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Research on the Skills Training of Normal Students in Local Colleges and Universities in the Network Community Environment

Taking the Junior Students Majoring in Geography Science of K University in Guizhou Province, China as the Research Objects*

Zhihua Ai
Shenzhen High School of Science
Shenzhen, China

Xiumei Yang**
Kaili University
Kaili, China
**Corresponding Author

Dexi Cao
No.1 High School of Guiyang
Bijie, China

Hai Yang
Kaili No.1 High School of Guizhou Province
Kaili, China

***Abstract*—This paper takes the junior students majoring in geography science of K university in Guizhou province, China as the research objects. Firstly, it has investigated the skills requirement of junior normal students majoring in geography of K University in Guizhou province. Taking the curriculum outline of the university, the national standards for the professional development of primary and secondary school teachers, the skills demand of normal students of the university as well as the requirements of the employers as the standards, the courses for the skills training of local normal university students are designed and developed. Finally, the backbone geography teachers in middle school are hired from the whole country to construct a network community on the QQ platform to implement the curriculum, achieving good results.**

Keywords—network community; normal college students of local colleges and universities; normal college student skills; curriculum design; development and implementation

I. INTRODUCTION

The National Medium- and Long-Term Education Reform and Development Plan (2010-2020) emphasizes: "We should strengthen the application of information technology, improve the level of teachers' application of information technology, update teaching concepts, and improve teaching methods and teaching effects." [1] Local undergraduate colleges are an important part of China's higher education system, shouldering the heavy responsibility of serving the localities. The cultivation of normal students is one of the important tasks, and the skills of normal students are a key component of the overall quality of students, which directly affect the quality of talent training.

The teacher education curriculum is the core link and main channel for cultivating the skills of normal students. It has strong practicality, and is closely related to geography teaching in middle school. At present, most of the courses in local colleges and universities are carried out in the form of traditional classroom, failing to make full use of the advantages of rapid development of Internet technology, and are still carried out solely in the form of lectures by university teachers, which is inconsistent with the practical characteristics of the courses. Therefore, on the basis of needs assessment and curriculum design, according to the specialty characteristics of "Geography Science", we mainly use the QQ group network platform in the network community environment, take "Teachers' Vocational Skills" course as the breakthrough point, adopt the mixed teaching mode of online teaching of geography teachers in first-line middle schools and offline tutoring of university teachers, and explore the effective ways to cultivate the skills of normal college students of geography of local colleges and universities in the network community environment.

II. LITERATURE REVIEW

"Network community environment" refers to the environment in which learners can use various tools and information resources and cooperate and support each other in activities of pursuing learning goals and solving problems. With the rapid development of computer Internet technology, a relatively mature "network community environment" has been formed, which provides a new way of communication and interaction for people, brings technical support for the teaching reform, and also triggers a series of changes in the training of normal students' skills. A relatively complete case

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of skill training for normal college students in the "network community environment" is to explore the way of teaching skill training for normal college students in the network community environment mainly through the teaching mode of modern audio-visual technology. Its focus is to use network resources to carry out teaching [3], without considering the whole system of curriculum setting, development, implementation and evaluation.

Researchers try to examine the skills training of normal college students from new perspectives. For example, based on the concept transformation of cognitive reconstruction (CRKM), the teaching skills training program of pre-service teachers is designed to improve the participation of students and to innovate from the concept [4]. The method and platform are very important for implementing the idea in the specific teaching links. Researchers hope to improve the teaching effect by innovating teaching methods. In recent years, more attention has been paid to micro-teaching method, flipped classroom, microlecture and MOOCs. Among these teaching methods and means, the Microteaching method has the longest research history and the richest degree of studies. Microteaching has been introduced into China for 40 years. It has experienced several stages of prosperity, silence and rational understanding [5][6][7][8][9][10]. It is generally regarded as an effective skill training method for normal college students. Although it has a long history, the real popularization is still in recent years. For example, the K University in this study established the microteaching classroom in 2015. With the rapid development of science and technology and the continuous renewal of teaching concepts, it has injected new content and vitality in the microteaching. At the same time, microlecture, MOOCs and flipped classroom have been created and applied to the training of normal college students' skills. To a certain extent, they have stimulated students' learning initiative and provided a "fragmented" learning mode. This efficient learning mode needs to be built on high-quality teachers and students, while the overall quality of teachers and students in local colleges is relatively weak, which makes it more difficult to carry out. In order to better implement these teaching methods, the teaching platform has played an important role. In recent years, researchers have created or developed various network teaching platforms, such as small-scale private online courses (SPOC), campus network teaching platform, QQ, Wechat, Weibo, etc. [11][12][13][14][15][16][17][18]. Through one or more platforms, traditional classroom and online learning are integrated, the practice of blending teaching and flipped classroom carried out to realize the innovation of teaching mode. Although the proportion of practical application in skill training of normal college students is not high at present, the application of these platforms in other courses or disciplines provides rich experience for the training of normal college students' skills.

The innovation of training mode is mainly embodied in the system of double tutors. Each group is equipped with an in-school tutor and out-of-school tutor. The in-school tutor is responsible for theoretical guidance, and the out-of-school tutor is responsible for practical guidance. The involvement of out-of-school tutors with rich teaching experience solves the problem that college teachers have solid theory but lack teaching experience in primary and secondary schools [19][20]. At present, research has not been carried out in individual colleges. And there is no paradigm promotion.

On the basis of referencing to foreign experience, the researcher analyzed the curriculum setting and teaching skills practice of pre-service teachers in foreign secondary schools, and proposed that "3+2 curriculum setting" and cooperative teaching mode should be integrated into teaching practice [21][22][23], which can provide reference for the training of normal college students' skills in China. However, the national conditions and school conditions will affect the implementation effect to a certain extent, and it needs to be adapted according to local conditions.

Therefore, in today's highly developed "network community environment", it is necessary to study how to construct a simple and feasible training model from the aspects of curriculum setting, development, implementation and evaluation of normal college students' skills, which meets the characteristics of normal students' skills and is close to students' real needs.

III. RESEARCH METHODS

A. Research Objects

With the curriculum setting of geographic science major (undergraduate) in K University, the curriculum of normal college students' skills is mainly carried out in the third year of the college. This study selects the junior students of geographic science major as the research objects. The objects of this study are 54 junior students majoring in geography science of K University (normal college students). At this time, they have completed the study of the core knowledge of geography specialty and the systematic study of the teaching skills of geography. Therefore, selecting the junior students as the research objects can help us deeply insight into the advantages and disadvantages of the training program.

In this study, a self-designed questionnaire "Survey on Teacher Training Needs" was used to obtain the survey data on the professional skills of normal college students and conduct analysis.

This questionnaire is conducted anonymously, which fully protects students' privacy and allows students to answer the questionnaire without scruple, so as to improve the authenticity of the answers. Students were asked to complete the questionnaire with the "paper and pen". Students' seats are arranged in the form of college entrance examination room, which prohibits communication, ensures independent completion and improves the validity of the answers. A total of 54 questionnaires were distributed, and 52 valid questionnaires were recovered, with an effective recovery rate of 96.30%.

B. Research Methods

According to the content of the study, literature analysis, questionnaire survey, observation, case analysis and other methods were adopted. This paper adopts literature review and questionnaire survey to understand the current situation of skill training of normal college students, and to analyze the shortcomings and reasons. On this basis, it puts forward improvement measures, implements curriculum to carry out actions to verify the ways of skill training of normal college students, and draws relevant conclusions through observation, teaching reflection and case analysis.

In view of the weak financial and teacher resources of local colleges and universities, this study uses the most basic chat network platform QQ as a network community, which saves costs and is easy to operate.

C. Collection and Analysis of Research Data

The research materials are "cooked rice" for research. The research data is mainly obtained through literature search, questionnaire survey, observation and teaching reflection, including the status quo of normal students' training in local colleges and universities in the network community environment, students' demand for teacher skills training, and the implementation effect of normal students' curriculum in the network community environment. The data collected is audited and classified mainly by combining qualitative analysis with quantitative analysis. SPSS 20.0 software is used to analyze the survey data of teachers' training needs, and the research problems are explained by the data.

IV. ETHICAL EXPLANATION

In addition to the above statements, it should be specially mentioned that the author has obtained the students' permission to make the investigation, and there are no ethical problems.

A. Research Results and Discussion

1) Analysis on the demand for the improvement of teachers' professional skills

a) Analysis on the demand for the improvement of teachers' essential skills: According to the study, the demand for improving the essential skills of the objects of normal college students of geography is shown in "Fig. 1". Generally speaking, in terms of teachers' essential skills, this group has the highest demand for teaching design and implementation, and the lowest demand for "education and teaching evaluation", "reflection and development". There is little difference among the proportion of demand for "class management and educational activities" in each rank, and they are not prominent, which indicates that the objects have different opinions. It also shows that most students plan to do a good job of subject teaching first, and then the work of head teacher.

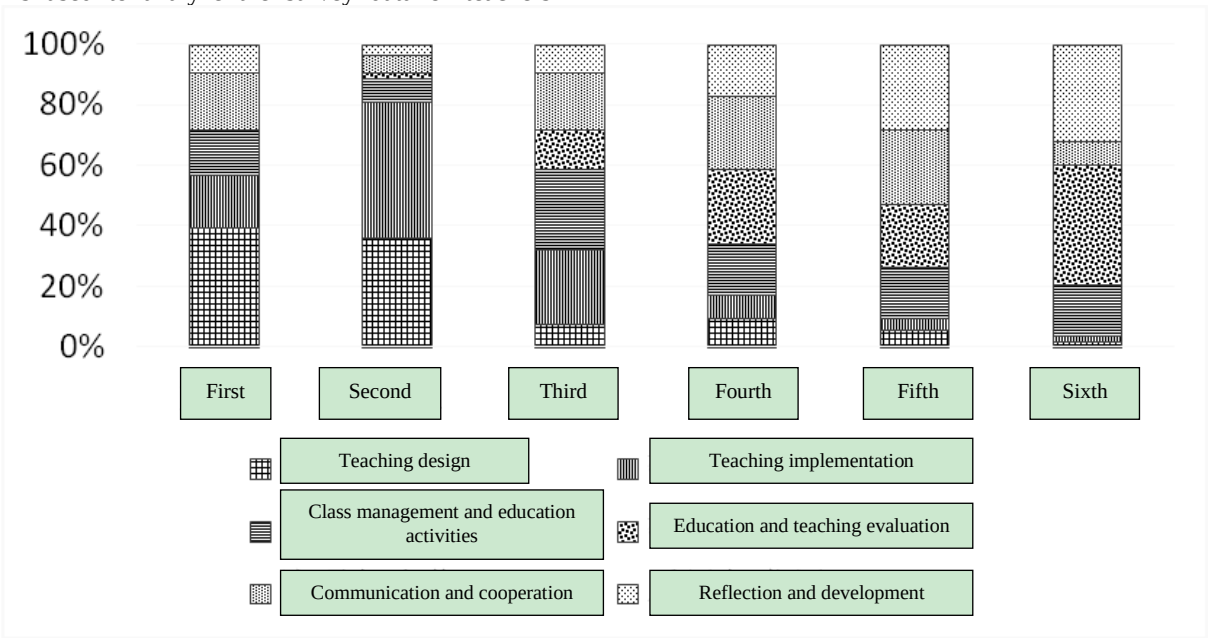

Fig. 1. The ranking of the importance of teachers' essential skills.

b) Analysis on the demand for teachers' professional essential information technology ability: The demand for professional essential information technology ability of normal college students of geography is shown in "Fig. 2". In terms of the demand for teachers' professional essential information technology ability, the demands of most students for technical ability in the three aspects of technical literacy, "organization and management" and "planning and preparation" are great. There are few demands for "assessment and diagnosis", and there is difference in terms of the demand for "learning and development".

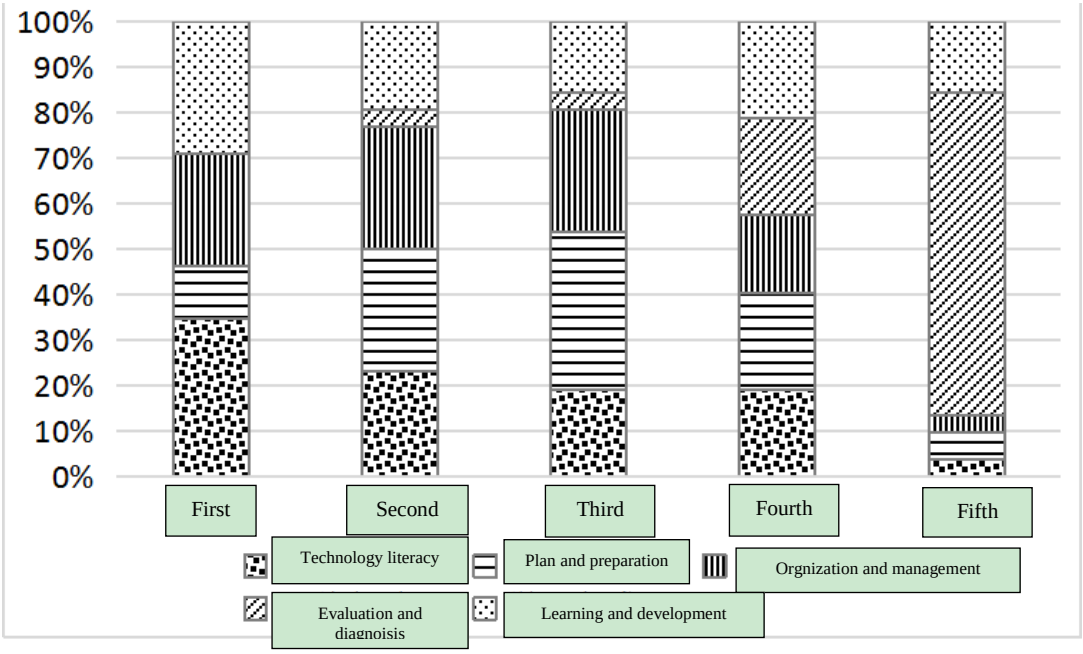

Fig. 2. The ranking of demand for teachers' professional essential information technology ability.

To sum up, the research objects have a higher demand for the improvement of essential information technology skills, such as, teaching design and implementation, the technical literacy, and "organization and management". There is a low need to improve the professional skills of "education and teaching evaluation and reflection" and the information technology ability of evaluation and diagnosis.

B. Requirements for Setting Related Courses

1) Demand for training courses of professional essential skills: According to the results shown in “Fig. 3”, the respondents' demand for the curriculum of teaching design and implementation is much higher than that of other skills courses. There is a low demand for "thesis writing and topic research", "examination question formulation" and curriculum teaching evaluation, and they have the lowest demand for the course of thesis writing and curriculum research.

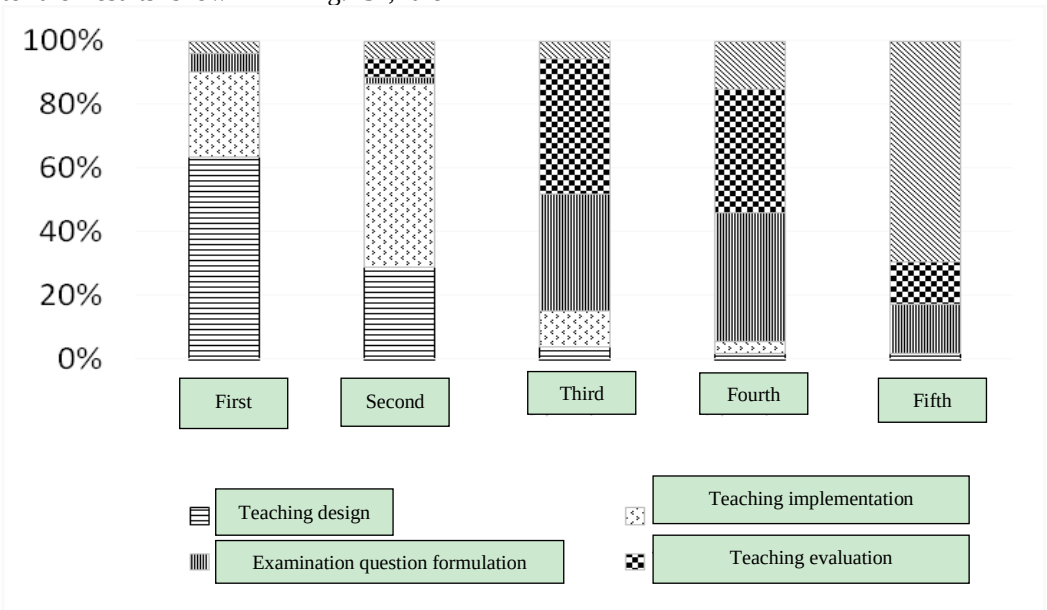

Fig. 3. Ranking of the demand for teachers' professional skills training course.

2) The demand for teachers' information technology capability training courses: From "Fig. 4", it can be seen that this group needs more training in mixed teaching and flipped classroom. There is less demand for training courses in community education. There are great differences in the demand for intelligent learning courses. It shows that their main consideration may be more inclined to the practicability of classroom teaching.

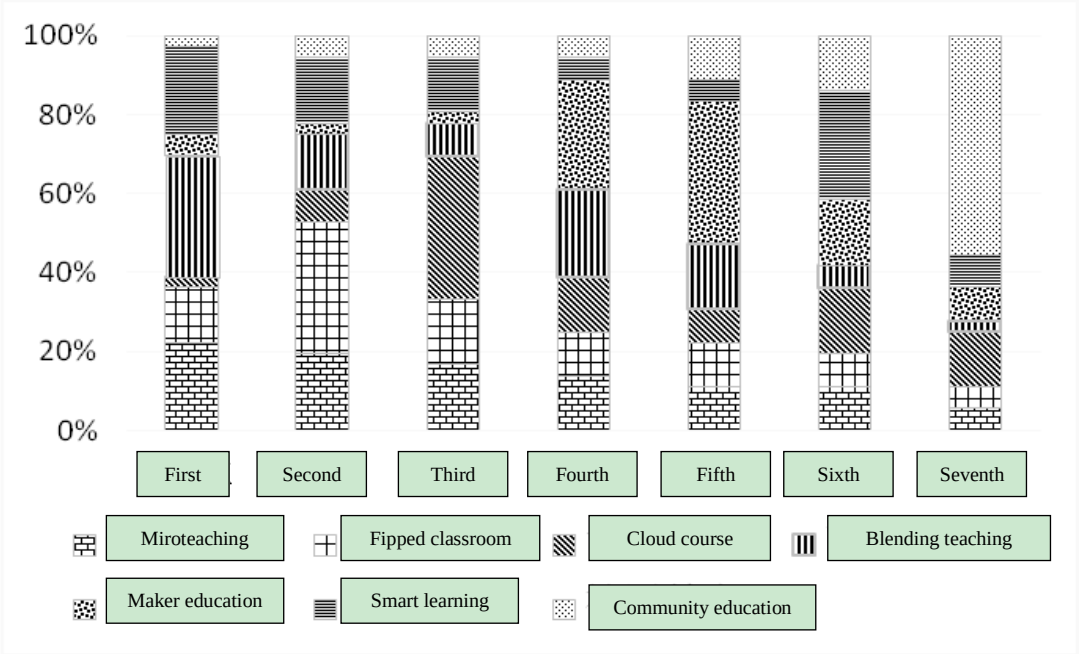

Fig. 4. Ranking of the demand for teachers' information technology ability training course.

In summary, the research objects have the greatest demand for training courses in teaching design, teaching implementation skills and mixed teaching. This is consistent with the previous survey on the need for professional skills promotion.

V. Course Design and Development of Skills of Normal College Students in Geography Department of K University

A. Method

Before we design and develop the skills of the normal college students majoring in geography, we mainly refer to the training program of the university, the national standards for the professional development of primary and secondary school teachers, the needs of the respondents and the skills needed by the students when they are employed. On the basis of these contents, the objectives of the course are initially determined, and the objectives of the course are optimized according to the educational objectives of the school and the relevant viewpoints of subject experts. After setting the goal, we develop the curriculum content of the course based on the students' experience, and set up the implementation plan of the course according to the actual situation.

B. Results and Discussion

The main courses of geographic science are: Introduction to Earth, Surveying and Mapping, Geology Basis, Hydrology and Geomorphology, Meteorology and Climatology, Plant and Soil Geography, Remote Sensing and Geographic Information System, Higher Mathematics, Probability and Mathematical Statistics, Regional Analysis and Planning, Karst Science and Application, Economic Geography, Human Geography, Chinese Geography and World Geography, Landscape Ecology, Introduction to Environmental Protection, Geography Teaching Theory, Tourism Geography, and "Geography of the Province in which the school is located" and other courses (the curriculum program comes from the official website of K University).

From the point of view of the curriculum setting of Geography Science Specialty in this university, professional knowledge courses have been set up in a very comprehensive way, but the skill courses of normal college students only have one course of "geography teaching theory", which is obviously not enough. Therefore, skills training courses for normal college students can be offered in an all-round way.

According to the relevant requirements of professional development standards for primary and secondary school teachers, geography teachers need to integrate the knowledge and skills, namely, subject knowledge, subject teaching knowledge, information technology knowledge, teaching design skills, teaching implementation skills, teaching evaluation skills and teaching reflection skills.

Based on the results of the survey, it is suggested that the normal university should set up a series of courses of "Professional Skills Training for Geographic Teachers" to improve the professional skills of normal college students. Teachers' professional skills include teachers' teaching skills and teaching abilities [24] [25]. The teaching skills of

geography teachers include introduction skills, blackboard drawing skills, skills of dealing with unexpected events, organizing skills of students' activities, conversation skills, etc. The teaching abilities of geography teachers include teaching design ability, classroom management ability, professional expression ability, skills of compiling examination question, lecture presentation ability, course standard interpretation ability, teaching evaluation ability, etc., [25].

Employers generally need to have written examinations, interviews and other links when recruiting, and then the pre-service teachers can be recruited. Here, the contents of interview are different. This study believes that it is a link that needs special attention. After entering the post, a geography teacher needs to master the skills mainly in lesson preparation, giving classes, counseling and other links. Accordingly, the course content is set up as shown in "Table I".

TABLE I. CURRICULUM SETTINGS OF PROFESSIONAL SKILLS TRAINING FOR GEOGRAPHIC TEACHERS

Category	Title of Course	Class hour	Students' homework	Detailed rules and regulations
Major compulsory courses	How do novice teachers interpret geography curriculum standards?	2	Interpreting the geography curriculum standards of junior high school and senior high school.	According to the teacher's request, the students read the geography curriculum standard carefully, and analyze the geography curriculum standard of a chapter.
	How do novice teachers analyze, understand, question and apply various editions of geography textbooks (including foreign textbooks)?	1	Analyzing mainstream textbooks, such as: different versions of senior high school geography textbooks in China, "American scientific discoverers".	In summary, we can make a simple comparison between the American scientific discoverers and a chapter of the mainland textbooks.
	How do novice teachers prepare lessons (write teaching plan and make ppt)?	2	The content of a compulsory course is designed according to the teaching process.	It is designed according to the process of preparing lessons, giving lessons and arranging homework.
	How do novice teachers interpreter lessons?	1	Grasping the skills of lecture presentation and writing lecture notes	Recording lecture microvideos.
	How do novice teachers introduce and give lectures, write on the blackboard, assign homework and comment on homework?	3	Choosing one or two compulsory courses according to the teaching process.	Writing detailed instructional design plan according to the process, making ppt and interpretation textbooks of lectures, Video recording of class.
	How do novice teachers conduct classroom management?	1	Mastering classroom management skills.	Writing five cases of teaching management in teaching, and expressing the wisdom and experience of management.
	How do normal college students attend classes?	1	Mastering novice teachers' listening skills.	Students write out what they are concerned about in class.
	How do novice teachers master evaluation skills?	1	Mastering the evaluation skills.	The method for teacher evaluation and student evaluation.
	How do novice teachers master teaching software learning?	1	Mastering the necessary software for geography teaching.	Mastering phoshop, GIS, Google Earth's operational skills.
	What are the necessary skills for novice teachers to interview?	1	Mastering interview skills.	Imitating interview and recording micro video.
	Learning results display	1	Teams show the study results in this semester.	

VI. IMPLEMENTATION OF SKILLS COURSE FOR NORMAL COLLEGE STUDENTS OF GEOGRAPHY DEPARTMENT OF K UNIVERSITY

A. Methods

According to the above analysis, the curriculum implementation process needs to be consistent with college curriculum objectives, national standards for teacher professional development, students' needs and social needs. We should consider the implementation of the curriculum from two aspects of teachers and teaching implementation plan.

B. Results and Discussions

1) Teacher allocation of course: As mentioned above, this course requires to being close to the reality of middle school teaching, to meet the needs of the country, to apply the skills learned directly in the middle school classroom, and to meet the needs of employers. Therefore, this study invites key teachers who have rich experience in geography teaching of middle school to give the lectures. Every subject in the course system is taught by teachers who are good at this course. Considering the differences between junior high school and senior high school, each subject is taught by a teacher from junior high school and senior high school respectively, as shown in "Table II":

TABLE II. TEACHERS ALLOCATION IN THE SERIES OF COURSES OF PROFESSIONAL SKILLS TRAINING FOR GEOGRAPHIC TEACHERS

Title of Course	Teacher allocation
How do novice teachers interpret geography curriculum standards?	One backbone geographic teacher from junior high school and senior high school, respectively
How do novice teachers analyze, understand, question and apply various editions of geography textbooks (including foreign textbooks)?	One backbone geographic teacher from junior high school and senior high school, respectively
How do novice teachers prepare lessons (write teaching plan and make ppt)?	One backbone geographic teacher from junior high school and senior high school, respectively
How do novice teachers interpreter lessons?	One backbone geographic teacher from high school
How do novice teachers introduce and give lectures, write on the blackboard, assign homework and comment on homework?	One backbone geographic teacher from high school
How do novice teachers conduct classroom management?	One backbone geographic teacher from junior high school and senior high school, respectively
How do normal college students attend classes?	One backbone geographic teacher from high school
How do novice teachers master evaluation skills?	One backbone geographic teacher from high school
How do novice teachers master teaching software learning?	One backbone geographic teacher from high school
Necessary interview skills for novice teachers.	One backbone geographic teacher from high school
Learning Outcomes Display	Four key geography teachers and researchers in Middle Schools

2) Curriculum implementation plan: As mentioned above, all the teachers of this course employed come from all over the country. Considering the expertise, teachers' time and the cost of curriculum design, the course of this study adopts the teaching method of "network teaching + on-site guidance". We use chat software platform to teach online. Teachers will open their PPT, and make the explanation with QQ video conferencing. The subjects open the computer in the computer classroom, watch the teacher's PPT, listen to the teacher's online real-time teaching and communicate with teachers and other students. If the homework is submitted after class, it will be sent to the teacher's mailbox in the form of WORD and PPT. If the homework is in the form of operation, it will be necessary for the students to record micro-video and send it to the teacher. Teachers give feedback to students through e-mail or videoconferencing after reading over.

On-site guidance is mainly carried out in the course of "Learning Outcomes Display". It mainly examines teaching skills and interview skills. In terms of teaching skills, students are required to write teaching design and lecture design well in advance, to do a good job in lecture courseware, and then go to the stage for lecture one by one. In terms of interview skills, students are required to dress and prepare for the interview in advance, and then go to the stage for the simulated interview one by one. As judges and interviewers, teachers comment and guide students' performance on the spot.

At the end of the course, the simulation class and interview test were carried out. The specific results are shown in "Table III". Among them, the full score of simulation class is 100 points, the interview and the three boards are 10 points. From the table, it can be seen that although the simulation class is not very good, it has made great progress compared with that of pre-class, and it is very rare for students who have never been on the stage. The overall results of the interview and blackboard writing were very good.

TABLE III. EVALUATION OF THE IMPLEMENTATION RESULTS OF THE COURSE

Simulation class	Interview	Blackboard writing, mapping and drawing	Total score
66.7	7.41	8.0	82.1

VII. CONCLUSION

Based on the national policy background, this study explores the current education problems in the network community environment, and finds that there is no curriculum using the network community to cultivate normal students' teaching skills. Therefore, this study takes K University as the object of study, takes the junior students of geography science major as the object to make the analysis on the demand, and then sets up courses, implements courses and obtains good results. The details are as the followings:

A. Course Requirements

According to the survey, it is found that the students in this university have the greatest demand to improve their professional skills in teaching design, teaching implementation, as well as their technical literacy, organization and management ability. Students in this university also have the greatest demand for these related courses, which basically coincides with the entry needs of novice teachers and the basic requirements of employers for new recruits.

B. Course Design and Development

According to the needs of the university, the country, the students and the employing units, we have designed skills training courses for normal university students, which includes "how novice teachers interpret geography

curriculum standard", "how novice teachers analyze, understand, question and apply various editions of geography textbooks (including foreign textbooks)", "how novice teachers prepare lessons (write lesson plans and make PPTs)"; "how novice teachers interpret lecture, introduce classes, give lectures, make blackboard writing, assign and evaluate homework"; "how novice teachers manage the classroom"; "how novice teachers manage the class"; "how normal college students listen to classes"; "how novice teachers master evaluation skills"; "learning outcomes display"; "necessary skills for Novice Teachers' Interview"; "how novice teachers master teaching software" and other topics of the skills training courses."

C. Course Implementation

On the basis of curriculum design and development, a simple network teaching and learning platform is constructed by using QQ platform. Famous teachers from all over the country are invited to teach the skills of normal college students. After the implementation of the curriculum, excellent results have been achieved.

However, in the course of curriculum implementation, we also need to consider how to achieve the "evaluation-oriented" and "evaluation-first" concept run throughout the implementation of the curriculum, which is the direction we need to work hard in the future.

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