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Exploring the Role of Experimental Teaching in Cultivating Map Skills for Geography Education Majors

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Abstract: This article explores ways to enhance the map-making skills of geography education students by integrating experimental teaching with micro-grid practical training courses. It selects the compulsory experiment 'Thematic Map Design' for geography education majors, focusing on the design of thematic maps on 'X City's Transportation Layout,' micro-grid practical teaching plan design, and classroom exercises.

Keywords: Experimental Teaching; Micro-grid practical teaching; Thematic Map Design

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Introduction

In higher education, experimental teaching is a crucial component of undergraduate instruction and an effective teaching method for cultivating students' comprehensive practical and innovative abilities[1]. Through experimental teaching, students not only gain a systematic understanding of the knowledge they've learned but also engage in hands-on activities, prompting them to think critically and integrate theory with practice more closely. As teaching reforms in higher education progress, there are changing ideals regarding the cultivation of university students and the requirements for experimental teaching. Additionally, with the advancement of information technology, the incorporation of GIS into high school geography education is inevitable, necessitating a shift in the training methods for geography education majors at teacher training colleges. It's essential to enhance geography education majors' skills in geographical experimental teaching and information technology during their undergraduate studies, thereby laying a solid foundation for their future frontline teaching careers[2-3].

As an essential foundation of a high-quality education system, teacher education in geography, represented by future geography teachers, serves as the disseminators of geographical knowledge. They bear the significant responsibility of nurturing essential civic geographical literacy. The distinctive map skills, as a disciplinary feature, directly reflect the effectiveness of higher education and also directly impact the cultivation of geographical literacy in primary and secondary school students. Therefore, this article attempts to explore pathways to enhance the map skills of geography teacher candidates through the deep integration of experimental teaching and micro-grid practical training.

1. Current Status of Geographic Education Students' Mapping Abilities

Through a survey conducted on in-service geography teacher candidates regarding their current level of map skills mastery, it was found that there are several main issues existing at present:

1.1 Insufficient mastery of map skills

Prospective high school geography teachers should possess extensive and profound knowledge in geography. However, due to some courses having limited time but heavy tasks, failing to arouse students' interest in learning, there exists a phenomenon where teacher candidates lack fundamental geographical theoretical knowledge[4]. Additionally, students generally have a lower interest in major courses compared to teacher education-related courses, lacking initiative in learning and failing to realize the equal importance

of geographical knowledge and teaching skills. This leads to poor map skills among geography teacher candidates and insufficient overall quality improvement[5].

1.2 Weak awareness of map skills

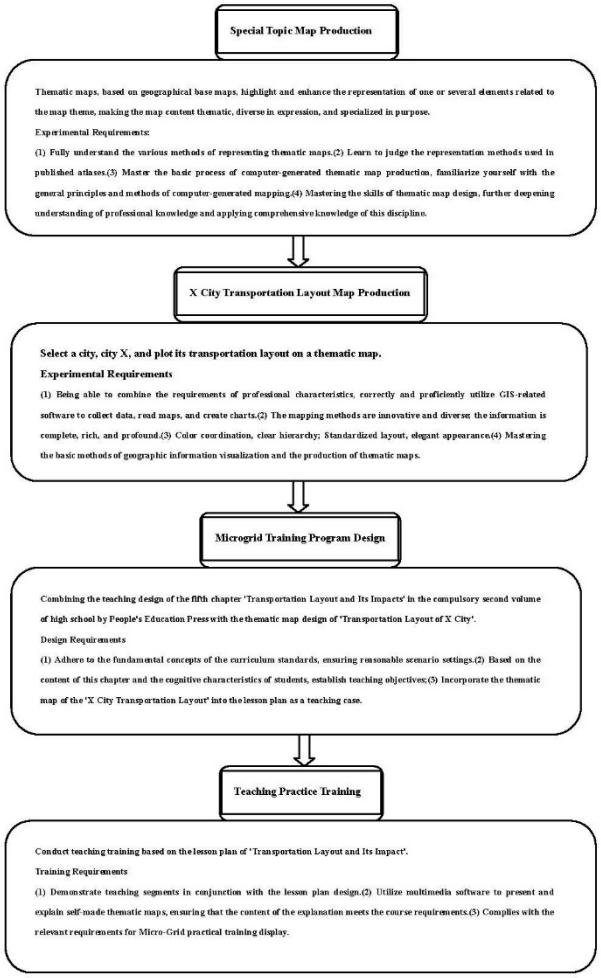
In high school geography practical courses, teaching often makes extensive use of geographic information technology-related software. With the acceleration of the curriculum pace due to compressed class hours, some students inevitably struggle to keep up, and they fail to realize the importance of practical courses in assisting their future teaching skills. There is a phenomenon of mechanically repeating the teacher's explanation steps, and there is a lack of self-practice after class, resulting in poor mastery.

1.3 Lack of connection between experimental teaching and secondary school teaching.

Qi Wanxue believes that normal universities are increasingly drifting away from the practical aspects of basic education, with teachers at these institutions becoming increasingly detached from the classroom of basic education[6]. There are inherent differences between the objectives and contents of university and high school geography teaching. Additionally, due to the lack of communication platforms and professional guidance for teachers, there is a limited connection between map usage and secondary education teaching, neglecting the cultivation of map skills for geography education majors.

2. Integration of Experimental Teaching with Micro-Grid Practical Training Courses

This article selects the compulsory experiment 'Special Map Design' for geography teacher candidates, carrying out teaching reform through targeted design of thematic maps, micro-grid practical training teaching plan design, and classroom exercises. It integrates the experimental course 'Special Map Design' with the requirements for cultivating map skills in secondary school geography teaching, aiming to achieve the joint cultivation of information technology and teaching skills, laying the foundation for cultivating high-quality frontline geography teachers in secondary school geography education (as shown in the figure below).



3. Conclusion

Through the questionnaire survey on the effectiveness of this teaching reform, it was found that 66.7% of the respondents

prefer targeted operational experimental teaching, and 83.33% of the respondents believe that the connection between experimental teaching content and secondary school curriculum can better enhance the map skills of geography teachers. At the same time, the professionalization of teachers also requires teacher education courses to have a significant stage and continuous dynamic lifelong development process. In order to better connect with basic education reform, the curriculum setting and teaching skills training of geography teachers are key to the reform. I believe that the following aspects can be addressed:

3.1 Construct experimental course content in accordance with student graduation requirements

The quality of teacher training directly affects the quality of basic education. It should be combined with the graduation requirements for geography teacher trainees. Based on attention to students' theoretical knowledge and experimental operation skills, strengthen the connection with teaching and research departments, optimize the structure and content of experimental courses, jointly formulate effective curriculum plans to enhance the map skills of geography teacher trainees, better achieve effective linkage between university and secondary school geography teaching, cultivate students' ability to integrate, transfer, and transform theoretical knowledge, and achieve the goal of training high-quality talents.

3.2 Strengthening the Integration of Geographic Information Technology and Geography Teaching

The importance of emphasizing geographic information technology in improving the comprehensive skills of teacher candidates is significant. GIS is widely used in university experimental courses, and the development and application of geographic information technology are gradually changing the teaching mode of secondary school geography classrooms. Integrating geographic information technology with secondary school geography teaching enhances the application of students' map skills during the training process, explores new models of teacher education in the era of intelligence, and enhances the information literacy of geography teacher candidates.

3.3 Implementing Cross-course Integration: From Theory to Practical Application

'Shallow understanding comes from studying on paper.' After studying experimental courses, geography teacher trainees have acquired a certain level of map skills. However, mastering the effectiveness ultimately requires testing through teaching. As a crucial part of geography teacher trainees' skill training, micro-grid practical training is the practical ground for trainees to exercise their map skills, intensifying training efforts in micro-grid practical training classes. By linking experimental courses with micro-grid practical training courses, theory is put into practice, further enhancing students' map literacy and achieving specialization in geography teaching.

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