

# Reflections on the Cohesive Teaching of Ethnic Preparatory Mathematics

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**Abstract:** With the development of education in our country, contents of mathematics textbooks in colleges and mathematics textbooks in middle school have been adjusted and changed. Therefore, it is necessary to adjust and change preparatory mathematics, which is the transition from mathematics of middle school to college. According to related characteristics of ethnic preparatory students and characteristics of mathematics teaching, this paper analyzes mathematics teaching of ethnic preparatory courses, and probes into cohesive teaching methods.

## 1. Introduction

With the continuous development of quality education in our country, contents of mathematics textbooks in colleges and middle school have been adjusted and changed. Therefore, ethnic preparatory education should also be adjusted and changed. As an important stage of linking secondary education and higher education, ethnic preparatory education must adapt to the development characteristics of relevant education.

## 2. Existing Problems

### 2.1 Ethnic Preparatory Students can not Master Basic Knowledge of Mathematics

At present, the main problems faced by ethnic preparatory students in mathematics is the weak foundation, and their uneven learning levels. With the expansion of enrollment in colleges and universities in our country, the entrance threshold of is lowered, and some students with weak learning ability and low level of mathematics knowledge can also be admitted to universities for study. Therefore, it is very difficult for college teachers to coordinate the difference among students' mathematics level, which makes teaching effects decreased.

### 2.2 Ethnic Preparatory Students Have Low Intrests in Mathematics

As a transitional stage between middle school and college, cohesive teaching aims to make ethnic preparatory students consolidate their knowledge learnt in middle school and lay a good foundation for their study activities in universities. However, in the actual teaching process, ethnic preparatory students always lose interests in the study contents of preparatory courses, because they feel that the study is just a repetition of previous learning contents, which is only a review of the past knowledge, and no new knowledge can be learned. Over time, they will have a weariness of study, lose interests in mathematics, and even have doubts about university study, especially for those students with poor grades in mathematics.

### 2.3 Difficult Study Contents Make Ethnic Preparatory Students Feel Hard in Learning

In the course of study, ethnic preparatory students will come into contact with contents such as calculus and so on. Calculus is more abstract and more difficult to learn compared with previous learning contents. Since some ethnic preparatory students do not have a claeer learning purpose, for example, entering university or coping with exam, some will produce weariness in mathematics learning once they encounter difficulties.

### **3. Basic Thinking**

As an important teaching content of colleges and universities in our country, ethnic preparatory education plays a very core role. In the teaching process, we are required to pay attention to students' practicability of learning methods and the connection of relevant knowledge, help them complete relevant learning activities and meet the requirements of relevant majors in the process of receiving higher education. However, it is difficult to meet the requirements of Physics, Chemistry, Mathematics and other related subjects in college teaching. In colleges, science teaching contents become more and more, and requirements for mathematical knowledge is relatively higher, while the majority of ethnic preparatory students come from minority nationality areas. Because of the low educational level prevailing in minority nationality areas, these students' mathematics foundation is weak, knowledge points are not fully mastered, and their practical application ability of relevant knowledge is insufficient. Therefore, teaching in the preparatory stage is very important which makes students effectively link up mathematics in college with mathematics in middle school, make up for their deficiency, widen their knowledge, and lay a solid foundation for future study. Teachers need to pay more attention to the cohesion of knowledge in mathematics teaching, make continuous exploration according to their own characteristics and learning ability, and carry out relevant teaching activities according to their own characteristics and learning ability. Through continuous practice as well as the adoption of effective measures, teaching system will be enriched and teaching methods improved, so that students are able to get coordinated development in the level of knowledge and comprehensive quality, and link their knowledge with the study in colleges, so as to adapt to college learning environment.

### **4. Practice of Cohesive Teaching of Mathematics in Ethnic Preparatory Course**

#### **4.1 Deep Investigate, Study Carefully, and Formulate Reform Plans**

Students are the main body of the whole teaching activities, so all teaching reforms should be carried out around students. Before carry out teaching reform, it is required to first investigate relevant situation of ethnic preparatory students. The specific methods include the following aspects. First is the relevant questionnaire survey to all ethnic preparatory students. Second is ethnic preparatory students' sampling quiz. Third is the convening of some ethnic preparatory students for a discussion and fourth is teachers' daily understanding of ethnic preparatory students. Through the investigation of the above methods, we can conclude the shortcomings of these students in mathematics, such as insufficient analytical ability of geometric knowledge, unclear understanding of the nature of function, insufficient basic operation level of formula and mathematics, low ability to solve mathematical application problems and other related problems. According to the above problems, we need to reform targeted teaching contents in order to cultivate students' ability and consolidate their foundation, so as to ensure that the mathematics foundation of can be promoted and their ability to use mathematical knowledge can be enhanced. Meanwhile, it is vital to stress the cultivation of students' creative consciousness, laying a foundation for them to adapt to college life as soon as possible.

#### **4.2 Improve Teaching Mode and Strengthen the Cultivation of Key Knowledge**

In the course of reforming teaching mode, teachers are supposed to enrich their own teaching contents, update teaching contents in time, make teaching meet the needs of the development of the times, constantly optimize teaching contents and abandon those that are incompatible with the development of the times. It is suggested for teachers to classify their teaching contents according to the degree of difficulty and students' learning ability, for example, contents can be divided into the part of reading comprehension and the part of deepening learning impression. For contents of reading comprehension, teachers are suggested to draw key points for students and then instruct them to complete by self-study. For contents of deepening learning impression, teachers need to assign relevant exercises for students and explain key parts, so that students are able to integrate

relevant knowledge. This teaching method helps ethnic preparatory students improve their self-study ability as well as integrate the knowledge learnt in college and the knowledge learnt in middle school into an effective link.

### **4.3 Improve Teaching Methods and Strengthen the Connection with Knowledge Learnt in Colleges**

Teachers should pay attention to the improvement of their own teaching methods in the process of cohesive teaching of mathematics for ethnic preparatory students, which is an important link in carrying out teaching reform. In the daily teaching activities, teachers are required to focus on the subject status of students, and change the traditional teaching thoughts in some minority areas. In many minority areas, teaching methods still take teachers as the main body during teaching process, rely on the contents of teaching materials and realize teaching aim through classroom teaching. This kind of teaching mode can no longer meet the needs of the development of the times, because it easily makes the learning methods of ethnic preparatory students rigid. Under this kind of teaching mode, students just passively accept teachers' teaching and passively master knowledge points in textbook, which is not conducive to the development of their innovative spirit as well as the promotion of practical ability. Besides, it also fails to meet the needs of the development of the times and be unable to adapt to teaching methods very well. Therefore, teachers are supposed to focus on the connection between teaching reform and college learning, including the following aspects. First is to strengthen the interaction between teachers and students and between students and students. In the process of teaching, teachers need to increase the application of discussion teaching methods. When teachers explain a chapter, they should firstly point out the key contents of this chapter to students, set up relevant problems, remind students to solve problems, and make them discuss with each other according to a certain learning purpose so as to deepen their impression of relevant knowledge. Moreover, teachers should point out students' misunderstandings in the course of discussion and explain them. In the process of discussion, it is necessary for teachers to make a positive evaluation of students' different opinions and encourage them to discuss with teachers. This teaching mode can effectively improve the teaching method of "infusion" in traditional teaching, enhance students' enthusiasm for learning, and deepen their impression of relevant knowledge. Students are capable of broadening their horizons by discussing with each other, increase the communication between students and teachers, and cultivate their language expression and thinking ability. Second, teachers must stress the key contents in teaching process. When teachers teach key knowledge points, they should adopt various methods to make special counseling from easy level to difficult level, strengthen students' practice of key knowledge, organize discussion activities related to key knowledge, and make students grasp relevant key knowledge contents. Third, teachers should not only pay attention to the connection of knowledge but also the connection between different subjects and chapters. In the process of teaching, teachers are supposed to focus on training students to combine mathematics with other subjects, for example, to solve physical problems by combining mathematical knowledge with related physical knowledge, and to apply mathematical knowledge to the process of solving problems in chemistry, and so on. Teacher should also emphasize the connection between every chapter, make students understand and deepen the mastery of knowledge points.

### **5. Strengthen the Cohesion of Weak Links in Students' Study**

In the process of studying mathematics, the most key part of weak points includes the weak understanding of related concepts, formulas, definitions and theorems, and the low ability to apply relevant theorems and formulas. In the mathematics study of ethnic preparatory students, the application of related mathematics formulas is often confined to the level of "imitating mechanically". Once they encounter more complicated problems, they are apt to have the fear of difficulties and is incapable of using flexible methods to solve related mathematical problems. Over time, they will lose interests in learning mathematics, or even produce a weariness. This has brought extreme unfavorable influence to mathematics teaching and has hindered the teaching goal

achievement of mathematics. In order to change this phenomenon, teachers need to change the traditional backward teaching mode and adjust teaching contents. The specific methods are as follows. First, teachers should carefully screen their own teaching contents in the process of teaching, strengthen the teaching of key contents and minor knowledge points, as well as give a brief account or make students study by themselves. It is vital to focus on cultivating these students' ability to apply mathematics knowledge flexibly, and ability to train their innovative spirit and interests in learning, so that students will produce the initiative for mathematics, thus improving their mathematics level. Second, in the teaching process, teachers are advised to strengthen the guidance for students' learning methods, actively train them to develop good learning methods, such as classroom discussion, group tutoring, and so on, so that they can achieve twice the result with half the effort in the process of mathematics learning, improve learning efficiency, and produce a good effect of mathematics teaching. Third, teachers should strengthen the regular examination of ethnic preparatory students, formulate relevant assessment methods, and combine test results with the grades of midterm examination and final examination. In order to make these students master their own learning conditions at any time, teachers need to carefully analyze their examination results, find out their deficiencies in their study, give targeted guidance to them and help them to achieve the promotion of academic performance.

## 6. Conclusion

To sum up, in the process of mathematics teaching for ethnic preparatory students, teachers should constantly make exploration, actively carry out teaching reform, improve shortcomings of the traditional teaching mode, try to find out teaching methods which meet the needs of the development of the new era, help ethnic preparatory students complete their preparatory education, lay a solid foundation for their successful completion of college study and achieve the goal of preparatory teaching.

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