



# Research on Decision-Making Strategies of Regional Geography Teaching in High School Based on Data-Driven

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## ARTICLE INFO

## ABSTRACT

### Keywords

Regional geography  
Big data  
Hierarchical teaching  
Precision teaching  
Strategy discussion

With the development of big data technology, it has become a trend to analyze students' behavioral data to promote teachers' precision teaching. In this context, this study cooperates with a senior high school geography teacher in Changsha City, Hunan Province, collects the students' examination data from 2020 to 2021 academic year with the help of Zhixue.com, divides the students into four groups according to the examination results, and takes regional geography knowledge as an example to analyze the weak knowledge points, discipline core literacy and practical application ability of students at all levels. Based on the analysis results, the improvement strategies of teachers' subsequent precision teaching were proposed, including students' stratification should be carried out according to daily performance and examination results; The weak knowledge points of students of different grades overlap and differ, so teachers should carry out targeted teaching for students of different grades. At the same time, the multi-level teaching method should be improved to enhance students' discipline core literacy. Pay attention to contact life reality, enhance students' practical application ability.

## 1. Introduction

Evaluating students' knowledge mastery and knowledge application ability is a necessary link to test teachers' teaching effect [1]. Teachers usually evaluate whether students master the knowledge through daily homework data and previous examination data. In order to deeply understand the learning effect of students and evaluate the learning situation of students at different levels more accurately, some scholars proposed that teachers can divide students into levels according to the differences of students' abilities, so as to help teachers better carry out various teaching work [2]. However, due to the influence of technology, environment, time, energy, etc., the specific situation of the assignments and exams of students at different levels cannot be carefully dug and analyzed every time [3]. In the end, there is a situation in which students stand still or even regress in the initial stratification [4]. Some scholars also pointed out that stratified teaching is a very good idea, but it was difficult to realize before the "Internet + education" model appeared [5].

Today, the development of emerging technologies such as artificial intelligence, big data, and educational informatization has brought new driving forces to the innovation of education and teaching. It has become a trend to use technology to analyze learning data to promote teachers' precise teaching, various intelligent education application platforms have also emerged [6]. The Blue Book on the Development of Big Data in Basic Education in China (2016-2017) focuses on the use of big data to help explore reform and innovation in primary and secondary education [7]. Feng et al. pointed out that the use of modern technology to deeply dig and analyze the value and meaning behind the data generated in teaching can assist teachers to "teach" accurately and students to "learn" accurately [8]. Based on this, in order to promote the in-depth application of intelligent systems in subject teaching and education management, and help front-line teachers and schools make better use of technology to optimize teaching quality, we adopt the cooperation model of "joint research between institutions of higher learning and primary and secondary schools". Carry out valuable research on the existing data of primary schools, make full use of existing technology for student behavior data collection and process evaluation, help front-line teachers to carefully prepare each lesson, and let all kinds of students "learn enough" in the classroom, truly Improve the quality of classroom teaching.

The Zhixue.com used by a middle school in Changsha City, Hunan Province is an online education platform and application tool that provides students with personalized learning services based on "artificial intelligence + big data" analysis, including test question analysis, test reports, and a collection of wrong questions. And many other functions, teachers can directly see the learning behavior data of all students tracked and analyzed by the platform simply by logging in to the platform, which provides great convenience for teachers to carry out accurate teaching [9]. Therefore, the regional geography-related learning and examination data of the class taught by the teacher were passed through Zhixue.com, and further data analysis was carried out on this basis, aiming to summarize the current situation of the students' regional geography learning in this class, and discover the specific existing in the teacher's teaching. Based on the theoretical background of layered teaching, more targeted and implementable teaching optimization suggestions are put forward, so as to provide some ideas and references for teachers' teaching. Accordingly, this study mainly addresses the following questions:

- a. According to the students' mastery of regional geographic knowledge points in this school year, how can teachers improve the overall teaching effect?
- b. According to the mastery of knowledge points of students at different levels, how to stratify students?
- c. According to the weak knowledge points of students at different levels and the mastery of core literacy and practical application ability of subjects, how should teachers conduct targeted and hierarchical teaching?
- d. What changes should teachers make in subsequent teaching?

## 2. Literature Review

### 2.1. Current Situation of Stratified Teaching

In 1868, American educator Harris W.T. proposed the "activity group system", which tests students at the beginning of the semester and divides them into three levels: A, B, and C according to their grades. Students carry out individual guidance, and at the end of the semester, students are re-stratified according to their test scores. This system is considered to be the prototype of stratified teaching [10]. The earliest attention to the domestic stratified teaching theory was the "Notice on Several Issues in Current Primary and Secondary Education" issued by the state in 1982, which pointed out that due to the gap in students' knowledge mastery, students can be classified according to the actual situation in teaching. To different classes [10], since then stratified teaching has been paid attention to in China.

Xue pointed out that if a unified teaching model is adopted, it is very likely that excellent students will not be further optimized and improved, and poor students will not be able to consolidate their

foundation in time [11]. For this reason, she adopts a stratified teaching model in the English courses of higher vocational colleges. The results show that stratified teaching can meet the learning needs of students in a targeted manner, so that students can get a satisfactory teaching experience in the classroom. Wang et al. divided the students into layer A (basic strengthening layer), layer B (stably improving layer), and layer C (exploration question upgrading) according to students' learning conditions. Students are taught in layers, and the results show that, through this teaching model, students' core literacy of geography and autonomous learning ability have been improved, and teachers' grasp of teaching knowledge is more reasonable [12]. Taking mathematics homework in junior high school as an example, Liu divides homework into three levels: basic, advanced, and divergent for students at different levels. The assignments are aimed at Tier A students who focus on developing independent learning and inquiry skills [13]. The results show that good homework design can promote classroom teaching, strengthen students' understanding and application of the knowledge learned in the classroom, and appropriately promote students' autonomous learning and inquiry ability.

### 1.1. Current Situation of Regional Geography Teaching

Regional geography has become the core content of geography learning in middle schools around the world. The main learning goal is to let students master the different characteristics and development status of various regions in the world, discover their existing problems, and explore the laws and principles of development and changes in various regions [14].

Different countries have different requirements for regional geography study. When teaching regional geography in the United States, it adopts the teaching content and model of "theme + region", such as linking the Middle East region with the oil issue and linking the African region with issues such as drought and AIDS. The mode in which questions are integrated into teaching helps students deepen their understanding of this area as they learn [15]. The study of regional geography in Japan mainly focuses on world geography. Its syllabus points out that teachers should pay attention to three requirements when teaching world geography: teach students to learn world geography in combination with the things around them; Deepen understanding of neighboring countries [16].

The main content of regional geography study in China is Chinese geography and world geography. Wang conducted a questionnaire survey on the students and geography teachers of the second-year liberal arts class of a middle school in Dongguan City, Guangdong Province, and found that in the process of learning regional geography, the main problems of the students are the unscientific way of remembering geographic knowledge and the failure to develop timely access to maps [17]. The main problems of teachers are inappropriate teaching methods, excessive teaching content and dull classroom atmosphere. Zhu et al. selected 100 learning situation analysis texts from the teaching design published in geography teaching and research publications and used Nvivo software to code and analyze them [18]. The results show that geography teachers tend to make subjective judgments in learning situation analysis and lack objective judgment. Data support: geography teachers pay more attention to the cognitive dimension of students when analyzing their learning situation, but ignore their dimensions such as emotion, attitude, and individual differences. Liu et al. pointed out that the following issues should be paid attention to in the current regional geography teaching in my country: grasp the main line of "geographical location and scope-geographical characteristics-regional comprehensive analysis", and clarify the two changes of "frontier knowledge of geographic information technology and college entrance examination answering logic", grasp the relationship between "regional geography and systematic geography, junior high school regional geography and college entrance examination", and pay attention to the four key points of "regional geospatial positioning, teaching methods, key elements and hot spots" [19].

Through the integrated analysis of the literature, it can be found that regional geography has become the core content of geography teaching at home and abroad, and high school geography teachers should fully realize its importance in the college entrance examination. However, in the

related research, there are still the following problems: First, in the related research on the current situation of regional geography teaching, theoretical research accounts for a large proportion and empirical research accounts for a small proportion. Most of the existing research focuses on the teaching content and teaching methods of regional geography. However, few studies have found practical problems in the teaching process of regional geography by analyzing the data of students' learning behavior. Second, among the related research on stratified teaching, most of the research at home and abroad focuses on mathematics and English, and there is very few research on stratified teaching in geography.

### 3. Material and Methodology

#### 3.1. Data

The data of this study come from the weekly, monthly, and final test data of students recorded in the Zhixue.com used by a middle school in Changsha. The previous test data of regional geography in the 2020-2021 school year of a class in the second grade of senior high school was selected as the main test data by us. The data that can be exported by the platform include students' previous test scores, test paper analysis, and all the test knowledge points of regional geography in this school year. The scores include the grades and shifts of students' previous tests. In the analysis of the test papers, there are the analysis of the students' answers to large and small questions and the analysis of knowledge points. We collect these data and analyze from the knowledge points.

#### 3.2. Method

All data that can be used by Zhixue.com is exported by us. After eliminating invalid data, students are divided into different grades according to the final exam results of the second semester of this school year. Combined with all the knowledge points that students have learned this school year recorded on the Zhixue.com, analyzed the differences in the knowledge points mastered by students at different levels, and find out the weak knowledge points of students at each level. Then, the weak knowledge points are corresponding to the questions of these knowledge points in the daily tests of students, and further analysis is made in combination with the thinking ability and practical application ability of geography. The analysis employed in this research was descriptive analysis including chart, central measurement, and dispersion.

### 4. Results and Discussion

#### 4.1. The knowledge points of the students in this class

The mastery of knowledge points of students in this class This school year, students have learned a total of 54 knowledge points of regional geography, mainly involving location division, atmospheric environment, geology and landforms, etc. This study uses the Zhixue.com system to generate the students' knowledge point mastery rate files according to the students' answers in previous exams in this school year. According to the analysis of the line chart shown in Fig. 1, it can be seen that the mastery rate of the two knowledge points "Coastal Zone Development" and "Climate Factors" in this school year is slightly lower than the average level of the grade, and the remaining 52 The mastery rate of each knowledge point is higher than the grade average. Among them, the three knowledge points of "crustal movement and geomorphology", "thermodynamic circulation and its common phenomena" and "hydrological characteristics of seawater" are the best, and the mastery rate is above 95%. However, there are also some knowledge points whose mastery rate is lower than 60%. In particular, the mastery rate of the two knowledge points "main features of glacial landforms" and "main characteristics of coastal landforms" is below 40%. Students need to focus on strengthening their studies.

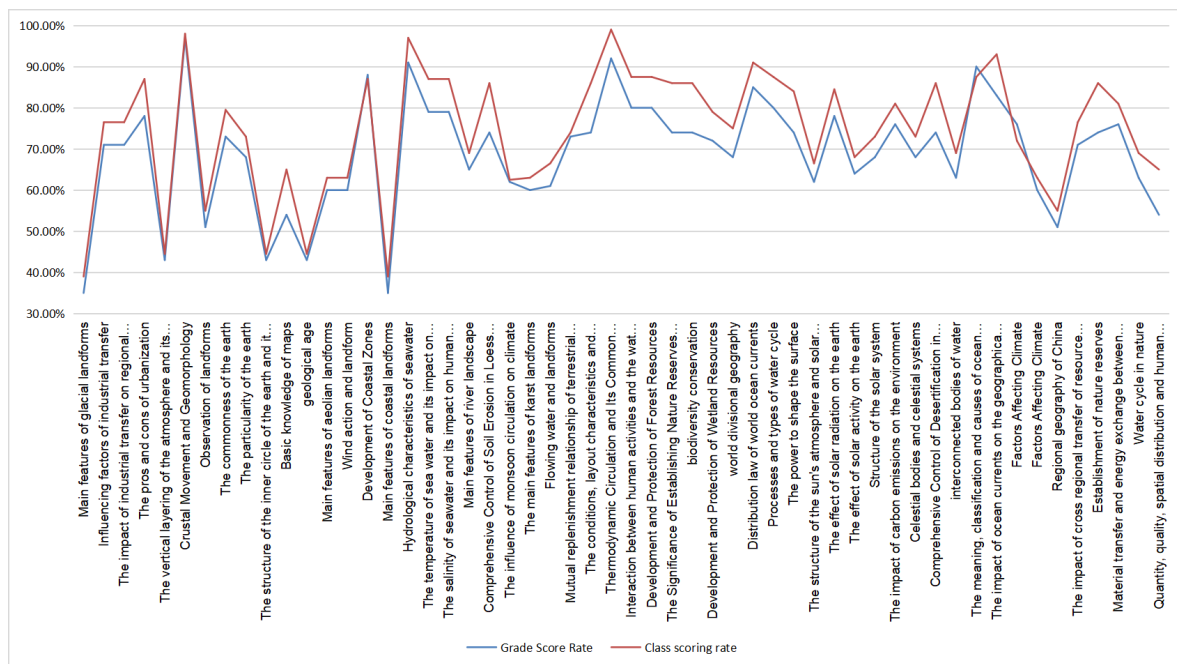


Fig. 1 Mastery rate of regional geographic knowledge points of class students.

To sum up, the regional geography learning of the students in this class is generally good this academic year, and they are at the middle and upper level in the grade. Among them, the knowledge points about geomorphology and landscape are poor for students as a whole. In the follow-up teaching, teachers should focus on training and explaining this knowledge.

#### 4.2. Mastery degree of knowledge points of students at different levels

From 2019, the new model of “3 + 1 + 2” has been adopted in the college entrance examination of Hunan Province. In order to ensure the fairness of the scoring of the college entrance examination, the grade scoring method is adopted for the re selected subjects of the college entrance examination, including geography subjects. Referring to the grading rules of the new college entrance examination in Hunan Province and based on the final examination results of the current academic year, this study assigns the top 15% of students to grade A, 16% - 50% to grade B, 51% - 85% to grade C, 86% - 98% to grade D and the last 2% to grade E. Since all the students of Grade E are absent from the examination, no specific analysis will be made in this study [20].

The data of 13 examinations of students in this academic year were obtained by zhixue.com, and the test score rate corresponding to each knowledge point was summarized. According to the classification of students, the average score rate of knowledge points of students at different levels was calculated, and the score rate was taken as the mastery degree of students’ knowledge points. As shown in Fig. 2, the mastery degree of knowledge points of students at different levels is described and analyzed according to the grade division results. Overall, the change trend of the students’ mastery of each knowledge point in this class is basically the same, that is, the students in this class generally have poor knowledge points, which mostly coincide. From the perspective of change trend, the mastery degree of knowledge points of students at the four levels fluctuates in different ranges. Among them, the mastery rate of all knowledge points of students at grade A is higher than 60%, the mastery degree of most knowledge points is at the highest level of the class, and the fluctuation amplitude of knowledge mastery degree is also the smallest; The mastery of knowledge points of students of grade B and C fluctuates greatly. The mastery degree of individual knowledge points is higher than that of students of Grade A, but the mastery rate of individual knowledge points is even lower than that of students of grade D; The mastery rate of most knowledge points of grade D students

is at the lowest level of the class, and there is an extreme that the mastery rate of individual knowledge points is the highest and the mastery rate of individual knowledge points is the lowest.

Students at different levels have different degrees of mastery of knowledge points. Next, the knowledge points that students at different levels have poorly mastered will be further analyzed, so that teachers can prescribe the right medicine in teaching.

After careful analysis, it can be seen that the three knowledge points of “the vertical layering of the atmosphere and its connection with production and life”, “the structure of the inner circle of the earth and its characteristics” and “geological age” are all the weak knowledge of A-level students. It is also the weak knowledge point of the other three levels of students, so these three knowledge points may be difficult knowledge points in the study of regional geography. In addition to the overlapping weak knowledge points with the A level, the weak knowledge points of the students in the three levels B, C, and D also overlap. The knowledge points that are poorly mastered at these three levels are “main characteristics of glacial landforms” and “main characteristics of coastal landforms”. These two knowledge points are also the two knowledge points where the overall mastery rate of the class is less than 40% in the first part of the study. It can be seen that the students of grade B, C and d have a low overall mastery rate of these two knowledge points. Therefore, when teachers encounter exercises related to geomorphology and landscape in teaching, they should pay attention to the students of these three grades.

In addition, students at the C level have two independent weak knowledge points, “Observation of landforms” and “Regional geography of China”. The mastery rate of the remaining three levels of these two knowledge points is more than 50%. D-level students also have three independent weak knowledge points: “The influence of monsoon circulation on climate”, “Interconnected bodies of Water” and “Water Cycle in Nature”.

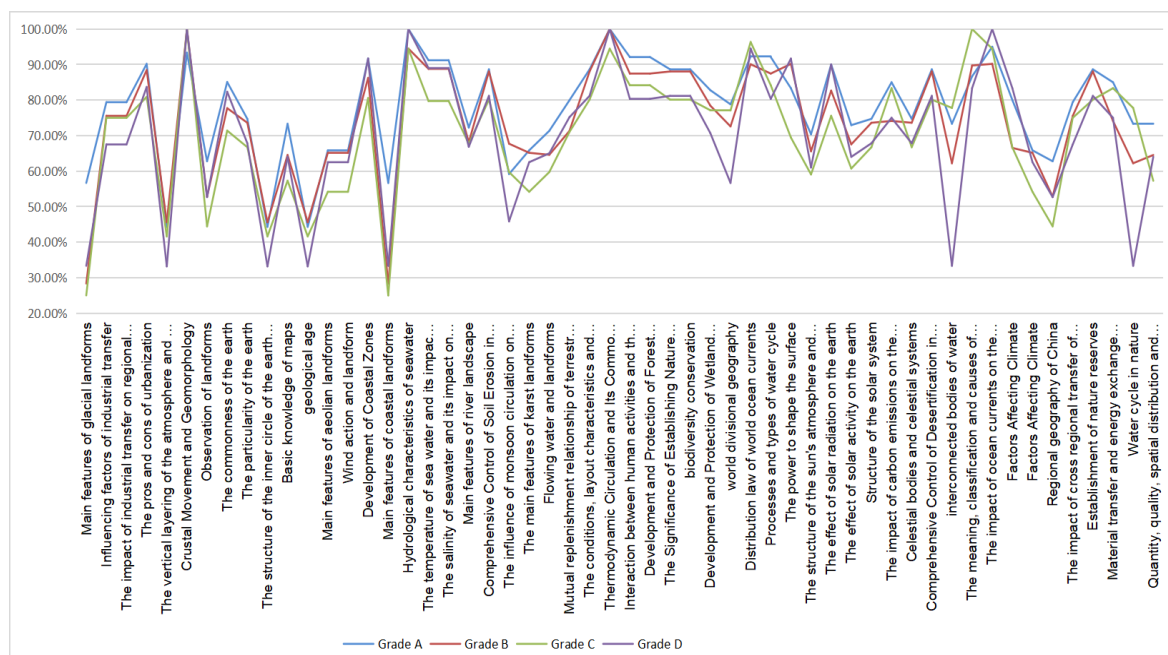


Fig. 2 Mastery rate of regional geographic knowledge points of students at different levels.

In short, the weak knowledge points of students at different levels are both overlapping and independent. In teaching, teachers should distinguish which weak knowledge points should be taught as a whole, and which weak knowledge points should be targeted for teaching.

### 4.3. Differences in Ability Corresponding to Weak Knowledge Points

The “General High School Geography Curriculum Standards (2020 Revision)” proposes that geography teaching should grasp the essence of geography, not only to learn the basic methods and ideas of geography, but also to cultivate students’ core literacy and comprehensive application practice ability of geography [21]. In this study, the weak knowledge points of students at different levels and these two abilities are corresponded and analyzed as follows.

#### 4.3.1. Differences in Core Literacy of Disciplines

Disciplinary core literacy is the concentrated expression of the educating value of disciplines, and it is the correct values, essential characters and key abilities that students gradually form through discipline study [22]. The core literacy of geography discipline mainly include the concept of human-land coordination, regional cognition, comprehensive thinking, and geographic practice [22], in which regional cognition and comprehensive thinking are the main objectives of regional geography learning to enable students to have a “geographical perspective” [23]. Regional cognitive ability refers to the capability of individuals to flexibly use the knowledge they have learned to analyze regional geographic information and solve regional problems; geographic comprehensive thinking capability refers to the capability of individuals to comprehensively and systematically understand geographic things and geographic phenomena [24]. Table 1 shows the specific connotations of the two capabilities.

**Table 1.** Specific Connotation of Regional Cognitive Capability and Geographic Comprehensive Thinking Capability

First-Level Capability	Second-Level Capability	Specific Connotation
Regional Cognitive Capability	Regional geographic information processing capability	The ability to acquire, organize and analyze regionally relevant information
	Regional geographic spatial positioning capability	With the help of schematic diagrams, etc., the ability to establish a corresponding mental map in the brain according to the characteristics and interrelationships of geographical elements, so as to determine the geographical location of the region
	Regional geographic causal relationship analysis and reasoning capability	Through a comprehensive analysis of the influencing factors, logical reasoning is carried out according to a certain method, so as to obtain the regional geographical features, the causes of geographical phenomena and the capability of the formation process
	Regional prediction, evaluation and optimization capabilities	The capability to simply predict the development process and future trends of the region based on the learned geographical principles and laws
Geographic Comprehensive Thinking Capability	Comprehensive ability of geographic elements	The capability to recognize the integrity of geographical things and the interaction and mutual influence among various elements of the geographical environment
	Space-time comprehensive capability	The capability to analyze the occurrence, development and change of geographical objects and phenomena
	Regional comprehensive capability	The capability to analyze the influence of local or regional natural and human elements on the formation of regional characteristics

The following is an analysis of the existing differences starting from weak knowledge points and focusing on the core competencies of these two disciplines. All weak knowledge points of students at different levels are summarized, and these weak knowledge points are correlated with their core literacy in geography. The results are shown in Table 2. In addition to the regional prediction, evaluation and optimization capability under regional cognition and the regional comprehensive

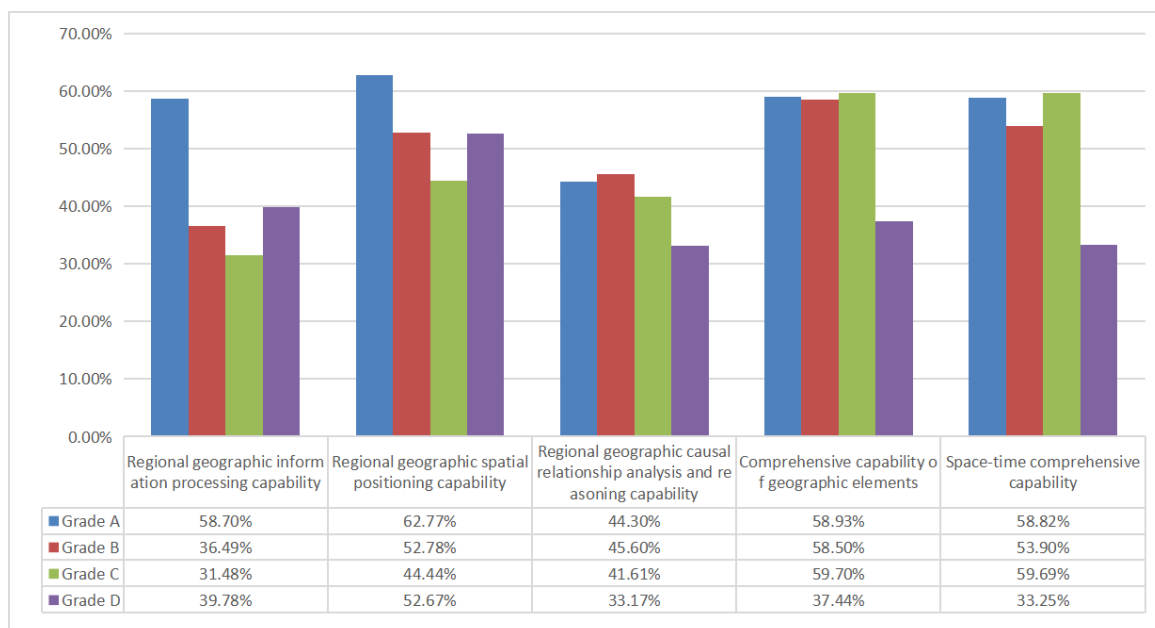
capability under comprehensive thinking, the core literacy corresponding to students' weak knowledge points covers all other secondary capabilities. Among them, the weak knowledge points covered by the regional geographic information processing capability and the comprehensive capability of geographic elements are the most.

**Table 2.** Disciplinary Core Literacy Competencies Corresponding to Weak Knowledge Points

<b>Disciplinary Core Literacy Competencies</b>		<b>Weak Knowledge Points</b>
<i>First-Level Capability</i>	<i>Second-Level Capability</i>	
Regional Cognitive Capability	Regional geographic information processing capability	Main features of glacial landforms Main features of coastal landforms Observation of landforms
	Regional geographic spatial positioning capability Regional geographic causal relationship analysis and reasoning capability	The structure of the inner circle of the earth and its characteristics Regional geography of China
Geographic Comprehensive Thinking Capability	Comprehensive capability of geographic elements	The vertical layering of the atmosphere and its connection to production and life The influence of monsoon circulation on climate Interconnected bodies of water
	Space-time comprehensive capability	Geological age Water cycle in nature

Then, the mastery rate of weak points of knowledge of students at different levels is mapped to the core literacy ability of students for specific description and statistics, as shown in Fig. 3. It can be seen that different levels of students' weak knowledge points correspond to different core literacy abilities. In general, only the students of Grade A have a mastery rate of more than 60% in the capability of regional geographic spatial positioning, and the mastery rates of these core qualities of students of all other grades are less than 60%. In terms of regional geographic information processing capability, the capability of grade a student is stronger, which is significantly higher than the other three grades, and the capability of Grade C students is the weakest. Therefore, students of Grades B, C and D, especially students of Grade C, need to strengthen the training of this capability. In terms of regional geospatial positioning capability, there are great differences among the students of the four grades. The students of Grade A have the strongest capability, the students of grade B and d have no obvious difference in capability, and the students of Grade C have the worst ability, with a mastery rate of only 44.44%, which is significantly lower than the other three grades. Therefore, in this ability, the teaching of students of Grade C should be strengthened. In terms of the regional geographic causal relationship analysis and reasoning capability, the four grades are poor, all below 50%, and the students of Grade D are significantly lower than the other three grades, only 33.17%. Therefore, for this capability, students of the four levels should strengthen teaching and training. In terms of the comprehensive capability of geographical elements, the students of Grades A, B and C have little difference, and their mastery is basically the same, which is less than 60%. Grade D students have the worst mastery, only 37.44%. Therefore, in this ability, targeted training should be carried out for Grade D, and the other three grades can be trained as a whole. In terms of space-time comprehensive capability, the basic situation of students is similar to the comprehensive ability of geographical elements. There is little difference in the mastery of Grade A, B and C students. Grade B is slightly lower than Grade A and C, and Grade D students are significantly lower than the other three grades. For the teaching and training of this ability, the focus should be on Grade D, and the training of grade B should also be strengthened.





**Fig. 3** Core literacy of specific disciplines corresponding to weak knowledge points of students at different levels.

In short, the core literacy competencies of students at different levels are different. Grade B, C and D students have poor regional cognitive capability, and Grade D students have the worst geographic comprehensive thinking ability. In terms of regional cognition, students of Grades B, C and D need to strengthen the ability of regional geographic information processing and regional geographic causal relationship analysis and reasoning capability, while students of Grade A need to strengthen the capability of regional geographic causal relationship analysis and reasoning, and students of Grade C need to strengthen the capability of regional geographic spatial positioning. In terms of comprehensive geographical thinking, only Grade D students need to strengthen.

#### 4.3.2. Differences in practical application ability

From the geography questions of the college entrance examination in recent two years, the proposition of the college entrance examination focuses on the basis of geography, and the evaluation of students is becoming more and more comprehensive, including not only the examination of subject knowledge, but also the examination of students' ability to flexibly operate their knowledge [25]. We found the specific test questions corresponding to students' weak knowledge points from the test paper analysis function of zhixue.com, and synthesized the question types, difficulties and application abilities of these questions. The results are shown in Table 3.

It can be seen that the specific application abilities corresponding to students' weak knowledge points mainly include the following four types: First, the ability to read and analyze drawings. There is an inseparable relationship between regional geography learning and map. The learning of geographical knowledge is inseparable from the support of map. Therefore, the reading and analysis of map is a necessary basic ability for students to learn geography [26]. Second, the ability to correctly grasp material information. Reading a given material is the basic link of answering subjective questions in geography examination. Only by correctly mastering the material information can we quickly grasp the main body of the material and answer correctly in the shortest possible time. Third, the ability to obtain and interpret information. This ability refers to the process of students discovering, judging and refining information. It is the starting point for students to answer questions [27]. Fourth, the ability to mobilize and apply knowledge. This ability means that after obtaining relevant information, students need to screen out the knowledge points for this problem in their own knowledge reserve and apply them to problem solving [28].

According to the analysis of these abilities corresponding to the specific level, it can be seen that the four abilities of the students in this class are weak in varying degrees. In teaching, it is necessary to cultivate the four abilities of the whole class. Specifically, the weak knowledge points of students at the four levels are usually investigated in the form of solving and answering questions in the exam. The difficulty of the exam is difficult. The focus is on the other three application abilities except the ability of reading and analyzing drawing. Subjective questions focus on the investigation of students' comprehensive ability. In addition, the difficulty level of the examination is high, so the score rate of students in the examination is low, resulting in the worst development of these three abilities. The weak knowledge points of Grade B, C and D students are usually investigated in the form of choice questions in the exam. The difficulty of the exam is more difficult or very difficult. The focus is on the students' ability to read and analyze drawing and the ability to mobilize and apply knowledge. The examination questions corresponding to the weak knowledge points of Grade C students are mostly choice questions. The examination difficulty of "Observation of landforms" knowledge points ranges from simple to difficult. Grade C students are at the middle and lower level in the class. They can answer the easier questions to investigate the knowledge points and may not be able to answer the more difficult questions. Grade D students' geography learning level is poor, and all four abilities need to be strengthened.

**Table 3.** Practical Application Ability Corresponding to Weak Knowledge Points

Weak Knowledge Points	Weak Student Grade	Difficulty of Test Questions	Question Type	Practical Application Ability
The vertical layering of the atmosphere and its connection to production and life	Grade A, B, C and D	Very difficult	Subjective question	Ability to obtain and interpret information; Ability to mobilize and apply knowledge; Ability to correctly grasp material information
Geological age	Grade A, B, C and D	Very difficult	Subjective question	Ability to obtain and interpret information; Ability to mobilize and apply knowledge; Ability to correctly grasp material information
The structure of the inner circle of the earth and its characteristics	Grade A, B, C and D	Very difficult	Subjective question	Ability to obtain and interpret information; Ability to mobilize and apply knowledge; Ability to correctly grasp material information
Main features of coastal landforms	Grade B, C and D	Very difficult; More difficult	Choice question	Ability to read and analyze drawings; Ability to mobilize and apply knowledge
Main features of glacial landforms	Grade B, C and D	Very difficult	Choice question	Ability to mobilize and apply knowledge
Observation of landforms	Grade C	Very difficult; More difficult; More easily	Choice question	Ability to read and analyze drawings; Ability to mobilize and apply knowledge; Ability to correctly grasp material information
Regional geography of China	Grade C	More difficult	Choice question	Ability to read and analyze drawings;
The influence of monsoon circulation on climate	Grade D	More easily; Average	Choice question	Ability to read and analyze drawings; Ability to mobilize and apply knowledge
Interconnected bodies of water	Grade D	More difficult; More easily	Choice question; Subjective question	Ability to obtain and interpret information; Ability to mobilize and apply knowledge
Water cycle in nature	Grade D	More difficult; More easily	Choice question	Ability to obtain and interpret information; Ability to mobilize and apply knowledge

To sum up, for the practical application ability corresponding to the weak knowledge points, in addition to the strong reading and analysis ability of grade a student, students of Grade B, C and D are weak in these four abilities to varying degrees. Therefore, teachers need to strengthen the cultivation of these four abilities of students of Grade B, C and D in teaching, and strengthen the cultivation of the other three abilities of students of Grade A except reading and analysis ability. In daily homework, Grade A students can focus on subjective questions, the other three levels of choice questions and subjective questions need to strengthen practice.

## 5. Conclusion

In each subject education, there will be students at different grades in a class. These students have different knowledge base, understanding ability and learning ability [29]. If teachers adopt the same teaching mode, it is difficult to meet the needs of students at all grades. Therefore, geography teachers should first stratify students, and then carry out data-driven targeted and accurate teaching.

In daily teaching, teachers can combine students' mastery of knowledge points with their grades and add students' usual classroom performance to stratify students. Moreover, the grade of students is not fixed. Students at each grade should flow and adjust the grade of students every other period. For example, if students at Grade A perform poorly, learn backward or cannot keep up with the progress of Grade A, they will be reduced to Grade B. On the contrary, if students at Grade B perform well, make progress, and reach a higher level, they will be promoted to Grade A. At the same time, teachers help the students who have been demoted to find out the targeted reasons, put forward further requirements for the students who have been promoted, form a virtuous circle in the class and mobilize the enthusiasm of students at all grades.

Because geography is a comprehensive subject, sometimes multiple knowledge points are often investigated in a topic. When explaining the usual exercises or examination questions, teachers should focus on explaining the weak knowledge points of the whole students. For the independent weak knowledge points of Grade C students or Grade D students, teachers can carefully screen the practice questions for Grade C and Grade D students in their usual practice homework to improve their weak knowledge points.

For the capability of regional geographic information processing and the ability of regional geographic causality analysis, teachers can teach by means of mind mapping before and during class. The way of drawing mind map helps students refine, list and connect knowledge points. It can not only improve the ability of Grade B, C and D students to process regional geographic information and analyze regional geographic causality, but also help Grade students consolidate their knowledge and strengthen the connection between knowledge points. For the capability of regional geographic spatial positioning, students first need to make accurate spatial judgment on the information given by the topic, so as to accurately analyze and infer others. As for the comprehensive thinking capability of geography, only Grade D students have unsatisfactory mastery, and their geographical foundation is relatively weak. Teachers can write some comments to motivate students in detail in students' usual homework feedback, such as which aspects have made progress and which aspects need to continue their efforts, so as to make students feel personalized and enhance the self-confidence of grade D students.

In addition, for practical application ability, teachers pay attention to let students form the habit of carefully examining questions in teaching. After careful deliberation, each group of questions must have its own internal logic, and each small question has its own focus around a core of this group of questions. At the same time, they learn to think in connection with the knowledge points in the teaching materials and extract useful information for problem solving. After laying a solid foundation of basic knowledge, take the problem as the guide, through appropriate practice of the topic, pay attention to connecting with the reality of life, help students deepen their understanding of geographical knowledge, solve problems in combination with geographical knowledge, and improve students' ability to mobilize and apply knowledge.

The implementation of layered teaching for students with different individual differences not only helps teachers to meet the learning needs of students at all levels to the greatest extent, but also achieves the educational equity of “unbiased”, “unbiased” and “fair and reasonable” as far as possible. Most of the existing research on students’ hierarchical precision teaching still stays at the level of knowledge and skills, and there is little research on the development of subject ability [30]. Therefore, this study analyzes students at all levels from the two aspects of subject core literacy and practical application ability, in order to provide a new research idea for the research related to regional geography teaching. However, this research work is still in the stage of data analysis, and the specific implementation effect needs to be further studied.

In short, the importance of regional geography in geography learning is becoming increasingly prominent. Therefore, in the link of regional geography teaching, teachers should combine students’ learning reality, accurately guide students at different levels to learn relevant knowledge of Regional Geography through hierarchical teaching method, strengthen discipline core literacy and application ability, make students fully aware of their shortcomings and improve their interest in regional geography learning.

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