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Study on the learning and practice of graduate students in mathematics education based on core literacy

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Abstract
At present, developing the core literacy of Chinese students is the main direction of cultivating students. Therefore, it is an essential step to improve the core literacy of teachers. In terms of learning content, the graduate students in mathematics education need to penetrate core literacy in learning mathematics theory and teaching skill and expand the knowledge in the field of other disciplines. The combination of theory and practice can be realized via trial lecture, practice teaching, and other various forms. The graduate students in mathematics education must promote own core literacy, thus us can be competent to develop the core literacy of students in the future work.

Keywords: core literacy, mathematics, graduate students in mathematics education, educational exercise

1. Introduction
On September 13, 2016, the news release conference held by Ministry of Education of the People's Republic of China at Beijing Normal University proposed that the developing the core literacy of Chinese students should center the cultivating all-round development of people [1]. While the teachers with high literacy are the essence to develop students. The graduate students in mathematics education all are prospective teachers and shoulder the important task of developing students. So, they should have targeted learning and develop themselves completely.

2. The content of learning based on Core Literacy
Because the core literacy of the cultural foundation emphasizes on the acquisition of knowledge and skills in various fields, such as humanities, science, etc. [1]. The graduate students in mathematics education needs extensive learning of theoretical knowledge and flexible mastery of mathematics teaching skills to lay a good cultural foundation.

2.1 Extensive learning of theoretical knowledge
2.1.1 Learning the theory of education and mastering the laws and regulations of education
The graduate students in mathematics education studies rich theoretical knowledge of educational science, which can lay the foundation for later teaching skills training and educational practice, mainly including pedagogy, educational psychology, Chinese and foreign educational history, educational technology, etc., and deepens understanding of the theory through the appreciation of famous books and expert lectures. Only on the basis of mastering the knowledge of pedagogy can the graduate students in mathematics education use theoretical knowledge to interpret and explain educational activities and phenomena and to understand the truth contained therein.
In addition, core literacy is designed to develop a code of conduct that modern citizens must abide by and fulfill [1]. The graduate students in mathematics education can exercise teachers' rights rationally in their work by studying *the Education Law of the people's Republic of China, the Law on compulsory Education* and *the Law on Teachers*, and understand the requirements of society and education for the moral quality and professional behavior of primary and secondary school teachers by studying *the Code of Professional Ethics of Primary and Secondary School Teachers* [2].

2.1.2 Studying the specialized knowledge of Mathematics and attaching importance to Mathematical Culture and Mathematical History
The teacher's mathematics professional accomplishment directly restricts the teacher's identification and materialization of the mathematics core accomplishment, while the education and teaching accomplishment directly restricts the teacher's teaching level and the practice materialization of the educational idea [3]. The graduate students in mathematics education learn the professional knowledge of mathematics, which is the premise of having solid professional literacy in mathematics. Taking Shandong Normal University as an example, Mathematics specialty course includes mathematics curriculum and teaching, educational measurement and evaluation, basic theory of mathematics learning, development and management of mathematics curriculum resources, etc. We should take the initiative to think about and build the links between knowledge in multiple courses.
In addition, the graduate students in mathematics education should accumulate knowledge about mathematical culture and history of mathematics, read ancient and modern mathematical works, and attend lectures on relevant reports, so as to fully understand the background of mathematical knowledge, expand the breadth and depth of own knowledge and use the knowledge of mathematics culture and mathematics history to help students to understand the process

of mathematical knowledge deeply in future teaching [4]. At the same time, in the process of knowledge transfer, the graduate students in mathematics education can also accumulate the basic knowledge and achievements in the field of humanities at all times and in modern times, so as to meet the requirements of core literacy in the aspect of humanistic precipitation [1].

2.1.3 Studying cross-disciplinary knowledge and skills and mining internal relations

The core literacy requires students to adjust the relationship between themselves and the society, and enhance the sense of social responsibility [1]. The professional study of the graduate students in mathematics education should not be confined to a certain subject field, but should also understand the knowledge of other subjects in humanities and science, pay attention to the intersection and penetration between it and the teaching field, and fully excavate the inherent related attributes. The graduate students in mathematics education needs to fully reserve relevant interdisciplinary knowledge and construct a flexible knowledge system in terms of breadth and depth before entering the office [5]. Such as learning art painting for writing chalk words to lay the foundation, improve the ability of writing mathematical blackboard. Learning education sociology course can understand and deal with the contradictions and problems among schools, parents, students and teachers from the perspective of sociology, and improve interpersonal communication and coordination ability [6]. Reserving the knowledge of career planning can strengthen the sense of identity of the profession, and obtain the direction and motivation of the continuous development of professional accomplishment [7].

2.2 Mastering mathematics teaching skills flexibly

2.2.1 Studying the lesson preparation and teaching design

When preparing lessons and designing teaching, the graduate students in mathematics education need not only to study scientific design process and knowledge, but also to pay full attention to the development of students and individual differences in different aspects according to the requirements of core literacy, so as to ensure the systematization and consistency of curriculum knowledge. In preparing lessons, the graduate students in mathematics education learn to estimate and grasp the situation of students, mathematics teaching materials, teaching methods and learning methods, pay attention to some novel knowledge and establish the relationship between knowledge and the current situation of society. In instructional design, the graduate students in mathematics education should firstly understand all aspects requirements of the national curriculum standards and education and teaching, secondly analyze about the teaching objectives, teaching content, teaching and learning difficulties, teaching tools and teaching time and finally make teaching design of system arrangement.

2.2.2 Learning the teaching skills of mathematics class

The graduate students in mathematics education needs to master the relevant skills to promote the smooth course of mathematics class, so as to guide students to carry out various learning activities. Learning classroom teaching skills is not only the key link for the graduate students in mathematics education to form and improve their own teaching level to become qualified teachers, but also an effective way to enhance teachers' teaching technology content and cultivate students' core literacy. The main classroom teaching skills are as follows: 1) The skills of setting up questions and asking questions is that the graduate students in mathematics education should learn to set specific questions in different stages and links of teaching, learn flexible and changeable ways to ask questions, and learn how to guide students to answer. 2) The application skill of mathematics teaching language is that the graduate students in mathematics education should learn how to use teaching language to explain and transfer knowledge, and study the expression of combining text, icon and mathematical symbol language [8]. 3) The mathematical drawing skills is that the graduate students in mathematics education should learn how to draw mathematical images with chalk to ensure clear lines, moderate size, and learn to use geometric drawing board, graphics calculator and other multimedia tools to draw and display. 4) The multimedia teaching skills is learning to make multimedia courseware and operate multimedia tools. 5) The mathematical blackboard skills are learning to use blackboard to show teaching content and process, and arrange the layout of the sheet reasonably as the information for students to pass the standards and specifications.

2.2.3 Learning diversify evaluation of teachers and students

The core literacy needs to have the consciousness and the habit which examines to own study condition in the diligent introspection aspect [1]. The reasonable teaching evaluation is helpful for the graduate students in mathematics education to strengthen the teaching reflection, to understand and evaluate oneself correctly. Teaching evaluation includes two parts: evaluating teachers' teaching and evaluating students' learning. When the graduate students in mathematics education evaluates the teaching of the students, the evaluation of the core literacy is integrated into every link of the teaching. At the same time, the graduate students in mathematics education needs to refer to the evaluation indexes and weights of classroom teaching in mathematics, understand the basic requirements of teaching links, and evaluate own teaching in simulated teaching and teaching practice.

3. Teaching practice of the graduate students in mathematics education based on Core Literacy

The core literacy is a gradual formed in the complex and ever-changing environment between learning and living of the graduate students in mathematics education. It enhances the spirit of innovation and practical ability to promote the realization of individual values, and achieves a colorful life [1]. Various forms of teaching practice are necessary links that link the dual identities of teachers and students. In simulated teaching, microteaching, practice and apprenticeship, the graduate students in mathematics education can continuously form and improve all kinds of knowledge, skills and emotional experience, and explore the thinking logic and deep implication of core literacy in teaching practice from the perspective of teachers.

3.1 Teaching and lecturing in simulated teaching

Simulation teaching is an important way of teaching practice in college. The graduate students in mathematics education should understand the process and mode of simulation teaching. Firstly, everyone chooses a lesson about middle school mathematics to prepare and design it. Secondly, the teaching lectures are simulated in the classroom scene, and all the links of the teaching are displayed. Finally, instructing teachers point out the deep knowledge, analyze the advantages and disadvantages of teaching, and correct the details of teaching. In order to make the thinking collide and cultivate the spirit of innovation, the graduate students in mathematics education can jointly explore the methods of improving, so as to complement advantages. In the practice of lecturing the main contents include the achievement of the course goal, the grasp of the key points and difficulties, the choice of the teaching method, the choice of the teaching method, the rationality of teaching process and the scientific nature of blackboard design. In order to improve the ability of teaching and lecturing, the graduate students in mathematics education should be diligent in introspection. The core literacy emphasizes the ability to choose or adjust learning strategies and methods according to different situations and their own reality [1].

3.2 Obtaining feedback information of evaluation in microteaching

Microteaching is a teaching practice in the form of a micro type class. In this platform, the graduate students in mathematics education can establish three parties' connection about the knowledge of related mathematics, the theory of mathematics education and the teaching skills of mathematics. Firstly, the graduate students in mathematics education should determines the clear goal of training, and divides the complex teaching skills into specific single skills for training in thematic form [8]. Secondly, they should observe the typical teaching cases or the standard quality classes of famous teachers before training so as to cultivate the ability to observe and absorb the teaching experience of others. Thirdly, they should start the mock up video and watch the video with partners at the end of the recording. Finally, feedback is evaluated to analyze whether the process of practice has reached its own goal, and whether the teaching skills are trained [9]. In view of the teaching process of oneself and others, the graduate students in mathematics education can find out the problems and revise the problems repeatedly until the teachers and the peers are satisfied [10]. At the same time, you can store each recorded video, listen again after a period of time, so that teaching skills are enhanced.

Creating a real teaching scene with feedback through micro-classroom and audio-visual techniques not only promotes the formation of the teaching skills of the graduate students in mathematics education, but also reduces the psychological pressure through repeated training [9].

3.3. Internship and practice in out-of-school education

Through educational internship and practice in secondary schools, the graduate students in mathematics education can be familiar with the teacher's work environment and be also truly involved in the environment by themselves. In participating in collective lesson preparation, using different lesson preparation materials and teaching experience, learning and exchanging with many teachers can reorganize their own experience and skills, and gradually form their own teaching style [11]. In organizing the classroom teaching, the graduate students in mathematics education can feel the real classroom situation, observe and record the problems arising from the teaching process, write down problems, thoughts and experiences, etc. [12]. Perfecting the teaching problems existed in the theoretical study is to rethink and design the individual links of teaching activities. Through internship and practice, the graduate students in mathematics education can supplement the lack of practical knowledge, deepen the experience of theoretical knowledge such as education and teaching theory, and develop the ability to solve problems independently in changing situations.

4. Concluding remarks

In order to cultivate the core accomplishment of the graduate students in mathematics education, the core literacy is passed through teaching contents such as teaching theory and teaching skills, and teaching practices such as microteaching and practice. In terms of learning content, because the core literacy of the cultural foundation emphasizes on the acquisition of knowledge and skills in various fields, such as humanities, science, etc. [1]. The graduate students in mathematics education needs extensive study of theoretical knowledge and flexible mastery of mathematics teaching skills to lay a good cultural foundation. In terms of teaching practice, because the core literacy is a gradual formed in the complex and ever-changing environment between learning and living of the graduate students in mathematics education [1]. Various forms of teaching practice are necessary links that link the dual identities of teachers and students. In simulated teaching, microteaching, practice and apprenticeship, the graduate students in mathematics education can continuously form and improve all kinds of knowledge, skills and emotional experience, and explore the thinking logic and deep implication of core literacy in teaching practice from the perspective of teachers. At the same time, because the core literacy is run through the theoretical and practical fields, the graduate students in mathematics education can form a general competence system, realize the relative consistency between the cultivation of teachers' literacy and the development of students' core literacy, and obtain a comprehensive development so as to be better qualified for the future of teacher work.

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