Exploring the Application Strategy of Artificial Intelligence Technology in High School Mathematics Teaching

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Abstract: While the rapid development of artificial intelligence has affected people's daily lives, it has also brought huge challenges to high school mathematics teaching, such as restructuring the classroom teaching structure, transforming the role of teachers, and selecting classroom teaching methods. Based on this, the article explores the application strategies of AI technology in improving knowledge introduction, improving mathematics classroom efficiency and stimulating students' learning interest, with a view to optimizing classroom teaching links, improving students' core discipline quality, and promoting the development of high school mathematics teaching informatization.

Keywords: Artificial Intelligence; High School; Mathematics Teaching; Teacher

1. Introduction

In November 2022, the American Artificial Intelligence Laboratory released the artificial intelligence tool ChatGPT, which had a huge impact on people's lives and sparked a storm of innovation in artificial intelligence technology. By organically combining large-scale education with personalized training, the transformation of talent cultivation mode under the background of artificial intelligence technology is poised. However, in terms of the current situation of combining artificial intelligence technology with high school mathematics teaching, some teachers are accustomed to the traditional curriculum teaching mode, and their attitudes are difficult to accept the changes brought by artificial intelligence to education, or they only use artificial intelligence technology formally, which limits the advantages of artificial intelligence technology in education[1], It is extremely unfavorable for students to adapt to the development of the intelligent era.

2. The Challenge of Artificial Intelligence Technology to High School Mathematics Teaching

Although artificial intelligence technology has brought great convenience to education and led to innovative development in educational methods, it is a double-edged sword that not only brings opportunities to high school mathematics teaching, but also brings a series of challenges to classroom teaching. To meet the opportunities and challenges with a Positive mental attitude can promote the development of mathematics classroom teaching in the era of artificial intelligence.

2.1 Reconstruction of classroom teaching structure

The traditional high school mathematics classroom structure is a process of imparting knowledge in a relatively closed classroom, based on the mode of dialogue and communication between teachers and students through methods such as telling, explaining, and reading. In an era when the level of public knowledge needs to significantly improve, this approach is undoubtedly the best. After the transformation of the times, with the penetration of artificial intelligence technology in all aspects of life, the traditional classroom teaching structure has also undergone changes. Previously, the teaching methods used by teachers to transfer knowledge to students will inevitably incorporate elements of artificial intelligence technology, and the introduction of artificial intelligence technology will gradually replace some of the role of teachers, passing more intuitive, clear, and concise knowledge to students, improving the

accuracy of classroom teaching Dynamicity and timeliness.

The restructuring of classroom teaching structure brought about by artificial intelligence technology has been reflected today, and multimedia classroom teaching is one of them. Due to its acceptance by many schools and teachers, this method obviously brings great convenience to classroom teaching and improves classroom teaching efficiency.

2.2 The Transformation of Teacher's Functional Role

The transformation of education driven by artificial intelligence technology has become a future trend. The continuous application of artificial intelligence technology in the education industry has gradually weakened the functional role of traditional teachers[2]. Artificial intelligence technology has developed to the point where it can not only impart knowledge to students, but also cultivate their values in the process of imparting knowledge. In the future, artificial intelligence machines will gradually replace some of the educational and teaching tasks undertaken by teachers[3].How to properly handle the collaborative relationship between teachers and artificial intelligence technology in teaching, organically combine the dominant position of teachers with the object status of artificial intelligence technology, and jointly promote the quality of teaching to a higher level, is an unprecedented challenge for teachers.

So, while doing a good job in teaching and educating people, teachers also need to consider the changes in their own roles, face the intervention of artificial intelligence technology in mathematics classroom teaching, and actively learn and collaborate with machine agents in teaching.

2.3 Selection of classroom teaching methods

The mode of classroom teaching in the context of artificial intelligence has not yet been established, and there is a lack of scientific theoretical guidance on the state in which teachers and students should participate in mathematics teaching. In the process of high school mathematics classroom teaching, the interaction between the subject and the object is in a vague form, which makes the selection of classroom teaching methods lack basis. Due to the unprepared arrival of the artificial intelligence era, it is difficult to accurately determine what standards should be used for selecting classroom teaching methods and what standards are suitable for mathematics classroom teaching in the context of artificial intelligence[4]. The current difficulty in selecting the above teaching methods is due to the transformational development of traditional classroom teaching brought about by the introduction of artificial intelligence technology. After becoming familiar with traditional teaching models, it is difficult for teachers to accept the changes caused by the external environment in their thinking and actions.

Driven by artificial intelligence technology, mathematics teachers' skill level and proficiency will directly determine their final choice when using various new teaching methods. In the current era of artificial intelligence, due to the lack of in-depth understanding of various teaching methods, teachers find it difficult to accurately identify the advantages, disadvantages, and scope of application of each method. Therefore, in mathematics teaching classrooms, they face a thorny problem: how to choose the most suitable classroom teaching method correctly.

3. The Application Strategy of Artificial Intelligence Technology in High School Mathematics Teaching
3.1 Improving the Introduction of Mathematics Classroom Knowledge through Artificial Intelligence Technology

The introduction of mathematical classroom knowledge lays the overall tone of a lesson and is crucial for the implementation of the teaching process. In the process of using artificial intelligence technology to carry out mathematics teaching, teachers can fully integrate the classroom introduction process with artificial intelligence technology [5]. By introducing artificial intelligence technology into the classroom, we aim to create a more objective teaching environment, inspire students to think deeply in a progressive manner, stimulate their curiosity in learning mathematics, strengthen their understanding of the knowledge they have learned, and cultivate their intuitive imagination and core mathematical modeling skills.

For example, in the teaching of "Trigonometric functions", teachers can first use AI technology to fully combine the change process of $y = Asin(\alpha x + \beta)$ image with the movement of the spring vibrator, so that static knowledge can be dynamic, abstract

problems can be concrete, and students can have intuitive concepts of Trigonometric functions images, thus reducing the difficulty of students' learning.

3.2 Improving Mathematics Classroom Learning Efficiency with Artificial Intelligence Technology

With the continuous impact of artificial intelligence technology on education and teaching, traditional teaching models have undergone tremendous changes. It can optimize the mathematics teaching environment, supplement teaching methods, and clarify teaching objectives. The traditional mathematical classroom teaching mode is that teachers explain and students listen, while the current artificial intelligence technology can achieve interaction between teachers and students, making classroom teaching more vivid and increasing students' interest in learning. This is also an important manifestation of the application of artificial intelligence technology in modern education[6].

VR technology is a virtual reality technology primarily based on artificial intelligence, which relies on computers to simulate a virtual scene, giving participants a sense of being present. Due to the abstract nature of high school mathematics, it is difficult for students to master it for the first time. However, using VR technology can bring a new experience to mathematics teaching, thereby reducing the difficulty of students' learning. For example, in the learning process of the "Three Views and Intuitive Views of Spatial Geometry" chapter, teachers can use VR technology to create three-dimensional diagrams, and based on the changes in objects at different angles and heights, in a virtual reality environment, let students experience a comprehensive three-dimensional space, enhance their visual sense of space, and clarify abstract mathematical knowledge, in order to build an efficient high school mathematics teaching classroom.

3.3 Artificial intelligence technology stimulates students' interest in mathematics classrooms

In the process of high school mathematics teaching, teachers can use artificial intelligence technology to optimize teaching methods and improve teaching methods. In the classroom of mathematics teaching, artificial intelligence technology should be actively used to stimulate students' interest in learning mathematics. When students' subjective initiative in learning mathematics is fully mobilized, they can actively participate in mathematics learning and lay the foundation for future mathematics learning. In the process of effectively integrating artificial intelligence technology with high school mathematics teaching, it can make the mathematics classroom full of vitality and more interesting, thereby better stimulating students' thirst for knowledge in mathematics learning, reducing negative emotions generated in traditional mathematics classrooms, and effectively eliminating traditional teaching defects.

For example, in the process of high school mathematics classroom teaching, in order to fully utilize the teaching value of artificial intelligence technology, teachers can apply the various functions of artificial intelligence technology such as animation, audio, and images to the mathematics teaching classroom, thereby enriching the presentation form of the mathematics classroom, generating strong interest in students' learning of mathematics courses, and laying a good foundation for students' mathematics learning. In addition, when explaining mathematical classroom problems, teachers can also use CAI courseware to simulate exercises to optimize teaching, deepen students' understanding, and improve the overall effectiveness of curriculum implementation. This can guide students to deepen their understanding of mathematical classroom learning content while activating the classroom, and improve the effectiveness of mathematical teaching.

3.4 Artificial Intelligence Technology Optimization Mathematics Exam Post-examination Evaluation

In mathematical tests, the use of artificial intelligence technology can enhance students' understanding of test results and improve their accuracy. During the learning process, the main content of the exam is to examine the teacher's teaching and students' learning situation, so as to timely discover and solve students' problems that arise during learning. In traditional high school mathematics teaching, most of the time teachers mechanically explain the content of test papers to students. However, for the evaluation of key knowledge, teachers still need to make rational judgments and evaluations based on their own experience, lacking procedural data support. Therefore, in this process, using artificial intelligence technology, teachers can accurately analyze the key content of the exam

based on students' learning progress, clarify the focus and specific order of the evaluation class. On the other hand, in high school mathematics teaching, teachers can actively utilize artificial intelligence technology to conduct personalized classroom exercises and assignments for students, provide targeted training based on students' weaknesses, and combine personalized practice results as an important basis for students' learning situation. Only in this way can teaching be truly optimized, and students' weaknesses be effectively solved and improved. On the other hand, after the evaluation class after the exam, teachers can also introduce common mistakes to students in the classroom based on their actual situation and exam results, assign personalized practice questions, and finally focus on explaining the mistakes to students, and provide personalized guidance. Only in this way can teaching be optimized to the greatest extent, and the teaching value of artificial intelligence technology be effectively utilized[7].

In summary, in the traditional mode of post exam evaluation classes, the improvement of students' problem-solving ability is relatively slow, but the teaching of evaluation classes driven by artificial intelligence technology is different. It can improve students' mathematical problem-solving thinking and ability, create a good environment for students to learn mathematics well, and truly achieve the goal of optimizing teachers' classroom teaching methods through artificial intelligence technology.

4. Conclusion

In today's rapidly changing artificial intelligence technology, teachers are using artificial intelligence technology to change classroom teaching methods when teaching high school students mathematics. This is the only way for the development of the information age and also a transformation of traditional education and teaching methods. Effectively applying artificial intelligence technology can optimize teachers' teaching and students' learning, thereby restructuring the entire high school mathematics teaching classroom. At the same time, it can establish a more harmonious teacher-student relationship, thereby improving the effectiveness of mathematics teaching, allowing students to master mathematical knowledge, improve subject abilities and qualities in the classroom teaching optimized by artificial intelligence technology, and promote students' development.

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