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2025 Volume 3, Issue 6
Lecture Notes in Education, Arts, Management and Social Science
ISSN(Online): 2705-053X

Research on Unit Teaching Design of Senior High School Geography Under the Guidance of Big Concepts

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Abstract: With the continuous development of educational reform, research on unit teaching design of senior high school geography under the guidance of big concepts has become a key path to improve teaching quality and students' core literacy. Based on this, this paper deeply explores the significance of such research and the practice of unit teaching design of senior high school geography under the guidance of big concepts, taking "natural disasters" as an example, aiming to better promote students' in-depth learning and enhance their geographical spatial thinking, comprehensive analysis and problem-solving abilities.

Keywords: Guidance of big concepts; Senior high school geography; Unit teaching design

Online publication: July 26, 2025

1. Introduction

To accelerate the construction of a strong education country, the Central Education Work Leading Group has strengthened the overall leadership of the compilation of the Outline. The Ministry of Education, together with relevant departments, has deeply promoted the compilation work. They have earnestly studied General Secretary Xi's Thought on Socialism with Chinese Characteristics for a New Era, thoroughly implemented the spirit of the 20th National Congress of the Communist Party of China and the second and third plenary sessions of the 20th Central Committee, comprehensively studied and understood the important expositions and instructions of General Secretary Xi on education, carried out in-depth research and demonstration, widely solicited the opinions and suggestions of various regions, departments, central committees of democratic parties, relevant schools, experts and scholars, etc., and made further revisions and improvements according to the spirit of General Secretary Xi's important speech at the National Education Conference. The Outline issued this time is a programmatic document for the development of education issued and implemented by the Central Committee of the Communist Party of China and the State Council at a crucial moment when China embarks on a new journey of building a modern socialist country in an all-round way and marches towards the second-centenary goal. It is the first national action plan with the theme of building a strong education country and the important task of comprehensively serving the construction of Chinese-style modernization. It is a top-level institutional arrangement for comprehensively promoting the coordinated development of education, science and technology, and talents and improving the overall efficiency of the national innovation system. It is of great and far-reaching significance for implementing the major deployments of the 20th

National Congress of the Communist Party of China and better playing the leading role, solid foundation and strategic support of building a strong education country in the all-round promotion of the construction of a strong country and the great cause of national rejuvenation. High schools should follow the path that conforms to the national development according to the national policy documents, so as to better promote the cultivation of talents.

2. Significance of research on unit teaching design of senior high school geography under the guidance of big concepts

2.1. Deepening curriculum reform and enhancing critical thinking

Traditional geography teaching models tend to focus on knowledge transmission while neglecting the exploration and refinement of core disciplinary concepts. This leads students to only grasp geographical knowledge superficially, failing to form in-depth understanding. The research on senior high school geography unit teaching design under the guidance of big concepts aims to address this challenge, deepen curriculum reform, and implement core literacy in geography. In senior high school geography teaching, big concepts can integrate unit teaching content, presenting knowledge in a holistic and structured manner. Teachers can better integrate teaching resources and design teaching activities with internal connections and logical coherence, helping students build a complete and systematic geographical knowledge system. This further promotes the development of students' critical thinking, enabling them to conduct in-depth thinking, analysis, and consideration when facing issues, thereby expanding their thinking perspectives.

2.2. Reconstructing knowledge systems and stimulating students' learning interest

The traditional teaching model, which takes class hours as the basic unit, is characterized by fragmented teaching objectives, fragmented teaching content, performative student activities, and superficial teaching research activities, making it difficult to stimulate students' interest in learning. To address this, teachers, with big concepts as the core and unit themes as the guide, systematically reconstruct the theoretical knowledge presented in the unit. This enables students to better learn theoretical knowledge and promotes the development of their structured cognitive abilities. Meanwhile, teachers emphasize the creation of teaching scenarios, allowing students to focus on the issues to be discussed in class in a nearly real environment, encouraging their active participation and enhancing their learning experience.

2.3. Integrating theory and practice to promote all-round development

As a comprehensive and practical discipline, geography requires students not only to master solid theoretical knowledge but also to possess the ability to apply what they have learned in practice. Therefore, in the design of senior high school geography unit teaching under the guidance of big concepts, teachers should not only impart theoretical knowledge but also guide students to better apply theories to practice. When students encounter problems, they should have the courage to raise questions, and teachers can analyze their teaching methods based on these questions. This forms a positive cycle and promotes students' all-round development.

3. Practice of high school geography unit teaching design under the guidance of big concepts — taking "Natural Disasters" as an example

3.1. Constructing a systematic conceptual system

From the perspective of geographical research fields, natural disasters are a core concept in geography, which profoundly reflects the essential attributes of geography. In terms of the content of this unit, the concept of natural disasters includes multiple sub-concepts such as meteorological disasters (typhoons, droughts), geological disasters (earthquakes, landslides), hydrological disasters (floods, tsunamis), biological disasters (such as pests and diseases, forest fires), and environmental

disasters (haze, acid rain). According to the specific requirements of the curriculum standards for teaching content, the study of natural disasters is not only limited to the understanding of disaster types, but also extends to multiple conceptual levels such as the analysis of the characteristics of natural disasters, the exploration of causes, the laws of spatial distribution, impact assessment, monitoring and early warning, disaster prevention and mitigation measures, as well as disaster response and recovery. At the same time, the concept of natural disasters is closely related to two broader geographical concepts: regional geographical characteristics, human social and economic activities, and the interaction between humans and the environment[1]. Based on the above analysis, teachers can establish a unit conceptual system led by the big concept of "natural disasters".

3.2. Enhancing comprehensive cognition and response capabilities

In this case, based on the unit conceptual system led by the big concept of "natural disasters", the design content is carried out in a structure with the learning content requirements of natural disasters as the main line and the content composition system of natural disasters as the secondary line[2]. Among them, the main line can better guide the progress of teachers' teaching, that is, to better explain the understanding of natural disaster types, the analysis of natural disaster characteristics, the spatial distribution and causes of natural disasters, the impact assessment of natural disasters, the monitoring, early warning and disaster prevention and mitigation of natural disasters, etc.; the secondary line will deepen students' better understanding of rich and in-depth teaching content, ensuring that students have a comprehensive understanding of natural disasters, that is, learning the relationship between natural disasters and the natural environment, the interaction between natural disasters and human activities, natural disaster education and the improvement of response capabilities, etc.

3.3. Promoting comprehensive response and regional cognition abilities

While this study focuses on the teaching content concept of "natural disasters", it also designs corresponding core literacy cultivation goals: first, teachers use charts and cases to let students analyze the formation conditions and influencing factors of natural disasters, master the basic methods of understanding and evaluating natural disaster risks, thereby enhancing students' regional cognition ability; second, teachers let students understand the main links of natural disaster management through group exploration of natural disaster monitoring, early warning, emergency response and post-disaster recovery, so as to improve students' geographical practice ability and enable them to effectively respond to natural disasters in practice; third, after learning, students can describe the multi-faceted impacts of natural disasters on the regional economy, society and environment, so that students can use natural disaster knowledge to analyze issues of industrial development and regional planning, and promote the development of students' comprehensive thinking; finally, teachers let students discuss the changing trends of natural disasters and the impact of human activities in combination with specific cases, understand the impact of human behavior on natural disaster risks, enable students to put forward reasonable suggestions, have a profound understanding of natural disasters, and promote the all- round development of students' geographical literacy[3].

3.4. Promoting knowledge construction and all-round development

The teaching strategy under the guidance of big concepts focuses on natural disasters nationwide, and establishes a learning environment that can support the conceptual system structure of "natural disasters" and reflect the typical geographical phenomena and problems under its main line, so that students can actively construct a knowledge network about natural disasters, better promote their all-round development, and enable them to better understand knowledge. The diversity, frequency and wide-ranging impact of natural disasters nationwide provide rich materials and cases for teaching. Different types of natural disasters such as earthquakes, floods, droughts and typhoons show different characteristics and impacts across the country, thus providing a broad space for students to observe and analyze geographical phenomena. When students are learning about natural disasters, teachers can use geographical principles and methods to help students explore the formation mechanism of natural disasters, improve their geographical practice ability and problem-solving ability, and enhance their learning of the knowledge of the "natural disasters" unit.

3.5. Cultivating core geographic literacy

Teachers can design a student-centered unit with "natural disasters across the country" as the main theme, adopting inquiry and practice as the primary methods, and constructing a unit learning framework of "problem description and proposal—practical solution—summary and induction—application and practice," aiming to cultivate students' core literacy in geography. The following are specific designs for three learning tasks related to national natural disasters:

3.5.1. Task 1: Correctly Understand the Main Types and Causes of Natural Disasters Nationwide

Problem Description and Proposal: Due to China's vast territory, its natural environment is complex and diverse, leading to a wide variety of natural disasters with extensive distribution. Based on this, teachers can ask: "What are the main natural disasters facing China? What are the causes of these disasters?"

Practical Solution: Students will learn about the types of natural disasters in different regions of China by consulting maps, statistical data, and relevant references. For example, some students may find that the southeast coastal areas are vulnerable to typhoons and storm surges; some may discover that the southwest region frequently experiences earthquakes and landslides; others may note that northern regions often suffer from droughts and sandstorms. On this basis, students will further analyze the causes of these disasters: typhoons are related to tropical cyclone activities, earthquakes are closely linked to crustal movements, and droughts are often associated with climate change and water shortages caused by human activities.

Summary and Induction: Through their practice, students will draw the following conclusions: The diversity and extensive distribution of natural disasters in China are closely related to its complex physical geographical environment; different types of natural disasters have distinct causes, which include both natural and human factors.

Application and Practice: Students can use their conclusions to predict the types of natural disasters that may occur in a certain region in the coming period and their impact levels, and propose suggestions for strengthening early warning systems and improving public awareness of disaster prevention and mitigation.

Design Intent: This task enables students to intuitively understand the distribution and causes of natural disasters in China by reading maps, analyzing data, and reviewing literature, thereby deepening their understanding of the laws of natural disasters.

3.5.2. Task 2: Formulate Strategies for National Natural Disaster Response and Prevention

Problem Description and Proposal: To help students deeply understand the losses caused by natural disasters to humans, teachers can ask: "How to effectively respond to and prevent natural disasters nationwide?"

Practical Solution: Teachers will divide students into different groups. Each group selects a topic they want to discuss and formulates specific response and prevention measures for that type of natural disaster. Some groups discuss typhoon disasters and propose measures such as strengthening early warning systems, improving emergency plans, and enhancing public awareness of disaster prevention and mitigation; other groups choose to discuss earthquake disasters and suggest strengthening earthquake monitoring, improving the seismic capacity of buildings, and conducting earthquake emergency drills.

Summary and Induction: The formulation of natural disaster response and prevention strategies needs to comprehensively consider multiple factors, including disaster type, causes, scope of impact, and socio-economic development level. Effective response and prevention strategies can significantly reduce the losses and impacts caused by natural disasters.

Application and Practice: They select a specific region, analyze the characteristics and actual situation of local natural disasters, and assign some students to role-play government departments and others to act as relevant institutions to comprehensively evaluate the plan and finally form a final proposal.

Design Intent: Through group cooperation and role-playing, teachers aim to help students deeply understand the complexity and diversity of natural disaster response and prevention, enhance their practical application abilities, and

realize that the knowledge they learn is closely related to real life, thereby improving their interest in learning.

3.5.3. Task 3: Explore the Impact of Human Activities on Natural Disasters and Paths to Sustainable Development

Problem Description and Proposal: To deepen students' understanding of the impact of human activities on natural disasters, teachers can ask: "How do human activities affect the occurrence of natural disasters? How to achieve sustainable development to reduce the impact of natural disasters?"

Practical Solution: Through investigations and watching video materials, they find that excessive deforestation can cause soil erosion and frequent landslides, while irrational planning in the process of urbanization may exacerbate urban waterlogging and poor drainage.

Summary and Induction: Through practical activities, students conclude that the impact of human activities on natural disasters is complex and far-reaching; reducing the impact of human activities on natural disasters and achieving sustainable development require the joint efforts and long-term practice of the whole society.

Application and Practice: Teachers encourage students to apply their knowledge to environmental protection in communities or schools to promote the popularization of low-carbon lifestyles; students can also carry out popular science publicity activities in communities to improve the public's understanding of natural disasters and sustainable development.

Design Intent: By exploring the impact of human activities on natural disasters and paths to sustainable development, students can deeply understand the complex relationship between human activities and natural disasters and think about how to reduce the impact of natural disasters by changing human behaviors.

3.6. Promote the dual development of performance and thinking

In the analysis of this case, it can be seen that teachers adopt a unit teaching strategy guided by big concepts, and finally evaluate students' performance and thinking structure. In terms of performance evaluation, teachers design tasks such as simulating natural disaster response scenarios and analyzing real disaster cases, aiming to let students demonstrate their understanding and application of the causes, impacts, and prevention measures of natural disasters in practice. In terms of thinking structure evaluation, teachers focus on whether students can use their mastered geographical knowledge and skills to conduct in-depth analysis from multiple perspectives and levels when facing complex problems, and finally construct a complete thinking system on their own. Practice has proved that this teaching design based on students' learning situation and centered on big concepts has become an effective path for high school geography teaching under the background of the new curriculum, as it can not only help students establish a systematic thinking structure but also better promote the development of students' geographical literacy.

4. Conclusion

Through in-depth exploration of high school geography unit teaching design under the guidance of big concepts, this study not only reveals its unique advantages in promoting the development of students' core literacy but also points out the direction for the future development of geography education. In addition, this paper can better provide certain references for professional scholars engaged in research in this field.

Disclosure statement

The author declares no conflict of interest.

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