

## Analysis and Suggestions on PEP (Peoples Education Press) Geography Textbook for Eighth Grade - Take the Chapter of "Climate" As an Example

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**Abstract:** Geography textbooks are an important tool for geography teachers to carry out classroom teaching. Full understanding of textbooks can help teachers flexibly choose the teaching contents and better achieve teaching goals. Taking the chapter of "Climate" as an example, this paper analyzed the textbook from four aspects: internal and external relations of knowledge structure system, requirements for curriculum standards and teaching goals, the key and difficult points and teaching hours assignment, picture and text structure of the textbook. The article also puts forward three suggestions: (1) Junior middle school geography teaching should link to real life; (2) "Activities" in the textbook should be combined with the "Text"; (3) Summarize the knowledge points in the form of tables.

**Keywords:** Geography in junior middle school; textbook analysis; climate; teaching suggestion

### INTRODUCTION

Geography Textbooks are an essential carrier of geography education at middle school. It is not only an important resource for students to learn, but also an important tool for teachers to carry out classroom teaching. Textbook analysis constitutes one of the most basic skills for teachers to carry out teaching work.

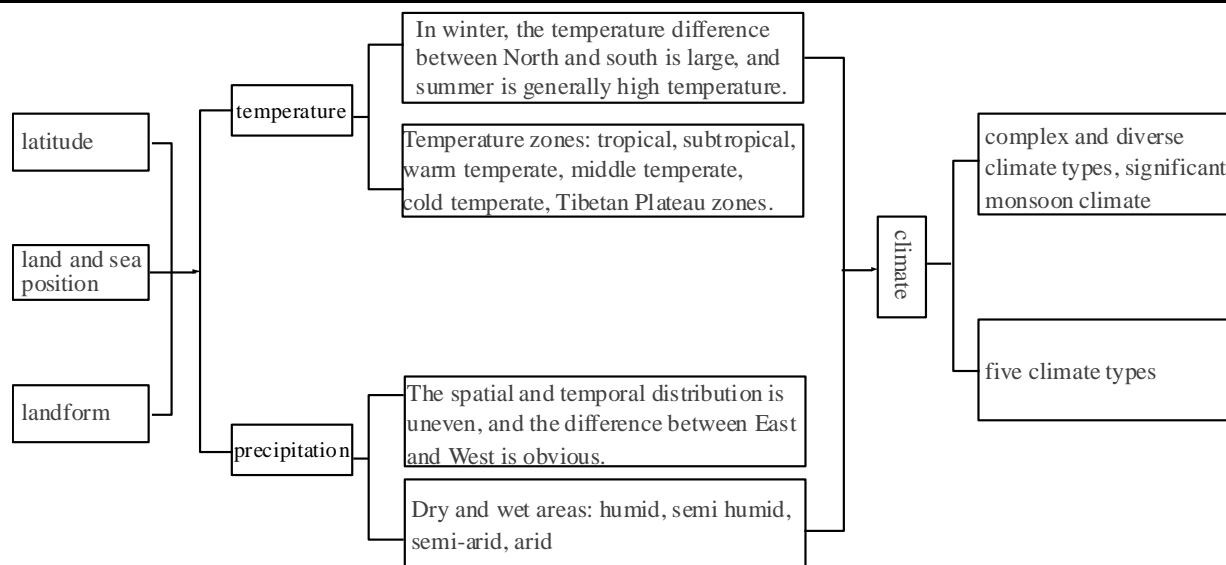
Mastering the method of textbook analysis and being able to effectively analyze the geography textbooks is a basic skill of teachers at middle school. It is also an important index to measure teachers' professional level [1]. The thorough analysis of geography textbooks can help teachers understand the contents of the textbooks and make detailed teaching plans to improve their teaching efficiency. At present, analytical methods of the geography textbooks at middle school can be divided into macro-analysis, micro-analysis and thematic analysis [2]. Micro-analysis is mainly to analyze the parts of geography textbooks, such as a unit or a section of a book to reveal its structure and function.

In the local analysis, it is necessary to clarify the position and role of a chapter or section in the textbook. Generally, the role of a certain part in the textbook mainly includes a foreshadowing role, a connecting link between the preceding and the following and a role of induction and summing up. The chapter of "Climate" located in the second section of the second chapter of the geography textbook for eighth

grade. Its first chapter discusses the terrain and topography of China, and its following two chapters are about the rivers and natural disasters in China. From the entire second chapter, this section plays the role of connecting the preceding and the following, which lays the groundwork for learning about rivers and natural disasters. This section requires students to master the principal character of the climate, the impact factors, and the distribution and variation characteristics of two elements of the climate (temperature and precipitation). Due to many knowledge points in this section, it is the key content of the second chapter.

### KNOWLEDGE STRUCTURE SYSTEM AND INTERNAL AND EXTERNAL LINKS KNOWLEDGE STRUCTURE SYSTEMS

A comprehensive analysis of a chapter or section can clarify the logical and causal relationship between knowledge, which is conducive to both teachers' arrangement of teaching activities and students' extensive grasp of knowledge, and forms a knowledge framework system. The knowledge structure of the "Climate" is shown in Fig-1.



**Fig-1: Knowledge structure chart of “Climate”**

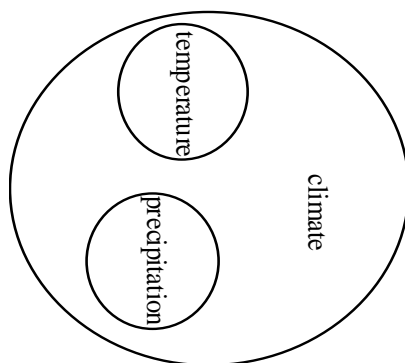
There are many knowledge points in this section and strong logical relationships between the arrangement of knowledge points. First, students need to learn the principal characteristics of temperature and the temperature zones in China. Then they need to learn the principal character of precipitation and how to divide arid and humid regions in China, and summarize the principal character of China’s climate by analyzing the temperature change maps and precipitation histograms. Then, analyze the causes of climate formation according to latitude factors, land-sea location and topography. Such arrangement accords

with the cognitive development level of students and the internal logical order of subject knowledge.

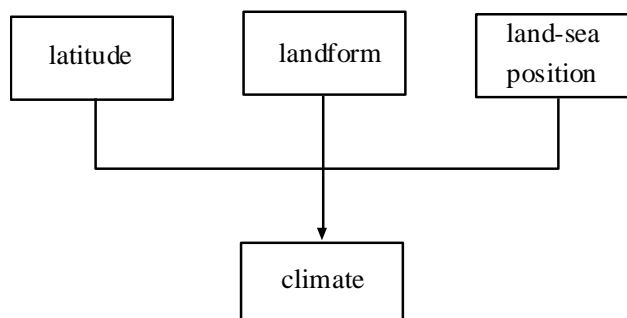
## INTERNAL AND EXTERNAL CONNECTION OF KNOWLEDGE

### INTERNAL CONNECTIONS

The internal relations of knowledge refer to the relations between knowledge points in this section and include “inclusion relationship”, “progressive relationship” and “causal relationship”. The relationship between climate and temperature and the relationship between influencing factors and climate is shown in Fig 2 & 3, respectively.

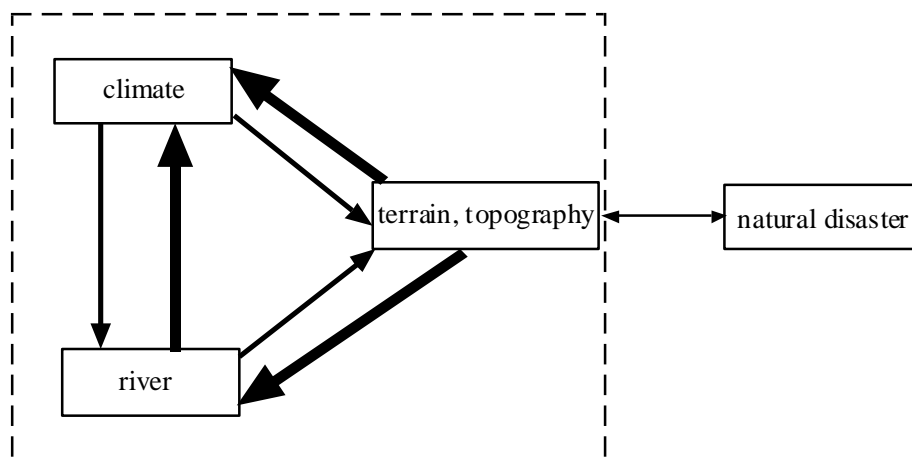


**Fig-2: Relationships among climate, temperature and precipitation**



**Fig-3: Climate and its influencing factors**

There is an inclusive relationship between climate and temperature-precipitation. Different temperature and precipitation combinations form different climate types (Fig-2). China's unique latitude, topographic features and land and sea location have resulted in the formation of complex and diverse climate types and significant monsoon climate (Fig-3). Therefore, these factors are mainly causal relationships.



**Fig-4: Relationship between “Climate” and other chapters (the arrows’ thickness indicates the influence degree.)**

The mutual influence and interaction among the terrain, topography, climate and rivers form China’s natural environment (Fig-4). Constant changing natural environment leads to natural disasters and natural disasters affect the natural environment at the same time. Therefore, they are a two-way relationship. Consequently, in the chapter of “Natural disasters”, the

## EXTERNAL CONNECTIONS

The external relationship of knowledge is the horizontal relation between knowledge, which is the relation between this section and other sections of this chapter. Of course, there are links between the contents of this chapter and knowledge of other subjects.

knowledge of terrain and topography can be connected with geological disasters and the knowledge of climate and rivers can be linked with meteorological disasters. The result is not merely to reorganize and synthesize the learned knowledge, but also to integrate the knowledge before and after, thus increasing the relationship between knowledge [3].

**Table-1: Relationship between knowledge points and other subjects in this section**

Knowledge points in this section	Knowledge of other subjects
Principal character and influencing factors of climate	Chinese: "The Qiang flute need not blame the willows, For the spring breeze doesn't cross Yumen Pass. " Physics: differences in thermal properties between land and sea
Climate difference between North and South	Chinese: "The tasty orange, grown in southern China, would turn sour once it is grown in the north." Biology: vegetation type
Interpretation of precipitation histogram and temperature change curve	Mathematics: numerical addition and subtraction Art: graphic understanding

Geography is a science that studies the geographic environment and the relationship between human activities and the geographic environment. It has the nature of both social and natural sciences [4]. The research on the relationship between the content of geography textbooks and other subjects is helpful for teachers to introduce the knowledge of other subjects into geography teaching, further optimize the teaching content, and better stimulate students' interest in learning. The knowledge points in this section are mainly interrelated with some subjects, such as Chinese, Mathematics, Physics, Biology and Art.

## REQUIREMENTS FOR CURRICULUM STANDARDS AND TEACHING GOALS EMBODIMENT OF CURRICULUM STANDARDS

The geography curriculum standards for junior high school play a guiding role in the compilation of geography textbooks, so the analysis of the requirements of curriculum standards in this section, find out the specific content of this section and curriculum standards corresponding to the place, is conducive to teachers best grasp the main content of this section, grasp the key and difficult points, best organization of teaching [5].

The content standard of geography curriculum standard for junior middle school is mainly comprised of two parts: "Contents" and "Activity suggestion". The curriculum standard of "Climate" is shown in Fig-2. In

the teaching process, teachers can design their teaching contents based on teaching suggestions to better achieve teaching goals.

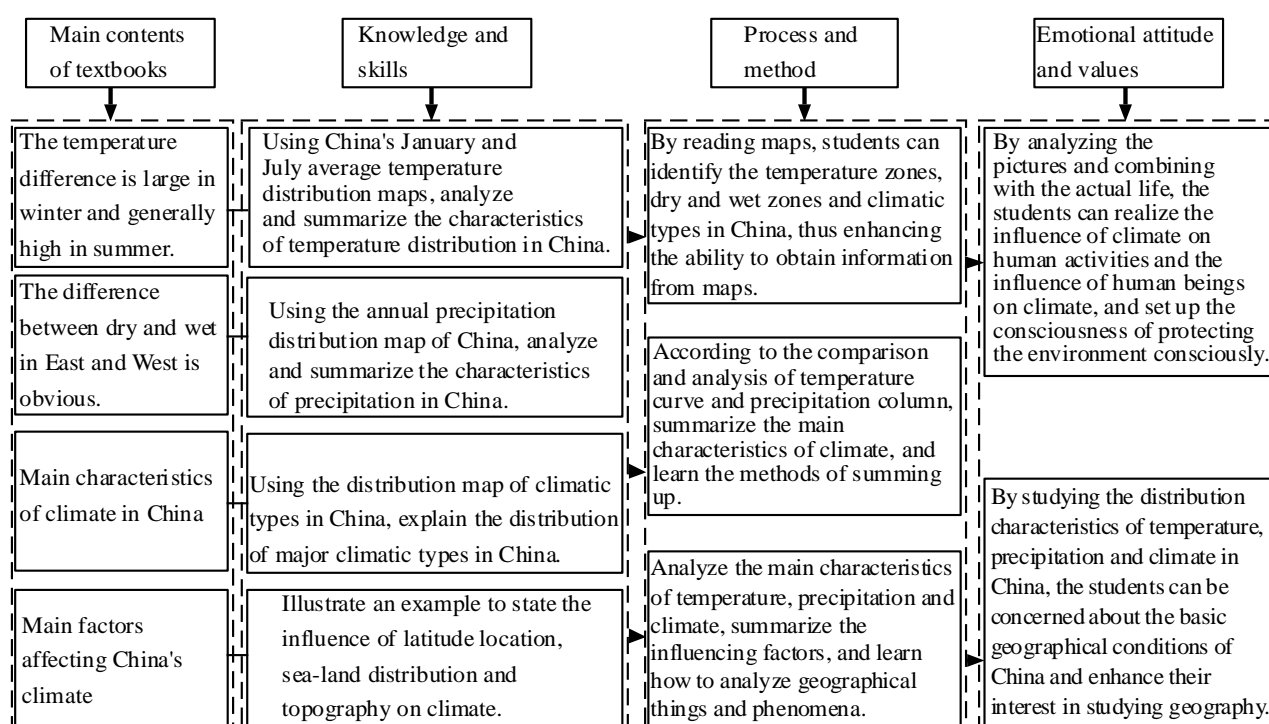
**Table-2: Courses standard excerpt of the chapter of "climate" [3]**

Content of curriculum standards	Activity suggestion
According to the knowledge of China's topographic area, summarize the main features of terrain and topography in China. Based on relevant documentation, describe the principal character of China's climate and principal factors affecting China's climate.	Carry out field observation, discussion and other activities

### REQUIREMENTS FOR TEACHING GOALS

The teaching goals of curriculum standards can be expressed from three dimensions: "Knowledge and skills", "Process and methods" and "Emotional attitudes

and values". In teaching, these three dimensions should be combined rather than separated. In fact, teachers are also educating their emotional attitudes and values while imparting knowledge (Fig-5).



**Fig-5: Teaching goals' analysis of "Climate" (Adaptation according to Zhang Weiqing [1])**

### KNOWLEDGE AND SKILLS

Knowledge and skill are the first dimension of teaching goals and can be analyzed through the knowledge of textbooks. For the chapter of "Climate", the main thing is to learn how to use maps to analyze and summarize knowledge points, and learn to read the skills of map analysis. By reading the China's maps of the average temperature distribution maps in January and July, we can summarize and conclude the knowledge point of "Large temperature difference between North and South in winter, high temperature in summer widely".

### PROCESS AND METHOD

The purpose of analyzing the textbook's contents is to cultivate students' abilities or grasp

learning methods of geography. Analysis on "Climate" involves three aspects:

- Enhance students' ability of gaining geographic information by reading maps.
- Learn the methods of analyzing geographical things and phenomena based on the mastered knowledge
- Learn to summarize and induce the Law of Geography through reading maps.

### EMOTIONAL ATTITUDES AND VALUES

As the personal and implicit psychological characteristics, students' emotional attitudes and values have obvious concealment and great differences and are hard to describe with explicit behavior verbs [6]. Generally, the description is abstract and hard to measure. However, it is still necessary to use some

measurable behavior verbs as far as possible. In the "Climate" section, the emotional attitude and values lesson can be expressed as: (1) students can realize the influence of climate on human activities and the influence of human beings on climate, and then establish the consciousness of protecting the environment by analyzing graphics/maps and combining with their real life; (2) Make students care about the basic China's geographical conditions and enhance students' interest in learning geography by studying the distribution characteristics of temperature, precipitation and climate of China.

### KEY POINTS, DIFFICULT POINTS AND TIME ALLOCATION

The key content of geography teaching is the important content of the whole chapter system. It may be the basis of learning a certain knowledge point later. In geography textbooks of junior high school, a content that is usually expended in a large space, displayed with many pictures or research activities is the key content. Difficult points refer to the contents that students are hard to understand in the teaching process. These contents are usually abstract. For one knowledge point, some students believe it is difficult, but some students think it is easy, which is mainly due to differences in students' knowledge base and learning ability.

**Table-3: Key points, difficult points and time allocation of "Climate" section**

Key contents	Difficult contents	Teaching hours
Temperature distribution characteristics and temperature zones division of China	Temperature Differences between North and South impact on production and life	1
Precipitation distribution characteristics and division of arid and humid regions	The difference between production and life in arid and humid regions	1
Main characteristics and influencing factors of China's climate	Characteristics of main climatic types of China; Main influence of monsoon climate on China	1

The curriculum standard of "Climate" put forward "using data to tell the principal character of China's climate and its influencing factors" clearly. So the key content is grasping the principal character of China's climate and its influencing factors. Because temperature and precipitation are the two main factors of climate, it is necessary to study the state of temperature and precipitation in China before mastering the main climate characteristics. Therefore, the distribution characteristics of temperature and precipitation in China are also the key content. For the eighth grade students, although they can describe the distribution of temperature and precipitation only according to the distribution map of temperature or precipitation easily, it is hard to analyze the principal factors affecting the China's climate for them. Consequently, this part is a difficult point.

For some knowledge points, it is both important and difficult. If students do not grasp it thoroughly and don't understand it deeply, it will certainly affect the follow-up study. Therefore, teachers must analyze the key and difficult points clearly to better carry out teaching design and lay a good foundation for the next classroom teaching.

### TEXTBOOK'S

#### STRUCTURE OF GRAPHICS AND TEXTS

From the arrangement of the eighth grade's geography textbook, it is composed of four parts: "Text", "Graphics", "Activities" and "Reading materials". However, due to different knowledge characteristics, different chapters have a different number of these four parts. For example, some chapters are mainly represented by "Graphics", and "Text" and

"Reading materials" are only supplementary. To consolidate the learned knowledge, "Activities" is principally thinking or exploratory activities to arouse students' interest. Nevertheless, some chapters are mainly showed by "Text" and "Reading materials". Of course, "Activities" can combine "Text" and "Graphics". This arrangement not only avoids the boring feeling of simply using "Text", but also enhances students' understanding. Obviously, this approach is suitable for students at different levels of learning. Therefore, presentation modes will affect students' learning and mastery of geographical knowledge.

"Climate" is mostly presented in the form of "Text" and "Graphics", and includes 18 "Graphics", 16 paragraphs of "Text", 3 "Reading materials" and 4 "Activities". To further understand and explain, the corresponding "Graphics" will be attached to the "Text". For example, illustrate with a bar statistical chart of the extreme annual precipitation value of Beijing to explain "the inter-annual variation of China's precipitation is also very large". In reading materials, graphics and texts are utilized to make an explanation of supplementary knowledge. The "Activities" mainly focuses on thinking activities or inquiry activities, and the way of expression is also the combination of pictures and texts, aiming at cultivating students' ability to read and analyze graphics.

### TEACHING SUGGESTIONS

#### MAKE STUDENTS LEARN HOW TO RELATE LIFE TO REALITY

Due to the limitation of junior high school students' ability, they can't understand the pure text

narration and abstract problems. Therefore, the more abstract questions are, the more connect with students' real life. Only in this way, Students can better deepen their understanding of knowledge. For example, use the differences of architectural style, crop varieties and dietary habits in different regions of China to explain the differences of temperature and precipitation. Similarly, the changes of wind direction and precipitation in summer and winter can illustrate the existence of the monsoon climate in China. In this way, the knowledge of books can be linked to real life to make students more easily understand. In addition, combining teaching with practice can better arouse students' interest and learn to explore geographical knowledge from life.

### COMBINE THE ACTIVITY'S CONTENTS WITH THE TEXTBOOK'S CONTENTS

"Activities" are an important component of geography textbooks and also a significant part of geography teaching content. On the one hand, this requires teachers to cultivate students' learning initiative. Teachers should be student-centered, and choose suitable activities to stimulate students' thirst for knowledge and participation according to the actual level of students and the way students can accept. Consequently, different levels of students can be developed in participation. On the other hand, teachers should cultivate students' innovative spirit and ability, advocate inquiry learning, inspire students according to their knowledge accumulation and cognitive development level, and encourage students to think positively [7].

In classroom teaching, teachers can reduce and improve the content of activities depending on the needs of appropriate, flexible handling of the content of activities, which may achieve twice the result with half the effort. There are four activities in the section

"Climate", but if they are not all used in the teaching process. For example, "Read the material below, add relevant data and explain the differences in people's production and life at different temperatures zone" is similar to "Explain the differences of people's production and life in different arid and humid regions based on materials". Then, the two activities can be integrated and introduced after the knowledge points of temperature and precipitation are completed to make students think about the differences of production and life in different temperature zones and arid and humid regions. This can't only simplify the content of the lesson, but also enable students to form a different perspective on the same problem. In addition, some activities can be appropriately added according to the teaching contents. Although most of the activities in junior high school textbooks are thinking or exploring activities, there are few experimental activities. Hence, it is necessary to use experiments to strengthen students' understanding of knowledge for the geography subject.

### INDUCE AND SUMMARIZE KNOWLEDGE POINTS BY A TABLE

There is a certain connection between the knowledge points of junior high school geography. The knowledge that has been learned before is the basis for the knowledge to study later. Knowledge points with similarities can be induced and summarized in the form of tables to compare their similarities and differences. For example, Table-4 summarized the climate types of China

Using a table to summarize, on the one hand, students can better grasp knowledge points, clarify the links between knowledge points, and form a knowledge network in their minds. On the other hand, they can compare similar knowledge points, and analyze the similarities and differences between them to gain a better understanding of knowledge.

Table-4: Climate types in China

Climate types	Distribution areas	Features	Representative Vegetation	origin
Tropical monsoon climate				
Subtropical monsoon climate				
Temperate monsoon climate				
Temperate continental climate				
Plateau mountain climate				

In a word, textbook analysis is an indispensable part of teaching practice and the premise of teaching practice. In the analysis of textbooks, teachers should focus on the analysis of teaching goals and difficult points, which is the core and key of textbook analysis. Only through thorough analysis of textbooks teachers can better organize teaching.

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