

RESEARCH ON THE STRATEGY OF CREATING THE SITUATION IN SENIOR HIGH SCHOOL MATHEMATICS CLASS

Mingqi Sun Yanzhi He*

Department of Mathematics, College of Science, Yanbian University, Yanji 133002, CHINA

ABSTRACT

In 2003, the mathematics curriculum standard (Experiment) of senior high school issued by our country opened the curtain of the new curriculum reform of senior high school mathematics. Most front-line teachers begin to pay attention to situational teaching and the creation of problem situations, realize the importance of creating problem situations, and try to create problem situations in classroom teaching. However, most teachers still need to improve their understanding of the function of situational teaching, lack of effective theoretical learning and time guidance to carry out situational teaching, and it is not easy to create suitable mathematical teaching objects and contents Teaching situation. How to create an effective and appropriate mathematical situation is the key to the success of situational teaching. Therefore, the effective creation of high school mathematics situation teaching strategy research has important practical significance, is a subject worthy of study. This study summarizes the existing research of senior high school mathematics problem situation teaching through literature research, and combs the relevant theories, and analyzes and discusses the theoretical research, and summarizes the strategies of creating problem situation in senior high school mathematics classroom. The purpose of this study is to provide teachers with the basic theory and practice reference about creating problem situations in senior high school mathematics, and then make some contribution to senior high school mathematics teaching.

Keywords: Senior High School Mathematics, Mathematics Teaching, Problem Situation, Creating Strategies

INTRODUCTION

Research Background

The mathematics curriculum standard (Experiment) of senior high school issued in 2003 clearly stipulates that "the basic starting point of mathematics curriculum is to promote the comprehensive, sustainable and harmonious development of students. It should not only consider the characteristics of mathematics itself, but also follow the psychological rules of students' learning mathematics. It should emphasize that starting from the students' existing life experience, let students experience the process of abstracting practical problems into mathematical models and explaining and applying them, so that students can get the understanding of mathematics, and improve their thinking ability, emotional attitude and values Development ". At the same time, it also requires high school mathematics teaching to "improve the ability of students to put forward, analyze and solve problems". In teaching, "teachers should create appropriate problem situations, encourage students to find the rules of mathematics and the ways to solve problems, so that their managers are only the process of forming development", "guide students to solve practical problems with mathematical knowledge, and the process of managers to explore and solve problems" ".^[1] This is not only the requirement of the new curriculum standard, but also the

requirement of students' own development. It is necessary to create appropriate problem situations in the classroom so that students can properly experience the process of problem generation and development.

Situational teaching focuses on the word "emotion", which is mainly based on the students' emotion. It aims at teaching by creating real or virtual teaching situations. Its biggest feature is "humanity". According to the characteristics of students' thinking and the law of cognition, we should take "form" as the means, take "interest" as the breakthrough, take "feeling" as the link, take "the world around" as the source of wisdom, and take the harmonious relationship between teachers and students as the guarantee, so that students can get the fun of seeking knowledge and cognition in the process of learning, and make teaching truly a lively and self-demanding activity. One of the biggest characteristics of the new curriculum is "situation with knowledge". The teaching of the new curriculum is almost all around "situation". The situation teaching has become one of the main teaching methods advocated by the new curriculum.

Research Content

This paper studies how to create a positive and effective situation to optimize teaching in senior high school mathematics classroom teaching from theory to demonstration, discusses the necessity of creating a situation in senior high school mathematics teaching from the perspective of new curriculum reform, discusses the theoretical significance of creating a situation in senior high school mathematics teaching from the Perspective of theory, combines the theoretical research and analysis, and refers to the relevant teaching practice experience summary and teaching case score. The method of analysis explores the effective creation of mathematics teaching situation, and puts forward the teaching strategy of implementing the creation of mathematics situation. The focus of the research is on the teaching strategy of situation creation, aiming to build the situation strategy system of optimizing high school mathematics teaching, also known as the situation processing strategy system of teaching, in order to achieve the goal of improving teaching objectives, improving teaching links, optimizing teaching effects, and promoting the overall development of students' quality. Through the method of literature investigation and case analysis, this paper tries to use the situational creation teaching strategy in teaching, and verifies the significance and value of the situational creation teaching strategy in high school mathematics teaching from an empirical perspective.

Research Purpose And Significance

At present, the research of situational teaching in China has taken root and sprouted. The majority of front-line teachers have realized the role of situational teaching from years of work, especially in optimizing classroom teaching, activating classroom atmosphere, explaining topics and guiding students to think, especially in changing passive learning into active learning. However, it is generally believed that situational creation teaching is more suitable for liberal arts teaching. In fact, mathematics knowledge is relatively more abstract and often gives people a sense of over-rationality. It needs to give people perceptual knowledge through the creation of situations to improve students' interest in learning.

The main purpose of this study is to make a systematic, comprehensive and in-depth study on the teaching strategy of situation creation through literature review and combining theory with mathematics teaching, so as to establish a clear working framework for high school mathematics

teachers. The research on the strategy of creating mathematics classroom situation in senior high school is helpful to improve teachers' ability of creating teaching situation, improve teachers' professional quality and ability, form a good teaching and research atmosphere, improve students' learning attitude and learning style, improve their initiative and enthusiasm in learning, promote students' thinking development, and improve classroom efficiency.

LITERATURE REVIEW

Relevant Research At Home and Abroad

In the history of western education, the ancient Greek and Roman education thoughts contain valuable enlightening and inducing thoughts. The "midwifery" often used by Socrates, an ancient Greek educator, is a classic example of situational teaching. He believes that the mission of teachers is "to inspire students to discover the truth existing in nature". In teaching, he does not teach and teach all kinds of knowledge directly to the students, but inspires the students by talking and asking questions, creates a certain problem situation for the students, and inspires the students to think actively by the created situation to get the solution of the problem, that is, the so-called "midwifery". It can be said that this is the germination of situational teaching.

Foreign countries have always attached great importance to the research of situational teaching. Their research on situational teaching is based on the research of Situational Cognition and situational learning, which is enriched and improved with the continuous development of Situational Cognition and learning theory. In 1989, American psychologist and educator Brown published a paper named "Situational Cognition and cultural learning" in "education researcher", proposing that "situational synthesis of knowledge through activities", that is, knowledge is situational, and to some extent, it is the product of the activities, background and culture it is applied to^[2]. Knowledge is situational, knowledge and action are mutual - knowledge is always in a rich situation and gets progress and development in behavior. The theory of situational learning put forward by them emphasizes that individual psychology often comes from the environment that constitutes, guides and supports cognitive process. The essence of cognitive process is determined by the situation, and the situation is the basis of all cognitive activities.

In recent years, many scholars, experts and teachers in our country have done theoretical exploration and teaching practice on situational teaching, and have made some achievements. Although the situational teaching mode founded by Li Jilin, a famous educator and national special grade teacher, is produced in the teaching practice of primary school Chinese, it has quite universal significance. It has been widely used in many schools in China and has produced good results. It has become an important mode of quality education in China, enriching and developing the contemporary educational teaching theory and educational reform practice in China. At present, situational teaching method has had a great influence in our country, especially since the implementation of the new curriculum standard, each subject has been developing and improving the theory and practice of this teaching method in its own subject field.

In 2001, the Institute of curriculum and teaching of East China Normal University carried out a special research on situational cognitive education. Mr. Xu binyan studied the teaching cases based on tourism situation, discussed the application of anchored teaching mode in mathematics teaching, and expounded the characteristics of anchored Teaching: the authenticity of teaching

situation; teachers as guides, supporters and learning partners; effective cooperation between students; emphasis on the "disorder" of Teaching^[3].

Wang Wenjing and Zheng Qiuxian conducted a case study of American Mathematics Learning Based on Situational Cognition, that is, Jasper series, one of the typical cases of American constructivism teaching mode since 1980s. Finally, we get two inspirations: first, create meaningful mathematics learning situation, promote students' active learning, and strengthen the connection between school teaching and daily life; second, while emphasizing the importance of Situational Cognition in mathematics learning, we should also deal with the relationship between situational and non Situational Cognition and learning, so as to find a better course for students' cognitive development Classroom teaching structure, training more innovative people^[4].

Concept Meaning

Situation refers to "situation" and "environment". More than 1000 years ago, in Wenxindiaolong, the concept of "situation" was first put forward. Situation is a descriptive concept with different meanings. From the psychological point of view, situation is represented by multiple stimulation modes, events and objects, which is a specific environment with direct stimulation effect on human beings and certain biological and sociological significance; from the pedagogical point of view, learning in the view of constructivism is always connected with certain social and cultural background, where certain social and cultural background is the situation, which occurs in a certain extent In the social background, learners create a community in which they construct their knowledge together; from the sociological point of view, situation refers to the social environment in which a person is engaged in a certain behavior, which is the specific condition for people's social behavior.

Situational teaching refers to that in the teaching process, according to the basic principles of pedagogy and psychology, according to the different age and cognitive characteristics of students, through the establishment of emotional atmosphere between teachers and students, cognitive objects and cognitive subjects, the creation of a suitable learning environment, so that teaching can be carried out in a positive emotional and optimized environment, so that learners' emotional activities can participate in cognitive activities, so as to achieve It is a kind of teaching activity to activate learners' situational thinking so as to acquire knowledge, cultivate ability and develop intelligence in situational thinking.

In order to achieve the specified teaching purpose, situational teaching, starting from the needs of teaching, creates or designs the scene adapted to teaching or the classroom emotion created by teachers and students together. In essence, the teaching situation is to reappear the real things represented by book knowledge or the relevant background of the real things in an intuitive way. Teaching situation solves the relationship and contradiction between image and abstraction, reality and theory, sensibility and rationality, old knowledge and new knowledge, background and knowledge, and problem and thinking in the process of students' cognition. It can stimulate students' interest in learning, produce the desire for knowledge, and let students actively participate in inquiry learning activities in the emotional classroom atmosphere. It can make comprehensive use of various teaching methods, through the explicit form of teaching activities, to create a learning atmosphere, so that students can form a good psychology of seeking knowledge and participate in the exploration, discovery and cognitive process of knowledge.

METHOD

Documentation Method

Through consulting a large number of relevant documents, we can get the relevant materials of mathematics teaching and problem situation teaching in senior high school. Starting from the classroom and teaching effect research of problem situation teaching, we can comprehensively and correctly understand the problems to be studied, the research status and scientific research methods.

Lesson Analysis

Combined with the relevant theory of mathematics classroom situational teaching, with the help of relevant teaching examples (taking the vertical relationship between the straight line and the plane of the position relationship between the straight line and the plane in high school mathematics solid geometry as an example), this paper analyzes the importance of situational teaching, and further explores the relevant strategies in high school mathematics classroom that are conducive to situational creation.

RESULT

The mathematics teaching idea under the new curriculum standard advocates to solve the mathematics problems in the situation. Creating the situation is the basic link of the situation teaching mode, and it is also a kind of teaching art about encouragement, awakening and encouragement. Teachers should be good at presenting mathematical knowledge to students in the form of mathematical situation, using the situation to guide students to explore, help students to complete the construction of knowledge, and experience the process of mathematics. In order to improve the effectiveness of situation creation, mathematics teachers must comprehensively consider the students' physical and mental characteristics, knowledge level, teaching content, teaching objectives and other factors, so that situation creation can serve the teaching content, teaching objectives, teaching focus, and play the best teaching effect in teaching. After the research, I have preliminarily summarized the following strategies to create high school mathematics classroom teaching situation.

Create Problem Situations To Stimulate Students' Desire For Exploration And Learning Motivation

Thinking starts from the problem, "problem" is the "catalyst" to mobilize students' positive thinking. The problem situation of mathematics classroom teaching is a kind of teaching situation that arouses students' desire for knowledge through suspense or exploration activities caused by specific mathematics problems. Many abstract mathematical knowledge is constructed and developed based on certain situations. Problem situation is the most common and widely used situation, and it is an important way to inspire thinking and stimulate interest. In fact, to create a problem situation is to create a "disharmony" between the teaching content and students' psychology of seeking knowledge by elaborately designing problems according to students' cognitive and psychological characteristics, to introduce students into a situation related to problems, to stimulate students' desire for exploration and learning motivation, to encourage students to actively participate in teaching activities, and to discover and produce in the process of activities To create new problems, and to analyze, compare and synthesize the situation content from multiple angles and directions under the guidance of the classroom according to various clues

provided by the problem situation, so that students can continuously complete "assimilation" and "adaptation" in the process of thinking and exploring problems, consolidate the flexible knowledge base, construct new knowledge structure, and develop the ability to solve problems effectively.

Create Suspense Situation To Ignite Students' Desire For Mathematics Cognition

The suspense situation in mathematics teaching is to set up a situation that arouses students' attention to mathematics knowledge and learning tasks in the teaching process, so as to inspire students' imagination and generate interest and motivation to solve mathematics problems. It can arouse the students' interest, focus their attention and stimulate their desire to explore. In teaching, teachers should skillfully seek the opportunity to set up suspense situations, mobilize students' thinking and inspire their learning motivation of seeking knowledge and exploration, so that students can actively perceive learning objects and deepen their thinking, so as to achieve the teaching effect of enhancing memory, developing intelligence and improving ability. Creating suspense can be selected at the beginning of a class. By asking interesting questions, leaving room for questions and exploration, students will be interested in the content of the textbook to be learned. Creating suspense can also be selected in the process of explaining a class or at the end of the class. Because of the suspense, students will not only have endless afterthoughts, but also pave the way for the next class. This can stimulate students' desire for knowledge, enable students to explore teaching content independently, cultivate students' ability to explore problems and the spirit of dare to question.

Create Game Situation To Make Students Understand The Fun Of Knowledge In Mathematics

The so-called game situation is to create a game activity or simulated game activity situation based on the teaching content, so that students can learn new knowledge and use new knowledge to participate in learning activities with different roles, and get inspiration from the game activities, and put forward some mathematical problems related to the taught mathematical content. It is undoubtedly the best way for students to enjoy their study to "hide" mathematical problems in the game. There is no fixed mode to follow in the setting of specific game situation, so it is necessary to design the game form with strong feasibility flexibly according to the characteristics of specific mathematical content and realistic teaching scene. Of course, the game method can't replace everything, but if we provide more opportunities for students to participate in some games, or add a little game spirit to the teaching, then the classroom teaching will glow with luster, more vitality and vitality.

DISCUSSION

When learning the position relationship between the straight line and the plane in solid geometry, please prepare a triangular cardboard before class. When class teaching proceeds to the "judgment theorem of the vertical line and the plane", please take out the cardboard, fold it once at will, slightly expand it, stand on the desktop, and think about how to fold it to make the crease vertical to the desktop. Enlighten students to get that only when the condition "a line is perpendicular to two intersecting lines in a plane" is met, can the "line be perpendicular to this plane". Through hands-on operation, the abstract problems can be directly displayed, and students can easily get conclusions that are difficult to imagine and understand.

Most of the knowledge of young students comes from the learning of indirect experience, but direct experience is the basis of learning indirect experience. In mathematics teaching, on the basis of students' existing cognition, students' direct experience is used to create problem situations, that is, to create problem situations of life examples, which can stimulate students' interest in learning and promote students' autonomy in learning.

CONCLUSION

The creation of the problem situation in mathematics classroom is based on the students' existing cognition. The creation of the problem situation stimulates the students' participation in the classroom. In the appropriate situation, the students show a stronger interest in learning, a more active learning attitude and participation in the classroom. It provides students with a broad vision and a variety of mathematical resources, which are conducive to the development of students' thinking and more. It is conducive to the cultivation of students' innovation ability and creativity. With the use of multimedia courseware and software in mathematics class, some changes in mathematics or mathematical objects that are difficult for students to imagine are presented and interpreted scientifically and accurately, which makes students' understanding clear and clear, and greatly improves the efficiency of classroom teaching.

Remark: * Corresponding author: Yanzhi He E-mail:yzhe@ybu.edu.cn

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