts and processes. Through the analysis of basic characteristics, teachers can initially judge the adaptability of images and teaching content, and determine the potential application value of

images in teaching.

Secondly, analyze the content and meaning of images. Image resources are not only simple visual elements, but also carry rich information and connotations. Teachers need to deeply analyze the people, objects, scenes and their internal relationships in the images, and dig out the implicit information behind the images. For example, scene maps can reflect specific social situations, and teachers can guide students to understand relevant cultural customs and language scenarios by analyzing the expressions, actions and background of characters in the maps. At the same time, teachers can refer to Royce's intersemiotic complementarity theory, and systematically analyze the image content from four dimensions: participants, processes, environments and attributes, so as to more comprehensively and accurately grasp the meaning of images.

Thirdly, analyze students' learning needs and teaching objectives. The ultimate purpose of using image resources is to meet students' learning needs and achieve teaching objectives, so teachers need to combine students' physical and mental development level and cognitive characteristics to analyze the applicability of image resources, and make the selection and use of image resources closely around the teaching objectives of the course.

### **2.2 Adjustment**

In view of the problems that textbook image resources are inconsistent with students' cognitive level and specific teaching situations, teachers need to make targeted adjustments to image resources through modification, deletion and addition. The adjustment of image resources is a necessary link to make up for the deficiencies of textbook image resources, and the core principle of adjustment is to adapt to students' cognitive characteristics and teaching practice needs, so as to enhance the complementary relationship between images and texts.

### **2.3 Use**

The use of image resources refers to the specific application methods of teachers in classroom teaching, which is the final link of the three processes of analysis, adjustment and use. The analysis and adjustment of image resources are all for better application in teaching, so the use link is the key to exert the educational value of

image resources. Teachers need to combine the characteristics of image resources and teaching content, and adopt flexible and diverse application methods to integrate image resources into classroom teaching organically. Zhang and Li [9] explored junior high school English multimodal teaching based on image-text complementarity, which provides a practical reference for the application of image resources in classroom teaching.

### **3. A Case Study of Image Resources in English Textbooks**

This paper takes two typical units of junior high school English textbooks as examples, and elaborates on the specific application process of image resources in textbooks under the framework of intersemiotic complementarity theory from three links: analysis, adjustment and use, so as to provide empirical reference for front-line teachers.

#### **3.1 Unit 1 The Secrets of Happiness**

##### **3.1.1 Analysis**

The image resources of this unit are composed of real photos and cartoon images, with an overall brown tone, including cartoon comb, cartoon scissors and real photos of boys having their hair cut in barbershops. The text part is matched with the Reading for writing module, and key vocabulary is sorted out in a green box to form a semantic prompt for reading.

From the perspective of intersemiotic complementarity theory, the image and text of this unit form an obvious semantic repetition relationship, and core elements such as long hair, barber's shop, cut it short in the text are all reflected in the image resources, which helps students initially grasp the core content of the text. At the same time, the text complements the implicit information that cannot be presented in the images, such as put the hair into the bag, walked to the post office and other details, which makes students more intuitively understand the kindness and good deeds of the protagonist Zhou Jian. The image and text complement each other at the conceptual meaning level, and jointly construct the thematic meaning of the unit, which has obvious intersemiotic complementarity characteristics.

##### **3.1.2 Adjustment**

Although the image resources of this unit have a good complementary relationship with the text, there are still some deficiencies in the design:

the real photo only shows the back of the protagonist, which cannot directly reflect Zhou Jian's male identity, and the long hair is easy to cause students' cognitive misunderstanding; the overall brown tone of the image is relatively cold, which cannot reflect the warm emotional connotation behind the protagonist's good deeds, and is not conducive to students' understanding of the thematic meaning of the secrets of happiness.

In view of the above problems, teachers can make two adjustments to the image resources: one is to add a front photo of the protagonist Zhou Jian to clarify the character identity; the other is to add small cartoon heart elements in the blank part of the image to highlight the warm emotional connotation of the story and echo the unit theme.

##### **3.1.3 Use**

Based on the analysis and adjustment of image resources, teachers can integrate image resources into classroom teaching in the following ways, and exert the complementary role of images and texts in teaching:

(1) Stimulate learning interest: Guide students to observe the image resources in the textbook, and ask exploratory questions such as Who is the person in the picture? What is he doing? to arouse students' curiosity, and take the image as the starting point to lead students to read the text actively. At the same time, guide students to guess the meaning of core vocabulary such as scissors, barber through the image, and lay a foundation for text reading.

(2) Build learning scaffolding: Take the protagonist in the image as the core, ask questions such as What information do you want to know about him?, and guide students to extract key information of the text by combining the image and text, and answer the core questions of What did Zhou Jian do? Why did he do that?

(3) Cultivate thinking quality: Combine the unit theme, guide students to observe the details of the image and analyze the complementary relationship between the image and text, and ask in-depth questions such as What efforts did Zhou Jian make for this action? to guide students to think deeply, and cultivate students' thinking quality while promoting their understanding of the text.

(4) Strengthen language application: Design group discussion, text retelling, after-class continuation and other teaching activities, let

students combine the image and text to express their views, and deepen students' understanding of the unit theme while strengthening their comprehensive language application ability.

(5) Highlight moral implication: Take the image and text as the carrier, guide students to understand the connotation of the unit theme the secrets of happiness, and let students realize that giving back to society and helping others is an important source of happiness, so as to realize the moral education value of English teaching.

### **3.2 Unit 5 Amazing Nature**

#### **3.2.1 Analysis**

The image resources of this unit are mainly real photos of lungfish, matched with the Fact File Lungfish module and listening text, with an overall tone of blue and yellow: blue symbolizes the marine living environment of lungfish in the rainy season, and yellow symbolizes the terrestrial living environment in the dry season. The image clearly shows the physical characteristics of lungfish, and the text part introduces the living habits and living environment of lungfish in detail.

The image resources lay a visual foundation for students' listening and reading learning, and help students understand the uncommon animal of lungfish, which is conducive to deepening students' understanding of the listening discourse. The image and text form a complementary relationship at the conceptual meaning level, and the image visualizes the abstract textual description of lungfish, which is helpful for students to grasp the core characteristics of lungfish. Li and Wang [10] analyzed the design of image resources in junior high school English textbooks from a multimodal perspective, which supports the rationality of this image-text complementary design.

#### **3.2.2 Adjustment**

The image resources of this unit have a clear corresponding relationship with the text, but there are still some problems in the design: the image type is single, only real photos of lungfish are used, and the information carried is relatively limited; the proportion of image and text is unbalanced, the text content occupies most of the page space, and the image resources are too simple; the overall tone is single, blue and yellow collocation lacks vividness, which is not conducive to stimulating students' learning interest.

In view of the above problems, teachers can make two adjustments to the image resources: one is to add colorful cartoon lungfish images with different postures, and add simple pattern prompts of lungfish living environment (water area, soil), so as to enrich the image types and information; the other is to streamline redundant descriptive text in the textbook, optimize the page layout, and make the proportion of image and text more coordinated.

#### **3.2.3 Use**

Based on the analysis and adjustment of image resources, teachers can use the following methods to exert the teaching value of image resources, and realize the organic combination of image and text teaching:

(1) Arouse learning curiosity: Guide students to observe the lungfish image in the textbook, and ask exploratory questions such as What kind of animal is this? What characteristics does it have? to stimulate students' learning interest and curiosity, and let students read the text with questions.

(2) Assist vocabulary learning: Guide students to guess the meaning of core vocabulary such as lung, breathe through the physical characteristics of lungfish in the image, and help students memorize vocabulary in a visual way.

(3) Lay the foundation for text understanding: Take the image as the visual carrier, ask core questions such as Can lungfish survive both on land and in water? It guides students to combine the image and text to extract key information, so as to grasp the main characteristics of lungfish and lay a foundation for understanding the unit text.

(4) Cultivate multimodal literacy: Guide students to analyze the complementary relationship between the image color, shape and text content, and ask in-depth questions such as Why is it important to protect species diversity? combined with the unit theme Amazing nature, so as to cultivate students' multimodal literacy and thinking quality. Zhao and Sun [11] applied intersemiotic complementarity theory to junior high school English reading teaching, which provides a theoretical basis for this teaching link.

(5) Strengthen language output: Design group discussion, oral description, text summary and other teaching activities, let students combine the image and text to describe the characteristics of lungfish, and strengthen students' oral expression and written expression ability.

(6) Highlight the educational concept: Take the lungfish image and text as the carrier, guide students to understand the diversity of natural species, realize the importance of protecting biological diversity, and let students establish the concept of harmonious coexistence between man and nature, which is consistent with the unit theme of Amazing nature.

#### **4. Conclusion**

Under the guidance of intersemiotic complementarity theory, the rational use of image resources in junior high school English textbooks can significantly improve the effectiveness of English teaching. The complementary combination of images and texts can make language materials more intuitive and vivid, help students better understand text content, and effectively improve students' comprehensive language application ability.

For front-line English teachers, it is necessary to further deepen research on image resources in textbooks, fully tap the educational value behind image resources, and accurately grasp the complementary relationship between image resources and text content. Teachers should change the teaching concept that regards image resources as simple decorative tools, and take image resources as important multimodal teaching resources to integrate into classroom teaching organically.

The use of image resources in English teaching has important educational value: on the one hand, it can develop students' multimodal literacy, make students adapt to the modern multimodal communication environment, and improve students' ability to interpret and construct meaning in multimodal discourse; on the other hand, it can enrich English teaching resources, make teaching content more lively and interesting, and effectively stimulate students' interest in English learning.

Under the framework of intersemiotic complementarity theory, teachers should design diverse teaching activities according to the characteristics of image resources and text content, such as picture matching, picture talking, picture creation and other activities, let students experience the complementary relationship between images and texts in different teaching scenarios, and improve students' language application ability and thinking quality while deepening students' understanding of the complementary

relationship between images and texts. At the same time, teachers should encourage students to actively observe and analyze image resources in textbooks, cultivate students' independent learning ability and observation ability, and guide students to explore the inherent relationship between images and texts by putting forward targeted guiding questions, so as to realize the organic integration of image and text teaching.

In short, intersemiotic complementarity theory provides important theoretical support and practical guidance for the effective use of image resources in junior high school English teaching. The rational use of image resources under the guidance of this theory can not only improve the teaching effect of junior high school English, but also help to cultivate students' multimodal literacy and comprehensive language application ability, which is an important path to promote the high-quality development of junior high school English teaching.

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