Advances in Social Science, Education and Humanities Research, volume 275
2nd International Conference on Education Innovation and Social Science (ICEISS 2018)

Interactive Whiteboard Optimizes Primary Mathematics Teaching

Huang Lan
School of Humanities and Foreign Languages, China JiLiang University

***Abstract*—With the reform of the mathematics curriculum, the interactive whiteboard has entered the elementary school mathematics classroom which has great advantages and has received the attention and love of teachers and students. This paper uses comparative research method to compare and analyze interactive whiteboard and traditional multimedia, and finds the value of several unique functions of interactive whiteboard in primary mathematics teaching. Combined with the actual teaching work, this paper proposes 4 mathematics classrooms and optimizes strategies to fully demonstrate the positive role of interactive whiteboards.**

Keywords—Interactive whiteboard; Elementary school mathematics; Teaching; Optimization strategy

I. INTRODUCTION

A. Research background

In the traditional teaching process, too much attention is paid to the teaching of knowledge. Many teachers will adopt neglecting methods for the problems generated in the classroom. However, the use of traditional multimedia teaching also has many shortcomings. For example, the teacher cannot perform real time operations on the teaching content, which is suitable. Highly structured teaching content is prepared before the show.

During the summer internship, I have heard a class using interactive whiteboard-assisted mathematics teaching. The enthusiasm and initiative of the students in the classroom have changed a lot. Some children who don't like to raise their hands and pay attention to class are not concentrated. I also listened very seriously in this class. It led me to think about how to optimize the primary mathematics classroom for interactive whiteboards, how to optimize them, and how to optimize these related aspects.

B. Introduction to the interactive whiteboard

1) Interactive whiteboard definition

The interactive whiteboard is a computer-based platform that integrates software systems, hardware systems and resource systems, integrates electronics, sensing and networking technologies, and effectively integrates traditional blackboards and traditional multimedia on computers. The operation can be implemented directly on the electronic whiteboard [1]. All in all, the interactive whiteboard is an upgraded version of the blackboard and traditional multimedia. Computers, projectors, interactive whiteboards and corresponding software form the teaching platform for interactive whiteboards.

2) Unique features of interactive whiteboards

The interactive whiteboard not only includes the functions of traditional blackboard and traditional multimedia, but also develops its own unique functions with the support of electronic technology and computer software technology. (1) The interactive whiteboard has the function of being free to write at any time. Teachers and students in the teaching process, when needed, you can use the electronic pen to write, mark, etc. on the whiteboard; (2) the function of the link. Support links to text, images, and images; (3) demonstrate and save records, display multimedia materials, and save and document teaching and learning processes;[2](4) Spotlight function, teachers can use the spotlight to stretch, zoom and move, highlighting the key points and difficulties of teaching; (5) Screen screen function, the teacher uses the screen to temporarily cover the teaching content, triggering student interest, and Convenient teaching; (6) Magnifying glass function, teachers can use this function to enlarge the area of choice or zoom out to highlight the difficult points of teaching; (7) Resource library function, whiteboard has multiple resources, resources created by teachers or students It can be downloaded on the Internet according to the needs of teaching or learning and stored in the interactive whiteboard resource library [3]. From these functions, we can see that the emergence of interactive whiteboards remedies the shortcomings of traditional teaching and multimedia projection in teaching.

II. THE VALUE OF INTERACTIVE WHITEBOARD IN MATHEMATICS TEACHING

A. Using interactive whiteboards to facilitate teachers to carry out teaching work

In the 2011 edition of the Mathematics Curriculum Standards, it is pointed out that in the mathematics curriculum, students should pay attention to the sense of number, symbolism, space, geometric intuition, data analysis, computing, reasoning and model thinking in order to adapt to the development of the current era. And the need for talent development, primary school mathematics curriculum should also pay special attention to the development of students' application awareness and innovation awareness [4]. In the traditional teaching process, teachers usually ask students to use the mode teaching to teach. This is contrary to the

mathematics curriculum standards. Teachers must change the tendency of the teaching process to pay too much attention to knowledge transfer. Encourage students to participate, multi-handle, and explore, and improve students' ability to collect information, acquire knowledge, analyze and solve problems, and communicate and cooperate with others. In the process of changing the implementation of teaching, the status quo of accepting learning, rote learning, and mechanical training is emphasized too much.

The interactive whiteboard combines the functionality of a blackboard with the power of multimedia. Using interactive whiteboard assisted teaching, using its powerful toolbox can help teachers develop students' various abilities. In the teaching process, they can cope with various episodes, create flexible mathematics classes, and combine various kinds in teaching. The teaching method is convenient for teachers to carry out mathematics teaching work and meet the requirements of the primary school mathematics curriculum standards.

B. *Using interactive whiteboards to increase student participation in class*

The interactive whiteboard is a new aided teaching tool with many special features: spotlight function, curtain pull-down function, arbitrary annotation function, screen recording storage playback function and drag flip. These functions can help teachers create appropriate teaching situations, which stimulate students to generate interest in learning, and can enrich learning content, increase interaction between teachers and students, enhance communication, build an excellent atmosphere of mathematics teaching, and help students to abstract Understanding of knowledge. The classroom atmosphere is harmonious and the knowledge is easy to understand. Students naturally take the initiative to participate in the teaching activities, from the previous passive learning to active learning, transforming the students' learning style and increasing the students' participation in the classroom. It seems that with the interactive whiteboard, the student's classroom participation will be greatly improved.

III. Optimization Strategy of Interactive Whiteboard in Elementary Mathematics Classroom

A. *Using the interactive whiteboard to make the math classroom interesting*

In the impression of many people, mathematics classes have always been boring from elementary school to middle school and even university. Therefore, mathematics teachers should attach importance to establishing a good learning atmosphere, arouse students' interest in learning, and create an excellent learning environment and atmosphere for them, so that the classroom becomes no longer boring. After entering the classroom, the interactive whiteboard brings a new teaching mode, which uses vivid colors, varied images and beautiful music to convey the knowledge clearly and vividly to the students. The most important thing is that the students can also go to the stage to practice. Operation, through the hands-on operation of students to stimulate students' interest in learning, the atmosphere of lively classroom teaching, which is incomparable in traditional classrooms.

In the course of determining the position, during the teaching process, the teacher asked the students to go to the whiteboard and drag the dots to find their position in the class. Compared with the teacher, the teacher taught the students to describe their position. This kind of teaching method is more affected by the students. Welcome, every student wants to go to the stage to go to the operation, find their position, the interest is very high, let the students actually participate in the classroom, such a classroom will be boring? And with the interactive whiteboard Students' photos can be placed on coordinates, allowing students to find their place and use pairs to represent them.

The use of interactive whiteboards can also create appropriate teaching situations that inspire students' interest in learning. In the calculation of the side area of the learning cylinder, the teacher can use the electronic whiteboard to display three different cylinders, create appropriate teaching situations for the students, and let the students think about the three cylindrical unfolded graphics, so that they can actively explore and think actively. Finally, the expanded view of the three cylinders is displayed in an animated form, followed by the subsequent teaching.

The interactive whiteboard makes the classroom atmosphere more lively while reducing the phenomenon of many hairpins and distractions, and creating appropriate teaching situations can stimulate students' interest in learning, which is of great help to mathematics teaching. It seems that using interactive whiteboards to assist teaching not only enhances students' interest in learning, but also makes mathematics classrooms interesting and interesting.

B. *Using interactive whiteboards to make mathematics knowledge more intuitive*

In the content of elementary school mathematics, there are calculations based on "numbers" and geometry-based "shapes". These two aspects of knowledge are more difficult to understand. The way of thinking of primary school students is mainly image thinking. They are interested in some intuitive and visual things. This conflicts with abstract knowledge, which leads them to not master this knowledge well, especially the concept that is more likely to be wrong. It is more difficult for students to learn [5]. Oral descriptions make them understand that it's not that easy, but when the interactive whiteboard enters the classroom, the fixed teaching content moves and the student's senses are mobilized [6]. Students have the interest to learn, and then use the whiteboard to effectively help us break through the difficult points of teaching, and let students easily understand and master the abstract knowledge and concepts in mathematics, so that abstract knowledge becomes concrete and image.

In the corner of the understanding of this lesson, because the corner is a more abstract figure, it is relatively difficult for students to abstract the corner from the physical map, then you can use the interactive whiteboard to abstract from the specific things. Corners, and use the painting function on the electronic whiteboard to draw corners to visualize abstract knowledge.

The inner corner of the triangle and the focus of this lesson is for the student to explore and verify that "the inner angle of the triangle is 180 degrees." When teaching this content, use the triangle function in the interactive whiteboard to drag out any triangle and display the degrees of each corner. The teacher can drag any inner corner. During the dragging process, the degrees of the three corners are always changing, but the inner angle of the triangle is always 180 degrees. In the classroom, students can also do it by themselves, drag one of the inner corners of the triangle, and think while operating. It is found that the inner angle of the triangle is always 180 degrees regardless of the number of inner angles of the triangle. It is concluded that the inner angle sum of any triangle is 180 degrees.

Therefore, the use of interactive electronic whiteboard can not only facilitate the teaching of teachers, but also make the knowledge change from abstract to intuitive and adapt to the thinking mode of primary school students, thus breaking through the difficulties in teaching, which is incomparable with traditional teaching methods and traditional multimedia. Therefore, the use of interactive whiteboards can make the abstract mathematical knowledge intuitive, visual, concrete and clear, and accelerate the internalization of students' knowledge.

C. Develop students' innovative thinking and abilities with interactive whiteboards

An important goal of the primary school mathematics curriculum standards is to develop students' sense of innovation and ability. However, the traditional teaching multimedia is very rigid. In the teaching process, it can only follow the courseware, can not change with the changes of the classroom, and the resources of the courseware are limited, it is fixed, and there is a certain teaching. Limitation [7]. Since all creative thinking comes from activities, teachers need to create a platform for students to become the protagonist of the classroom, and teachers are the guides, and they need to guide students to develop multi-directional thinking, and to cultivate students' innovative thinking. And the ability to develop the student's thinking only makes the classroom energetic and creative.

The difficulty of the area of the parallelogram is the derivation of the formula for understanding the area of the parallelogram, and the formula of the area of the parallelogram is mastered. You can use the drag function in the interactive whiteboard to convert the parallelogram into a rectangle, which is a good way to break through the difficulties of this lesson. In the process of teaching, the group cooperates and learns, and the hands-on operation method allows students to collide with the students' thinking, generate new solutions, and cultivate students' innovative thinking ability. When the teacher demonstrates the process of cutting and adding, the student's thinking can be diverged, and he will think about whether there are other ways to cut, thus creating a new method. In the process of teaching, students will produce a lot of ways to cut, let students explore, think, and then use their existing knowledge to apply knowledge, analyze problems and solve problems.

In the course of observing objects, students can copy and drag graphics using the drag and copy functions in the interactive whiteboard, then combine the graphics and observe them. When observing, you can see several faces from the front? Use the coloring tool to paint, and finally draw on the squared paper. Throughout the teaching process, students can combine a variety of different graphics. If you practice for a long time according to this teaching mode, you can cultivate cooperation and communication between students and students, and develop students' divergent thinking.

Mathematics is an instrumental subject. It comes from life and serves life. Teachers should link life to mathematics in teaching, so that students can understand the usefulness of mathematics. It is not enough to cultivate the sense of students. It is not enough to rely on the teacher's explanation. It is necessary to combine the specific situation and obtain the feeling and experience through the mathematical activities. The use of interactive whiteboards allows students to experience the connection between mathematics and life, and to develop students' thinking and develop their innovative consciousness and ability in the teaching and teaching process of using interactive whiteboards. Compared with the traditional auxiliary teaching tools, the advantages are relatively large.

D. Improve the efficiency of mathematics classroom exercises with interactive whiteboards

Classroom exercises are an important part of the mathematics classroom in primary schools. Efficient mathematics classes must have a high level of practice as the basis. But in fact, in the elementary school mathematics classroom, the form of practice is often single, lacking flexibility, and open the subject of students' thinking.

This is especially true in the primary school plus, minus, multiply, divide, and divide. If you use interactive whiteboard teachers, you can perform a variety of different exercises, such as filling graphics and playing games, and you can make a variety of changes to the title. In order to cultivate students' ability to do the same, in the process of thinking, students can also have a variety of problem-solving ideas and generate a variety of problem-solving methods. Not only can the purpose of consolidating knowledge and knowledge be achieved, but also the thinking of students can be expanded.

In the practice of fractional multiplication and division calculation exercises, it is inevitable that students' computational ability will be boring through the maritime tactics, and students will always repeat the same type of questions. The interactive whiteboard can regenerate new ones according to the students' mistakes. The topic allows students to carry out consolidation exercises, which is conducive to correcting students' misunderstandings and improving the efficiency of the exercises.

In the reasonable matching section, the teacher has been dictating this dress with the pair of pants, which is easy for students to have doubts. Some teachers will make props for students and make several sets of different clothes, which can really make students understand, but in a class, the classroom efficiency is obviously not high. If you use the interactive

whiteboard and use the whiteboard's drag function to match and combine, the classroom efficiency will be much improved, and it will help the students' thinking divergence.

It can be seen that using the whiteboard in the practice class can reduce the fatigue of the students and make the practice less boring. However, students of different grades are interested in different things. Teachers can make full use of other functions in the electronic whiteboard to meet the needs of students and keep them in good condition during the practice class. It seems that the use of interactive whiteboards can not only improve the efficiency of classroom exercises, but also develop students' ability to give inferences.

IV. CONCLUSION

From this article, it can be seen that the use of interactive whiteboard assisted teaching has greatly optimized the primary school mathematics classroom and injected fresh blood into the primary mathematics classroom. Frontline teachers should learn and be proficient in the operation of interactive whiteboards to add vitality to the classroom and let students fall in love with learning. With China's emphasis on education informatization and the advantages of interactive whiteboard itself, it will certainly become the mainstream technology for primary school mathematics teaching.

REFERENCES

[1] Zhang Zhaojun. A wonderful chapter of classroom teaching in the new technology environment − − Exploration of interactive whiteboard application[J]. Primary School Teaching Reference, 2008 (27). (In Chinese)

[2] Ye Ying. The most common function of interactive whiteboard [J]. China Modern Education Preparation. 2010 (6): 27. (In Chinese)

[3] Chen Fang. Problems and Improvement Countermeasures in the Application of Interactive Whiteboard Teaching in Gansu Province [D] Gansu: Master's thesis of Northwest Normal University, 2012.4:15-16. (In Chinese)

[4] Development of the Ministry of Education of the People's Republic of China. Mathematics Curriculum Standards (2011 Edition) https://wenku.baidu.com/view/d6f2cfe828ea81c758f578b6.html. (In Chinese)

[5] Huang Xiaohua. Optimizing and Integrating Primary School Mathematics Classroom Teaching with Electronic Whiteboard[J]. China Science and Education Innovation Guide, 2012(21): 119. (In Chinese)

[6] Zhan Xiyan. Rational use of interactive whiteboard to improve the effectiveness of mathematics teaching in primary schools [J]. Reading and Writing: Education and Teaching Journal, 2016(10). (In Chinese)

[7] Cai Chunfang. Application of Electronic Whiteboard in Primary Mathematics Teaching[J]. Digital Education, 2016(5). (In Chinese)