On the Basis of Curriculum Standard, Making Full Use of Teaching Parameters, Positioning Teaching Objectives and Difficulties-Take the Concept of "Opposite Number" as an Example

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Abstract: Determining Teaching Goals is the Key Link in Preparing Lessons and is the Core of Teaching Activities. It Determines the Determination and Arrangement of Teaching Content, the Choice and Application of Teaching Methods, and the Level of Teaching Effectiveness. Therefore, It is Especially Important to Master the Method of Determining Teaching Goals. Combining My Many Years of Teaching Method Teaching Experience and the Requirements of Related New Curriculum Standards for the Formulation of Teaching Objectives, Taking the Junior High School Concept Class "Reverse Numbers" as an Example, the Methods for Formulating Teaching Objectives Are Summarized and the Following Methods Are Proposed: Target, Grasp the Teaching Direction; Analyze the Teaching Materials, Determine the Teaching Goals; Dialogue Texts, Discuss the Teaching Goals; Analyze Students, Modify the Teaching Goals. This Provides a Reference for the Majority of Mathematics Teachers and Primary School Mathematics Teachers in Teaching.

1. Introduction

The Teaching Goal is a Very Critical Part of the Entire Teaching Process, the First Step in Teaching Design, and the Core and Soul of Teaching Activities. It Determines the Determination and Arrangement of Teaching Content, the Choice and Application of Teaching Methods, and the Level of Teaching Effectiveness. and after My Many Years of Teaching Experience in Teaching Methods, I Can Know That Teachers' Students Generally Have Inaccurate Grasp of Teaching Goals When Determining Teaching Goals. So, How to Set Effective Teaching Goals under the New Curriculum Standards? Let 's Take the Junior High School Concept Class "Reverse Numbers" [10] (P10-11) as an Example, and Use the Collected Data and Teaching Experience to Discuss the Methods and Steps to Determine the Teaching Goals.

2. Grasp the Teaching Direction Based on the Curriculum Standard

Curriculum standards are the basis and guidelines for teaching. If the teacher understands and is familiar with the content of the lesson during the course preparation, the teaching will not deviate from the correct direction. We can be familiar with the description of the nature and status of the curriculum, the basic concepts of the curriculum, the curriculum objectives, implementation suggestions, etc. in the curriculum standards. Then in the course preparation and teaching, we can have a clear teaching direction, and naturally we will Following the curriculum standard thinking, consciously implement its concept and achieve it naturally.

For example, the "Reverse Numbers" in the new curriculum standard [6] (P18) stipulates that "understand the meaning of opposite numbers and absolute values with the help of the number axis, and will find the opposite numbers and absolute values of rational numbers (absolute value symbols do not contain letters)."

Therefore, we cannot deviate from the direction when teaching "Reverse Numbers":

understanding the meaning of opposite numbers and absolute values is achieved through the aid of the number axis. It is required that the opposite numbers and absolute values of rational numbers are sought.

3. Analyze Textbooks and Set Initial Teaching Goals

If the curriculum standard is compared to the center of the circle, then the teacher's grasp of the textbook is the radius. No matter how large the circle is, it cannot be separated from the core element of the center of the circle. Therefore, the second step for teachers to determine the teaching goals is to analyze the teaching materials.

Before teaching design, teachers should carefully consider the knowledge structure of the textbook, the status, role and role of each knowledge point, the key points, difficulties, and key factors, as well as the underlying thinking methods and emotional attitudes to determine the teaching goals. This is the analysis textbook.

3.1 Intent Analysis

Intent analysis is to carefully consider the intent of compiling textbooks and understand the characteristics of compiling textbooks when analyzing textbooks. Our approach is to read the textbooks one by one and use the outline of the outline to summarize the intent of this lesson.

The first part of the textbook [10] (P10-11) is to use the diagram from the previous lesson to get the first example, "The distance from point D and point B to the origin is equal to 3"; the second part uses a question to lead to more There are many examples "2 and -2, 5 and -5"; the third part summarizes the above examples and concludes the general conclusion example "and"; the fourth part defines the opposite number; the fifth Partly explore the properties of the opposite number and the method of finding the opposite number; part six exercises.

3.2 Structural Analysis

Analyze the internal connection between the textbook layout system and knowledge, and their status and role in the entire mathematical textbook. It is necessary to read through the entire volume and read the unit carefully. That is to fully understand what is the knowledge base of the part of the content to be taught, and pave the way for the study of subsequent knowledge.

For example, the role and status of "Reverse Numbers" in teaching materials

Opposite numbers are an important part of rational numbers. It is closely related to the previous number axis, and it is also the continuation and deepening of knowledge such as absolute value. The number is also the test point of the middle school entrance examination over the years. The teaching in this lesson will not only enable students to have a deep understanding of the opposite number knowledge, but also improve their ability to observe, analyze, combine numbers and shapes, and generalize.

3.3 Analysis of Important and Difficult Points

(1) The main content in the classroom teaching process that can directly affect other knowledge points is called teaching focus. (2) In the teaching process, those that are difficult for students to understand, master, or easily cause confusion and errors are called teaching difficulties.

There are three main points of knowledge in the lesson "Reverse Numbers": the understanding of the concept of opposite numbers will find the opposite number of a number, and will use the definition of the opposite number to simplify the symbol. The "understanding of the concept of opposite numbers" is the most important in this textbook. Its mastery affects whether students can accurately find the opposite number of a number and simplify symbols. Therefore, it is the focus of this lesson. In the course of teaching, it is difficult for students to grasp the simplified symbols using the definition of the opposite number, so it is difficult.

3.4 Moral Education Factor Analysis

Analyze and dig up relevant teaching materials, educate students about their moral character,

cultivate students' hard, careful, strict, and serious learning habits and independent thinking, not afraid of difficulties, and aggressive spirit, and feel the close connection between mathematics and life. In the course of "Reverse Numbers", in the process of forming the concept of opposite numbers, through teacher-student, student-student cooperative learning, promote communication and stimulate interest.

3.5 Analysis of Mathematical Thinking Methods

When analyzing textbooks, we must consider where we are and what kind of opportunities to infiltrate what kind of mathematical thinking and methods or what kind of abilities to cultivate. In the course of "Reverse Numbers", the concept of opposite numbers was summarized through examples during the formation of the concept of opposite numbers, and students' ability of observation, induction, and generalization was developed.

3.6 Exercise Analysis

For the example questions and exercises in the textbook, find out which are the basic questions and which are the variant and comprehensive questions. Consider the design goals and requirements of the exercises, and whether they can achieve the teaching goals through the training of these exercises. In the "Reverse Numbers" exercise, Exercise 1 finds the opposite number of a given number, Exercise 2 infers the characteristics of the opposite number of a special number, and Exercise 3 simplifies the symbols according to the definition of the opposite number.

3.7 Initial Teaching Goals

After the analysis of the above 6 items, we can determine the knowledge and skill goals according to the "analysis of difficult and difficult points", the process and method goals according to "analysis of mathematical thinking methods", and the goals of emotional attitudes and values according to "analysis of moral education factors" The teaching objectives are initially determined as follows: (1) to understand the concept of opposite numbers with the help of the number axis, and to know the positional relationship between two numbers that are opposite numbers to each other; (2) to find the opposite number of a number; (3) to carry out according to the meaning of the opposite number Simplification of multiple symbols; (4) In the process of exploring the definition of opposite numbers, cultivate students' ability of observation, induction, and generalization; (5) promote cooperative communication and stimulate interest through teacher-student, student-student cooperative learning.

4. Conversational Texts Discussing Teaching Goals

Why did the editor write the textbook like this? "Teacher's Book" allows us to "stand on the editor's shoulders" to look at teaching materials. It analyzes each topic, including the interpretation of teaching materials, teaching goals and teaching suggestions. Reading "Teacher's Book" can make us more confident in teaching. If we can also conduct dialogue analysis with a large amount of existing literature and instructional design on the Internet, it is more correct to determine the teaching goals.

4.1 Dialogue Literature

By searching the "Reverse Numbers" of China HowNet, we found the literature about the teaching goals and important and difficult points of "Reverse Numbers" [1]-[4], which mainly have the following similarities:
Teaching objectives: (1) understand the concept of opposite numbers.
(2) Find the opposite of a number.
(3) Cultivate students' ability of observation, induction and generalization.
(4) Cultivate the ability of cooperation and communication between students.
Teaching focus: Understand the concept of opposite numbers, and find the opposite of a number.
Teaching Difficulty: Master the simplification of double symbols according to the concept of

opposite numbers.

4.2 Dialogue Teacher Books

According to the exercises in the teacher's book, "3. Simplify the following numbers:-(-68),-(+0.75),-(-3/5),-(+3.8)" explain "the simplification here Refers to: turning multiple symbols into a single symbol, if it is a positive sign, you can omit it. [9] (P13) "and" textbooks combined with the knowledge of using letters to indicate numbers, point out that a and -a are opposite numbers. This way Speaking, it is convenient to introduce the problem of simplification of multiple symbols below, and also lays a foundation for future learning. [9] (P14) ", and the exercises here and simplification of multiple symbols according to" a and -a are opposite numbers to each other "are only It involves the simplification of the double symbol, so we conclude that "mastering the simplification of the double symbol according to the concept of opposite numbers" is one of the teaching goals, and it is also the difficulty of this lesson, which makes sense.

According to "Let the students observe points on the number axis that are equal in distance to the origin, we can find that there are two such points. Further, we can find that the numbers represented by these two points differ only in sign, which leads to opposite numbers. [9] (P14) "," I will make full use of the "number axis" tool later, from the point of view of combining numbers and shapes, learn the opposite and absolute values, the comparison of rational numbers, and the operation of rational numbers. [9] (P13) "and" For the opposite numbers , Can highlight the geometric features of two points on the number axis that represent opposite numbers to each other: 'on both sides of the origin, the distance to the origin is equal', algebraic features of two numbers that are opposite to each other: 'the sign is opposite, the absolute value The correspondence between 'equality' in order to deepen the understanding of the concept of opposite numbers, and realize the idea of combining numbers and shapes. [8] (P28) ", we can determine," The preliminary use of the combination of numbers and shapes of thinking methods to solve problems and enhance application awareness "Developing innovative spirit" should also be one of the goals of teaching.

According to "the study of opposite numbers is classified based on zero and non-zero. [8] (P31)" "" Two numbers with only different signs "are directly observed by numbers such as 2 and -2, 5 and -5 "And" Each positive (negative) number corresponds to a negative (positive) number, these two numbers are opposite numbers to each other. '0's opposite number is still 0' is part of the definition of the opposite number. [9] (P14) "We can judge that" cultivating students' thinking methods of classified discussion "should also be one of the teaching goals.

Therefore, the teaching goals and difficulties of The Opposite Numbers should be changed to:

Teaching objectives: (1) Understand the concept and geometric meaning of opposite numbers.

(2) Find the opposite of a number.

(3) Master the simplification of the double symbol according to the concept of opposite numbers.

(4) Cultivate students' ability of observation, induction and generalization.

(5) Cultivate the ability of cooperation and communication between students.

(6) Initially use the combination of numbers and shapes to solve problems, enhance application awareness, and develop innovative spirit.

(7) Cultivate students' thinking methods of classified discussion.

Teaching focus: Understand the concept of opposite numbers, and find the opposite of a number.

Teaching Difficulty: Master the simplification of double symbols according to the concept of opposite numbers.

5. Analyze Students and Revise Teaching Goals

Students are the subject of teaching and the master of learning. Analyzing students and "eating thoroughly" is the focus and difficulty of preparing lessons. We must advance with the difficulties, advance with the difficulties, and teach others well. Therefore, we must recognise our students and prepare lessons based on their actual situation. Here are some questions to consider when determining your teaching goals:

(1) Does the student have the knowledge and skills necessary to learn new knowledge?

(2) Through the preview, have the students already understood the relevant content in the textbook, and how many people have understood it? How much did you know? To what extent?

(3) What kind of knowledge is the key and difficult point, which needs teachers to instruct and guide in the classroom?

(4) What content will arouse students' interest and thinking and become the excitement point of the classroom?

The above questions can be understood before or at the beginning of the teaching. Teachers can design a small survey to understand the students' existing knowledge and experience. Only then can we set realistic teaching goals.

Acknowledgement

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