

# Research and Practice for Ethnic Minority Students' Computer Teaching in Preparatory Department

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**ABSTRACT**—*Preparatory education is a special and effective measure to training minority students in remote and backward areas. This paper analyzed the problems of computer education for minority students which is an important part of preparatory education, discussed the teaching reform of computer education for minority students including the teaching course, teaching mode and teaching methods in detail. The teaching results in recent years have showed that our computer teaching reforms have improved the computer level and computer comprehensive qualities of preparatory students effectively, and the passing rate of National Computer Rank Examination has been significantly improved.*

**Keywords**—Preparatory Education; Basic Computer Teaching; Access Database

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## 1. INTRODUCTION

Minority Preparatory education is a special effective measures at the national training personnel in remote and backward areas taken, is an important part of our national education indispensable [1]. By preparatory education, not only effectively make up the basis of minority students in high school culture is weak enough and able to expand their horizons and knowledge, so that they soon become good and qualified freshmen [2].

For a long time , preparatory student education focused on Chinese, mathematics and a foreign language which three core subjects , but with the rapid development of the global information technology ,computer technology and applications, computer knowledge and ability has become necessary for employment and further education of contemporary college students to master essential skills to improve their ability of thinking, analytical skills, creativity and comprehensive application ability to both have a profound impact. So it is necessary and can make preparatory stage ahead of preparatory students accepted in computer-related education [4]. Dalian nationalities University since 2006, the computer classes as preppy compulsory core subjects, taking into account minority students come from remote areas , so the contents of the computer courses taught include basic knowledge of computer hardware , Windows operating system, basic operations, characters enter the practice , office software ( including Word, Excel, PPT) and other computer basics. But judging from the teaching, students' enthusiasm for learning is very low, test scores are not ideal, learn poorly. 10 classes for matriculation through questionnaires, attributed to the following reasons:

(1) With the popularity of computers and networks, a considerable number of students (including remote areas) came into contact and use the computer during the junior middle school and high school, so the Chinese character input exercises, computer basics Windows basic operation is no stranger to difficult interest in continuing to learn this knowledge.

(2) Due to differences in scores education, family and social environment, and the presence of preparatory student enrollment, thus students in junior middle school master computer skills that there are significant differences, also in learning ability there are very big differences. Traditional teaching used a "guillotine" teaching method, this tend to a

polarization of the situation. On one hand, the higher levels of students “cannot eat to the full”, they think the computer courses that have no meaning and learning enthusiasm by a heavy blow. On the other hand, the lower levels of student learning very difficult, easy to produce computer courses fear and self-abandon, these issues to improve students' computer skills will have great obstacles.

(3) Students' lack of team spirit. In traditional computer teaching focus primarily on improving individual student mastery of knowledge and ability, while ignoring the cultivation of students' teamwork, communication skills training, organization and management capabilities.

(4) Students' ability to solve problems and analysis ability is poor. An important objective is to develop computer teaching abilities of students and analytical problem-solving ability, but due to the impact of traditional teaching, students learning computer still prefer to mainly relying on books, it is difficult to establish a computer to solve practical problems of consciousness and capacity.

For preparatory students that exist on computer learning problems, the teacher of many domestic national institutions have done a useful exploration. Such as the literature [4] based on the concept of CDIO prep computer- basic teaching, literature [5] for minority preparatory students on computer curriculum made useful explorations, Zhu Hongyuan [6] made a investigation and analysis on the Heilongjiang Provinces' computer education of national preparatory class, studying the teaching mode reform of the prep computer by Tian Xishan [7, 8]. The study promotes the development of computer education of minority students in a certain extent, but there are still many issues to be resolved, for example, how to set the appropriate curriculum? How to prep students teaching in different levels? How to pay attention to the basic education, while improving preparatory students' ability to cooperate, active learning and practical problem-solving computer skills?

For many problems exist in these Preparatory Computer Education, Dalian Nationalities University Preparatory Department of preppy computer courses, teaching mode, teaching methods, and so do the reforms. Teaching practice results in recent years show that my school computer education reform not only promoted the Preparatory students interested in computer learning, and effectively improve the capacity and ability to work in unity and cooperation to solve the problem of their actual computer, which for Preparatory students University study has laid a good foundation.

## **2. THE REFORM IN THE TEACHING OF COMPUTER PREPARATORY**

### **2.1 Course content and curriculum**

Basic computer course content is the key to learn computer classes for Preparatory students, and given the current level and Preparatory students' interest in learning computers, basic computer courses will be set to "Basic computer and Access database program design". The course is divided into two semester of teaching, teaching content mainly includes four parts: computer basics, using Office software , implementation uses a simple Access database and database management systems, course content and course training objectives as shown in Figure 1.

(1) Computer Basic Knowledge. This part teaches the basic concepts of computer development situation, the basic working principle, basic data structures and software engineering (National Computer II examination content). Learning the basic purpose is to make students understand how computers work, preliminary master the basics of computer data structures and software engineering, lay a foundation for further computer II examination and later learning. This arrangement is part of class 20 hours, including 8 hours of theoretical lessons, lessons on board 12 hours.

(2) Use Office software. This part of the course content, including Word software, Excel software, PPT production and use Visio software, curriculum training goal is to make students master the Word processing capability, Excel for data processing capabilities, PPT production and use Visio software, which is part of the 24 hours arrangements machine class.

(3) Access database. The course includes the basic principles of the database, the link between the establishment of Access database tables and data tables, create forms, create reports, create a view and VBA programming language widely used in Office, the goal is to train students to understand database the basic working principle, basic grasp Access software used to help students with basic problem solving skills and learn programming. Focus of the course is to create data tables, data window, data query, VBA development language, curriculum difficulty is the data query and VBA development language.

(4) The realization of a simple database project. Found in the teaching process, teaching only Access can't achieve the goal of teaching. So we are on top of the Access curriculum content, increase the teaching content simple database project. This course requires students to the group as a unit, according to the project functional requirements given by the teacher to complete the project needs analysis shows that the project design (for example, a summary description of the design, functional flowcharts, etc.), project implementation and project testing process. Since the vast majority of these projects are completed by the students together, therefore, not only can increase student interest in learning computers, but also can cultivate students effective problem solving ability and cooperation ability, further enhances the student

computer level.

Overall, our school preparatory students' basic computer course content and settings has several advantages as follows:

- (1) Considering the preparatory courses to enter college after students of different professional situations, computer knowledge course includes the rich, basically to meet the university preparatory student learning.
- (2) The Access database and implement database project combines both teaching content, not only improve student achievement and interest in learning computers, and cultivate students' ability to solve practical problems and mutual communication, cooperation ability, which are beneficial to preparatory students in the future university life and work.
- (3) The course covers all the knowledge points of Access II examination, after completion of courses, students can directly participate in the national Preparatory Computer Access II exam without having to wait for junior secondary computer when it participated in the exam, which will greatly save them the time and effort.

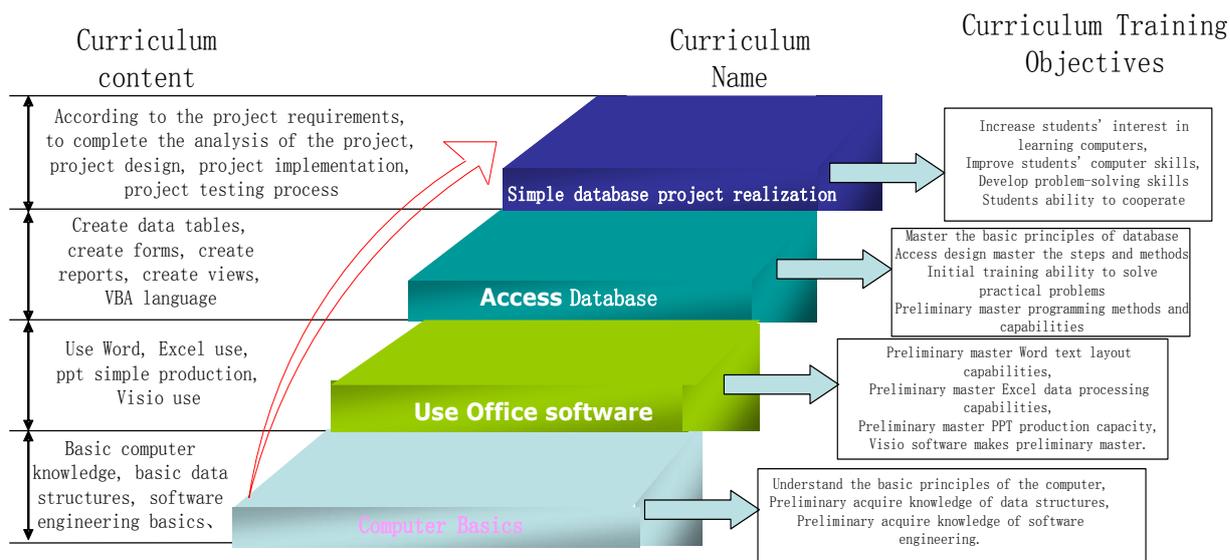


Figure 1: Computer courses

## 2.2 Training Mode

Considering the matriculation student learning and personal circumstances, compared with the traditional teaching, my school matriculation students' basic computer courses training mode also made great changes, specifically can be summarized as: phases and levels, project module of matriculation students training model is shown in Figure 2.

(1) Level teaching. My school preppy including Dalian Nationalities University, Jilin University and China's civil aviation preppy, from previous teaching experience, Jilin University preppy learning quality, infrastructure and capabilities are far better than the other preppy two schools, a " guillotine " of teaching model is clearly not good. If the Jilin University preppies and the other two schools were teaching, from the past teaching experience, the student is likely to cause polarization phenomena. Our approach is hierarchical grouping method, it simply is the first grouping of all students, and each group is generally 4-5 people. Team leader is Jilin University preppy in general. When the task is arranged for each student, they generally must complete on the machine (such as data tables, windows, etc.). If students do not understand, they can directly ask the head of the unit, the head need responsible for the task of the entire group achieved. If the head does not understand, you can directly ask the instructor. After students complete the task, but also need to complete the database project (such as the establishment of real data table, query window, test items, etc.) according to schedule requirements and teaching database project, these tasks are not all people need to be completed, mainly Jilin University preppies and people who interested in Access and well learning. Grouping of these students again, achieved mainly by the group members to discuss with each other in class, mutual assistance, the teacher is more of a guiding role played in the database project.

(2) Stages of teaching. The teaching process in Access, each stage of the knowledge and content are different, which often produces two problems: First, will often lead to " forget talked about behind the front " phenomenon, but often behind the teaching content also used a lot of knowledge in front, especially when doing a database project, that is to the front of the knowledge learned in Access comprehensive application. If the previous knowledge forgotten, it is difficult to carry on throughout the course, not to mention the mastery of knowledge; second, students in the learning process do not understand the specific contents of each chapter to learn what to do, thus greatly reducing the interest in learning computers. We have adopted a phased approach to solve this problem of teaching, specific practices are as follows: ①

Above all, in the first class the students will be demonstrated that they needed to complete the database project (these projects have been completed in advance by the instructor), and grouping students; ②According to the characteristics of Access courses, Access course is divided into five stages, including data tables, forms and queries, VBA language. The contents of each database project is also divided into the same five stages, each stage requires the completion of a learning phase associated with the project tasks, such as data sheets learning stage, students have to complete the database project to establish a data sheet, statement of establishment association between the keyword table setting, table setting constraints and other fields of work. After five learning phase is complete, the main function of the basic database project realized in the project implementation phase, the main task of the project is to further refine and test.

(3) Item modular teaching. The so-called modular teaching program is a simple database for each project contents include Access courses students have learned all the knowledge modules. This course is a simple database project in general, including school management system, performance management system, all Access To Knowledge module students have learned (such as: SQL Language Fundamentals, window application, query applications, etc.) truly mastered in order to achieve these database system. This not only improves the overall quality of students' computers, while these modules contains all the knowledge of local content National Computer II exam, if students can truly grasp all the knowledge database project implementation, it is relatively easy through the National Computer II exam.

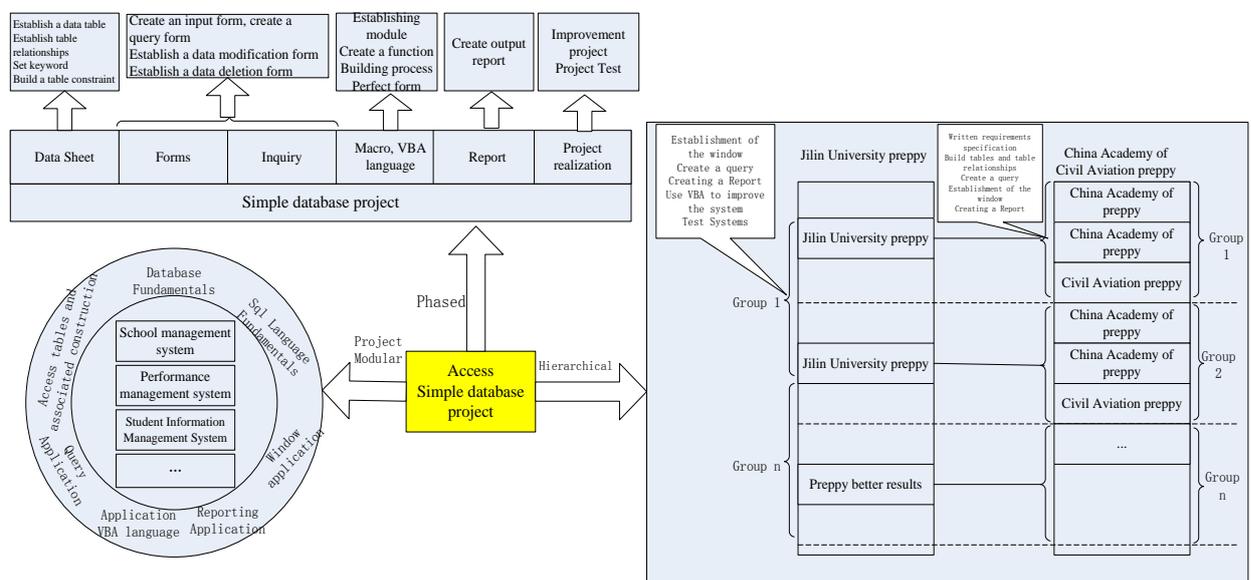


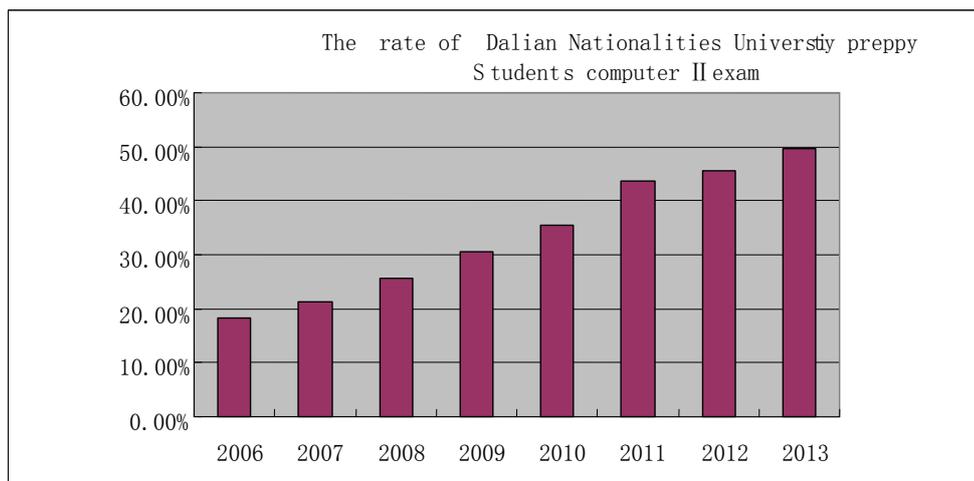
Figure 2: Students training mode

### 2.3 Examination of the way

According to the course content and curriculum training mode, and our test methods can be described as follows: 60% of final exam scores of the total content of examinations is on board exams, the exam is similar with the National Computer II exam. On the one hand, it can be investigated student computer knowledge to grasp the situation; on the other hand also allows students to become more familiar with computer II exam environment and examinations. Usually 5% of the total performance score, 10% of the total scores on the test machine, the database project to achieve 25% of the total grade.

## 3. STATISTICS AND ANALYSIS OF THE RESULTS OF TEACHING

After years of computer teaching reform and practice, the preppies of Dalian Nationalities University have been significantly improved and enhanced their computer interest in learning, as well as the overall quality of the national secondary computer by computer to the rate. Figure 3 is for the national computer two preppy pass rate of our university since the implementation of computer education reform. From Figure 3 we can see that over the year preppy of our school computer two national pass rate has been significantly improved. In particular, in 2013 the implementation of paperless computer secondary examination, due to the examination of this approach is more focused on the actual capability of the computer on the plane, so our secondary school matriculation student's computer through rate is nearly 50%, indicating that our school preppy teaching computer is fruitful.



**Figure 3:** Dalian Nationalities University preppy computer two pass rate

#### 4. SUMMARY

Computer education is an important part of the preparatory teaching. Especially in the current era of information technology, computer preparatory of students have a significant impact for their future university level study and life. This paper analyzed the current problems of Computer Education Foundation, explained the teaching reform for the ministry of Dalian Nationalities University Matriculation computer courses and teaching methods. In recent years, the results show that the computer teaching reform of Dalian Nationalities Preparatory School helped to improve preparatory students' computer skills and overall quality. The preppy national computer II pass rate has been significantly improved.

#### 5. ACKNOWLEDGEMENT

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