



Research on the Growth Path of Normal Students Majoring in Geography Under the Background of Professional Certification

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To cite this article:

Min Ding, Chenxue Guo. Research on the Growth Path of Normal Students Majoring in Geography Under the Background of Professional Certification. *Higher Education Research*. Vol. 8, No. 4, 2023, pp. 168-183. doi: 10.11648/j.her.20230804.18

Received: November 28, 2022; **Accepted:** December 6, 2022; **Published:** August 22, 2023

Abstract: Normal students in universities are the main source of school teachers and the key to teaching quality. In order to meet the needs of China's basic education reform and development, as well as the impact of the "New College Entrance Examination" on geography education, the demand has been raised to build China into a strong country with talent and education, and the country has introduced a certification policy for teacher training majors. The training of professional teachers should be the fundamental task of normal university education. The training of normal teachers majoring in geographical science is more professional and needs to be considered as a whole in the process of improvement. Based on the OBE concept and the "student-centered" humanistic learning theory, this paper analyzes the growth of normal students majoring in Geographical Science in Taishan University under the background of professional certification by means of literature and questionnaire, finds out the problems existing in the growth of geography science normal students from four aspects: Teachers' basic literacy, subject teaching ability, class comprehensive education and cooperative innovation development, and puts forward improvement measures for the problems, Promote the practical ability and professional ability of geography normal students, so as to make geography education practitioners more professional progress and make great progress in geography education.

Keywords: Professional Certification, Geography Education, Geography Normal Students, Growth Path

1. Introduction

1.1. Background of the Selected Topic

1.1.1. The Introduction of China's Teaching Professional Certification Policy

In 2017, the Ministry of Education of the People's Republic of China (MOE) issued the *Implementation Measures for Normal University Teachers' Professional Certification*, which updated the training objectives and training programs of normal universities. China's education reform should implement the policy of professional accreditation of normal universities under the leadership of the Communist Party of China, strictly implement the Party's education policy, and face the demands of national and regional basic education reform and development.

On October 13, 2020, the State Council of the Central Committee of the Communist Party of China promulgated the *General Plan for Deepening Education Evaluation Reform in the New Era*, which clearly proposed to improve the evaluation criteria for normal universities, making good teacher education work the primary responsibility of schools and making the training of qualified teachers a key assessment indicator.

1.1.2. Current Situation of Foreign Research on Teaching Professional Certification

Many foreign countries refer to teaching professional certification as teacher education accreditation. In the study of teaching professional certification in the United States, Huiyan Wu suggested that the United States carried out relevant certification efforts as early as the 1980s, focusing on teacher

professional development and combining the cultivation of normal students with the improvements of the quality of teachers [1]. In her study of the Canadian professional certification system for teachers, Lingling Chen found that Canada has established an internal control mechanism to test the learning and teaching outcomes of normal students, which emphasizes the practical education curriculum, especially the integration of theory and practice, which includes not only the testing of normal students but also a complete re-certification program for in-service teachers [2]. Mingli Li studied the professional certification of teachers in the UK and suggested that the professional certification journey in the UK has undergone a change from curriculum certification, institutional certification to professional certification, and has now formed a more comprehensive system under national safeguards [3].

From the above-mentioned research status in the United States, Canada and the United Kingdom, it can be seen that different countries implement different certification methods

and measures in accordance with their actual conditions. However, during the exploration of teaching professional certification, the problems of unprofessional certification bodies and unified certification standards were common in all countries in the world.

1.1.3. Current Situation of Domestic Research on Teaching Professional Certification

As of December 31, 2021, the search term "teaching professional certification" in the database of CNKI yielded a total of 608 results. At the same time, it can be found that the results related to teaching professional certification in China mainly started in 2017, which coincides with the official introduction of teaching professional certification in China, with only 8 articles in 2017, increasing to 44 articles in 2018, 105 articles in 2019, 188 articles in 2020, and 263 articles alone in 2021, with the research results showing a yearly growth trend (see Figure 1 for details).

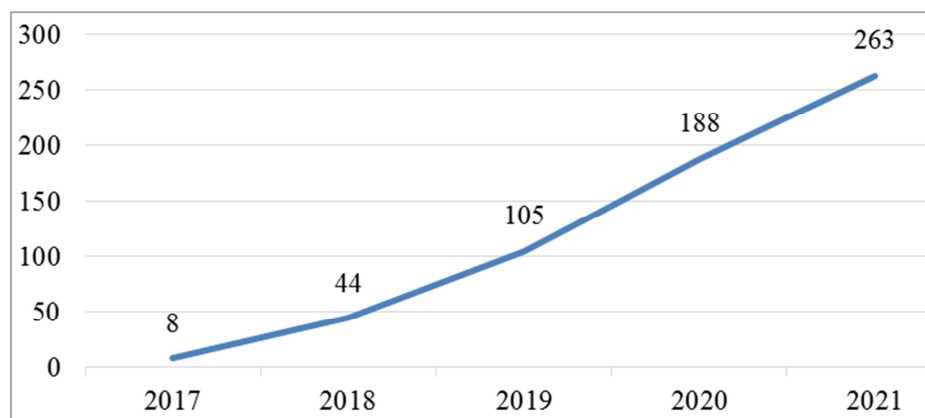


Figure 1. Statistics of literature published on research of normal teachers' professional certification.

According to Shengnan Shang, universities nowadays pay more and more attention to research and begin to neglect teacher education, and the evaluation index of undergraduate education is immature, and there is a lack of sharing of resources and information in the accreditation process, and there are still many problems in teacher education certification [4]. Zhihua Yin and Xue Wan believed that at present, the cultivation of practical teaching ability of normal students in China mainly relies on educational apprenticeship and internship, and a systematic and effective mode of cultivating practical teaching ability has not been formed [5]. China started late but is making steady progress, and the research literature has continued to grow over the past five years, but due to the lack of experience, the certification of teaching professions in China is not yet complete.

As of December 31, 2021, the search term "growth of geography normal students" in the database of CNKI yielded 24 valid results, of which 12 were master's dissertation, 1 was a doctoral dissertation, and the remaining 11 were journals. The content of the literature related to the growth of normal students majoring in geographical science is relatively small, which indicates that the growth of normal students is less studied taking normal students majoring in Geographical

Science as the research objects.

In terms of professional knowledge, Tongyang Guo argued that normal students majoring in geographical science lack cultural literacy, they have obvious fragmentation characteristics, poor integration of different aspects of knowledge, and lack their own reflective research ability [6]. In terms of basic teacher literacy, Zhengang Ma analyzed the multiple goal constraints of normal students majoring in geographical sciences, benchmarked the requirements of the *National Standards*, he established an educational internship file bag, and promoted the construction of curriculum ideological and political education teaching according to the material [7]. In terms of policy implementation, Chunying Ding found that China's training model, hardware facilities, and educational practices in the process of normal teachers' professional certification for geographical science majors are still inadequate, and proposed the idea of improving while certifying, so as to improve the graduate tracking feedback mechanism and obtain timely feedback [8]. In terms of self-innovation development, Yang Zhao believed that the normal students majoring in geographical science in China have a strong pedagogical awareness but lack sufficient teaching practice. They have poor self-reflective awareness

and insufficient application level. He also proposed strategies to improve their teaching ability [9]. The authors argue that, compared with countries such as the United States, Canada, and the United Kingdom, China's geographical science teaching major mainly suffers from two problems: the lack of time for educational practice and the lack of normal students' abilities.

The geographical science major of Taishan University, as a provincial first-class major and the key construction major of Taishan University, has the qualification of national class B tourism planning unit and provincial key laboratory, and there are some problems and confusions in the growth process of normal students majoring in geographical science.

1.2. Research Significance

In order to enable geography normal students to better improve their abilities and qualities during their school years, to achieve more comprehensive growth and success, and to meet the demands of society and the country after graduation and to achieve industry recognition, it is urgent and necessary to conduct a study on the professional growth path of geography normal students. The research object of this paper is the geography normal students of Taishan University, which is able to enrich the analysis of the current situation and reasons for the growth of normal students majoring in geographical science to a certain extent.

This paper combines the characteristics of geography subject specialties, and in the context of the new area, by analyzing the current situation of the growth of geography normal students affecting Taishan University, benchmarking the assessment standards, suggesting improvements for the current growth path of specialties of normal students majoring in geographical science, and providing guidance for the current direction of professional development of geography in normal universities, so that local normal universities can develop success along the way of following industry standards and meeting the demands of the country and society, and improving the cultivation plan for geography teaching majors, as well as being able to provide reference for normal universities of other majors to carry out good professional development.

1.3. Research Methods

(1) Literature method. Through the collection of domestic and foreign related literature, while understanding the background of the research and research direction, extracting the excellent research results in the literature to provide theoretical support for the paper.

(2) Questionnaire survey method. Based on the national certification standards, derive the questionnaire to understand the current situation of the growth of geography normal students, analyze the problems encountered by geography normal students in the process of growth, issue the questionnaire to the research subjects, sort out in a comprehensive manner after filling in, and obtain the data of the corresponding problems.

2. Theoretical Basis

2.1. OBE Concept

The OBE concept, or Outcome-Based Education, refers to the design of teaching objectives and curriculum in accordance with the learning outcomes that students need to achieve.

The OBE concept emphasizes not how much knowledge teachers can teach, but what students learn in the teaching process. Firstly, teachers design teaching objectives according to the actual situation of each normal student, and carry out teaching activities around the requirements of teaching objectives, so as to achieve more accurate teaching according to the students' demands, and then universities evaluate the results obtained by normal students. Secondly, according to the "output-oriented" education concept, the certification of normal university teaching majors mainly examines the achievement of cultivation objectives and graduation requirements. How to set it up rationally becomes the focus [10]. Through which tangible ways to build out these intangible things has become a key problem that plagues most of the teacher training majors in China's normal universities at present.

2.2. Humanistic Learning Theories

The representatives of humanistic learning theory are Maslow and Rogers, who not only criticized the research object of behaviorist theory, but also proposed a human-centered learning theory. Many teachers in normal universities believe that college students already have a sense of self-responsibility, and it is enough for students to not interfere with the teaching process, ignoring the classroom participation of college students [11]. However, Rogers proposed that it is necessary to fully trust students, create and set up an atmosphere conducive to learning, be student-centered, and care about understanding and respecting each student, which is conducive to the formation of a new, democratic, equal, and cooperative teacher-student relationship.

3. Survey of Current Situation of Growth of Geography Normal Students

3.1. Survey Respondents and Content

The purpose of this survey is to understand the current situation of growth of geography normal students during their school years and to provide directions for the optimization of related strategies. Taking convenience as the principle, this survey selected the normal students majoring in Geographical Science in Taishan University as the research objects. In order to have a more comprehensive understanding and analysis of the current situation of the growth of geography normal students, the authors drew on previous studies [12] and designed the questionnaire based the actual situation carefully, and used "WJX.cn" to distribute the electronic-questionnaires,

a total of 100 questionnaires were collected, and the number of valid questionnaires was 100, accounting for 100% of the total number of valid questionnaires.

The basic information of the respondents consisted of seven items, namely, "grade of the respondents", "intention to apply for the college entrance examination", "reasons for applying for the geographical science teaching major", "acquisition of teaching certification", "computer operation ability", "Putonghua" and "English level".

The questions set in the questionnaire are mainly in line with the 2021 edition of the "Geoscience Undergraduate Talent Training Program", and the survey was conducted to analyze the current growth of normal students majoring in geographical science in Taishan University in terms of four aspects, namely, "basic teacher quality", "subject teaching ability", "classroom people educating level", and "self-innovation development". The existing problems in the

above for aspects of normal students majoring in geographical science in Taishan University were analyzed, and solutions were proposed accordingly.

3.2. Questionnaire Survey Statistics

This questionnaire was distributed mainly to the senior students of Taishan University. The questionnaire data revealed that most of the students filled in the college entrance examination voluntarily out of interest, and a small number of them were persuaded by others to transfer to the geographical science teaching major. Most of the students have successfully passed the high school or middle school geography teacher certification examinations, and their Putonghua proficiency has reached the national requirement level, and their computer and English proficiency were sufficient to deal with the problems they face in the teaching process (details See Table 1).

Table 1. Basic information of the respondents.

Question No.	Content	Choices	Proportion
1	Grade	Freshman year	2%
		Sophomore year	2%
		Junior year	5%
		Senior year	91%
2	Intention to apply for the college entrance exam	Yes	87%
		No	13%
3	Reason for applying for major of college entrance exam	Personal interest	85%
		Family's suggestion	8%
		Teacher's suggestion	2%
		Other people's persuasion	5%
4	Acquisition of teaching certificate	A high school geography teaching certificate	79%
		A middle school geography teaching certificate	14%
		A teaching certificate in another subject	1%
		Did not have any teaching certificate	6%
5	Teaching Certificate test	Passed by one sitting	25%
		Passed by twice attempts	68%
		Passed by more than twice attempts	7%
		Level I, Grade A	1%
6	Putonghua test level	Level I, Grade B	1%
		Level II, Grade A	91%
		Level II, Grade B	7%
		NCRE Level I	16%
7	Computer level	NCRE Level II	84%
		CET-4	84%
8	English level	CET-4	84%
		CET-6	16%

According to the questionnaire data, 91% of normal students majoring in geographical science think they need to have the ability to follow the code of teachers' morality upon graduation, 85% of normal students think they need to be rich in educational sentiment, 80% of normal students think they need to have disciplinary literacy, 79% of normal students think they need to have the ability to innovate, 72% of normal students think they need to have the ability to teach, 71% of normal students think they need to have the ability to independently learn and reflect on research, 60% of normal students think they need to have the ability to communicate and cooperate and an international perspective, 58% of normal students think they need to have the ability to educate people in an integrated way, and only 47% of normal students think graduates need to have the ability to be able to work as

home-teachers when they graduate (see Figure 2 for details).

93% of the normal students majoring in geographical science thought that normal students most needed to improve their professional knowledge ability before graduation, 87% thought that normal students most needed to improve their classroom teaching ability before graduation, 78% thought that normal students most needed to enhance their creative thinking ability before graduation, 72% thought that normal students most needed to improve their curriculum design ability before graduation, 64% thought that normal students most need to exercise their board writing and drawing ability before graduation, 57% thought that normal students most needed to improve their professional ability of practical operation before graduation, 44% thought that normal students most needed to improve their interpersonal ability before graduation, and 42%

thought that normal students most needed to improve their writing ability before graduation (see Figure 3 for details).

In the surveyed perceptions of normal students majoring in geographical science, "Abide by the code of morality for teachers", "Rich in educational sentiment", "Have subject knowledge", "Have certain innovation ability", and "Have teaching ability" are the top five most important, while the majority of normal students do not attach much importance to "the ability of independent learning and reflective research", "the ability of communication and cooperation", "the ability of

comprehensive education", and "the ability to work as a home-teacher". Most of the normal students majoring in geographical science think that the most important abilities they need to improve before graduation are "professional knowledge ability", "classroom teaching ability", "creative thinking ability" and "curriculum design". Therefore, they relatively neglect the development of "Board writing and drawing ability", "Stress resistance ability", "Practical professional operation ability" and "Interpersonal ability", and "Writing ability".

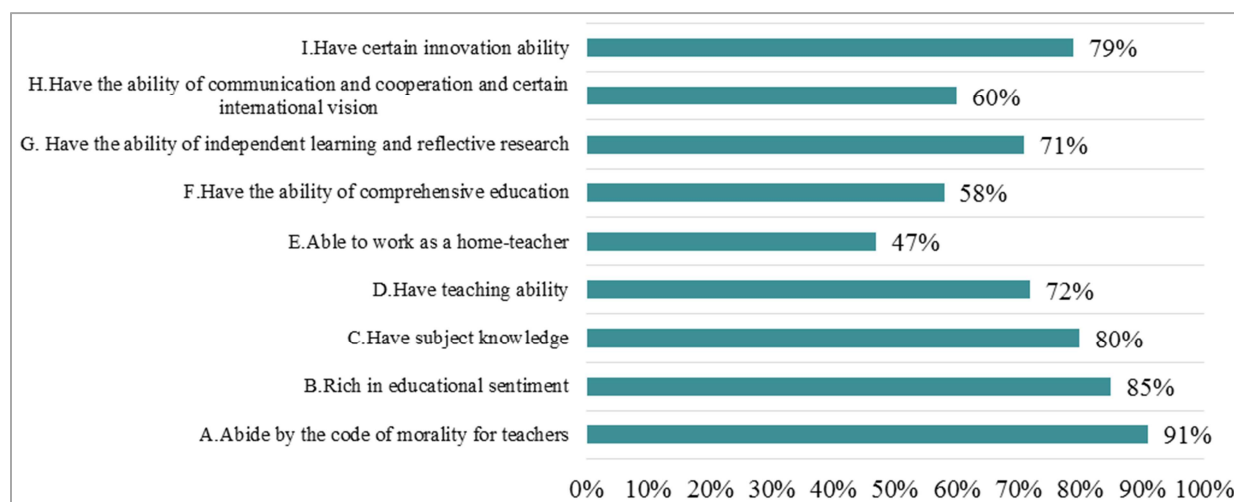


Figure 2. Qualities of normal students that are required for their graduation.

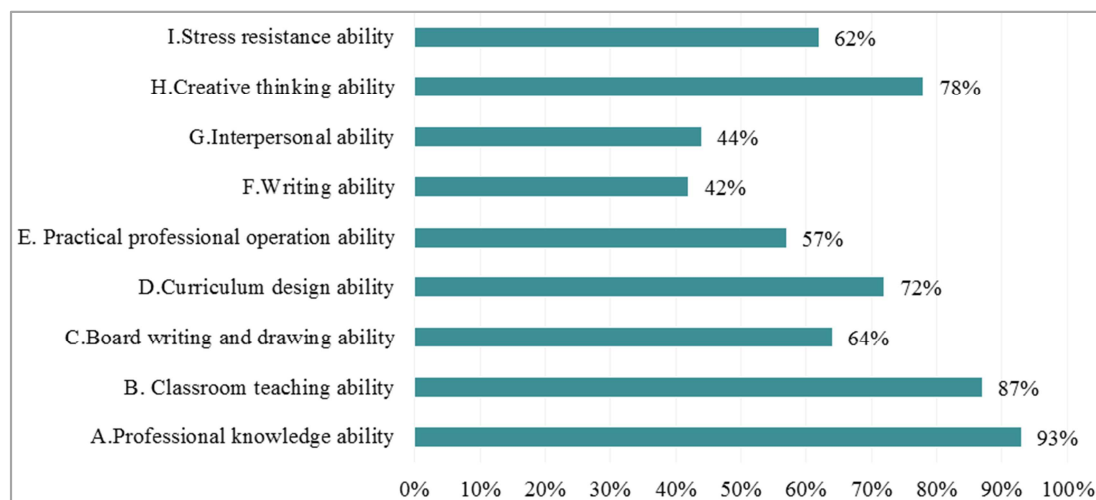


Figure 3. Abilities of normal students that need to be improved before graduation.

3.2.1. Teachers' Morality and Educational Sentiment

This paper conducted a questionnaire survey on the current situation of basic teacher literacy of normal students majoring in geographical science in two aspects: teachers' morality and educational sentiment.

On the question of "knowledge of the specific content of the code of teachers' morality," only 8% of the normal students said they knew the specific content of the code of teachers' morality very well, 79% said they knew it, 6% said they knew it generally, 4% knew it only partially, and 3% did not know

the content of the code of teachers' morality at all (see Figure 4 for details).

On the question of "whether they could strictly abide by the requirements of the code of morality", 81% of the normal students said they could abide by the requirements of the code of morality, 16% could abide by most of them, 2% could only abide by a small part of them, and 1% could not abide by the specific requirements of the code of morality (see Figure 5 for details).

Most normal students had a low level of understanding of the content of the teacher code, but could still comply with

what they have learned.

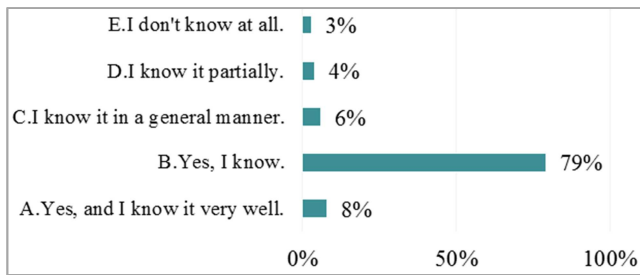


Figure 4. Knowledge the content of morality of the teaching profession.

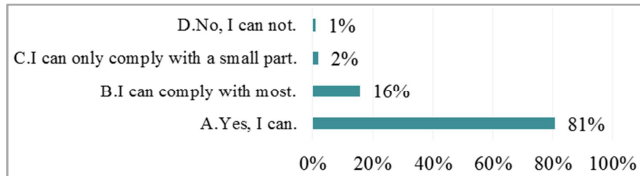


Figure 5. Whether able to strictly abide by the code of morality of the teaching profession.

On the question of "current satisfaction with working in geography education", 80% of the normal students strongly agreed to work in geography education in the future, 15% agreed to work in geography education in the future, and 5% did not want to work in geography education in the future (see Figure 6 for details).

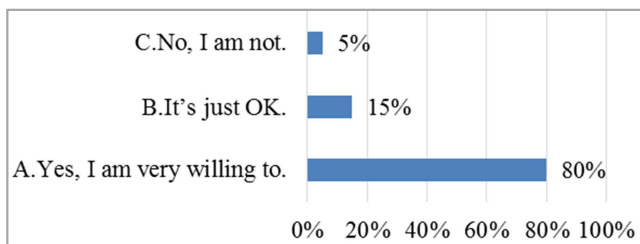


Figure 6. Satisfaction with the current work in geography education.

When confronted with the question of which is more important, "teaching" or "educating people", 97% of the normal students thought educating people was more important in their teaching lives, while 3% thought teaching was more important (see Figure 7 for details).

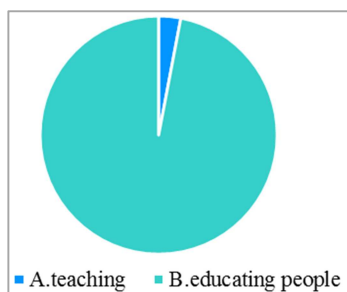


Figure 7. Which is more important, "teaching" or "educating people"?

In terms of educational sentiment, the normal students majoring in Geographical Science surveyed generally loved the cause of geography education, had a high degree of

identification with geography education, and were able to establish the professional ideal of "student-oriented, teaching and educating people, guiding the overall development of students".

3.2.2. Subject Teaching Ability

This paper conducted a questionnaire survey on the current situation of subject teaching ability of normal students majoring in geographical science from two aspects, subject professionalism and teaching ability respectively.

When investigating the familiarity of normal students majoring in geographical science with the *Interpretation of the General High School Geography Curriculum Standards*, only 11% of the geography normal students said they had read it carefully, 80% said they had read it roughly, 5% said they had read it but had not finished it, 3% said they had never read it, and even 1% said they had never heard of it (see Table 2 for details).

On the question of "whether subject expertise can meet the demands of teaching", only 7% of the geography normal students said they could cope with teaching tasks very well, 80% of the geography normal students said they could cope with teaching tasks relatively well, 8% of the geography normal students said they could cope with teaching tasks, 3% of the geography normal students said they occasionally had difficulty coping, and 2% of the geography normal students said they often encountered difficulties in teaching that they could not cope with (see Table 3 for details).

Most normal students majoring in geographical science were unfamiliar with the *Interpretation of the General High School Geography Curriculum Standards*, and their subject expertise could not meet the demands of educational internship; Moreover, normal students had poor ability to combine professional knowledge and practice, and they often encountered difficulties in the process of internship.

Table 2. Familiarity with Interpretation of the General High School Geography Curriculum Standards.

Options	Frequency	Ratio
A. I have read it carefully.	11	11%
B. I have read it roughly.	80	80%
C. I have read it but not finished it.	5	5%
D. I never read it.	3	3%
E. I never heard of this book.	1	1%

Table 3. Whether professional knowledge can cope with the demands of teaching.

Options	Frequency	Ratio
A. can cope with teaching tasks very well.	7	7%
B. can cope with teaching tasks well.	80	80%
C. can cope with teaching tasks generally.	8	8%
D. occasionally have difficulties to cope with.	3	3%
E. often encounter difficulties that cannot be coped with.	2	2%

On the question of "whether able to skillfully implement the core literacy of geography into classroom teaching," only 16% of the normal students majoring in geographical science said they were very proficient in implementing the geography core

literacy content, 75% said they were proficient, 7% said they were in the process of implementation and were not very proficient, and even 2% of the geography normal students said they were in the process of implementation and were not proficient at all (see Table 4 for details).

On the question of "whether connect the content of major with the teaching content of secondary school after class", 14% of the geography normal students said they would connect the content of their major very actively, 23% said they were able to do so more actively, 61% said they would do so occasionally after class, and 2% said they would not do so at all (see Table 5 for details). On the question of "whether design instruction before teaching geography and use lesson plans", only 5% of the normal students said they had little or no design before teaching, 82% said they used a combination of lesson plans and textbooks, but 13% occasionally designed and used lesson plans with textbooks (see Table 6 for details).

On the question "Do normal students trial before each class during their internship?", only 13% of the normal students said they trialed before each class, 82% said they trialed sometimes, and 5% said they never trailed before the class (see Table 7 for details). On the question of "whether normal students teach according to the students' abilities and pay attention to methodological guidance", 78% of the normal students said they pay attention to the guidance of students' learning methods in every lesson, 21% said they pay attention to the guidance occasionally, and 1% said they do not pay attention to the guidance (see Table 8 for details).

When faced with the three basic office software programs (word, excel, and powerpoint), only 24% of the normal students said they could use them very proficiently, 69% said they could use them proficiently but would have problems during the process, 6% said they were not very proficient, and 1% said they were not proficient at all (see Table 9 for details).

The majority of normal students majoring in geographical science were able to implement the core literacy of geography into classroom teaching, but few can carry out proficient implementation. The connection between professional knowledge and teaching activities after class is very important, but most normal students do not actively connect the content of both after class, they use a combination of lesson plans and textbooks when conducting teaching activities. Only a few normal students indicated that they would conduct trial activities before each class during the internship, most chose to trial occasionally, and normal students were not adequately prepared for the internship classroom. During the internship, normal students majoring in geographical science mainly face secondary school students, who have smaller gap in age with the students and are more able to put themselves in their shoes and focus on guiding students' learning methods.

Table 4. Whether skillfully implement the core literacy of geography teaching.

Options	Frequency	Ratio
A. Yes, in a very proficient manner.	16	16%
B. Yes, in a proficient manner.	75	75%
C. No, not very proficient.	7	7%
D. No, not proficient at all.	2	2%

Table 5. Whether connect the content of professional knowledge with teaching content after class.

Options	Frequency	Ratio
A. Yes, and very active.	14	14%
B. Yes, quite active.	23	23%
C. Yes, but occasionally.	61	61%
D. Never.	2	2%

Table 6. Whether design instruction before teaching and use lesson plans in teaching.

Options	Frequency	Ratio
A. Almost no instructional design, only use textbook without lesson plan.	5	5%
B. Combination of lesson plan and textbook.	82	82%
C. Occasionally design and use lesson plans, depending on the situation.	13	13%

Table 7. Whether trail before every class.

Options	Frequency	Ratio
A. Yes, every lesson.	13	13%
B. Some times yes, some times no.	82	82%
C. No.	5	5%

Table 8. Whether pay attention to the guidance of learning methods of students.

Options	Frequency	Ratio
A. Yes, every class.	78	78%
B. Occasionally.	21	21%
C. No.	1	1%

Table 9. Degree of mastery of the three basic software (word, excel, powerpoint).

Options	Frequency	Ratio
A. Very skilled	24	24%
B. Skilled	69	69%
C. Not too skilled	6	6%
D. Not skilled at all	1	1%

3.2.3. Comprehensive People Educating in Class

This paper mainly conducted the questionnaire survey on the comprehensive people educating in class of normal students majoring in geographical science from two aspects: classroom guidance and comprehensive people educating.

On the question of "whether normal students participated in thematic educational activities and provided guidance to students during their internship", 76% of the normal students indicated that they participated in thematic educational activities during their internship and achieved good results, 20% of the normal students indicated that they participated in teaching activities but little, and 4% of the normal students indicated that they did not participate in thematic educational activities (see Figure 8 for details).

When asked "whether normal students had paid attention to the development of implicit human-earth harmony during their educational internship", 84% of the normal students said they had paid much attention to the development of implicit human-earth harmony in the classroom, 7% said they had not, and 9% said they were not sure and had no such awareness of the development (see Figure 9 for details).

Most of the normal students participated in thematic

educational activities during their internship and achieved good results, and paid great attention to teaching students according to their needs and the development of implicit "human-earth harmony" in the classroom.

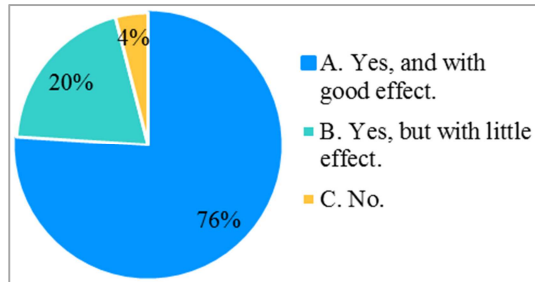


Figure 8. Whether participate in thematic educational activities during internship.

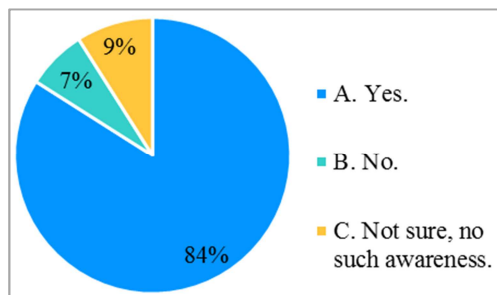


Figure 9. Whether pay attention to the development of implicit human-earth harmony concept for students.

When asked the question of "whether normal students could initially complete the work of a home-teacher after the educational internship," only 10% of the normal students thought they were fully competent to complete the work of a home-teacher, 18% thought they were relatively competent to complete the work of a home-teacher, 70% thought they were less competent to complete the work of a home-teacher, and 2% thought they were not able to complete the work of a home-teacher at all (see Figure 10 for details).

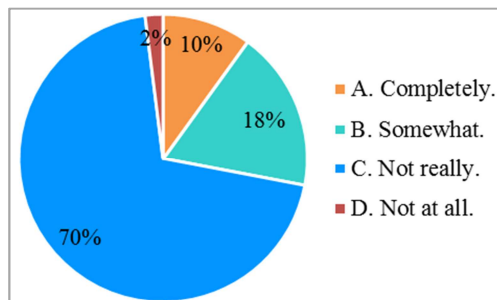


Figure 10. Whether can initially complete the work of a home-teacher.

Home-teachers not only need to have a strong sense of commitment and responsibility, but also the ability to manage organizationally and improvise. Normal students basically experienced home-teacher work during their internship, but most of them said they were difficult to be competent in home-teacher work initially.

3.2.4. Cooperation, Innovation and Development

This paper conducted a questionnaire survey on the cooperation, innovation and development abilities of normal students majoring in geographical science in terms of self-reflection and communication and cooperation.

On the question of "How much time do normal students majoring in geographical science spend on independent study every day on average during their undergraduate studies?", 6% of the normal students said they spend less than 30 minutes a day on independent study, 87% said they spend 30 minutes to 2 hours, 4% said they spend 2 to 4 hours, and 3% said they spend 4 to 8 hours or more on independent study (see Table 10 for details).

In response to the question of "whether make plans for personal learning and professional development in conjunction with employment prospects?", 12% of the normal students said they had made detailed plans and had grown according to them, 84% said they had but only rough plans, and 4% said they had not made any plans for their own development (see Table 11 for details).

In response to the question "Do you habitually reflect on scientific research or instructional design?", 78% of the normal students indicated that they often reflected on their teaching afterwards, 19% indicated that they occasionally reflected on their teaching, and 3% indicated that they never reflected on their teaching (see Figure 11 for details).

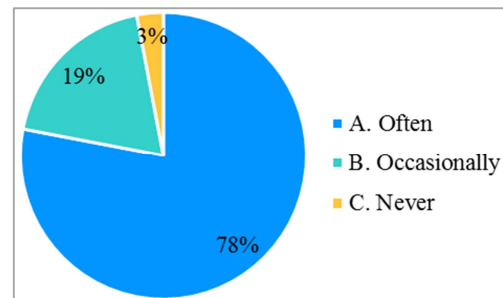


Figure 11. Whether habitually reflect on scientific research or teaching design.

Most normal students spend only 30 minutes to 2 hours a day on independent learning, they have little time for independent learning and will make rough plans for their own learning and professional development. Some normal students do not habitually reflect after teaching.

Table 10. Normal students independent study time everyday.

Options	Frequency	Ratio
A. 0-30 minutes	6	6%
B. 30 minutes - 2 hours	87	87%
C. 2 hours - 4 hours	4	4%
D. 4 hours - more than 8 hours	3	3%

Table 11. Whether formulate a plan for personal learning and professional development.

Options	Frequency	Ratio
A. Yes, and I made a detailed plan.	12	12%
B. Yes, and I made a rough plan.	84	84%
C. No.	4	4%

In response to the question "Do you often share and communicate with others about your study and work?", 83% of the normal students said they often share and communicate with others about their studies and work, 14% said they do so occasionally, and 3% said they never share and communicate with others (see Figure 12 for details).

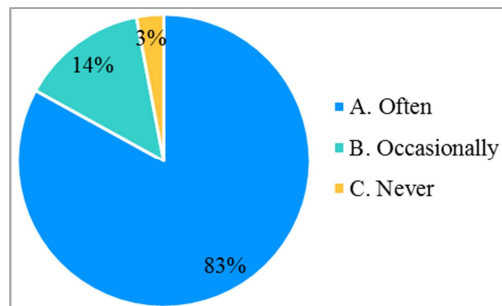


Figure 12. Whether share and communicate with others about your study and work.

4. Features of Growth and Reason Analysis of Geography Normal Students

4.1. Teachers' Morality in Education

From the survey results, in terms of the code of morality, most of the normal students had a low level of understanding of the content of the code of morality of the teaching profession, but were still able to abide by what they have learned; In terms of educational sentiment, normal students majoring in Geographical Science generally loved geography education, had a high degree of identification with geography education work, and were able to understand the importance of the teaching profession and the professionalism of geography education work.

The most important factor influencing the growth of geography normal students is still the normal students themselves. Most normal students majoring in geographical science filled in their major for the college entrance examination voluntarily out of interest. For many students, teaching is a profession worthy of reverence, and attending a teaching major allows them to receive knowledge in a more systematic way. There were also a small number of geography normal students who studied geographical science teaching majors due to the choice of others, the transfer of major application for college entrance examination or simply for good employment prospects, and this part of students have low interest in geography teaching majors and cannot take the initiative to learn, which makes it difficult to make breakthroughs in the learning process.

Since the internship time set by normal universities is usually in the second semester of junior year or the first semester of senior year, during this time period, influenced by postgraduate examinations, examinations for career establishment and civil service examinations, normal students are under great social pressure, they can neglect educational

internship issues and pay little attention and importance to the internship teaching classroom. The short time of actual teaching and the lack of accumulated experience of normal students lead to difficulties in adapting to teaching immediately in their future teaching jobs.

4.2. Subject Teaching Ability

According to the survey results, most normal students majoring in geographical science were unfamiliar with the *Interpretation of the General High School Geography Curriculum Standards*, and their subject expertise was unable to meet the demands of educational internship, and their ability to combine professional knowledge and practice was poor, so they often encountered difficulties in the internship process. Only a few normal students indicated that they would conduct trial class activities before each class during the internship, and normal students were not sufficiently prepared for the internship classroom, and there was a serious disconnect between professional knowledge and teaching skills.

Many normal students majoring in geographical science were unable to skillfully implement geographic core literacy into classroom teaching, and the connection between professional knowledge and teaching activities after class is important, but the majority of normal students were not actively engage in the content connection between the two after class.

There are not many courses in the curriculum of colleges and universities that are connected with geography teaching in secondary schools, and there are courses of geography pedagogy and three-board (board writing, board drawing and board painting) design in the curriculum, but there are few class hours in the semester. In the teaching process, in the link of teaching trial on the podium, due to the large class size and limited class time, normal students have less times on the podium, they don't draw enough importance to the classroom, and are inexperienced, which leads to the lack of solid basic skills in teaching practice. They are inexperienced in preparing lessons, unfamiliar with the textbooks and the *Interpretation of the General High School Geography Curriculum Standards*, weak in analyzing and handling geography textbooks, and less integration of theoretical knowledge and lifelike teaching in the teaching process, so when they encounter practical situations, normal students still do not know how to deal with them.

4.3. Comprehensive Educating People in Class

In the process of educational internship, many normal students neglected their ability to comprehensive educating people and to be competent in home-teacher work, resulting in that the vast majority of normal students indicated that it was difficult to be fully competent in classroom work in their future educational work in terms of classroom guidance. Classroom management ability are a necessary ability for teachers and an important part of normal students' skills. Currently, there are existing problems that normal students

only focus on improving teaching skills and neglect classroom management skills as well as the lack of unity between theory and practice [13].

Geographical science teaching majors mainly focus on the study of geoscience expertise in their freshman and sophomore years, the knowledge of education in pedagogy and psychology is only roughly studied, and the textual knowledge is too monotonous, which makes it difficult for normal students to be interested in continuing their studies.

Internships are usually interfaced with between normal universities and internship schools, and sometimes some internship schools may not lack geography teachers, or for the sake of the normal teaching schedule of geography, the internship schools are unwilling to provide too many opportunities for geography normal students to enter the classroom, or arrange few teaching hours or directly arrange no geography-related courses, so the internship is just a formality and geography normal students have few opportunities to exercise. Therefore, although geography normal students have gone through a semester of internship, their teaching experience and home-teacher work experience have not been significantly improved, and it is difficult for them to be truly competent in teaching and home-teacher work.

4.4. Cooperation, Innovation and Development

Many normal students pay little attention to the ability of independent learning and reflective research and the ability of communication and cooperation. In terms of learning to reflect, normal students spend little time on independent learning every day, have little awareness of reflection and have poor reflective habits, and most normal students do not have clear plans for their own learning and professional development in conjunction with their employment prospects.

Normal students spend little time on independent study every day, have little sense of reflection, and have not developed good reflective habits. Some geography normal students are not familiar with geography core literacy and secondary school geography curriculum standards, they are unable to update geography concepts in time, nor do they able to be skilled in the process of applying professional knowledge to teaching, or implement geography core literacy in the classroom. At the beginning of entering university, many university students cannot adapt to the freer life in university and lower their requirements for themselves. Moreover, after getting used to receiving knowledge passively, they are not active in receiving new knowledge by using library and internet after entering university, and when organizing class activities, many students are too busy with their personal affairs to take part in collective activities.

In college classes, some teachers have a single teaching mode, in which the teaching process is dominated by the instillation of theoretical knowledge and less communication with normal students, such a classroom teaching mode is not conducive to the cultivation of normal students' communication and innovative cooperation consciousness, which leads to insufficient understanding of cooperative

communication, relatively lack of cooperative ability, and weaker awareness of cooperation [14].

5. Growth Path of Geography Normal Students

5.1. Cultivate Good Teachers' Morality

The 2021 edition of the *Cultivation Program* adds "the goals expected to be achieved by normal students about five years after graduation" compared to the 2017 edition, which aims to cultivate geography backbone teachers of secondary schools. It also sets out more detailed requirements for teachers' morality, updates the curriculum, and more clearly defines the steps for the cultivation of geography normal students, requiring geography normal students to have teachers' morality, adhere to the leadership of the Party, practice socialist values, and abide by the code of teachers' morality.

Teachers should not only teaching knowledge to students, but also take up the task of educating them. As a model for students, teachers should maintain the harmony between spiritual and external beauty, and normal students should focus on the development of their own cultivation from the point of view of the professional characteristics of teachers [15]. For most normal students, they will become a teacher after graduation, so they should pay attention to the cultivation of their own educational sentiment and teacher's moral code from the time they are in school, take "student-oriented, teaching and educating" as their professional ideal, read the specific contents of the teacher's morality code carefully, pay attention to their words and behaviors in daily life, study teacher's etiquette and teacher's language seriously, exercise their ability and improve their teachers' morality cultivation.

Colleges and universities should strengthen the ideological and moral education of normal students, set up teacher moral education bases, adhere to the leadership of the Communist Party of China, and firmly establish the correct political direction. It can also let normal students actively participate in social practice activities through internship apprenticeship, summarize through practice or discuss by group, analyze the problems encountered in study and practice in a targeted manner, solve the confusion and perplexity of normal students, help them form correct concepts of teachers' morality and methods of self-education, inspire and educate students to guide their own behavior with the requirements of scientific worldview methodology, actively carry out activities and guide students to think creatively, to achieve self-development and self-improvement, so as to meet the requirements of the new changing situation and development.

5.2. Exercise Solid Teaching Ability

Geographical science is a highly integrated professional field, which involves not only the basic knowledge of natural science but also many basic knowledge of sociology. First of all, geography normal students need to learn geography

expertise, master professional knowledge, and have professional disciplinary literacy [16]. In the daily study, geography normal students need to make a study plan, determine the direction to work for the goal, and not develop the habit of laziness. They need to read more books, listen carefully in specialized classes, take notes carefully in class, summarize after class, ask teachers and classmates more if they don't understand, and take some time to borrow some specialized books from the library to read. Secondly, geography normal students should also broaden their horizons and perspectives in daily life to receive a lot of information, and learn to find geography from life and use geography. The unique disciplinary characteristics of geography require geography teachers to have rich general knowledge, therefore, geography normal students also need to master interdisciplinary knowledge and integrate the knowledge of different disciplines [17]. For example, when studying the knowledge of "Population Migration" in Unit 1, Compulsory Book 2 of PEP in High School, in the early 19th century, the population of the middle and lower reaches of the Yellow River in Shandong and Hebei declined significantly, while the population of the Northeast increased significantly. The reason for this is that a large number of people from Shandong and Zhili "Rushed to Northeast" due to the lack of agricultural harvest in the Yellow River area. The clever combination of geographic knowledge and historical knowledge is able to help geography normal students think about the problem in the general context and realize the comprehensiveness of problem thinking.

Normal students majoring in geographical science should also read the *Interpretation of the General High School Geography Curriculum Standards* carefully, learn to analyze the teaching materials, master the ability of teaching design, and combine theoretical knowledge with practical activities. Good board writing and drawing in the classroom can leave a deep impression on students and help them better understand the classroom content. Therefore, maps are especially important for geographical science majors, so geography normal students should also exercise their board writing and drawing skills, draw more and practice more to perfect themselves.

Majors of teacher education in colleges and universities can carry out a balanced practical course for normal students majoring in geographical science in each semester before the educational internship, which does not have to be too long, 1-2 weeks is enough, it focuses on educational apprenticeship, so that geography normal students are able to go deep into the classroom and grasp the first movement of the classroom, as well as to provide an opportunity for geography normal students to adapt to the internship in advance. Colleges and universities can also offer competitions of related skills, such as teaching skills competition, map drawing competition, mini-lesson competition, etc., to improve the professional teaching ability of geography normal students in the actual exercise. Colleges and universities can also set up more small competitions, arrange practice time according to the number of geography normal students in a coordinated manner,

arrange practice content in combination with the content of geography pedagogy and the three-board design, guarantee the training time of educational skills, and reasonably arrange the time of professional teachers so that there is a teacher on the spot to guide them in each practice to guarantee the effect and quality of training. Normal students also need to analyze typical cases after each practice, so to improve their independent reflection ability [18]. In the case study, create a real situation and platform for geography normal students to improve the training effect of their professional abilities.

5.3. Enhance the Level of Educating People in Class

Geography normal students not only need to master the professional knowledge of geography, they also require the mastery of certain knowledge related to psychology and pedagogy. Normal students need to attach importance to the ability to be competent as home-teachers, learn the relevant knowledge of pedagogy and psychology, achieve educational sentiment and people educating concepts, understand the psychology of secondary school students, and establish good teacher-student relationships. Normal students are faced with secondary school students who are in the stage of psychological immaturity, and there will be many problems in their learning life, large and small. Knowledge of education and psychology is able to help play a great role in dealing with class affairs and do a good job as a home-teacher. During the educational internship, it is necessary to actively experience the work of home-teachers and ask other home-teachers for advice on classroom management so as to accumulate experience for future teaching work.

Actively promote the method of combining "going out" and "inviting in". Colleges and universities need to connect with internship schools, find internship schools that have a real shortage of geography teachers, ensure that each geography normal student can get an internship opportunity, and arrange the internship time. Before the internship of geography normal students, they need to provide pre-service training and answer any questions that may arise during the internship of normal students. According to the normal students' professions with comprehensive teacher quality and secondary school classroom teaching management and skills as the main objectives, the requirements of educational internship are clarified through training to help normal students to carry out educational internship successfully. Experienced teachers in primary and secondary schools, especially famous teachers and home-teachers, should also be invited to enter colleges and universities to teach normal students, so as to continuously improve their comprehensive classroom people educating level and educational experience [19]. In addition, it is necessary to establish a sound internship evaluation mechanism, develop an internship feedback form, and improve the evaluation mechanism of internship teaching quality [20] to ensure that the instructors of universities and normal students are able to receive timely feedback messages and continuously promote the interaction and communication between universities and internship schools and between instructors and normal students.

5.4. Implement Reflection and Develop Momentum

In order to make their own better development, geography normal students also need to have the ability to reflect on teaching and develop good reflective habits. After each educational practice, all geography normal students need to seriously reflect on their own problems in teaching and classroom coping capacity, ask their instructors for more advice, summarize the shortcomings in the teaching process in a timely manner, and reflect on the teaching practice before they can make better progress.

Practical exercises in teaching are better for normal students to experience the teaching environment after graduation and to apply theoretical knowledge in practice. In the classroom, no matter how much the teacher tells, for normal students, there are only a few who can immediately reproduce it by hand. Only by watching and practicing more can they remember the knowledge and gain experience to better apply it. During their school years, normal students need to participate in more educational internships and learn from experienced teachers. The internship opportunities of normal students are not easy to come by, therefore, geography normal students need to raise the importance of educational internships, cherish the opportunities, exercise themselves, reflect on their progress in practice, and lay a solid foundation for becoming a geography teacher and working in geography education in the future.

The OBE concept mainly emphasizes what students have learned, rather than what teachers have taught. This requires normal colleges and universities to scientifically formulate teaching objectives, implement the graduation requirements for geography normal students into each teaching objective one by one, specify the teaching content of each course and optimize the curriculum, so that normal students are able to really learn and thus realize the implementation of graduation requirements. Colleges and universities need to regularly examine the degree of achievement of the curriculum system and curriculum objectives of the teaching professions, and timely update them according to the results of the examination to achieve the adjustment of cultivation objectives [21]. As future geography teachers, geography normal students need to keep up with the requirements of the times, keep abreast of current geography events, and interpret the geography curriculum standards for secondary schools. Keeping up with the times, reflecting forward, and innovating beyond the initiative to understand the frontier dynamics of the geography discipline or geography education session, aiming at the world, and integrating the spirit of the new era into the classroom.

Colleges and universities need to focus on the cultivation of cooperation and communication skills of normal students, support students to carry out various activities, promote self-management in their daily study and life, and promote the formation of teamwork spirit among students. In today's society, lifelong learning has become the trend of the times. For normal students, professional development is a continuous and long-term process, and they should make a clear plan for their own learning and professional development in conjunction with employment prospects. With the rapid

development of the Internet today, it has become more and more convenient to collect information and paperless reading is becoming more and more popular, it is able to learn and acquire more useful knowledge and information through the Internet.

Geography normal students need to keep up with the times, enhance their innovation and practical ability, always draw attention to the development trend of basic education reform and the development of geography, and make positive changes. As future geography teachers, geography normal students should keep up with the requirements of the times, keep abreast of current geography events, and interpret the geography curriculum standards for secondary schools. Keeping up with the times, reflecting to go forward, innovating beyond and taking initiative to understand the frontier dynamics of geography discipline or geography education session, aiming at the world, and integrating the spirit of the new era into the classroom.

6. Conclusion and Prospect

6.1. Research Conclusion

With the development of China's economy and the advancement of the times, the process of China's curriculum reform has continued to advance, China has implemented a professional certification policy for teaching education in an effort to promote the development of China's education cause. Due to the short period of time and insufficient experience in the implementation of China's teaching professional certification policy, there are some problems in the cultivation of normal students majoring in geographical science in the context of professional certification. According to the current situation of the growth of normal students majoring in geographical science in Taishan University, this paper correspondingly proposes the development measures: colleges and universities need to optimize cultivation programs, strengthen internship practice training, and innovate practical training methods for normal students in collaboration with internship schools; normal students majoring in geographical science need to start from themselves, develop good teacher qualities, exercise solid teaching ability, improve classroom people educating level, enhance self-innovation and development motivation, study continuously, improve themselves, and improve their overall quality.

All subjects need to unify their goals and move forward hand in hand to create a favorable environment for the growth of normal students majoring in geographical science, develop collaboratively, and promote the development of normal students majoring in geographical science in the direction of high-standard talents needed for the development of the country and society.

6.2. Research Deficits and Research Prospect

Due to the authors' limited personal ability and the influence of epidemic, there are fewer research cases in the paper, and it failed to understand the current situation of the

growth of normal students majoring in geographical science and the problems faced in a timely manner in the form of interviews, and the questionnaires were failed to sort out the problems comprehensively for the sake of time.

Professional certification policy has become a key issue of concern in China's education career, and more and more people are paying attention to and exploring it, and the requirements for normal students majoring in geographical science are becoming higher and higher, which has prompted the improvement of abilities of normal students majoring in geographical science. In this paper, it is hoped to cultivate secondary school geography backbone teachers with strong political stance, high teachers' morality and strong geography education sentiment, both professional knowledge of geography and teaching ability, ability to carry out educational

and teaching activities and classroom management based on secondary school geography core literacy, and relatively strong sense of cooperation and innovation for China's education cause.

Acknowledgements

This study was supported by Project of Teaching Reform Research Project of Education Department of Shandong Province in 2020: Innovation and Practice of Tourism Management Application-oriented Talent Training Mode under the background of First-class Specialty Construction and international Certification (Project No.M2020289); Shandong Social Science Fund (18CLYJ55).

Appendix

Questionnaire for the Study of the Current State of Growth of Geography Normal Students.

This survey is conducted to find out the current situation of the growth of geography normal students during their college years and their compliance with the cultivation requirements. Your responses are crucial to this study, so please answer carefully and thank you.

I. Basic information

- (1) What year are you currently in college? [Single-choice] *
 - A Freshman year
 - B Sophomore year
 - C Junior year
 - D Senior year
- (2) Did you apply for the Geographical science (Teacher Training) major when you applied for the college entrance examination? [Single-choice] *
 - A Yes
 - B No
- (3) Why did you apply for the major of Geographical science (Teacher Training)? [Single-choice] *
 - A Personal interest
 - B Family's suggestion
 - C Teacher's suggestion
 - D Other people's persuasion
- (4) Did you pass the teacher certification exam: [Single-choice] *
 - A Yes, and received a high school geography teaching certificate
 - B Yes, and received a middle school geography teaching certificate
 - C Yes, and received a teaching certificate in another subject
 - D No
- (5) Did you pass your teacher certification exam in one sitting? [Single-choice] *
 - A Yes
 - B No, passed by twice attempts
 - C No, passed by more than two attempts
- (6) What is your Putonghua test level: [Single-choice] *
 - A. Level I, Grade A
 - B. Level I, Grade B
 - C. Level II, Grade A
 - D. Level II, Grade B
- (7) Your computer level is: [Single-choice] *
 - A. NCRE Level I
 - B. NCRE Level II
- (8) Your English level is [Single-choice] *
 - A. Not yet passed CET-4
 - B. CET-4

C. CET-6

II. Main content

- (1) What qualities do you think contemporary normal students need to possess? [Multiple Choice] *
 - A. Abide by the code of morality for teachers
 - B. Rich in educational sentiment
 - C. Have subject knowledge
 - D. Have teaching ability
 - E. Able to work as a home-teacher
 - F. Have the ability of comprehensive education
 - G. Have the ability of independent learning and reflective research
 - H. Have the ability of communication and cooperation and certain international vision
 - I. Have certain innovation ability
- (2) What competencies do you think contemporary normal students need to improve before graduation? [Multiple choice]*
 - A. Professional knowledge ability
 - B. Classroom teaching ability
 - C. Board writing and drawing ability
 - D. Curriculum design ability
 - E. Practical professional operation ability
 - F. Writing ability
 - G. Interpersonal ability
 - H. Creative thinking ability
 - I. Stress resistance ability
- (3) Do you know the specific content of the code of morality for teachers? [Single-choice] *
 - A. Yes, and I know it very well
 - B. Yes, I know
 - C. I know it in a general manner
 - D. I know it partially E. I don't know at all
- (4) Can you strictly abide by the code of morality of the teaching profession? [Single-choice] *
 - A Yes, I can.
 - B I can comply with most.
 - C I can only comply with a small part
 - D No, I can not.
- (5) Are you willing to work in geography education at present? [Single-choice] *
 - A Yes, I am very willing to.
 - B It's just OK.
 - C No, I am not.
- (6) Which do you think is more important, "teaching" or "educating people"? [Single-choice] *
 - A teaching
 - B educating people
- (7) Have you read the "Interpretation of the General High School Geography Curriculum Standards"? [Single-choice] *
 - A I have read it carefully
 - B I have read it roughly
 - C I have read it but not finished it
 - D I never read it E I never heard of this book
- (8) You think your subject expertise () [Single-choice] *
 - A. can cope with teaching tasks very well
 - B. can cope with teaching tasks well
 - C. can cope with teaching tasks generally
 - D. occasionally have difficulties to cope with
 - E. often encounter difficulties that cannot be coped with
- (9) Can you skillfully implement the core literacy of geography into your classroom teaching [Single-choice]*
 - A. Yes, in a very proficient manner
 - B. Yes, in a proficient manner
 - C. No, not very proficient
 - D. No, not proficient at all
- (10) Will you connect the content of your major with the content of secondary school after class? [Single-choice]*
 - A Yes, and very active

- B Yes, quite active
 - C Yes, but occasionally
 - D Never
- (11) Will you design instruction before teaching geography and use lesson plans in your teaching? [Single-choice] *
- A Almost no instructional design, only use textbook without lesson plan
 - B Combination of lesson plan and textbook
 - C Occasionally design and use lesson plans, depending on the situation
- (12) During your internship, do you always trial before giving every class? Course implementation [Single-choice] *
- A Yes, every lesson
 - B Some times yes, some times no
 - C No
- (13) Do you teach students according to their abilities and pay attention to the guidance of learning methods in class? () Teaching evaluation [Single-choice] *
- A Yes, every class
 - B Occasionally
 - C No
- (14) Your degree of mastery of the three basic software (word, excel, powerpoint) () [Single-choice] *
- A. Very skilled
 - B. Skilled
 - C. Not too skilled
 - D. Not skilled at all
- (15) How many papers have you published during your undergraduate study? (Teaching research) [Single-choice] *
- A None
 - B 1~2
 - C 3~5
 - D more
- (16) Did you participate in thematic educational activities or provide effective education and guidance to students during your educational internship? [Single-choice] *
- A Yes, and with good effect
 - B Yes, but with little effect
 - C No
- (17) Do you pay attention to the development of implicit human-earth harmony concept for students in the process of educational internship? [Single-choice] *
- A Yes
 - B No
 - C Not sure, no such awareness
- (18) After the educational internship, do you think you can initially complete the work of a home-teacher? [Single-choice] *
- A Completely
 - B Somewhat
 - C Not really
 - D Not at all
- (19) During your undergraduate study, how much time do you spend on independent study every day on average? [Single-choice] *
- A. 0-30 minutes
 - B. 30 minutes - 2 hours
 - C. 2 hours - 4 hours
 - D. 4 hours - more than 8 hours
- (20) Do you have a plan for your own learning and professional development in conjunction with your employment prospects? [Single-choice] *
- A Yes, and I made a detailed plan
 - B Yes, and I made a rough plan
 - C No
- (21) Have you ever taken the initiative to learn about the frontier of geography or geography education? [Single-choice] *
- A Yes
 - B No
 - C Depends on the situation
- (22) Do you habitually reflect on scientific research or teaching design? [Single-choice] *

- A Often
B Occasionally
C Never

(23) Do you often share and communicate with others about your study and work? [Single-choice] *

- A Often
B Occasionally
C Never

(24) What suggestions do you have to give feedback to the school / major in order to promote better development of geography normal students toward the demands of basic education? [Fill in the blank].

References

- [1] Huiyan Wu. Description and Evaluation of Professional Development School (PDS) [J]. Survey of Education, 2017, 6 (13): 70-72.
- [2] Lingling Chen, Huimin Hu. The Certification System of Teachers Education Program in Canada [J]. Global Education, 2010, 39 (02): 79-82.
- [3] Mingli Li. UK Pre-service Teacher Education Professional Certification Study [D]. Northeast Normal University, 2018.
- [4] Shengnan Shang, Yingxiu Yang. Risk Analysis of Normal University Teachers' Professional Certification [J/OL]. Journal of Xinjiang Normal University (Chinese Edition of Philosophy and Social Sciences): 1-8 [2022-05-19].
- [5] Zhihua Yin, Xue Wan, Haohui Liu, Phillip Ward. Construction of PEPDS in Context of Normal Major Certification: Experience and Enlightenment of US [J]. Journal of Physical Education, 2022, 38 (02): 79-87+95.
- [6] Tongyang Guo. Research on the Professional Literacy of High School Geography Teachers in the "Core Literacy Era" [D]. Tianjin Normal University, 2021.
- [7] Zhengang Ma, Lili Li, Yingjie Zhao, Lizhi Ai. The Optimization of the Training Mode of Normal Talents in Geographical science Specialty under the Constraints of Multiple Objectives [J]. Journal of Zhangjiakou Vocational College of Technology, 2020, 33 (03): 25-28.
- [8] Chunying Ding. Research on the Cultivation of Teaching Ability of Geography Normal Students Education [D]. Hunan Normal University, 2019.
- [9] Yang Zhao. Research on the current situation of informatization teaching ability of geography pre-service teachers in secondary schools [D]. Central China Normal University, 2021.
- [10] Lining Wang. Research on the policy of professional certification of teachers in colleges and universities in China [D]. Shenyang Normal University, 2019.
- [11] Xiao Yu. On the Reform of Higher Normal Course Setting from the Perspective of Educational View on Humanism [J]. The Science Education Article Cultures, 2012 (08): 138+140.
- [12] Jingchen Wang. Research on the growth path of geography normal students training under the background of professional certification [D]. Nanjing Normal University, 2021.
- [13] Yuan Wang, Haiying Zhang. Study on Cultivating Pathway of Teaching Practical Ability of Geography Normal Students [J]. Heilongjiang Science, 2021, 12 (05): 68-69.
- [14] Chenghua Jiao. Research on the current situation and countermeasures of the cultivation of cooperative spirit among college students [J]. Modern Communication, 2014 (04): 245.
- [15] Dihua Hu. Talk about the training of normal students from the perspective of teacher professional development [J]. Continue Education Research, 2010 (12): 81-82.
- [16] Lijuan Chu, Linlin Sun. Training Pathways for Excellent Geography Normal Students in Higher Education Colleges and Universities under the Background of New College Entrance Examination Reform [J]. Journal of Changchun Normal University (Natural Science), 2021.
- [17] Rufang Bai, Pengwei Deng. Human Geography Teaching Strategies Based on Humanistic Learning Theory [J]. Technology Wind, 2022 (01).
- [18] Tengfei Tian, Renlu Liu. Course Construction of Teacher Training Majors under the Concept of OBE Certification [J]. Journal of South China Normal University (Social Science Edition), 2022 (01): 41-52+205.
- [19] Qin Zhang. Research on the Training of Class Management Ability of Normal Students in Local Normal Colleges [J]. Contemporary Education Research and Teaching Practice, 2020 (12): 130-131.
- [20] Lulu Ni, Wenhui Li, Zhenguo Li. Geography Teachers Teaching Skills Training [J]. Theory and Practice of Innovation and Entrepreneurship, 2021.
- [21] Yinfeng Li. Research on Capacity Development of Normal Students Based on OBE Concept [J]. Modern Communication, 2021 (18): 26-28.