

# Geography Assignment Design for Enhancing Targeted Literacy in the Context of "Double Reduction"

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**Abstract:** In the context of the "double reduction" policy, this article analyzes how to enhance the quality and efficiency of geography education in the new college entrance examination, in order to fully implement the fundamental task of cultivating students' moral character. By studying curriculum standards, past examination questions, and classroom teaching methods, the article explores teaching directions and extends this knowledge to design geography assignments that promote students' divergent thinking abilities. This approach aims to smoothly integrate geography teaching that incorporates humanistic care into the evaluation practices of the college entrance examination.

**Keywords:** "Double Reduction"; Geography Teaching; Targeted Literacy; Assignment Design.

## 1. Introduction

The concept of test proposition in the "Chinese College Entrance Examination Evaluation System" has shifted from "knowledge-oriented" and "ability-oriented" to "value guidance, literacy orientation, emphasis on abilities, and knowledge as foundation." [1] This change has prompted teachers to collect real-life geographic materials and apply them scientifically in geography teaching activities. Students are guided to explore the "chain of problems" in real-life situations using their acquired knowledge, enabling them to appreciate and understand the natural and human environments from a geographic perspective, as well as to explore and solve complex real-world problems. The comprehensive reform of the college entrance examination and curriculum reform are aligned in the same direction. In test question development, the focus is on creating problem scenarios that more realistically reflect students' qualities, closely connecting with students' daily lives, social progress, and national development. The scope of material selection is expanded, and students' development of core literacy is assessed within realistic problem scenarios, thus promoting the implementation of key abilities and core literacy in teaching and examinations. [2]

During the intensive review sessions for Grade 12 geography teaching, optimizing the design of assignments highlights teachers' pedagogical wisdom. Assignment design reflects students' internalization and transfer of classroom knowledge, representing a comprehensive process of knowledge construction and the cultivation of geographic thinking methods and approaches. The quality of assignments directly affects the cultivation of students' key abilities and the enhancement of their core geographic literacy. In the context of "double reduction," it is necessary to control the quantity and improve the quality and effectiveness of Grade 12 geography assignments. This article, based on the practical experience of geography teaching in the 2021 new college entrance examination, proposes relevant suggestions for optimizing Grade 12 geography assignments for the reference of fellow teachers.

## 2. Analogical Reasoning, Addressing Typical Regional Hotspot Issues

During Grade 12 review sessions, carefully selected college entrance exam questions from various provinces are used as the foundation, focusing on specific topics and highlighting hot issues in specific regions. The emphasis is placed on revisiting geographic fundamentals and textbooks, identifying gaps in knowledge, and enhancing the overall understanding of the subject matter. An example that illustrates this approach is the comprehensive question from the 2020 Shandong college entrance exam.

*The term "dew point" refers to the temperature at which air becomes saturated through cooling, indicating a higher moisture content in the air as the value increases. Generally, humid air has a lower density than dry air at the same temperature. The convergence of two air masses, one moist and the other dry, with similar temperatures, forms three fronts in the Great Plains region east of the Rocky Mountains: a cold front, a warm front, and a dry line. The accompanying diagram illustrates the distribution of key meteorological elements in certain regions of North America at a specific moment, with three air masses of varying characteristics originating from the polar region, the Pacific, and the Gulf of Mexico.*

(1) Drawing the symbols for cold front and warm front at appropriate positions in the diagram:

(2) Analyzing the reasons for precipitation near the dry line in the diagram:

(3) Explaining the influence of the geographical features in the depicted region on the formation of the dry line:

Homework Design: Carefully review the assignment: underline the questions and key terms in the text to clarify the requirements; understand the meanings of dew point and dry line; identify the main wind directions in the diagram and understand the meaning of numerical values in the legend; determine the geographical region in the diagram and its topography; establish connections between the material and the knowledge and principles learned, focusing on accurate application and transfer of knowledge.

### 2.1. Problem Breakdown

What are the conditions for the formation and existence of

cold fronts and warm fronts in this region? In mid-latitude regions of the Northern Hemisphere, how do cold fronts and warm fronts coexist?

What is a dry line? How can we compare the moisture levels on both sides of the dry line? What are the causes of precipitation near the dry line?

What are the characteristics of the Eastern, Central, and Western regions of North America in terms of topography?

How can we distinguish the properties of air masses from the polar region, Gulf of Mexico, and Pacific?

## 2.2. Current Affairs Expansion

Case 1: On June 29, 2021, the highest temperature in the western province of British Columbia, Canada reached 49.6°C, and the highest temperatures in the northwestern United States also broke local records. This extreme heatwave is directly attributed to the formation of a "heat dome" under the control of a high-pressure system [3]. Climate change has increased the probability of such extreme heatwaves occurring in North America by at least 150 times. Researchers state that without global warming, the deadly heatwaves sweeping across North America would be highly unlikely. Reflecting on this, please describe the formation principle of a "heat dome."

Case 2: According to data from the U.S. National Interagency Fire Center on August 1, 2021, there are currently 91 large-scale wildfires burning in the United States. The data published by the center shows that from January to August 2021, there were 37,803 wildfires in the United States, consuming over 12,140 square kilometers of land. Considering this, briefly describe the formation process of "Santa Ana winds" and analyze the conditions for wildfires in the United States, explaining the reasons. Also, provide a brief overview of the impact of wildfires on the local geographic environment.

Case 3: On the night of December 10 to the early morning of December 11, 2021, a rare "tornado outbreak" hit multiple areas in the United States. What caused this disaster? Consider the similarities between tornadoes and typhoons. Why are tornadoes more frequent in the Central Plains of the United States? What causes them to occur in winter? What are the main hazards of tornadoes and what defensive measures can be taken?

## 2.3. Design Approach

**A Case:** In the boundless sea of questions, students have limited time, and it is only when teachers dive into this sea that students can navigate through it. By carefully selecting natural geography questions from the Shandong college entrance examination, this assignment aims to assess students' understanding and application of natural geographic principles (such as cold and warm fronts, frontal cyclones) and their ability to transfer this knowledge to different contexts (main lines and formation mechanisms). The term "main line" is a specialized term in meteorology, and students should focus on studying new geographical terms and concepts encountered in practice exams or the college entrance examination. The questions are sourced from university textbooks and the latest academic frontiers to enhance students' understanding of unfamiliar terms. Through the decomposition of complex real-life scenarios, this assignment enables students to identify the essential characteristics of complex geographical phenomena, explore underlying patterns, and develop the confidence and skills to

tackle complex situations.

**Expansion depend on this case:** Adhering to the principles of practicality, comprehensibility, and in-depth explanations, this assignment delves into the understanding of North American terrain, atmospheric movements, and other regional knowledge. It explains concepts such as "heat dome," "Santa Ana winds," and "tornadoes," connecting them with current events. By consolidating fragmented and scattered knowledge or test questions into categories, the assignment aims to deepen students' understanding of a specific region or a group of related questions. This approach enables students to proficiently apply and transfer their knowledge, equipping them with the ability to solve other problems related to the same region or category.

## 3. Utilize Geography Videos and Magazines to Understand Real-life Situations and Solve Geographical Problems Flexibly.

Pay attention to landscape images to discover the beauty of geographical harmony. The 2021 Jiangsu Province's geography exam for the college entrance examination included approximately one-third landscape images. Geography videos showcase scenes of farmers, workers, and people's daily lives, as well as the ecological landscapes of our beautiful country. This approach can enhance students' familiarity with landscape images, broaden their perspectives, strengthen their sense of patriotism and global awareness, and improve their adaptability and problem-solving skills when dealing with unfamiliar geographical situations.

**Assignment Design:** Watch videos and take notes. During summer and winter vacations, watch two geography-related videos per week and organize notes on key geographical knowledge. Teachers can recommend videos such as "Aerial China," "Super Engineering," "National Memory - Granary of a Great Country," "Geographical China," "Talk about the World," "Traveling with Books," "Most Beautiful Highways 2020," "Beautiful China," etc. Journals such as "China National Geography," "Global Human Geography," "This is China," etc. Match the typical regions mentioned in the videos and magazines with the topics covered in daily assignments. For example, the detailed description of cotton production conditions in Xinjiang in "Aerial China" corresponds to a mock exam question: Question 26 (1) in the 2021 Salt City High School Grade 12 Third Mock Exam describes the characteristics of cotton distribution in Xinjiang and analyzes the growth conditions for high-quality long-staple cotton. The description of Sichuan's geographical location, topography, and atmospheric circulation in "Aerial China" corresponds to a set of multiple-choice questions about the rainy belt in the western part of China in the 2021 Suzhou-Wuxi-Changzhou Grade 12 Teaching Situational Research. The discussion on double-cropping of coarse cereals in "National Memory - Granary of a Great Country" corresponds to the analysis of the significance of soybean-corn intercropping in the Suzhou-Wuxi-Changzhou Grade 12 Teaching Situational Research. Questions related to the foehn effect on the Qinghai-Tibet Plateau and the Jiajiang section of the Yangtze River Basin come from newspapers and magazines.

In the context of the new college entrance examination, we not only focus on studying knowledge from textbooks but also pay attention to the ever-changing world. Assignments such as watching geography videos and reading journals may

seem simple, but they require students to have a higher ability to capture geographical information, and it takes a longer time. These assignments are suitable to be conducted during the summer before Grade 12 and winter vacation of Grade 12. Journals can be read on weekends, and many questions are derived from academic journals and magazines.

Through watching geography videos and reading journals such as the "Aerial China" series, "Super Engineering," "National Memory - Granary of a Great Country," and "Geographical China," students can understand regional geographical knowledge and enhance their regional cognitive abilities. "Super Engineering" introduces China's development level in terms of roads, bridges, vehicles, ports, etc., and helps students understand the development of transportation infrastructure and the country's major development strategies, nurturing a sense of patriotism. "National Memory - Granary of a Great Country" involves the development of agriculture in China, enabling students to understand the types and structures of agriculture in our country, as well as the technological changes in agriculture. "Geographical China" provides references for students to conduct geographical practical activities through geological scientific expeditions, promoting the harmonious coexistence of humans and nature.

When vivid and real geographical scenarios from videos or magazines appear in geography exam questions, students can confidently and actively solve new problems with a more flexible approach.

#### **4. Emphasizing Geographic Boundaries to Effectively Enhance Students' Regional Cognitive Abilities**

Question 3 of the non-multiple-choice section, Task 25 of the 2021 Jiangsu Province College Entrance Examination: Please draw the "Hu Huanyong Line" on the answer sheet's map of China and write down the names of the provinces where the line starts and ends. Students are not unfamiliar with the "Hu Huanyong Line," but drawing it on a map is rare, which may leave students at a loss during the exam. They will have to accurately depict it on the map, making the task more challenging. They can only draw it vaguely based on memory, resulting in a lower accuracy rate.

Design of the assignment: Taking Chinese geography as an example, draw a map of China: label important mountain ranges, the three-tier step boundary, and the boundaries of the three major natural regions. Divide and label the temperature zones in our country, mark the approximate latitude of the Qinling-Huaihe line, the boundary between the monsoon and non-monsoon regions, and the shifting process of the monsoon frontal rain belt in the eastern monsoon region. Draw the Yangtze River and Yellow River main streams, and

label important cities, lakes, etc., along the rivers.

Design concept: Drawing and illustrating maps are important tasks for assessing students' geographical literacy, which requires a higher level of geographical knowledge. Drawing maps can enhance students' understanding of regions and the connections between various geographical elements. According to candidates' recollections, the 2021 Jiangsu College Entrance Examination asked students to infer the northern boundary (Lines 1) 2) 3) 4) ) of the distribution of Japanese citrus based on the spatial distribution characteristics of citrus in China and provide a brief explanation for their reasoning. This question not only tests the analysis of background information, characteristic induction, and regional comparison in regional cognition but also emphasizes the ability to analyze specific issues in regional cognition. By combining drawing and explanation, students can improve their understanding of regional geography and enhance their problem-solving abilities.

#### **5. Conclusion and Summary**

In the context of the new college entrance examination (Gaokao), the assessment of geographic core literacy is prominently reflected in the areas of knowledge retention, thinking skills, and expression. Students must accurately extract the principles and patterns behind the knowledge points assessed in the test. They should be able to apply geographic thinking to solve problems in unfamiliar situations or transfer familiar scenarios to unfamiliar contexts. Additionally, they should be able to express geographic problems clearly using logical and causal language.

Situations serve as the carrier of assessment in the Gaokao evaluation system. By optimizing the design of assignments, the mysterious veil of situations is unveiled, shedding light on the geographic principles and laws and solving the underlying geographic problems. This enables a comprehensive assessment of students' core literacy in the discipline of geography, thereby ensuring the smooth implementation of moral education and talent cultivation in the Gaokao evaluation practice.

#### **References**

- [1] Li Xianhu. (2021). Analysis of the National B Paper Composition Topic in the 2021 College Entrance Examination [J]. Chinese Language Monthly, 2021(8), P41-43.
- [2] Men Hailong, & Li Yingying. (2021). Discussion on the Preparation Strategies for the New College Entrance Examination Geography Drawing Questions [J]. Teaching and Examination, 2021(09), P63-65.
- [3] Xu Qimin. Global Heat Record Continues to be Broken, Intensifying "Heat Dome" Due to Climate Warming [N]. Wen Wei Po, 2021-07-15(8).