

Present Situation Investigation and Countermeasure Analysis of College Geography Experiment Teaching¹

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Abstract: Taking the experimental teaching of phytogeography in Shangluo University as an example, this paper discusses the current situation of experimental teaching of geography in colleges and universities and puts forward relevant countermeasures. The survey results show that there are some problems in the experimental teaching of plant geography in Shangluo University, such as imperfect experimental instruments, too few experimental class hours and students' misunderstanding of experimental teaching. It is suggested to strengthen the construction and management of geography laboratory, build open laboratory and implement open experimental teaching in the future teaching.

Keywords: Shangluo University; Experimental teaching; Plant geography; Countermeasure analysis

1. Introduction

Experiment teaching is helpful to enhance students' practical ability and innovative spirit, and can help students develop good practical ability and comprehensive quality. However, there are some problems in current geography experiment and practice teaching in colleges and universities, such as emphasizing theoretical knowledge, neglecting experiment and practice teaching^[1].

In 1992, as a guiding document of geography education, the International Chapter of Geography Education was promulgated, which put forward requirements for students' knowledge level and skill level, and geography experiment teaching began to receive attention^[2]. The requirements of geography experiment are clearly put forward in the American geography curriculum standard; British National Geography Curriculum Standard requires students to use simple instruments to observe and record the weather, make outdoor measurements and draw profiles. The training goal of "Geoscience" in Japan's "High School Curriculum Standards (Science Edition)" is to observe and experiment the structure of the earth, the history of the earth and the structure of the universe among the natural things and phenomena^[3]. In addition, other countries have paid enough attention to geography experiment teaching, and their research and application are in constant development.

The research of geography experiment teaching in domestic universities has been paid attention by many geography educators. By consulting the relevant literature, the research of geography experiment teaching in colleges and universities in China can be roughly divided into the analysis of geography laboratory in colleges and universities and the discussion of geography experiment teaching. The first kind of research mainly takes local universities as the breakthrough point, analyzes the problems existing in university laboratories, and puts forward constructive suggestions for the reform and construction of laboratories. For example, Zhang Ling^[4] analyzed the construction and development of geography laboratories in local universities; Han Xiaoping^[5] studied the problems existing in university laboratories. From these studies, it can be seen that the construction and development of geography laboratories in colleges and universities in China are not optimistic, and there are some

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problems, such as imperfect experimental setup, outdated instruments and equipment, unreasonable allocation of class hours, less experimental class hours, backward laboratory management mode, weak teachers and so on. In view of these problems, the researchers have given some suggestions and countermeasures in combination with practice. The second kind of research mostly focuses on geography experimental teaching in senior high schools, but there are few researches on geography experimental teaching in colleges and universities. For example, Wang Jian^[6] analyzed the present situation and several typical problems of geography teaching in colleges and universities, and gave relatively feasible suggestions and reform strategies; Tan Zhenhua^[7] studied the problems and countermeasures in the process of geography experiment teaching in colleges and universities; Huang Dequan^[8] discussed the experimental teaching of geography and some innovative methods.

In this paper, taking the experimental teaching of plant geography in Shangluo University as an example, based on the feedback and feelings of students majoring in geography after class, through the questionnaire survey, from the aspects of students' attitude towards geography experiment, the present situation of plant geography experiment in Shangluo University, the performance of students in geography experiment, etc., the existing problems in the experimental teaching of students' geography in colleges and universities are analyzed and countermeasures and suggestions are put forward.

2. Research methods

2.1 Questionnaire survey

The experimental course of plant geography in Shangluo University is offered to sophomores majoring in geographic science, and it lasts for the fourth semester, with a total of 6 hours. The experiments in front of us mainly include the use of microscope and plant cell observation, the use of plant key, plant groups and campus plant observation. The junior and senior students who have systematically studied the experimental teaching course of plant geography in this major are selected for research.

By consulting relevant literature, referring to the requirements of the new curriculum reform standard, the textbook of plant geography compiled by Science Press, the experimental outline of plant geography and the experimental instruction of plant geography, the questionnaire "Survey Questionnaire of Plant Geography Experimental Teaching in Shangluo University" is formed, which includes three aspects: students' attitude towards geography experiment (1-5 questions), the present situation of Shangluo plant geography experiment (6-12 questions) and students' performance in geography experiment (13-20 questions).

2.2 Data analysis

The collected questionnaire survey data are sorted out, and the valid questionnaires and statistical results are retained to find out the existing problems in the experimental teaching of plant geography in Shangluo University. Aiming at the problems found in the experimental teaching of geographical science and plant geography in Shangluo University, this paper puts forward some corresponding countermeasures and suggestions.

3. Analysis of the results of the questionnaire survey

A total of 118 questionnaires were distributed to junior and senior students majoring in geography in Shangluo University, and 104 valid questionnaires and 14 invalid questionnaires were collected.

3.1 students' attitude towards geography experiment

After investigation, about 94% of the students are interested in geography experiments. As for the relationship between geography experiment and geography learning, 87% of students think that geography experiment can verify and explore geography laws. As for the gains brought by geography experiments, 48.08% of students think that doing experiments can help them understand and master knowledge, 26.92% think that their ability to analyze and solve problems can be improved, 18.27% think that their desire to explore new things has been enhanced, and only 6.73% think that geography experiments can help them pass exams and experimental examinations smoothly.

3.2 Investigation on the present situation of plant geography experiment.

According to the investigation of students' class status in plant geography experiment class, it is found that about 53.83% of students conduct reference experiments according to the experimental steps and methods explained by the teacher, and 36.54% of students can conduct independent experiments according to the experimental principles and precautions explained by the teacher. 40.38% students observe and record experiments, and only a few students prepare experimental equipment and watch others' experiments. Most students can think seriously and have their own opinions in the experimental class, but they

don't speak much. Only 24.04% students can think positively and speak boldly. About 1/4 of the students who scored in the experimental course of plant geography scored according to the experimental report book and the performance of the experimental course, while only 10.58% of the students scored according to the experimental report book. According to the investigation of the experimental results of the geographical experiments that have been carried out, about 96.81% of the students can observe and understand the basic structure of plant cells through optical microscope, and only 2.88% of the students can't operate them at all. More than 9/10 students can easily distinguish the structural characteristics of various types of plant leaves, while less than 1/10 students don't know it at all. Most of the students can complete the investigation of plant quadrats in school through group cooperation, but only 4.81% of the students can't. Most students can use plant reference books to search for plants through the study of plant geography experiments. Nearly 1/2 students will collect and make plant specimens, and only 3.85% students can't collect and make them.

3.3 Investigation of students' performance in geography experiment.

According to the survey of students' performance in geography experiment, it is found that most students can describe the process causes and results of geography experiment by language or words after the experiment, accounting for 98.07% of the total number of students. About 90.38% of the students can put the geography knowledge learned in class into practice in daily life, and only 9.62% of the students can't often. Through the study of geography experiment, 23.89% students can skillfully use the experimental equipment, 23.30% students have mastered the test sites in the experiment, 20.65% students can independently complete the studied experiments, 18.88% students are full of interest in geography study, 11.80% students can design the experimental scheme according to the requirements, and only 1.47% students make no progress.

4. Comments and suggestions

4.1 Problems existing in experimental teaching of plant geography in Shangluo University

4.1.1 Students' understanding of experimental teaching is biased.

According to the analysis of students' attitude towards geography experiment in the questionnaire, most students are willing to take an active part in the experiment, thinking that the experiment can help them quickly understand and master the theoretical knowledge learned in textbooks and successfully pass the examination and experimental examination. These students regard mastering theoretical knowledge as the main purpose of learning and doing experiments as the way to master theoretical knowledge and improve their grades. Some students think that doing experiments can improve their ability to analyze and solve problems, and their desire to explore new things is enhanced, which is conducive to improving their geographical science literacy and dealing with the problems they face in daily life. However, the experimental classes are mostly carried out in the way that teachers assign tasks and students complete them, which is difficult to exercise students' thinking ability and is not conducive to improving students' creative thinking^[9].

4.1.2 The experimental instruments are imperfect.

The normal development of any experiment depends on the hardware conditions of this laboratory. According to the analysis of the questionnaire data, the hardware conditions of the plant geography laboratory can basically meet the normal teaching needs of the school, but there are some problems such as insufficient number of experimental instruments, outdated equipment and lack of management. At present, the shortage of experimental equipment and specimens is a common obstacle for teachers to carry out experimental teaching and students' experimental classes. 21.82% of the students think that the experimental instruments in the school should be supplemented and updated.

4.1.3 There are deficiencies in the arrangement of theoretical courses and experimental courses.

The traditional experimental teaching mode is divided into four steps: preview the experimental content before class; Preparation of instruments and samples; Give lectures on experimental principles, contents and steps, and students imitate experiments; Complete the experimental report^[10]. In a short experimental class, students should master the experimental principle, experimental steps and instrument operation of this experimental class, and then they should actually operate and complete the experimental operation. The time is tight and it is difficult. According to the syllabus of the experimental course of plant geography, the theoretical class hours account for most of the total class hours, while the experimental class hours only account for a small part. Among them, the experimental class hours of plant geography only have 6 hours in a semester, and 32.73% of the students expressed the hope to increase the experimental class hours and give full play to students' initiative.

4.2 Countermeasures to improve experimental teaching of plant geography in Shangluo University.

4.2.1 Strengthen the construction and management of geography laboratory.

The laboratory is an important platform for practical teaching, practical activities and scientific research^[11]. The experimental instruments in the Plant Geography Laboratory of Shangluo University are incomplete, so it is necessary to further optimize the allocation of laboratory resources. First of all, we should sort out and determine the experimental items, and properly consider the scientific research and open experimental items on the basis of meeting the professional courses of disciplines; Secondly, the existing equipment and instruments in the laboratory should be counted in detail, and the damaged and outdated instruments that need to be eliminated should be eliminated. Combined with the requirements of the experimental project, the list of instruments that are still lacking should be sorted out. On the basis of the necessity and feasibility of purchasing equipment demonstrated by relevant departments and experts, and combined with the funding conditions for laboratory construction, the equipment with a wide application range and a large audience should be given priority to purchase^[12].

4.2.2 Build an open laboratory and implement open experimental teaching.

Open laboratory refers to all kinds of laboratories at all levels formally established in the school. On the premise of completing normal teaching and scientific research tasks, it is open to college students and graduate students by using existing resources such as teachers, instruments and equipment, and environmental conditions. The Ministry of Education's "Undergraduate Teaching in Colleges and Universities, Your Job Evaluation Program (Trial)" clearly stipulates that there should be an open laboratory in the "practical teaching" index, and it also stipulates that courses with designed and comprehensive experimental projects should account for the proportion of the total number of experimental courses^[1]. On the basis of the existing experimental courses, students can complete some self-designed experiments in the open laboratory, fully arouse students' enthusiasm for learning and experiments, give full play to their scientific associations, and design more valuable experiments that attract everyone's attention, so as to continuously innovate and enrich the content of geography experiments and enhance the attention of geography experiments.

5. Conclusion

According to the results of the questionnaire survey, there are some problems in the experimental teaching of plant geography in Shangluo University, such as students' misunderstanding of experimental teaching, imperfect experimental equipment, unreasonable arrangement of theoretical courses and experimental courses, etc. Therefore, it is proposed to strengthen the construction and management of geography laboratories, build open laboratories and implement open experimental teaching, so as to improve the application of geography laboratories and stimulate students' interest in geography learning.

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