

Research on Teaching Strategies of Mathematical Application Problems in Primary Schools Based on the Development of Mathematical Core Literacy

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Abstract. Mathematical core literacy is the central link of problem solving, which is of great significance to the successful solution of application problems. Students really understand and successfully answer application problems, not only need students to master the essence of mathematical knowledge through various ways of mathematical core literacy, but also need students to correctly transform and apply various mathematical core literacy. In this regard, teachers should effectively improve the corresponding teaching innovation from the perspective of curriculum teaching, and then effectively improve the efficiency of curriculum development. At present, the teaching mode is single, teachers' educational concept is relatively backward and students' interest in learning is neglected, which are the difficulties in the teaching of mathematical application problems in primary schools. Therefore, this paper will focus on the application problems in primary schools, analyze the problems existing in current teaching, and put forward the teaching strategies of application problems in primary schools based on the development of mathematics core literacy, so as to maximize the value of teaching.

Keywords: Mathematical, Core Literacy, Primary Schools, Mathematical Application Problems.

1. Introduction

In primary school mathematics teaching, the purpose of application problem teaching is to make students scientifically apply theoretical knowledge to daily practice and cultivate their practical ability [1]. From the perspective of mathematics core literacy, the application problem training in primary school mathematics teaching is an effective way for students to adapt to the key abilities needed for future social development and personal development.

Effective mathematics application problem teaching can not only effectively improve pupils' logical thinking ability, but also cultivate pupils' comprehensive ability to find, ask, think and solve problems, which can further promote the cultivation of pupils' mathematical core literacy [2]. In this regard, teachers should effectively improve the corresponding teaching innovation from the perspective of curriculum teaching, and then effectively improve the efficiency of curriculum development. To strengthen students' comprehensive development ability, it is necessary to strengthen students' mathematics learning ability one by one from the following angles and improve the corresponding curriculum arrangement.

2. The significance of cultivating students' core literacy by mathematical application problems

Mathematical core literacy is the central link of problem solving, which is of great significance to the successful solution of application problems. Students really understand and successfully answer application problems, not only need students to master the essence of mathematical knowledge through various ways of mathematical core literacy, but also need students to correctly transform and apply various mathematical core literacy [3]. Cultivating students' core literacy through application problems is in line with the requirements and needs of students' cognitive development, which is not only of great significance and role in achieving the goal of problem solving, but also conducive to

promoting the cultivation of students' mathematical core literacy and abstract thinking, which shows the great significance of cultivating students' core literacy through mathematical application problems.

Different mathematical core literacy are interrelated and interacted, and it is also the interaction and transformation between different core literacy methods that constitute a certain core literacy system (Figure 1).

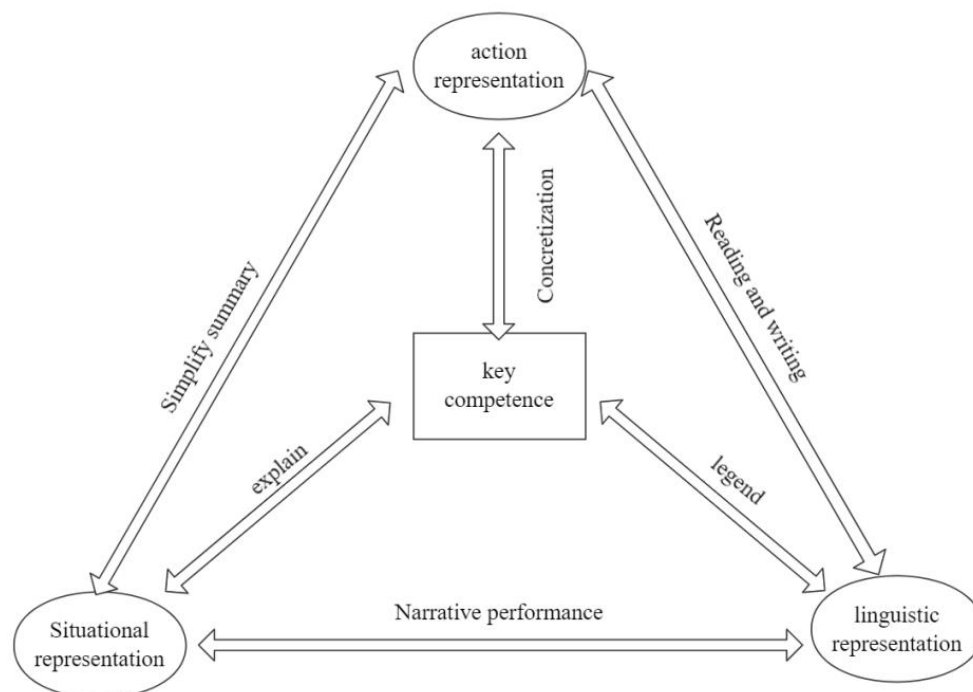


Figure 1. Interaction between different ways of core literacy in mathematics.

In the process of solving application problems, learners comprehensively use various core literacy methods to analyze and find the key quantitative relations of mathematical information, and experience the exchange, transformation and application of core literacy, which makes the core literacy system show dynamic characteristics [4-5].

The purpose of cultivating students' mathematics core literacy is to improve students' abilities through teaching forms, and the application problem practice in primary school mathematics curriculum is just a teaching method that can best train students' comprehensive abilities. Strengthen their ability to apply self-body sense, which can effectively improve their own reading and memory ability. From the above two teaching contents, it can be seen that students' learning ability in all aspects can be greatly improved in the teaching process of primary school mathematics application problems under the background of mathematics core literacy [6].

Based on the cultivation of mathematical core literacy, effectively innovating the teaching methods and modes of application problems from the perspectives of training students' thinking ability and computing ability will help to cultivate students' mathematical core literacy and comprehensively promote the development and promotion of students' ability to solve application problems.

3. The dilemma of mathematics application problem teaching in primary schools

3.1. Single teaching mode

The purpose of this study is to understand what difficulties teachers have encountered in the process of primary school students' core literacy in applied mathematics and their sources; This paper mainly interviewed 50 primary school students in a primary school. Figure 2 shows the results of the survey that teachers will encourage us to use different methods to solve fractional application problems in math class.

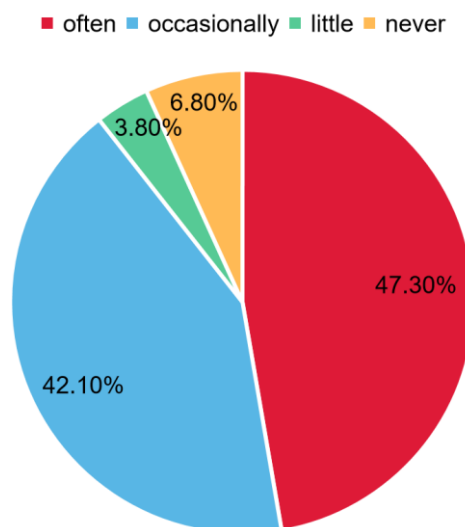


Figure 2. Survey result

As can be seen from Figure 2, only 42.10% of the students said that their teachers would encourage students to use different methods to solve fractional application problems. It is proved that the teaching method is relatively simple, lacking the connection between different representations, and the communication, transformation and application of mathematical representations are not achieved as much as possible in the teaching of applied problems.

The single teaching mode is the main dilemma of mathematics application problem teaching in primary schools at present. This dilemma is mainly manifested in that in the teaching of application problems, teachers explain examples first, and then students practice by imitating relevant examples. The "blank space" advocated in the teaching process is only the time that teachers give students to think after the topic is presented, and the rest are dominated by teachers and passively accepted by students. The teaching mode of teacher-led and students' passive acceptance is still the mainstream of application problem teaching.

3.2. Teachers' educational concept is relatively backward

Teachers' educational behavior is guided and influenced by teachers' educational concepts, especially teachers' educational concepts and students' views, which will affect all teachers' activities in teaching practice [7]. If teachers attach great importance to the cultivation of primary school students' core literacy of mathematical application problems and realize its important value, it will guide teachers to actively explore all aspects of application problems in teaching practice to promote the cultivation of students' core literacy ability of mathematics, and reflect on their teaching strategies in time, and devote themselves to the teaching of application problems to cultivate primary school students' core literacy ability of mathematics can achieve benign development under the correct guidance of teachers.

Because teachers' educational concept of cultivating students' core literacy in applied problems is relatively backward, the teaching of primary school students' core literacy in mathematical applied problems has not been put in place. Due to the pressure of teaching and students' examination, mathematics teachers will teach students direct problem-solving routines, so that students can directly calculate the mathematical information in applied problems. But in fact, problem-solving routines are not suitable for all problems and will limit students' mathematical thinking.

3.3. Ignore students' interest in learning

Primary school students are at the critical stage of physical and mental development, and they will have a strong curiosity and desire to explore things of interest, which plays an important role in mathematics learning. In the actual teaching process, teachers still master the progress and rhythm of the class, some teachers reduce the time for students to study independently, and even deprive

students of the right to ask questions, resulting in a dull and depressing teaching atmosphere, and students' access to mathematical information is relatively single, which can not achieve ideal teaching results.

4. The improvement of teaching strategy of mathematics application problems in primary schools

4.1. Situational teaching

The content of application questions in textbooks is single, which makes it difficult to develop students' potential thinking ability [8]. At the same time, situational teaching is not paid attention to in most application problems teaching, which makes the teaching effect unsatisfactory and it is difficult to improve students' comprehensive quality. Situational teaching can effectively improve this situation. Situational teaching means that teachers introduce or construct vivid scenes in the teaching process, so as to create practical experience opportunities for students, which can not only deepen students' understanding of mathematical application problems, but also achieve the goal of cultivating comprehensive literacy. It makes the teaching effect of application problems more remarkable and is beneficial to the physical and mental development of primary school students.

For example, graphic language has the characteristics of intuitive image and clarity. In the translation of application problems in primary schools, in order to further enhance students' ability to judge problems and analyze them, teachers can make proper use of the idea of "combination of numbers and shapes" to inspire students to "simplify complex problems and clarify hidden relationships" with the help of different graphic languages, so that students can feel the vivid, rigorous and interesting subject charm of mathematical application problems on the premise of strengthening their translation literacy and ability to judge problems.

4.2. Interesting teaching

Teachers in the process of curriculum innovation, the first principle to be guaranteed is fun, diverse teaching methods, strengthen the teaching fun of the course itself, and then stimulate students' interest in learning, so that the course can be fully carried out in order to ensure students' initiative in the classroom, so that their subjective initiative can be fully stimulated, while improving their comprehensive ability and literacy [9].

For example, in the course of comprehensive teaching, teachers can replace some boring knowledge expressions in the course with elements that are more vivid and in line with students' preferences, so as to stimulate students' interest in learning. When solving some mathematical application problems, if positive thinking finds that the conditions for solving the problems are insufficient or positive reasoning is too complicated, teachers can guide students to simplify the problem-solving process by using the backward deduction method, which is also a commonly used method for solving mathematical application problems quickly. This kind of problem situation comes from students' side, which students can really experience and understand. In this way, it can not only help students understand knowledge points, but also help students to develop and activate their thinking.

The higher the primary school students' interest and self-confidence in learning application problems, the stronger their sense of self-efficacy in solving application problems, and they will take the initiative to extract mathematical knowledge related to sub-application problems, and then choose appropriate representation methods to help them read mathematical information and understand problem situations, analyze quantitative relations and solve problems. Therefore, teachers adhere to the principle of positive affection in classroom teaching and daily education management, actively encourage students to believe in themselves in order to form a correct learning attitude and motivation, create students' successful experience as much as possible in the teaching of applied problems, and enhance students' sense of self-efficacy in representation.

4.3. Practical activity teaching

Practical activity teaching is to let students experience reality in person, discover and verify knowledge in reality, and replace traditional theoretical teaching method with practice. Teachers guide students in practice, so that students can apply the theoretical knowledge they have learned to practice to deepen their memory. In addition, statistical data is also a common type of application problems. Before teaching, teachers can ask students to investigate the work and rest time of different grades on campus and make statistics. In this practice, students can clearly grasp the statistical methods, lay the foundation for solving statistical application problems in the future, and realize their all-round development.

4.4. Performance teaching evaluation

Expressive teaching evaluation is an evaluation that can detect students' cognitive thinking and reasoning ability and the ability to use knowledge to solve real and meaningful problems, and can effectively measure the high-order thinking and the ability to solve complex problems pointed by mathematics core literacy [10]. Therefore, the application of performance evaluation in application problem teaching pays more attention to students' process performance, and is more conducive to the cultivation of students' knowledge transfer and application ability and higher-order thinking.

The traditional closed-book examination belongs to restricted performance evaluation, and the task and goal of this evaluation method are very clear, so it is difficult to really see the potential ability of students. However, open performance evaluation pays more attention to the process, and teachers can easily find more possibilities in students' learning. When evaluating the teaching results of applied problems, teachers should give more consideration to students' problem-solving ideas and judge whether they can solve problems.

In the specific teaching activities of mathematical application problems, we should also pay attention to the individual differences among students, constantly innovate teaching strategies, and provide more opportunities for primary school students to explore and learn independently, so that students can devote themselves to the teaching activities of mathematical application problems, master more mathematical theoretical knowledge in the process of exploring knowledge content, and effectively improve the teaching quality of application problems. Train students' representation habit of representation summary and reflection in mathematics learning, take cultivating primary school students' core literacy of application problems as the goal and motivation, form educational synergy, jointly enhance students' representation subjectivity and help promote the cultivation of students' core literacy of application problems.

5. Conclusions

Effective mathematics application problem teaching can not only effectively improve pupils' logical thinking ability, but also cultivate pupils' comprehensive ability of finding, asking, thinking and solving problems, which can further promote the cultivation of pupils' mathematical core literacy. Based on the cultivation of mathematical core literacy, effectively innovating the teaching methods and modes of application problems from the perspectives of training students' thinking ability and computing ability will help to cultivate students' mathematical core literacy and comprehensively promote the development and promotion of students' ability to solve application problems. So that students can truly appreciate the fun of learning mathematical knowledge, realize the application value of mathematical knowledge in real life, and promote the development of students' comprehensive ability.

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