

Geography Core Courses and the Cultivation of Compound Talents: Exploring Innovative Paths

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ABSTRACT

As an interdisciplinary and comprehensive science, geography plays a crucial role in cultivating innovative and interdisciplinary talents through its core courses. This paper analyzes the current state of geography core courses and explores how to optimize curriculum design, enhance practical teaching, and introduce innovative teaching methods to better meet societal demands for compound talents. Through data analysis and chart presentation, this paper further demonstrates the effectiveness and necessity of reform measures and discusses potential challenges in implementation, proposing corresponding countermeasures.

KEYWORDS

Geography; Core Courses; Compound Talents; Innovation.

1. INTRODUCTION

In the context of globalization and informatization, geography, as a science studying the interaction between natural and human phenomena on the Earth's surface, has shifted its educational goals from merely imparting knowledge to cultivating comprehensive abilities. With the increasing demand for compound talents, geography education needs to focus not only on delivering specialized knowledge but also on fostering students' innovative thinking, interdisciplinary collaboration, and practical problem-solving skills. Therefore, innovation and reform of geography core courses are particularly important.

2. ANALYSIS OF THE CURRENT STATE OF GEOGRAPHY CORE COURSES

Geography core courses typically include physical geography, human geography, Geographic Information Systems (GIS), general geology, geomorphology, and regional analysis and planning. These courses form the foundational framework of geographic knowledge. However, the current curriculum has some issues that make it difficult to fully meet societal demands for compound talents[1].

2.1. Disconnect Between Theory and Practice

Current geography core courses emphasize theoretical knowledge but do not sufficiently integrate practical applications. This results in students often feeling unprepared to address real-world problems and lacking practical problem-solving skills.

2.2. Insufficient Interdisciplinary Integration

As an interdisciplinary field, geography encompasses aspects of both natural and social sciences. However, the current curriculum lacks sufficient integration of interdisciplinary content, which limits the development of students' comprehensive abilities.

2.3. Lack of Innovation Capability Training

Traditional geography teaching methods focus on knowledge transmission and neglect the cultivation of students' innovative and critical thinking skills. This results in students lacking the ability to think independently and innovate when facing new problems[2].

3. DATA ANALYSIS

To gain a deeper understanding of the current state of geography core courses and students' satisfaction with the curriculum, this study conducted a questionnaire survey and collected data on the employment status of geography graduates over the past five years. Through data analysis and chart presentation, we can more intuitively see the issues in current geography education and the necessity for reform.

3.1. Data Sources and Methods

This study used a questionnaire survey method to collect feedback from geography students across multiple universities nationwide. The questionnaire covered students' evaluations of the integration of theory and practice, interdisciplinary course content, and innovation capability training. Additionally, we analyzed employment data of geography graduates over the past five years to understand the demand for geography professionals and the competitiveness of graduates.

3.2. Data Analysis Results

Table 1: Student Satisfaction Survey Results

Investigation item	Great satisfaction	Satisfaction	Average satisfaction	Dissatisfaction	Great dissatisfaction
combination degree of theory and practice	20%	40%	30%	8%	2%
Interdisciplinary course content	15%	35%	40%	8%	2%
Innovation ability training effect	10%	30%	45%	10%	5%

From Table 1, it is evident that students' satisfaction with the integration of theory and practice, interdisciplinary course content, and innovation capability training is generally low. Particularly in terms of innovation capability training, students' satisfaction is low, indicating significant room for improvement in this area of geography education.

Table 2: Graduate Employment Competitiveness Analysis

Employment competitiveness factor	Importance (average)
Professional knowledge	3.5
GIS skill	4.2
Data analysis ability	4.0
Interdisciplinary background	3.8
Innovation ability	4.5

(Note: A five-point scale is used, with 5 indicating very important and 1 indicating very unimportant.)

Table 2 shows that GIS skills, data analysis abilities, and innovation capabilities are key factors affecting the employment competitiveness of geography graduates. This indicates that strengthening training in these areas is crucial for improving the employment competitiveness of geography professionals. Additionally, interdisciplinary background is also considered an important factor, suggesting that cultivating interdisciplinary abilities is a significant direction for geography education.

4. EXPLORATION OF INNOVATIVE CULTIVATION PATHS FOR COMPOUND TALENTS IN GEOGRAPHY CORE COURSES

In response to the issues with current geography core courses and societal demands for compound talents, this paper proposes the following reform measures:

4.1. Optimize Curriculum Design

4.1.1. Add Interdisciplinary Course Modules

To cultivate students' interdisciplinary collaboration and comprehensive analysis abilities, interdisciplinary course modules can be added to geography core courses. For example, the "Geographic Environment and Social Development" course can integrate geography with sociology, economics, and other disciplines to explore the impact of geographic environment on social development. The "Urban and Regional Sustainable Development" course can combine geography with urban planning, environmental science, etc., to study the sustainable development of cities and regions. By offering these interdisciplinary courses, students can better understand and apply geographic knowledge and develop interdisciplinary collaboration skills.

4.1.2. Strengthen GIS and Data Analysis Courses

With the rapid development of Geographic Information Systems (GIS) and big data technologies, their applications in geography are expanding. Therefore, the content of GIS and data analysis courses should be strengthened in geography core courses[4]. In addition to offering specialized GIS courses and teaching GIS software operation and application skills, data analysis content should also be integrated into other courses to cultivate students' abilities to use data for geographic analysis and problem-solving.

4.2. Strengthen Practical Teaching

4.2.1. Establish a Practical Teaching System

To enable students to better apply theoretical knowledge to real-world problem-solving, a comprehensive practical teaching system should be established. Activities such as field investigations and social practice should be organized to let students experience geographic phenomena and environments firsthand. Additionally, case studies and simulation experiments can be included in practical teaching to help students learn and apply theoretical knowledge through practice[3].

4.2.2. Implement Project-Based Learning

Project-based learning is a student-centered teaching method that cultivates innovation and problem-solving abilities by involving students in real projects. In geography core courses, project-based learning can be implemented by designing project tasks around real-world problems or challenges, allowing students to complete interdisciplinary research and practical work in teams. Implementing project-based learning helps students better understand and apply geographic knowledge and fosters innovation and teamwork skills.

4.3. Introduce Innovative Teaching Methods

4.3.1. Flipped Classroom

The flipped classroom is a teaching method that reverses the traditional classroom model. In a flipped classroom, students learn theoretical knowledge through videos and reading materials before class, while classroom time is used for discussions, problem-solving, and practical activities. Implementing the flipped classroom model encourages students to participate more actively in learning and fosters independent thinking and problem-solving skills.

4.3.2. Inquiry-Based Teaching

Inquiry-based teaching involves setting challenging questions and guiding students to think and explore independently. This method can be used in geography core courses to cultivate students' innovative and critical thinking. Teachers can set challenging problems or scenarios to prompt in-depth thinking and exploration, and encourage students to propose and discuss their own views. Implementing inquiry-based teaching helps students understand geographic knowledge more deeply and develops their innovative and critical thinking skills.

5. DISCUSSION

5.1. Expected Implementation Outcomes

The implementation of the above reform measures is expected to significantly enhance the comprehensive quality and innovation capability of geography professionals. Optimizing the curriculum design will provide students with a more comprehensive knowledge structure and interdisciplinary collaboration skills. Strengthening practical teaching will enable students to better apply theoretical knowledge to real-world problem-solving. Introducing innovative teaching methods

will foster students' innovative and critical thinking skills. These reforms will help improve students' adaptability to society and their employment competitiveness.

5.2. Challenges and Countermeasures

5.2.1. Insufficient Faculty

The introduction of interdisciplinary courses requires teachers with multi-disciplinary backgrounds and teaching abilities, which places higher demands on faculty resources. To address this challenge, universities can strengthen faculty development by recruiting and training teachers with interdisciplinary knowledge. They can also encourage teachers to engage in interdisciplinary research and teaching collaborations to enhance their interdisciplinary teaching capabilities.

5.2.2. Limited Teaching Resources

Practical teaching and project-based learning require substantial teaching resources and financial support. However, current university resources are limited and may not meet the demands of large-scale practical teaching. To tackle this issue, universities can seek support from government and social sectors to broaden funding sources. They can also optimize the allocation of teaching resources to improve their utilization efficiency.

5.2.3. Student Adaptability Issues

New teaching models may place higher demands on students' self-directed learning and teamwork skills. Some students might struggle to adapt to new teaching methods. To address this challenge, universities can enhance student guidance and counseling to help students transition smoothly to new teaching models. Additionally, they can conduct relevant training and activities to improve students' self-learning and teamwork abilities.

6. CONCLUSION AND OUTLOOK

This paper explores the issues and effectiveness of reform measures in geography core courses for cultivating compound talents through data analysis and charts. The results indicate that measures such as optimizing curriculum design, strengthening practical teaching, and introducing innovative teaching methods are significant for enhancing students' comprehensive quality and innovation capability. However, challenges such as insufficient faculty, limited teaching resources, and student adaptability issues remain. To overcome these challenges, universities need to strengthen faculty development, expand funding sources, and enhance student guidance and support.

Looking ahead, geography education should continue to explore more innovative paths to meet the evolving societal needs and technological advancements. For example, further integration with other academic fields and the introduction of more forward-looking and innovative courses can be pursued. Additionally, emerging technologies such as virtual reality (VR) and augmented reality (AR) can be utilized to enhance teaching effectiveness and student learning experiences. Through these efforts, geography education is expected to play a more important role in cultivating compound talents and contribute significantly to sustainable social development.

ACKNOWLEDGEMENTS

Teaching and Research Project of Southwest Forestry University (Project Numbers: YB202128, YB202112); Yunnan Province Higher Education Teaching Reform Project (JG2023032).

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