Analysis of the Design of High School Mathematics Teaching Based on Deep Learning in Viet Nam

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ABSTRACT: Instructional design is a necessary prerequisite for achieving good results in mathematics teaching, and deep learning is an important way to improve the mathematics quality of mathematics classes and cultivate students' core literacy in mathematics. The research takes high school mathematics teaching as an example. Based on the basic requirements of high school mathematics teaching design under analysis of learning, the study puts forward the optimization strategy of high school mathematics teaching plan under deep learning.

KEYWORDS: Deep Learning; Instructional Design.

I. INTRODUCTION

With the development of students' core literacy of mathematics as the goal of the mathematics curriculum, how to implement the core literacy of students' mathematics in classroom teaching has become a problem faced by frontline teachers. Many studies have pointed out that deep learning is an important way to cultivate students' core literacy of mathematics in mathematics classroom teaching, making deep learning a hot topic in the field of education. Deep learning is an experiment based on student reading by American scholars Ference Marton and Roger Saljo, and the concept of learning levels was first proposed in 1976 for the shallow learning of isolated memory and non-critical acceptance of knowledge. Compared with shallow learning, the characteristics of deep learning are embodied in: cognitive depth, that is, the use of higher-order thinking; depth of participation, that is, active participation; target depth, that is, the transfer of knowledge and understanding through learning and the development of critical and creative thinking. Therefore, as an effective path to maximize students' intellectual resources, deep learning refers to a meaningful way for students to actively participate wholeheartedly around challenging learning topics under the guidance of teachers and to experience success and gain development from it

learning process. In recent years, scholars' research on deep learning has mainly focused on deep learning from a macro perspective or case studies of scattered subject instructional design, while there are few analytical studies on the implementation of deep learning in mathematics classroom instructional design. In view of this, this article deeply analyzes the basic requirements of mathematics teaching design from the four aspects of comprehension, ideology, integrity and logic, and then proposes several optimization strategies for the design of high school mathematics teaching under deep learning, in order to be a first-line teacher Mathematics teaching design provides some theoretical and practical references.

II. THE BASIC REQUIREMENTS OF HIGH SCHOOL MATHEMATICS TEACHING DESIGN BASED ON DEEP LEARNING

High school mathematics teaching should develop students' core competence in mathematics on the basis of students' meaningful learning. In this regard, mathematics teachers should do a good job in the design of mathematics teaching based on deep learning, that is, in-depth understanding and analysis of teaching content, digging out the ideas and methods of teaching content, combing the internal framework of teaching content, and following the strict logic generation of teaching content. In short, the design of high school mathematics teaching based on deep learning should reflect the basic requirements of "focusing on comprehension", "infiltration of ideas", "grasping integrity" and "abiding by logic".

1. Focus on understanding

Deep learning is an effective way for learners to improve the quality of learning. Learners can flexibly understand subject knowledge and apply it to solve practical problems through deep learning. The so-called focus on comprehension is a deep understanding of the generality, generality, and commonality of

knowledge. It is a basic requirement in mathematics teaching and an effective means for students to master mathematics knowledge and develop mathematics literacy. The general high school mathematics curriculum standard points out that the core literacy of students should be cultivated, which mainly refers to the correct values, essential characters and key abilities that students gradually form through subject learning. However, relevant research shows that students can't achieve the lesson only through simple memory and mechanical application. Target requirements. Deep learning, as a mode of teaching comprehension and teaching design, aims to design teaching activities that help students think deeply through understanding and analyzing teaching content, so that learning activities that reflect the essence of the subject, focus on the learning process, and are full of in-depth thinking really occur. It can be seen that the focus of deep learning is to guide students to produce cognitive conflicts in the learning process, and then organize students to participate in learning activities wholeheartedly, so that students can experience success and gain development to enhance their comprehensive literacy. Therefore, in the mathematics teaching process of deep learning, students should understand the core content of mathematics, and grasp the mathematics essence of the content learned in the process of the occurrence and development of mathematics knowledge to promote the development of students' core literacy.

In short, in order to realize students' deep learning and realize the core literacy of mathematics, mathematics teaching design must be based on academic conditions, establish appropriate deep learning goals, and carefully design teaching and evaluation tasks to guide students in deep understanding.

2. Infiltration of thought

In the mathematics teaching process of deep learning, penetrating mathematics thinking is an effective way to cultivate students' thinking ability. It can encourage students to form their own learning methods and gradually improve learning efficiency. The so-called mathematical thinking is the abstract summary and the most essential understanding of the knowledge and methods of exponential science at a higher level. But how to infiltrate mathematical ideas in mathematics teaching? The research found that the combination of teacher in-depth teaching and students' in-depth learning is an important way to penetrate mathematics thinking, that is, deep in student participation and advocating a proactive learning

attitude; deep in the content of the course, advocating an ideological awareness of knowing why; deep in the learning process , Advocating the educational philosophy of applying what you have learned; deep in learning results, advocating learning strategies of critical thinking. Therefore, when teachers design mathematics classroom teaching, they should let students learn to internalize the points, fragments, isolated knowledge and ideas they have acquired into essential characters and key abilities through deep learning. Let students experience the thinking process of deep learning, and promote the remarkable development of students' ability to analyze problems, solve problems, critical thinking, and creative thinking, thereby strengthening students' mathematical ideology and developing students' core mathematics literacy.

3. Grasp the integrity

Grasp the subject of mathematics as a whole, focus on the main line of core literacy, and systematically design classroom teaching is the basic strategy of mathematics teaching design that points to deep learning. The so-called grasping the wholeness means that mathematics knowledge is not an isolated "point". Mathematics teachers should grasp the basic propositions or conceptual systems that are related to each other as a whole. From the perspective of the goal of deep learning, the holistic teaching design of mathematics trains students to observe the real world with a mathematics eye and reflect the abstractness of mathematics; they can think about the real world with mathematical thinking and reflect the rigor of mathematics; they can use mathematics. Language expresses the real world and reflects the applicability of mathematics. From the perspective of the content of deep learning, on the one hand, the overall teaching design of mathematics requires teachers to guide students to discover the essence of mathematics through phenomena when explaining the explicit knowledge in the textbooks, and to have a deep understanding of the hidden knowledge of mathematics thinking and methods, so as to achieve The dynamic transformation of explicit and implicit knowledge; on the other hand, students are required to integrate scattered mathematical knowledge, to systematically sort out the knowledge framework, and to build a scientific and reasonable knowledge system. Therefore, teachers should grasp the integrity when designing teaching, and actively guide students to develop core mathematics literacy in the process of knowledge transfer and application. In short, the overall grasp of mathematics teaching design needs

to effectively solve the problems of fragmentation of class time and isolation of knowledge, separation of units and unrelatedness of subjects, etc., so as to better reveal the essence of mathematics knowledge and promote student learning. By analogy of transfer, deep learning is achieved, which lays the foundation for students' self-development.

4. Abide by logic

Problem is the guidance and drive of mathematics teaching, and mathematics teaching is essentially the cognitive process that mathematics problems are solved continuously, so problem characteristics are the logical starting point of design teaching, which runs through the links of goal, process, evaluation and reflection. At the same time, the content system layout of teaching materials always follows the logical structure of the interrelationship between knowledge points and its framework. In this regard, the high school mathematics teaching design based on deep learning must abide by logic is the most important thing. The so-called abide by logic means that the design of teaching content conforms to the logical framework, has certain logical characteristics and logical rules. It can be seen that teachers need to sort out the framework of mathematics knowledge in accordance with reasonable and logical learning requirements, grasp the essence of mathematics to promote knowledge understanding, cultivate students' logical thinking ability, and promote their in-depth learning. Therefore, when designing teaching, high school mathematics teachers should combine the relevant concepts and requirements of the mathematics curriculum standards, study the curriculum and organize the materials from the perspective of the logical structure of knowledge, pay attention to the internal logic between the knowledge points, so that the relevant knowledge forms a complete knowledge Chains and structural systems, so as to grasp the systematicness of knowledge, and promote the development of students' core literacy in mathematics.

III. THE OPTIMIZATION STRATEGY OF HIGH SCHOOL MATHEMATICS TEACHING DESIGN BASED ON DEEP LEARNING

Instructional design that points to deep learning is a specific and in-depth design of the teacher's knowledge of the subject and students' learning. This requires teachers to complete the teaching design on the basis of an overall understanding of the teaching content, goals, and academic conditions. Specifically, they should master the following teaching design optimization strategies.

1. Closely connect with real life and guide students to understand the essence of mathematics.

The essence of mathematics is the original intention and natural state of teaching design. The creativity in teaching cannot deviate from the true meaning of teaching, cannot be separated from the original experience of students, and cannot be deviated from teaching goals to create falsehoods creation. It can be seen that the design of mathematics teaching based on deep learning should start from the students' academic conditions, integrate relevant mathematics teaching resources with the help of information technology, and the teaching materials should be closely linked to students' life and practice, and to understand the nature of mathematics in the process of guiding students to explore and practice on their own. So as to construct a lifelike mathematics classroom.

2. Carefully create problem situations to help students master thinking methods

In-depth exploration in mathematics teaching is triggered by the context of mathematics problems. It is carried out in the process of solving mathematical cognition conflicts, and in the process of continuously solving mathematics problems, the two core goals of knowledge, skills and thinking methods are realized. Let students perceive the close connection between mathematics and life, and explore the thinking methods such as the combination of number and shape contained in it. It can be seen that in the teaching design based on deep learning, teachers must carefully create effective and rich teaching situations to cultivate students' problem awareness, which not only allows students to understand mathematics knowledge, but also allows students to master the methods of researching problems, and the ideas and ideas for exploring problems. How to build the ability of the knowledge system, and then develop the students' core literacy in mathematics.

3. Grasp the teaching ideas as a whole and guide students to realize knowledge transfer

The teaching content in the mathematics class is the point in the corresponding branch of mathematics. Only when the teacher designs the teaching at the height of the whole branch, can he grasp the status and function, ability and requirements, system and construction of the taught content as a whole. It is helpful for students to truly understand and master the connotation, method

application, and ideological essence of corresponding mathematics knowledge. Teachers should grasp the teaching ideas as a whole when carrying out teaching design based on deep learning. They should not only pay attention to the explanation of knowledge and skills, but also pay attention to the training of basic thinking methods and basic activity experience, and guide students to explore the transfer and application of knowledge through consolidation training. Enhance students' ability to discover, propose, analyze, and solve problems from the perspective of mathematics, and then develop students' core literacy in mathematics.

4. Cleverly design mind maps to inspire students to clarify logical relationships

Mathematics education and teaching not only contains rich cultural value orientation, and the close logical connection between mathematics knowledge plays an important role in cultivating students' meticulous mathematics thinking, and the clever design and proper use of mind maps in mathematics teaching can help students clarify the knowledge gap. The inner relationship of the students can cultivate students' good quality of mathematical thinking. In this regard, it is very important to use a reasonable mind map to sort out the teaching content, visualize the students' thinking, and perceive the cultural factors of mathematics from it. The so-called mind map is a visual representation of the knowledge structure constructed by learners on a specific topic. It is an effective graphical thinking tool for expressing divergent thinking and clarifying logical relationships. When designing mathematics teaching based on deep learning, high school mathematics teachers should combine the students' acceptance ability and actual learning situation, and ingeniously design reasonable mind maps to inspire students to clarify the logical relationship of content so that students can truly improve the core literacy of students' mathematics.

IV. CONCLUSION

Instructional design is a necessary prerequisite for achieving good results in mathematics teaching, and deep learning is an important way to improve the quality of mathematics in mathematics classroom and cultivate students' core literacy in mathematics. Deep learning is an important way to hone students' math fundamentals in classroom math teaching, making deep learning a hotbed in the education sector.
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