

# *Research on Implicit Group Teaching Model Based on Individual Differences of Students*

## *- Taking the "Operational Research" course of the Department of Transportation of Tibet University as an example*

**Cui Suping**

*College of Engineering, Tibet University, Lasa, Xizang, China, 850000*

*E-Mail: june011011@163.com*

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**Abstract:** Due to the particularity of the structure of students in Tibet, the mathematics foundation of the same class is very different. The highest score of the college entrance examination is 130 points, and the lowest score is 40 points. The "Operational Research" course is a discipline that comprehensively uses statistics, mathematical models and algorithms to solve practical problems, the course is very logical. It is difficult to balance the basic and solid students with the basic unified teaching model. The implicit group mode teaching mode divides students into three groups according to the teacher's internal scale according to the students' mathematics foundation. Through the classroom unified teaching and the post-class targeted teaching mode, the learning goals of different groups of students are achieved. In the process of teamwork, the students improve the overall scores of the course and improve their overall quality.

### **1. Introduction**

The "Operational Research" course is a natural subject that comprehensively applies scientific techniques and methods to solve practical problems and makes the system reach the optimal solution. It is basic and applicable. This course requires the development of students' ability to link abstract mathematical theory knowledge to practical activities and to solve practical problems. At present, the transportation major of Tibet University offers this course, and the professional education has a special nature. The highest score of the college entrance examination scores is 580 points, and the lowest score is only 240 points. The traditional "Operational Research" teaching mode ignores the individual differences of students, unified teaching and unified counseling, making the course performance less than ideal, and is not conducive to the improvement of students' comprehensive ability.

### **2. Analysis of the Unique Structure and Learning Characteristics of Tibetan College Students**

The Tibet University's transportation and professional level offers an operation research course. The classes are mixed classes for students from the district and outside the district. Among them,

the source of students outside the district accounts for 50%, the Han people in the region account for 5%, and the Tibetans in the region account for 45%. The student's foundation is uneven. Take the classes of the Operational Research course in 2014, 2015, and 2016. For example, 34% of the college entrance examination math scores are above 100 points, 60-99 points account for 32%, and 60 points or less account for 34%. %, the mathematical foundation gap is very large. Students of different basics have completely different ways of analyzing and solving problems. Students with strong mathematical foundations have strong comprehension and understanding, and have a good grasp of the use of knowledge points. Students with poor mathematics have a simple way of thinking, poor comprehension and acceptability, and most students learn rigidly and passively.

### **3. The Necessity of the Implicit Group Teaching Mode in the Course of Operational Research**

#### **3.1. Disadvantages of traditional teaching mode**

The traditional teaching regards the class students as a group, the teaching tasks, teaching content and teaching requirements are treated equally, taking into account the students with weak foundation and weak foundation, and the teaching content adopts a compromise method. As a result, the students with solid foundations feel that the content is too shallow, and the enthusiasm for learning is greatly frustrated. Students with poor foundations feel that the content is too deep, causing inferiority and losing confidence in learning. Leading students to a very negative attitude. The results of the course assessment are not satisfactory, and the two-level differentiation is serious. Students with scores of 85 or more in the 2014 and 2015 students account for one-third of the students, and one-two of the students who failed the test. The test scores are completely inconsistent with the normal distribution.

#### **3.2. The significance of implicit group teaching mode**

The unique characteristics of Tibetan college students in transportation and the learning characteristics of different basic students determine that there are various drawbacks in traditional teaching methods. Teachers must pay attention to their individual differences. Since the number of classes is mainly concentrated in about 30 people, if it is divided into three different classes, it will increase the ratio of teachers and is unrealistic.

In view of this phenomenon, this paper proposes an invisible group teaching mode based on individual differences of students. That is to say, the teacher divides the class students into three groups through the intrinsic scale of the student base. The lectures and classroom assignments are the same, the same, and the special requirements for the individual differences of the students and the teaching objectives of each level group after the class, special counseling.

### **4. Teaching Mode of "Operational Research" Course in Tibetan Colleges and Universities**

#### **4.1. Implicit grouping model based on individual differences of students**

The invisible group teaching mode based on individual differences of students requires the instructors to fully analyze the learning characteristics of students at all levels and formulate different teaching objectives at different levels; Classroom lectures are not hierarchical, so that all students can complete the basic teaching content, and the homework must have certain universality and typicality, even if the students in Group C can complete independently at the teacher's prompt; After-school homework and after-school tutoring are conducted in layers according to the teaching objectives of each level; Fully affirmed to Group C, instructed them to complete the basic tasks,

encouraged Group B to complete the goal of jumping, and raised higher requirements for Group A in addition to praise.

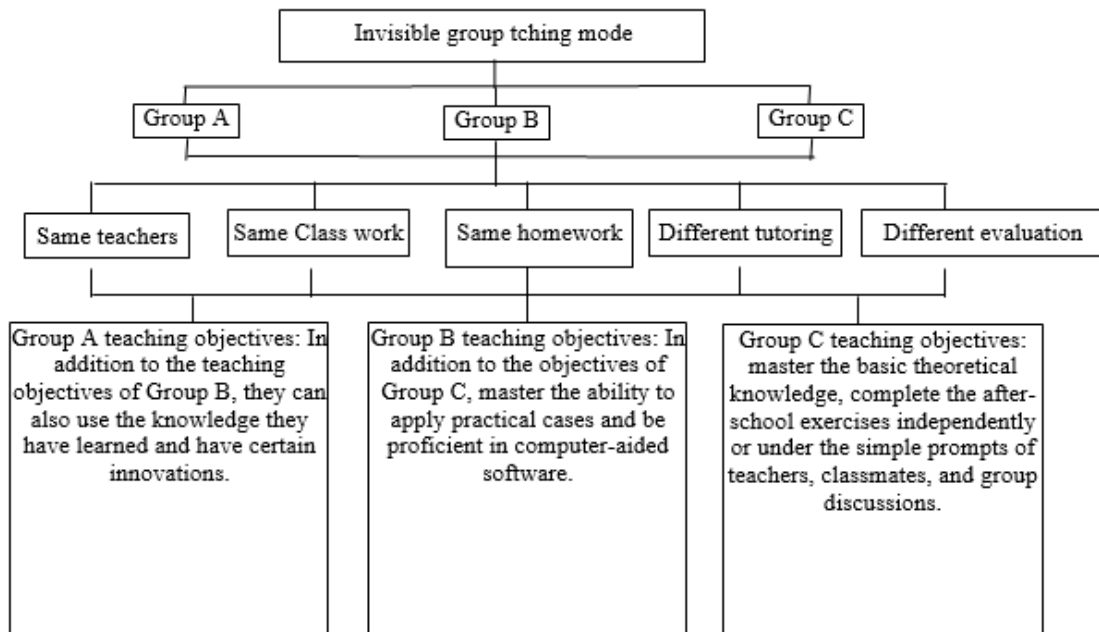


Figure 1 Stealth group teaching mode

## 4.2. Analysis of the Characteristics of Students in Different Recessive Groups and the Teaching Mode of "Operational Research" Course

### 4.2.1. Analysis of the learning characteristics of students in different recessive groups

#### (1) Group C students

The student foundation is relatively weak. In mathematics learning, it is difficult to understand the mathematical essence of concepts and theorems due to language perception factors. It is only perceived on the surface, and most students still master basic mathematics knowledge through passive memory, passive learning. It is sensitive and easy to be inferior. If you ask for the same as other students, it will hurt their self-confidence and create inferiority.

#### (2) Group B students

In the middle position, the basic knowledge is firmer, the savvy is medium, and the learning attitude is more serious. This group of students is the key level for the improvement of students' comprehensive ability. The passive guidance will fall into the C group, and the active guidance will be promoted to the A group. This group of students is more likely to lose themselves in the university life and relax the learning.

#### (3) Group A students

The students have high grades, strong basic knowledge, flexible learning methods and high savvy. This group of students is not satisfied with the book knowledge, and is creative and innovative. However, if the same requirements are met by students with poor foundations, the gap is large and easy to be proud.

### 4.2.2. Teaching mode of each hidden group "Operational Research"

#### (1) Group C teaching mode

The students in Group C are mainly basic teaching, and they mainly focus on the concept and

foundation of Operational Research. The specific learning focuses on the basic knowledge, basic concepts and basic rules of operations research. Classroom lectures require mastery of basic theoretical knowledge, interpreting the cases in real life during the teaching process, using the visual appeal of multimedia animation combined with traditional blackboards in the teaching method, and attracting this through the use of heuristic and interest-based teaching in teaching methods. The attention of some students. Classroom discussion, experimental classes, and teaching interactions are used to activate the classroom atmosphere and enhance students' interest in learning at this level. Classroom assignments are based on the students' ability to complete independently, collectively talk about completion, or complete with the teacher's simple instructions. The lab class only needs to master the Excel part of the Operational Research experiment. The after-school tutoring is based on the basic course. Through summarizing and analyzing the learned knowledge, we can find out the problems and make up for it.

### (2) Group B teaching mode

The students in Group B are mainly practical teaching, mainly to cultivate the ability of operational research applications, and after-school tutoring is based on case analysis. In addition to completing the teaching tasks of the C group students, it is also necessary to master the application of computer-aided software, master the ability of book knowledge to apply actual cases, and master the skills to solve practical problems. Classroom lectures and classroom assignments are consistent with Group A and Group C. In addition to completing the C group assignments, students are required to apply the knowledge of Operational Research to real-life cases, deepen their understanding and application of knowledge, and enhance their knowledge of solving practical skills. Compared with the C group, it is necessary to strengthen the experimental teaching, familiar with the basic functions of the corresponding computer software such as MATLAB and LINGO, and use some computer algorithms to calculate some complicated algorithms. After-school tutoring should strengthen practical teaching guidance, experience operational planning ideas through practical examples such as bank queuing, financial management, and travel route design, and strengthen the mastery of knowledge.

### (3) Group A teaching mode

The students in Group A are mainly innovative teaching, focusing on ability development, giving full play to students' autonomy and initiative. After-school tutoring is mainly based on curriculum design and various competitions. In addition to completing the teaching tasks of group B students, they also require skilled use of the knowledge they have learned, and they are somewhat innovative. Classroom lectures and classroom assignments are consistent with Group A and Group B. In addition to completing the post-job assignments of Class B, the assignments are also completed by the instructor, the investigation and research of the problems, data collection, collation, and data processing analysis. Modeling, solving, and getting the complete curriculum design for optimal decision making. In addition to familiarizing with the basic functions of corresponding computer software such as MATLAB and LINGO, the experimental class uses some computer algorithms to calculate some complex algorithms. It also requires students to master basic programming methods and data processing methods. Encourage and guide these students to participate in the mathematics modeling contest for college students. Mathematical modeling is a process of describing actual phenomena in mathematical language. It involves knowledge of operations research, statistics, and computer. Through the assumption, establishment and solution of the model. Several processes, such as analysis and testing, integrate multidisciplinary knowledge and improve the overall quality of students.

The implicit grouping teaching mode based on the individual differences of students divides the students into three groups with the teacher's internal scale. Through the encouragement of the students in Group C, the guidance of the students in Group B, and the high requirements of the

students in Group A, the students are exposed. In the learning atmosphere of sexual collaboration and invisible competition, you chase after you and improve your comprehensive ability in the process of improving course performance.

## 5. Conclusion

The course of operations research is difficult, and it is more difficult in ethnic areas due to the particularity of the class structure and the individual differences of different students. This invisible group teaching mode for different foundations and different learning characteristics of Tibetan college students is an educational means to achieve invisible grouping through different tutoring after class under normal teaching conditions, avoiding the disadvantages of unfair treatment of students in the classroom and improving Students' creativity and self-confidence, through mutual competition and assistance, have formed a learning atmosphere for you to compete, so that different students have achieved different teaching goals, that is, completed the teaching tasks, and improved the students' interest in learning. Improve the grades of the course and improve the overall quality.

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