

## **A Study on Teachers' Dominance and Students' Subjectivity in Mathematics Teaching**

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**Abstract:** *This paper discusses how to combine the teacher's dominance with the student's subjectivity in mathematics teaching, and how to make the student become the subject of the class and teacher become the guide of the student's learning. Today's Nowadays, the mathematics classroom has changed the indoctrination teaching into heuristic teaching, and students' autonomous learning and discovery learning have become the focus of attention in the classroom. All these require teachers to play their leading role in guiding students' thinking and independent discovery learning.*

**Keywords:** *teachers' leading role, students' subjectivity, cooperative learning.*

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### **I. Introduction**

Under the influence of the traditional Chinese education model, there has long been a serious ignorance of student subjectivity and ignorance of cultivating student creativity in Chinese education. However, since the reform and opening up, especially in recent years, modern philosophical research has focused on the study of human subjectivity and has been influenced by foreign educational reform thoughts, especially due to the needs of the times and social development. The education circle has gradually launched and strengthened the research and practice of the theory of student subjective education. But at the same time, another problem has arisen. While emphasizing the subjectivity of students, it shows the wrong tendency to ignore the leading role of teachers. The author believes that in teaching, we must deal with the relationship between the student's subjectivity and the teacher's dominance. The development and training of students' subjectivity cannot be separated from the full development of teachers' leading role.

Nowadays, there are great problems in mathematics classroom teaching, which is mainly reflected in the "indoctrination" teaching of teachers, the subjectivity of students is not well reflected, and students are only passive recipients. With the reform of the new curriculum, students are required to become masters of learning, and the classroom has changed from teacher-centered to student-centered.

### **II. Measures to Give Full Play to Teachers' Leading Role in Mathematics Teaching**

The leading role of the teacher is mainly the leading organizational role of the teacher for the entire educational activity in the teaching process. The leading role of mathematics teachers is manifested in helping students to point out the direction of learning, guiding students' thinking, and allowing students to learn knowledge independently; in extracurricular tutoring, interesting explanations make students interested in mathematics and arouse students' curiosity. Teachers are the achievers of social education goals. Although the teaching methods that are now advocated are students-oriented, if all students are taught by themselves, there is no clear system, so teachers' knowledge is systematically imparted.

#### **2.1 Create problem scenarios, set problems and guide thinking**

It is indispensable for teachers to set up questions when teaching mathematics. The discovery of the theory started from the problem. The problem set by the teacher in teaching should start from a certain situation, so that students can quickly enter the state of learning, and can develop their imagination. The center of the question revolves around the students, allowing them to raise better and more difficult questions in the process of answering. Questions are the motivation to promote students' learning. Questions can stimulate students' curiosity and promote students' learning. Specific problem situations can allow students to fully think, especially extracurricular mathematics activities can allow students to learn mathematics while exercising. The problem situation means that the teacher gives a situation in life, and then asks questions related to this situation, and students use this situation to solve the problem.

First, use games to create problem situations. Playing games is the nature of children. In mathematics classroom teaching, teachers can design a variety of math games as teaching situations to satisfy students'

curiosity and love to play, thereby forming a pleasant classroom atmosphere. In the classroom, teachers can design games and patiently guide students to discover mathematical knowledge during the game. Through planned and step-by-step games, students are allowed to think about the meaning of multiples and leave a deep impression in their minds.

Second, problem situations can be created based on daily phenomena. Students often come into contact with some buildings or things that use mathematical knowledge in their daily lives, and some are even visible, tangible, and personally experienced, such as the construction of bridges and the probability of lottery draws. These real events in daily life can make students jump out of books and return to life, and feel the charm of mathematics up close. In the activities, students are allowed to discover and discuss problems on their own. Teachers delegate the power to study problems to students, allowing students to observe, communicate and analyze in the activities to further appreciate the application of probability in real life [1-2]. Through planned and step-by-step actual activity scenarios, students can experience the application of probability firsthand, shorten the distance between books and students' lives, so as to impress students and stimulate their thirst for knowledge.

The problems created to promote students' thinking must always run through the teaching. In mathematics teaching, we can create lively teaching situation through various and flexible teaching activities, so that students can learn lively and experience the endless fun in mathematics learning.

## **2.2 Respect the personality of students and make suggestions at the right time**

Because each student's family environment, the social environment is different, the formation character is also different. Teachers should not treat students with different personalities equally, teach students according to different characteristics, and guide them in time.

In the classroom, students like math problems that can be done and need to be studied. Teachers can arrange some extroverted students with introverted students according to the students' personality, so that every student can participate in the classroom learning. Whether it is independent thinking or group discussion, teachers need to guide students' thinking in time, so that teachers can become active servers and regulators of this activity. When the time is up, show the process well written on the big screen of the projector, and give praise in time. Different students have different ways of praise, especially the timid and introverted students need fancy encouragement from the teacher to make him feel Expectations from teachers [3]. After showing the excellent process, let the design deficiencies be corrected in time, and the students who do not understand should be patiently guided.

Extracurricular activities are a good place for students to develop their personality. Teachers should not rigidly stipulate what students must learn, but let students choose their favorite activities. What teachers have to do is to guide and instruct students in time. Extracurricular activities are the extension of classroom teaching, which is essential to enlighten students' thinking, develop their imagination and cultivate their interest in mathematics.

## **2.3 Organize student communication and clarify learning conclusions**

In the teaching mode of "autonomous learning, showing feedback", students' group communication and cooperative learning are important links in classroom teaching. However, the current learning methods of communication, discussion and cooperative learning in the classroom are still at the superficial stage of focusing on form. The following summarizes how to effectively organize students to exchange discussions and cooperative learning in mathematics class.

First, group scientifically and reasonably. Reasonable grouping by teachers is crucial for students to study efficiently in the classroom. Scientific grouping must take into account the personality characteristics of students. For example, you can arrange the seats of naughty students next to the class leader and let the class leader manage the naughty students. For example, when doing math wide-angle learning, group the students with academic difficulties and the students with better grades in a group so that the discussion can proceed smoothly; the seats of the students who play well should not be arranged too close, because they are easy in class. After the group is organized, a clear task should be established for each student so that each student can participate in the classroom [4].

Second, create a warm and pleasant cooperation atmosphere. It is best to form a harmonious atmosphere and a democratic relationship between teachers and students. Teachers must establish prestige in the classroom to suppress students, but they should form a friendly and democratic teacher-student relationship with students after class. A democratic teacher-student relationship is conducive to narrowing the distance between teachers and students, allowing students to express their opinions and opinions, expressing more opinions and asking more questions. And teachers should not deny students' ideas at will. This is the embodiment of students' creative thinking and the key to the formation of mathematical interest.

Third, the learning methods of communication and discussion and group cooperation must give students time to think independently, so that students can express their views in cooperative discussions, so the teacher before class should write a pre-class guide to guide students to learn independently. In the process of self-study, if you don't understand, put a mark on it and bring it up during the classroom group communication. Give students enough time to think independently, and then conduct group discussions and study, so that classmates can participate in the study as much as possible.

Fourth, there must be clear goals and tasks for exchanges and discussions on cooperative learning. Teachers must have a clear direction when designing problems or stipulating goals. For example, when studying "Parallelogram Theorem 1", the teacher has a clear learning goal: students understand and master the Parallelogram's Theorem 1 and can be used in proof and solution questions. Teachers design students' thinking questions according to the learning objectives: look at the sample questions and think about how to prove that the quadrilateral in the question is a parallelogram, and which judgment theorem is the parallelogram used. Teachers enable students to communicate and think through clear tasks.

### **III. Measures to Reflect Students' Subjectivity in Mathematics Learning**

Students are the main body of classroom teaching, which has become the consensus of all educators. Classroom teaching fully reflects the subjectivity of students. It is a requirement for classroom teaching reform in the experiment of mathematics curriculum reform. At the same time, it has become an important training goal in the curriculum standard. It can only be realized by relying on the inquiry activities created by teachers.

#### **3.1 Pay attention to the stimulation of student interest**

First, there are not so many vivid and interesting stories about mathematics knowledge compared with the learning of Chinese knowledge. Therefore, teachers should focus on cultivating students' interest when teaching mathematics knowledge, especially for teachers in lower grades. For example, when studying the content of the section "The Stability of Triangles", the teacher can import the scene in this way: display the building that uses the triangular nature in life on the PPT and ask the students to watch the pictures on the PPT. At the same time, the teacher asked the students to cite some examples of the stability of triangles used in life.

Second, teachers can use ambivalence to cultivate students' interest in mathematics and promote students' learning. For example, when studying "Square", teachers can use the special point that squares are special rectangles to cut into teaching: the teacher first asks students to review the properties of rectangles. By comparing the properties of rectangles and squares, you can find that rectangles have properties of squares [5]. A square has one more property than a rectangle, and all four sides are equal. When proving that a figure is a square, it is also proved to be a rectangle, but when proving that a figure is a rectangle, it is not also proved to be a square. So we can conclude that a square is a special rectangle.

Third, "movement" is the child's nature. In the teaching process, it is best for teachers to let students do it themselves to achieve the liberation of their hands. Moreover, operational activities are easier to stimulate students' interest in learning. For example, when studying "The Nature of Parallelogram One", the teacher can let the students do it by themselves. First draw a parallelogram, then cut it out and cut out a triangle from one corner of the parallelogram, and put it on the opposite side. According to "two straight lines with equal internal staggered angles are parallel", the opposite sides of the parallelogram are parallel.

Fourth, launch the competition appropriately. Teachers can carry out small competitions in the classroom. For example, when learning oral arithmetic in primary schools, teachers can set aside a lesson for oral arithmetic competitions, which can stimulate students' competitiveness and promote better learning.

#### **3.2 Pay attention to basic subject teaching**

The learning of any subject knowledge is gradual, from the shallower to the deeper, which requires that the basic knowledge does not need to be very firm. Research at this stage shows that scientific teaching should be a spiral-increasing type. First learn basic knowledge, then gradually increase the difficulty to transition to difficult knowledge, and continue to use what has been learned when learning new knowledge. Old knowledge, so if you do not learn the basic knowledge well, it will be difficult to learn the difficult knowledge later. For example, students in elementary school have initially studied triangles, rectangles, squares, parallelograms, etc. to understand their shapes and basic properties; upon entering junior high school students will further learn the properties and judgments of these figures, and be able to use these properties or judgments to make simple demonstrations And calculations; in high school, students will learn complex arguments and calculations. This spiral teaching is more conducive for students to consolidate and learn new knowledge.

Teachers in primary and secondary schools should pay attention to the explanation of the problem process when teaching, and not only let students know the answer to the problem, but ignore the problem-solving process [6]. The problem-solving process is often the most important part of the basic knowledge. Many students only pay attention to whether the result is correct when solving the problem, and the process is often

scribbled or even just looking at the analysis book, forming a bad habit of being superior and inferior. These are habits that need teachers to guide students to develop or correct for a long time.

Mathematics teachers in primary and middle schools should also be aware of the sorting and selection of textbooks and teaching materials. The compilation of textbooks takes into account the students' physical and mental development laws, the country's educational goals, and the school's teaching goals. Teachers should try their best to follow the order of the textbooks and carefully read the teaching requirements when teaching.

### **3.3 Pay attention to student experience learning**

For students, the most important thing to solve a problem lies in the process of learning a variety of methods to solve the problem and can use the method to draw inferences about other similar question types, rather than just a single answer. These are the keys to let students "learn to learn" and "learn how to learn". Only pursuing results is destined to not effectively improve performance. The key is the process of answering. Students can also experience problem solving and learning during the process. In the process, it absorbs the knowledge from the books and turns it into the students' own knowledge [7].

First, teachers should guide students to watch more. Scientific research has pointed out that if students want to learn well, pre-class preparation and after-class review are essential, and both pre-study and review require students to read books. Students read the book before class to understand what the content of this lesson is. They can follow the teacher's ideas when the teacher is in class. If it is a difficult course without pre-class preview, it may not be able to keep up with the rhythm. Read more not only refers to preview and review, but also refers to students who must carefully review the questions when writing homework. When encountering questions that are not familiar, they must read the questions several times and try to figure out the meaning of the questions.

Second, pay attention to teacher-student interaction, activate students' independent inquiry thinking, and create the joy of inquiry. Questions are the source of students' motivation and the key to stimulating students' curiosity. Teachers should interact with students as much as possible in class, and set up diverse questions for students to fully stimulate their imagination [8-9]. And this can make the classroom atmosphere lively and interesting, and promote the formation of a good teacher-student relationship between teachers and students.

Third, attach importance to encouragement or praise to stimulate students' enthusiasm. Praise and encouragement play a great role in student learning. Teachers praising a student with learning difficulties can give him the idea of wanting to learn and achieve success and get the teacher's praise again. The effect of expectation is also huge. Studies have shown that teachers show expectation for a student. Whether the student is a poor student or an excellent student, he can work hard and study well in the next period of time.

## **IV. The Combination of Teacher Dominance and Student Subjectivity**

Modern classroom is a teaching mode with students as the main body, teachers as the leading, teachers and students combined. Teachers lead students to learn knowledge, systematically impart knowledge to students, students actively discover and accept knowledge. For the classroom, students are the main body, whether classroom learning can play a role in the participation of students is the key, whether students can participate in the classroom, teachers are required to work hard to guide students, Stimulate students' curiosity and curiosity to actively participate in the classroom.

### **4.1 Care for students and establish a democratic and equal teacher-student relationship**

The traditional teaching model is mainly based on the teacher's lectures during the whole course of the students' listening. The shortcomings of this model are obvious: the teacher is the center of the classroom, the students cannot play the subjectivity and passively accept the knowledge, the exercises after the class are mostly rote memorization, and the students A sense of distance with the teacher is easy The new class now takes the student as the center, advocates the harmonious coexistence of teachers and students, students respect teachers, teachers respect students, teachers and students establish a friendly teacher-student relationship. Teachers pay more attention to students' lives and families, and learn more about students' interests and hobbies, which are not a few entry points [10].

Establishing a friendly teacher-student relationship is not only after class, humorous language in class is often easier to attract students' attention and make students feel that the teacher is more cordial. The humorous language is slowly formed by countless exercises after class. Teachers can also read more excellent books after class and watch the teaching methods of excellent teachers. In the course of class, teachers should often raise questions of value for thinking, inspire students' curiosity, let students think all the time, and maximize their potential.

#### **4.2 Stimulate students' curiosity and fully mobilize students' learning initiative**

In the classroom, teachers can hold more competitions. Competitions, a competitive activity, can greatly mobilize students to participate in the classroom, and stimulate students' desire to rank. The competition of conscience can not only promote the formation of a good learning atmosphere among students, so that excellent students can learn together with students with learning difficulties, but also allow students to form a benign competition, so that students can learn knowledge during the competition. For example, when learning ten-digit addition and subtraction, the teacher organizes a competition: the teacher prepares the ten-digit addition and subtraction formula before class, and when the topic is displayed on the upper limit of the PPT, students can calculate and select the top ten Complimentary students will be praised, and small gifts can be prepared for students who have done fast and well to stimulate their learning motivation.

After class, the teacher assigns homework, according to the difficulty of the homework, appropriately control the motivation level. According to the "Yerkes-Dodson Law" of psychology, the motivation of students is related to the difficulty of the topic, which is roughly an "inverted U" relationship. When teaching, teachers can arrange learning tasks of different difficulty according to this relationship, and appropriately control the arousal of students' learning motivation. It is required that when learning easier and simpler knowledge, students should try their best to focus their attention so that students should be as nervous as possible, and the level of motivational arousal should reach the best state of medium to high; and when learning more complicated and difficult knowledge, it is necessary to create a relaxed classroom atmosphere as much as possible, so that the level of motivation is at a moderately low optimal state. When students encounter difficulties or have problems, they should try their best to calmly and slowly guide them to avoid excessive tension and anxiety.

#### **4.3 Teach students in accordance with their aptitude based on the actual situation and cultivate students' independent ability**

Although we now advocate cooperative learning, independent thinking is also crucial for students. Independent thinking can promote students to form a habit of hard thinking. But not every student can think about a complete question independently. Sometimes it needs to be assigned and discussed. At this time, teachers need timely guidance and reasonable arrangement of group discussions. Teachers and students with relatively weak foundation should pay more attention to them, and when they have no thoughts after thinking, they should promptly point out ideas and let them continue to think. For students with a better foundation, they should see whether their thinking is correct, and praise and encourage them in time [11].

When solving questions and guiding students to think, let the students think more. Teachers can't read the results all at once, so that the students will have no time to think and return to the past duck-filling teaching mode. The design of the task should not be too difficult. It is too far away from the current cognitive level of the students, and the students will experience anxiety and depression when they are in the shadow of failure for a long time. Once the students are found to have this situation, the teacher should immediately talk to the students and help the students Make correct attributions, so as not to make students tired of learning because they have not understood the class several times.

### **V. Conclusion**

In teaching, the combination of teacher's leading and student's subjectivity is necessary. Teachers, as knowledge imparters, need to guide these knowledge, and students, as knowledge receivers, need to actively learn these knowledge. We cannot unilaterally become a teacher-led, student-dependent or student-led, teacher-dependent classroom. Teacher-led and student-oriented, the two should be organically combined.

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