

Discussion on the Implementation Strategy of Stratified Teaching in Middle School Physics Teaching

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Abstract: In middle school physics teaching, due to differences in students' personality characteristics and learning abilities, their acceptance of knowledge varies greatly. In this case, if teachers continue to adopt a unified teaching method, they will not be able to meet the learning needs of all students, thereby reducing the efficiency of students' physics learning. Based on this, teachers can apply stratified teaching method to design targeted teaching plans based on students' differences, in order to enhance students' interest in learning physics, further stimulate students' enthusiasm for participating in the physics classroom, and help students make progress together. This article mainly explores effective strategies for applying stratified teaching in middle school physics teaching.

Keywords: Stratified Teaching; Middle School Physics; Implementation Strategy

Introduction

Stratified teaching refers to making stratified teaching plans based on students' learning differences, in order to meet the learning needs of students at all levels. The middle school stage is the most important stage for students' learning, and a unified teaching model is difficult to meet the needs of all students. That's why it is necessary to implement stratified teaching, the teachers should mobilize the learning interest of underachievers, enhance the learning efficiency of middle school students, improve the learning depth of top students to allow all the students to fully unleash their individual vitality. Teachers should reasonably apply stratified teaching to enable students to continuously feel satisfied in their learning, stimulate their confidence, and promote the comprehensive development of their physical literacy.

1. Analysis and Exploration of the Necessity of Stratified Teaching in Middle School Physics

Firstly, for physics courses, students need to integrate physics knowledge with their daily lives during the learning process. However, middle school students have accumulated a certain amount of life experience after going through primary school, and they will have some effectiveness in learning physics knowledge. The current teaching objectives focus on the cultivation of students' physical literacy, while classroom teaching focuses on the exercise and expansion of students' physical thinking, improving their exam scores, and enabling them to comprehensively improve their physical abilities. Therefore, it is necessary to apply stratified teaching to make teaching arrangements based on individual differences among students.

Secondly, for middle school students, traditional teaching concepts are no longer sufficient to meet their learning needs. There are certain differences in students' comprehensive abilities. In the process of learning physics, due to factors such as their learning level and environment, there will be significant differences in the degree to which students receive physics knowledge. Therefore, teachers should carry out stratified teaching based on individual differences of students, Only in this way can we effectively promote the common progress of all students.

Finally, teaching students in accordance with their aptitude is one of the educational concepts in China. Nowadays, stratified teaching specifically presents the concept. Due to the special national conditions of our country, the teaching materials in different regions are basically the same, which limits teachers' teaching thinking and concepts. Often, a unified teaching method is used, and in the classroom, there will be situations where students tend to "focus on the middle and lose both ends". Stratified teaching can prevent this situation from happening, It can also help students better understand their own abilities.

Based on the above content, the role of stratified teaching in modern education system is very significant. Teachers can deeply explore the shining points of students based on the concept of individualized teaching, and they should keep up with the trend of the times to enhance their teaching level and ability through various means, and then promote the effective implementation of stratified teaching

2. Strategies for Stratified Teaching of Middle School Physics

2.1 Stratified Teaching Based on Students' Abilities

Exercising students' thinking is beneficial for developing their autonomous learning and thinking abilities, but in order to effectively improve their abilities, teachers' guidance and assistance are indispensable. In the current classroom teaching, it is necessary for teachers to find corresponding solutions and law enforcement based on the problems in teaching. Currently, some teaching still focuses on teachers' teaching but ignore individual differences among students, resulting in a stratified distribution of students' grades. In classroom teaching, teachers can design questions and ask questions to maintain positive interaction with students to stimulate their thinking, and do their best for each student. Through communication and exchange of questions, students can bridge the gap between each other. In addition, teachers should develop a stratified teaching plan based on students' learning level, enhance their interest in learning physics knowledge, master corresponding learning skills, and ensure that every student can make progress in their learning. For example, when teaching *Quality and Density*, the teacher first explains the main content of the course to students, allowing them to have a deeper understanding of the teaching content, and then designs corresponding questions. When designing problems, it is necessary to consider pertinence and hierarchy, while reasonably regulating the difficulty of the problem. It is not allowed to design overly simple problems or too difficult problems. The problem should be designed based on students' learning situation, as well as their knowledge reserves and learning abilities. For students with strong thinking abilities, it is possible to design some extended questions to allow them to practice independently and continuously explore knowledge. For example, placing plastic and metal balls of the same weight into a measuring cup filled with water, but the amount of water overflowing is different, in order to expand students' learning depth and enhance their creativity and thinking ability. For students with poor learning abilities, teachers should provide appropriate guidance and provide them with detailed explanations of the relevant concepts and definitions of knowledge points, in order to enhance their classroom efficiency and enable them to effectively understand and master the course knowledge points.

2.2 Stratified Teaching Based on Classroom Practice

The implementation of stratified teaching in middle school physics teaching aims to help students better learn, thus gaining progress and improvement. Therefore, in stratified teaching, teachers should also assign appropriate practice questions to students when imparting theoretical knowledge, so that students can deeply understand physics knowledge, establish a sound knowledge system, and deepen the knowledge memory in their minds. In classroom teaching, teachers can use group competitions to stimulate students' enthusiasm and achieve the goal of stratified teaching through continuous and extensive practice. For example, when reviewing "Series and Parallel Connection", this knowledge point appears more frequently in physics exams. Therefore, during the review, teachers can select some relevant test questions for students to practice, and then divide students into three learning groups based on their learning abilities: upper, middle, and lower. Distributing corresponding test questions to the three groups, and have each group engage in practice competitions within the group to improve students' classroom enthusiasm, which can enable students to deeply understand the relevant knowledge of series and parallel connection, enhance their interest in physics learning, and comprehensively develop their comprehensive abilities.

2.3 Stratified Teaching Based on Homework Design

As is known to all, homework is an effective method for students to review and consolidate their knowledge. Designing homework can help students build a more comprehensive knowledge system, and designing scientifically reasonable homework can alleviate students' learning pressure and enhance their interest and efficiency in classroom learning. Therefore, in middle school physics teaching, teachers need to reasonably apply stratified teaching and design stratified assignments based on students' learning levels. In the process of designing homework, teachers should carry out a stratified plan in an orderly manner based on teaching objectives to help students better understand and master physics knowledge. For example, in teaching *Energy Transformation and Conservation*, the focus of this course is to enable students to master the material transformation process and forms of energy, and to extend energy transformation to daily life applications. For inferior students, homework designed by teachers should help them consolidate their memory of basic knowledge, thereby improving their autonomous learning ability. Therefore, when guiding these students to complete, teachers can use relevant tools such as small balls, wooden boards, and springs to complete the process of energy conversion, thereby exploring the main influencing factors of object kinetic energy changes. Teachers and students convert the small ball from a stationary state to a sliding state according to the relevant experimental steps to explore the changes in the wooden blocks on the horizontal board, and analyze the relationship between the mass and kinetic energy of the object during the sliding process. For intermediate and top students, the homework designed by teachers should aim to cultivate students' hands-on practical abilities, organize students to engage in relevant practical activities, use the

knowledge learned to solve relevant physical problems, and pay attention to collecting phenomena related to energy conservation and conversion in daily life, conducting in-depth analysis and exploration, such as water turbines, electric fans, etc, which can enable students to better grasp the essence of energy conversion and conservation through their own practice, thereby enhancing their independent thinking and exploration abilities. Through stratified training for students at different levels, it is possible to better utilize their individual characteristics and fundamentally enhance their practical abilities. While ensuring the quality of physics teaching, stratified teaching can improve students' thinking ability and self-learning ability.

Conclusion

In summary, as one of the important subjects in the middle school education system, physics is a subject that teachers should adopt scientific and effective teaching methods in the classroom teaching process to improve the effectiveness of physics teaching. As one of the effective teaching methods, Stratified teaching requires teachers to design stratified teaching plans based on teaching content and students' learning situations. In middle school physics teaching, teachers can focus on teaching objectives and students' needs, and carry out stratified teaching based on students' learning level and cognitive ability, ensuring that each student can receive targeted training, thereby promoting students' common progress and improvement.

References

- [1] Yang GP. Research on the Teaching Model of "Stratified Teaching and Classified Guidance" in Middle School Physics [J]. *Middle School Curriculum Guidance*, 2021 (01): 85-87.
- [2] Wang XX. Implementation of Stratified Teaching in Junior High School Physics Teaching [J]. *Mathematical and Physical Universe (Junior High School Edition)*, 2022, 14 (03): 83-85.
- [3] Huang BZ. Reflection and Exploration on Implementing Stratified Teaching in Middle School Physics Teaching [J]. *Exam Weekly*, 2020 (92): 125-126.