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Enhancing Core Mathematical Literacy in Primary School Students: Strategies and Implications for Sports Education and Cognitive Development

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Abstract
In the 21st century, core literacy has emerged as a critical focus in education, emphasizing the holistic development of students. While the concept of core literacy is relatively new, it aligns with the principles of quality education and curriculum reform in China, reflecting the fundamental laws of teaching innovation. This study explores strategies for cultivating primary school students' core mathematical literacy, with implications for cognitive development and problem-solving skills, which are essential in sports education and team dynamics. Using a combination of literature review, questionnaires, interviews, and case analysis methods, this research addresses twso key issues: (1) A survey and interviews with primary school mathematics teachers were conducted to assess their understanding of core mathematical literacy and their teaching abilities. Through quantitative and qualitative analysis, the study identifies the current practices and challenges in teaching mathematics to develop students' core literacy; (2) Based on theories of professional development, the study examines cases to propose strategies for enhancing teachers' abilities to foster mathematical literacy in students. These strategies include emphasizing mathematical cognition and in-depth teaching methods, improving students' mathematical thinking by advancing teachers' theoretical knowledge, cultivating mathematical emotions through teacher-student communication, and fostering a mathematical spirit in a supportive teaching environment. The findings indicate that implementing these strategies can significantly enhance the integration of core literacy into classroom teaching, improving teaching quality by over 28%. These insights have broader implications for sports education, where fostering cognitive, emotional, and strategic thinking skills can contribute to better performance, teamwork, and holistic development.
Keywords: Operation Of Numbers; Core Literacy; Mathematics Core Literacy.

1. Introduction

Human development is logical starting point and value orientation of education. Different eras have different requirements for human development. Entering 21st century, development and reform of society has put forward new challenges and requirements for cultivation of talents, and core literacy is most fundamental question of "what kind of people to cultivate and how to cultivate them" in context of development of new era. Reflections on educational issues (Cope et al., 2021). This is first time that term "core literacy" has been explicitly used in an important document on national curriculum reform. Since then, core literacy began to receive widespread attention in my country, and thus began to study connotation and framework of core literacy, as well as discussion on how to further implement core literacy. The implementation requires overall reform of each educational link, such as curriculum reform, teaching practice and evaluation mechanism improvement, and finally forms a complete education system with student development as core (Francis et al., 2019). Among them, classroom teaching is field closest to students' learning ecology and student development. The improvement of classroom teaching and adjustment of teaching strategies have played a particularly important role in cultivation of students' core literacy (Bradbury, 2019). Every hot issue of educational reform has its specific social background and educational practice basis. Since 2014, there has been a substantial increase in research results related to core literacy, and it has become an issue of widespread concern, whether in various literatures, or in subject research and academic conferences. On one hand, in context of economic globalization, exchanges and cooperation among countries in world are becoming more and more close (Snowling et al., 2020). Also, in field of education, commonality of problems faced by countries has greatly increased, and more and more countries and regions have begun to pay attention to A series of questions such as what are most basic and important knowledge, abilities and emotional attitudes that students will have in future? "What are key contents of abilities and characters that students should have?", and focus on relevant research on core literacy and have Very mature research results, which provide a reference for our country's exploration of core literacy, and also allow our research to better integrate with international discourse system; on other hand, my country has experienced quality education for 20 years, although There are still many problems and confusions,

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but it is certain that we have reached a strong consensus on quality education on value level, and concept of quality training and all,round development of people has been deeply rooted in hearts of people. The new formulation of literacy has laid a solid foundation, and it can also be regarded as a continuation and deepening of quality and literacy teaching. Therefore, research on core literacy should focus on educational issues it deals with, and continue to receive attention and implementation, rather than being a slogan, style initiative. The cultivation of mathematics core literacy is related to life, long development of students. Therefore, this paper discusses problem of improving teaching ability of primary school mathematics teachers from perspective of cultivating students' core literacy. This paper earnestly investigates current situation of teaching ability of primary school mathematics teachers, analyzes advantages and existing problems, and formulates corresponding strategies based on core literacy, in order to help improve teaching ability of primary school mathematics teachers, and for primary school mathematics teachers from perspective of cultivating students' core literacy. The research on improvement of teaching ability provides a reference case.

2. Related Work

In 2016, overall framework of Chinese students' development of core literacy was released, and domestic experts and international organizations have done a lot of research on definition of core literacy. By sorting out relevant literature, author found that core literacy is a kind of ability literacy that is closely related to future development of people (Goyal & Kumar, 2021; Livingston et al., 2018). Define core literacy as basic characteristics and key abilities that students gradually form in process of receiving school education to meet needs of personal lifelong development and social development (Pokropek et al., 2022; Shearer et al., 2018). Define core literacy as key literacy that a person should possess in order to adapt to social changes in 21st century (Siddiq & Scherer, 2019; Sorby & Panther, 2020). Defines core literacy as a concept of "defining image of future talents by learning results" (Shelton et al., 2022; Vamos et al., 2020). Defined core literacy as advanced and human ability to adapt to needs of information age and knowledge society, to solve complex problems and to adapt to unpredictable situations. In China, core literacy is mainly defined as a personal ability that can adapt to social development. The definition of core competencies in foreign countries originated from European Union's Organization for Economic Cooperation and Development (Jailani et al., 2020; Peng et al., 2019). Believe that core literacy refers to main literacy that includes multiple life areas and promotes a successful life and a healthy society (Csapó & Molnár, 2019; Scherer & Siddiq, 2019). Research on connotation and construction model of primary mathematics core literacy, explore effective training strategies, and expound how to cultivate students' mathematics learning literacy in primary school mathematics teaching (Cencelj et al., 2019; Piper et al., 2018). Elaborated on implementation of core literacy of mathematics in primary schools, and she believed that comprehensive training of core literacy was of great significance for students (Spiegel et al., 2021; Zhang, 2021, July). The training method of core literacy has a certain comprehensiveness, including basic knowledge, practical application ability, and subject development history, which is conducive to strengthening students' understanding of mathematics (Baye et al., 2019; Cheng et al., 2022). In teaching practice of primary school mathematics, core literacy of students is an important educational concept put forward under background of continuous promotion and development of educational reform. The concept of mathematics core literacy plays a very important role in cultivating comprehensive quality of primary school students. Teachers should carry out and implement reform of primary school mathematics curriculum, and actively cultivate students' core literacy of mathematics in process (Falloon et al., 2020; Jamshidifarsani et al., 2019). This paper discusses characteristics and construction of primary mathematics core literacy. The article mainly introduces connotation and characteristics, constituent elements, representation and construction of primary mathematics core literacy. Finally, it is concluded that core literacy of primary school mathematics is rooted in in,depth thinking of overall goal of primary school mathematics training, and teaching should rely on familiar life experience of primary school students to create interesting situations to promote formation and development of students' core mathematics literacy (Grigorenko et al., 2020; Kizi, 2021).

Based on meaning of mathematics core literacy, he analyzes cultivation strategies of students. He believes that while carrying out basic knowledge education for primary school students, we should pay more attention to cultivating primary school students' core literacy. The mathematics subject of primary school should gradually change from traditional test, oriented education concept to quality education concept that adapts to future development of students. When teaching, teachers should start from perspective of students, innovate teaching mode and content, and improve comprehensive ability and core literacy of primary school students. With continuous deepening of new curriculum reform, while reducing difficulty and complexity of "number operation" part, it also puts forward new requirements for teachers, such as paying attention to combining specific situations, paying attention to students' understanding and mastery of arithmetic, and paying attention to students' estimation Ability development, etc. However, it is

precisely because of strong foundation of computing teaching that many teachers cannot handle relationship between teaching of basic computing knowledge and skills and cultivation of students' core literacy in teaching process. The requirements that should be met on surface, such as designing problem situations, encouraging hands-on operation and group discussion, and communicating various algorithms, etc., without further thinking about deep-level directions behind these requirements, make whole teaching process superficial, boring and monotonous. In many teachings observation and teaching display activities, choice of "number operation" is relatively small, and it is "difficult to reflect new ideas and highlight depth" in teaching process and teaching form. Our focus on core literacy of students prompts us to reflect on and improve current problems in computing teaching, and it also provides a good opportunity and perspective for us to clarify significance of "number computing" teaching for students' mathematics learning and lifelong development. Therefore, this study takes teaching of "operation of numbers" as an example, and hopes to summarize teaching strategies that can be used for reference in teaching of "operation of numbers" through in-depth analysis of teaching of operations, so as to cultivate students' core literacy in classroom teaching. A question that provokes more thought.

3. Mathematical Core Literacy Framework

The "Compulsory Education Mathematics Curriculum Standards (2011 Edition)" (hereinafter referred to as "Standards") (Figure 1).

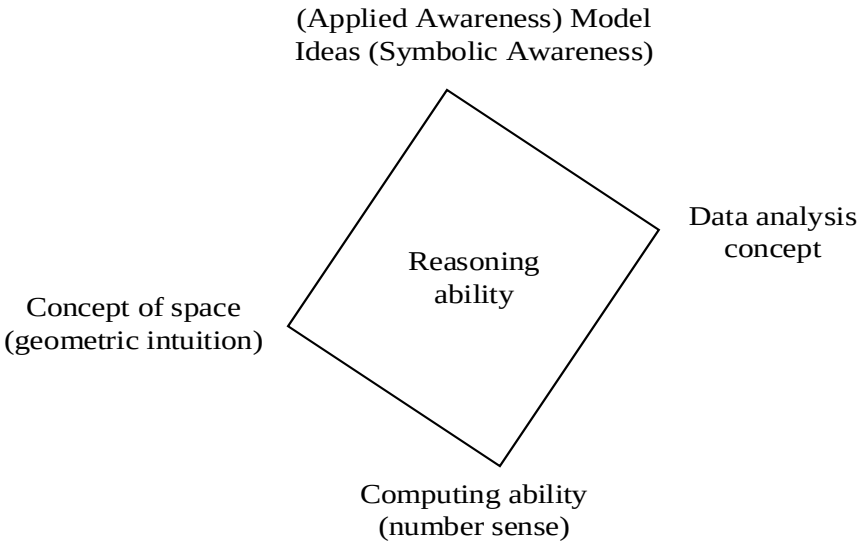

Figure 1: Analysis of core mathematical literacy

In "Standards" officially issued by Ministry of Education, it is clearly pointed out that "two basics" will be transformed into "four basics", and at same time, ten core competencies of mathematics are proposed. As shown in Figure 2, "four bases" form a whole, which promotes each other and is closely related. Students exchange experience in mathematics activities through various mathematics activities, master basic knowledge, basic skills and basic ideas of mathematics and continuously improve themselves.

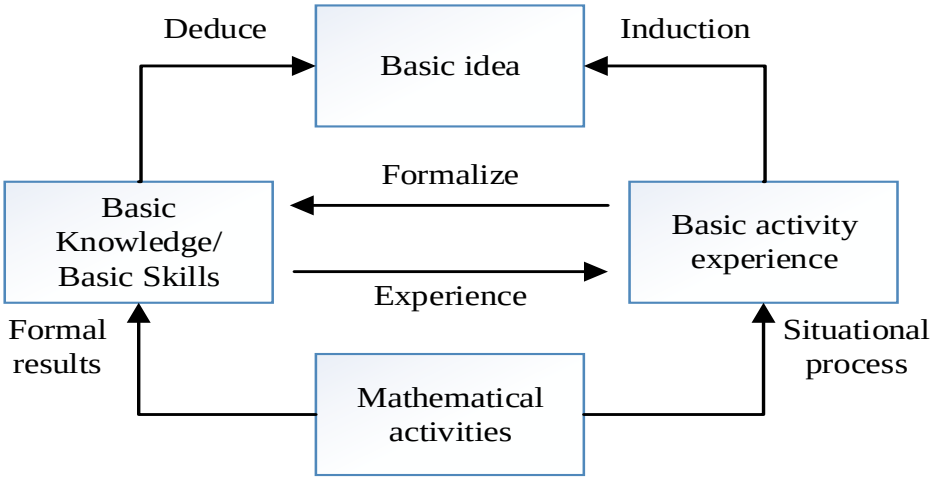

Figure 2: "Four base" structure diagram

Based on core literacy framework of students' development in my country, People's Education Publishing House proposes a primary school mathematics core literacy framework constructed from three dimensions: mathematical cognition, mathematical thinking, and personal development. These three dimensions reveal what core mathematical literacy is and where it comes from and question of where to go, as shown in Figure 3. The framework of OECD's core competencies was formed in 2003 and officially released in 2005. The main landmark documents are final report "Core competencies for a successful life and a healthy society" published by DeSeCo project, and "DeSeCo" published in 2005. executive Summary. From main research idea framework of DeSeCo (Figure 4).

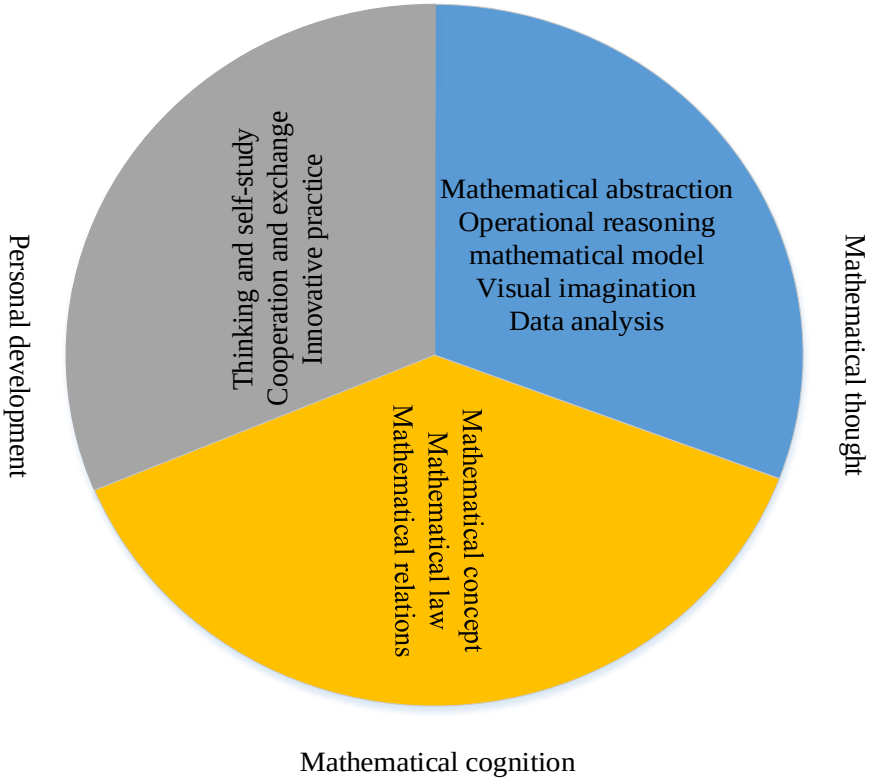

Figure 3: Mathematical core literacy framework

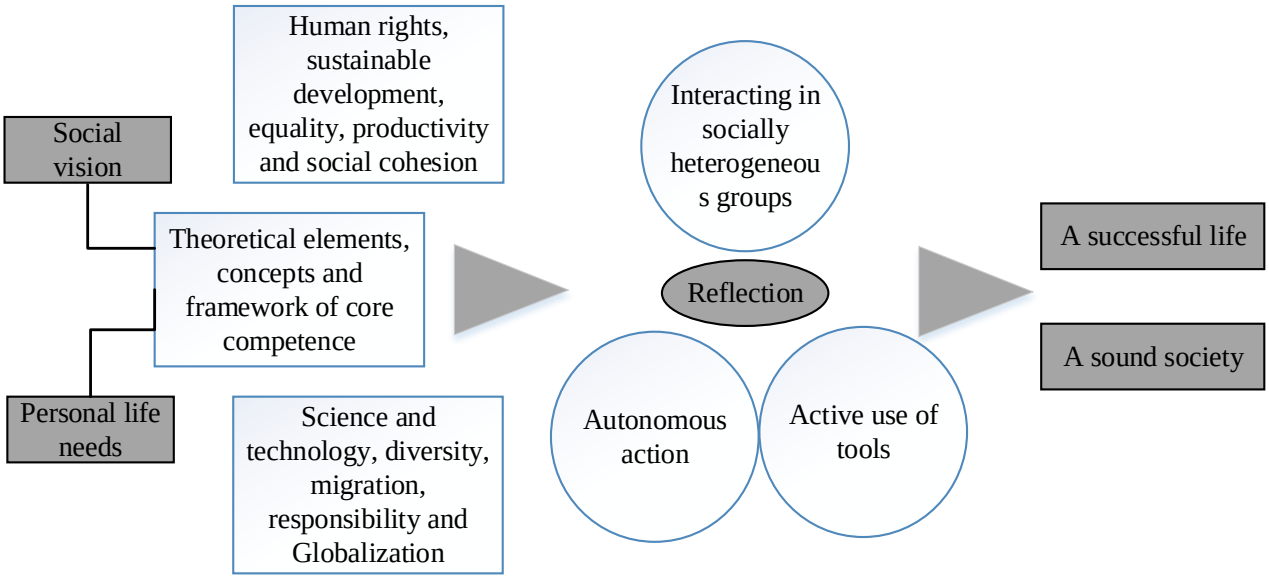

Figure 4: Theoretical elements, concepts and frameworks of OECD core competencies

Beijing Normal University was entrusted by Ministry of Education and established a research group with nearly 100 experts from domestic universities. After three years of research, on September 13, 2016, "Core

Competence for Chinese Students' Development (Draft for Comment)" was released to cultivate "comprehensive It is divided into six major qualities such as cultural foundation and independent development, and is refined into 18 basis points such as national identity (Figure 5).

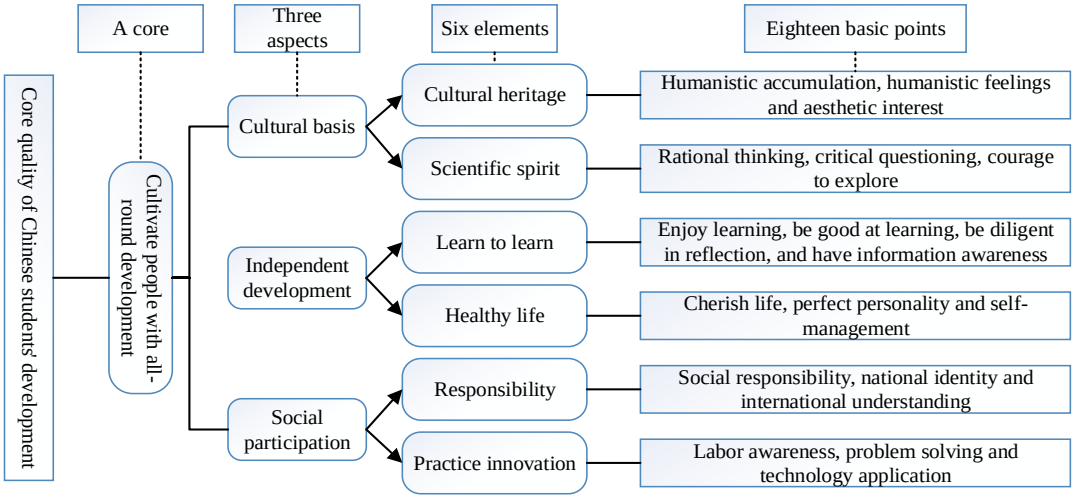

Figure 5: The research group released framework of "21st Century Chinese Students' Development of Core Literacy"

Mathematical core literacy is thinking quality and key ability gradually formed by students in process of mathematics learning, which reflects basic characteristics of mathematics, including basic thinking level of mathematics and level of mathematics content area (Figure 6).

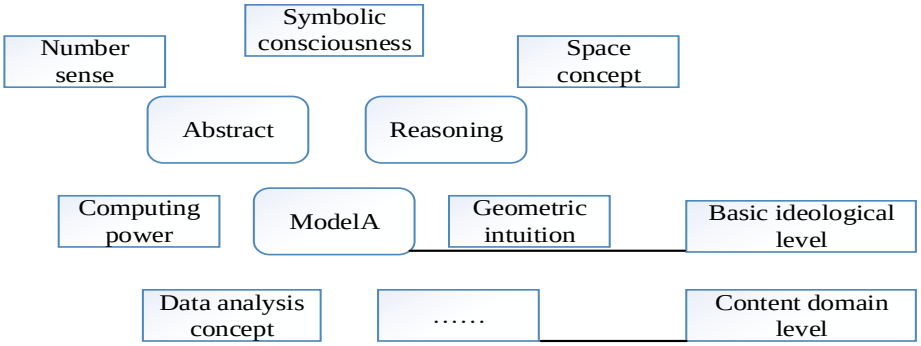

Figure 6: Operational definition of core mathematics literacy (primary school)

The four operations refer to addition, subtraction, multiplication, and division. The four operations are most basic and most important content in "operation of numbers", and are also extremely important for people's daily life and production practice. This also constitutes primary school stage " The main content of "number operations", that is, four operations and operation laws of addition, subtraction, multiplication, and division of integers, decimals, and fractions (Figure 7).

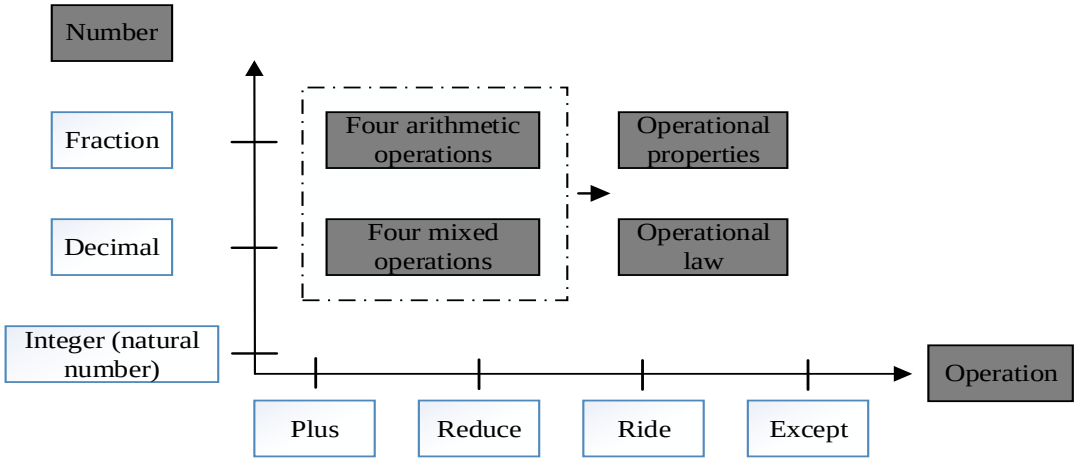

Figure 7: Schematic diagram of main content of "operation of numbers" in elementary school

We can have a general grasp of core literacy embodied in "operation of numbers". Combined with analysis of essence of content of "operation of numbers" in literature review, we construct following core literacy framework, and take it as focus of this study. Analysis framework (Figure 8).

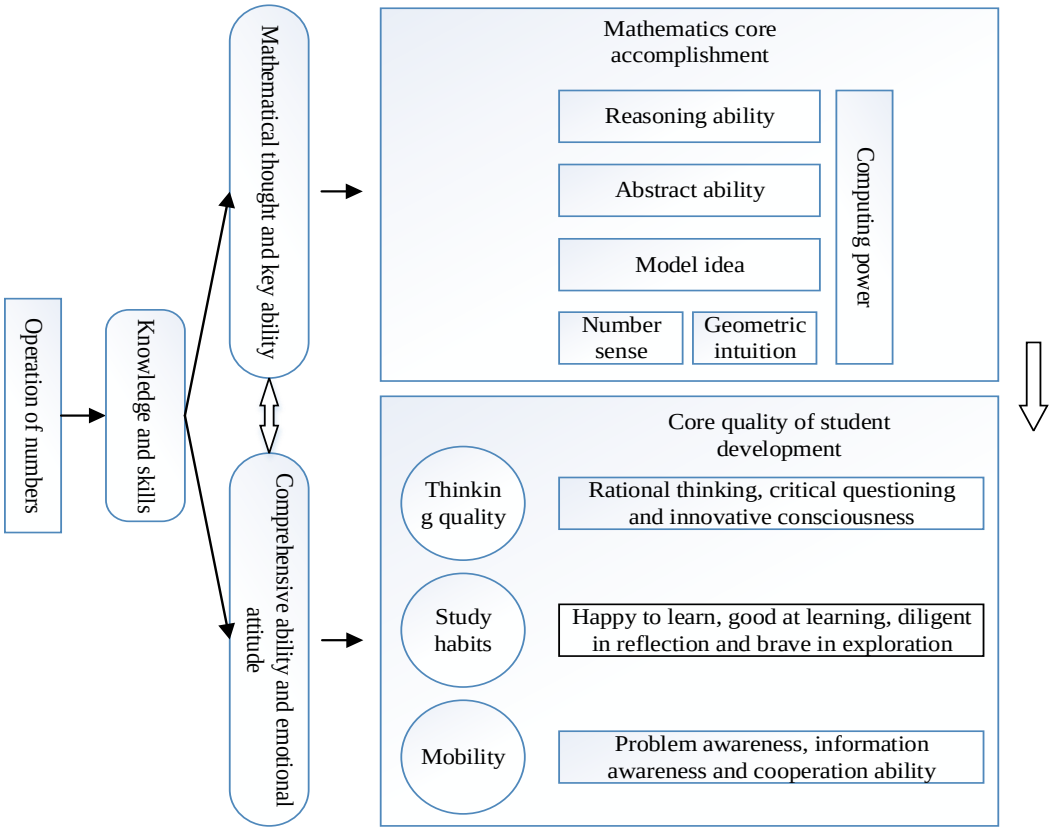

Figure 8: The core literacy framework mainly cultivated in teaching of "Operation of Numbers"

4. TLBO algorithm

The main frame of TLBO algorithm consists of two stages: "teaching" and "learning". Its core idea is to simulate process of teachers imparting knowledge to students and students learning from each other in classroom. In a class, improving overall performance requires not only teachers and professors, but also mutual communication between classmates. The teacher is individual with best fitness value in algorithm population, and students are individuals in population, and all students form population. For d-dimensional optimization problem, $X_i = [X_{i1}, X_{i2}, \dots, X_{id}]$ represents position of i student, X_{mean} represents average position of current class, and X_{teacher} represents teacher's position. The two phases of TLBO are described in detail as follows. In "teaching" stage, teacher shares knowledge with students, and students (individuals) learn according to gap between average class position and teacher's position. The update formula of individual is as follows:

$$X_{i,\text{new}} = X_{i,\text{old}} + \text{rand}^{*}(X_{\text{teacher}} - T_F X_{\text{mean}}) \quad (1)$$

In formula, $X_{i,\text{new}}$ and $X_{i,\text{old}}$ respectively represent position of i student (individual) in current generation and old position of previous generation, and $rand$ is a random number between 0 and 1. The position of X_{teacher} is determined by global optimal individual, T_F is determined by formula (2); X_{mean} is determined by formula (3).

$$T_F = round[1 + rand(1)] \quad (2)$$

$$X_{\text{mean}} = \frac{1}{m}[\sum_{i=1}^{m} x_{i1}, \sum_{i=1}^{m} x_{i2}, \dots, \sum_{i=1}^{m} x_{id}] \quad (3)$$

In formula, m represents number of all individuals in population. For solving minimization problem, if new individual's $f(X_{i,new})$ is better than previous generation's individual $f(X_{i,\text{old}})$, that is, $f(X_{i,\text{new}}) < f(X_{i,\text{old}})$, then $X_{i,\text{old}} = X_{i,\text{new}}$. In "learning" stage, students (individuals) randomly select individual k from group to study, compare gap between students themselves and random individuals, and then determine final learning method. The update formula of individual is as follows:

$$\text{new } X_i = \begin{cases} X_i + rand \cdot (X_i - X_k) & \text{if } f(X_i) < f(X_k) \\ X_i + rand \cdot (X_k - X_i) & \text{otherwise} \end{cases} \quad (4)$$

In formula, fitness value of i-th individual is expressed as $f(X_i)$, and $rand$ is a random number between 0 and 1. If $f(X_{i,new})$ of new individual is less than $f(X_{i,\text{old}})$ of previous generation, then $X_{i,\text{old}} = X_{i,\text{new}}$. BSA mainly includes five basic steps: initialization population, selection-I, mutation, crossover and selection-II. The biggest difference between it and other swarm intelligence algorithms is that historical population

information is retained, and information of current population can be used without losing it. important information about historical populations.

1. Initialization: Initialize population P and historical population $OldP$, formula is as follows:

$$P_{ij} = P_j^{min\left(P_j^{max} - P_j^{min} * \text{rand}\right)} \quad (5)$$

In formula, P_i is i individual in contemporary group P, P_j^{max} and P_j^{min} represent upper and lower bounds of solution space of dimension j, and $rand$ is a random number between 0 and 1.

2. Selection-I: Perform selection-I operation according to probability, generate a new $OldP$, and then sort $OldP$ randomly. The formula is as follows:

$$\begin{cases} \text{if } a < b \text{ then } \text{Old } P = P \mid a, b \sim U(0,1) \\ \text{Old } P = \text{ permuting (OldP)} \end{cases} \quad (6)$$

In formula, a and b are random numbers with uniform distribution between 0 and 1, and $permuting(\cdot)$ is shuffling function.

3. Mutation: The formula for mutation operation is as follows:

$$\text{Pop } = P + F^*(\text{ Old } P - P) \quad (7)$$

In formula, $F = 3 \cdot randn$, which represents coefficient of variation scale.

4. Crossover: The crossover of BSA has two steps. First define a mapping matrix Map, size of matrix is N^*D, and initial values are all zero. Then randomly update Map according to probability, formula is as follows:

$$\begin{gathered} \text{if a} < b \\ Map(i,j) = 1 \\ else \\ Map(i,k) = 1 \end{gathered} \quad (8)$$

In formula, a and b are both random numbers between 0 and 1, $j = 1{:}\, ceil(rand * D)$, $k = randi * D$, $rand$ is a random number between 0 and 1, and $rand$ is a uniform distribution. of pseudorandom integers. The individuals in new population are generated according to formula (9), and it is judged whether individuals in $newP$ exceed boundary. If it exceeds boundary, a new position is regenerated according to formula (5).

$$\text{new } P_{i,j} = P_{i,j} + \left(\text{Map}_{i,j} * F\right) * \left(\text{Old } P_{i,j} - P_{i,j}\right) \quad (9)$$

5. Selection-II: The greedy selection mechanism is adopted, and selection formula is as follows:

$$P_i = \begin{cases} newP_i \text{ if fitness (new } P_i) \text{ better than fitness } (P_i) \\ P_i \text{ otherwise} \end{cases} \quad (10)$$

In formula, $fitness(newP_i)$ and $fitness(P_i)$ are fitness values of individual P_i before and after update, respectively. First, a new population $newP_1$ is obtained according to selection-I, crossover and mutation operation steps of BSA. In this paper, individual update formula after adding optimal individual guidance is:

$$\text{new } P_{i,j} = P_{i,j} + \left(\text{Map}_{i,j} * F\right) * \left(\text{OldP}_{i,j} - P_{i,j}\right) + \text{rand}^*\left(\text{ Best }_{i,j} - P_{i,j}\right) \quad (11)$$

In formula, $rand$ is a random number between 0 and 1, and $Best_{i,j}$ is global optimal individual.

Next, update individual according to formula (1) in $TLBO$, and limit new individual to obtain a new population $newP_2$, and then perform random mixing operations on $newP_1$ and $newP_2$. The formula is as follows:

$$\begin{cases} u = \text{ rand} \\ newP = u^* newP_1 + (1-u)^* newP_2 \end{cases} \quad (12)$$

In formula, u is a random number between 0 and 1. Finally, fitness value of $newP$ is calculated, and then selection-II operation is performed to determine global optimal value. The "learning" stage is same as "teaching" stage. First, random selection is made between new individuals generated by TLBO and new individuals generated by BSA with introduction of optimal guidance mechanism, and then second selection operation of BSA is performed as follows: The way of generating $newP_1$ in "learning" stage is same as that in "teaching" stage, and optimal individual when generating $newP_1$ is global optimum in "teaching" stage. Then generate $newP_2$ according to TLBO Chinese formula (4), and then randomly select $newP_1$ and $newP_2$, formula is as follows:

$$newP = \begin{cases} newP_1 & \text{if } m < n \\ \text{newp} & \text{otherwise} \end{cases} \quad (13)$$

In formula, m and n are random numbers between 0 and 1. The boundary of $newP$ is limited, fitness value of $newP$ is calculated, and selection-II operation is performed to determine global optimal value.

5. Results

Table 1(a)

Statistical table of basic information of respondents

Sample Basic Information		Number (Person)	Percentage (%)
Gender	Female	108	71.54
	Male	43	28.46
Age	20-30 years old	65	43.05
	31-40 years old	47	31.15
	41-50 years old	31	20.51
	51 years and older	8	5.33
Teaching Age	3 years and below	49	32.43
	4-10 years	40	26.47
	11-20 years	35	23.19
	21 years and above	27	17.86
The Location of Teaching School	City	95	62.93

	Township	37	24.53
	Rural	19	12.56

Table 1(b)

Statistical table of basic information of respondents

Sample Basic Information		Number (Person)	Percentage (%)
Job Title	Third grade teacher	26	17.24
	Secondary teacher	60	39.76
	First-level teacher	39	25.85
	Advanced teacher	8	5.33
	Special teacher	0	0.00
	Other	18	11.94
Current Grade	Grades 1~2	29	19.23
	Grades 3~4	38	25.15
	Grades 5-6	84	55.65
Number of Lessons Per Week	Sections 1~5	10	6.64
	Sections 6~10	46	40.45
	Sections 11~15	62	40.05
	Section 16 and above	33	21.83

From statistical summary table of sample basic information (Table 1), it can be seen that among 151 valid samples, there are 43 male teachers and 108 female teachers, accounting for 28.46% and 71.54% respectively. In general, there are more female teachers. For male teachers, it basically conforms to current situation that gender structure of primary school teachers in China is unreasonable and proportion of female teachers is relatively high; from perspective of teaching age of surveyed teachers, distribution is relatively uniform. The number of teachers is relatively small; from area where surveyed teachers are located, there are 95 in cities, 37 in townships, and 19 in rural areas, accounting for 62.93%, 24.53%, and 12.56%, respectively, and proportion of urban primary school teachers is higher; Judging from professional titles of sample, there are most second-level teachers in sample, and there are no special-grade teachers; according to teaching section of sample, there are 29 teachers in junior section (grades 1-2) and 38 teachers in middle-age section (grades 3-4).

There are 84 seniors (grades 5-6), accounting for 19.23%, 25.15% and 55.65% respectively, and seniors have highest proportion; The proportion of 11-15 periods is highest. In addition, 21.83% of teachers have more than 16 periods per week, indicating that some primary school mathematics teachers have a heavy teaching task. By discussing questionnaires, survey respondents' understanding of current proposed mathematics core literacy, as well as their understanding and attention are analyzed. The data statistics are shown in Figure 9:

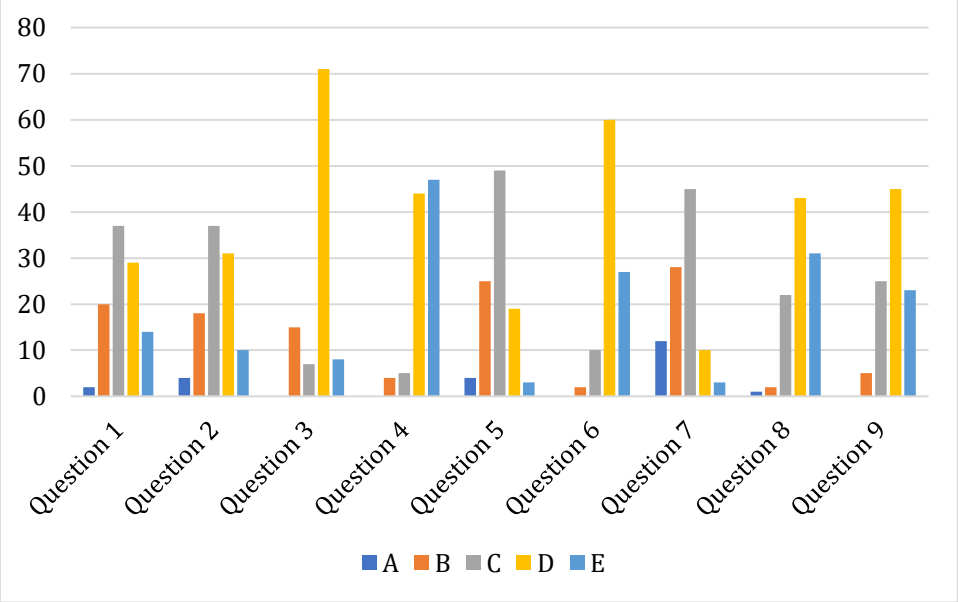

Figure 9: Dimension 1 Overall Statistical Chart

Judging from distribution of various options, number of people who choose option C is largest, which shows that current first-line primary school mathematics teachers have an optimistic understanding of and emphasis on core mathematics literacy. And realize that we should pay attention to development of

students' comprehensive literacy in usual teaching work. With gradual deepening of core literacy research in compulsory education stage of primary and secondary schools, more and more primary school teachers realize that teachers should pay attention to and continue to pay attention to research and development of core literacy, and also realize importance of cultivating students' core literacy. Through data in chart, we can intuitively see that most teachers have a full understanding of importance of "mathematical core literacy" in development of students, and have given a positive attitude to importance of mathematical core literacy. Although six major mathematics core literacy determined now are only for high school stage, in survey, most teachers believe that these six major mathematics core literacies are also more suitable for primary school stage. However, it should be noted in research that students in elementary school and high school have different knowledge systems and psychological development. Therefore, six core literacy cannot be simply copied. improved and focused.

By discussing 10th, 11th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th, and 28th questions of questionnaire, analyze basic situation of teaching of respondents in this study, including reason, method, content, influence factors, level of support from school, etc. The data statistics are shown in Figure 10:

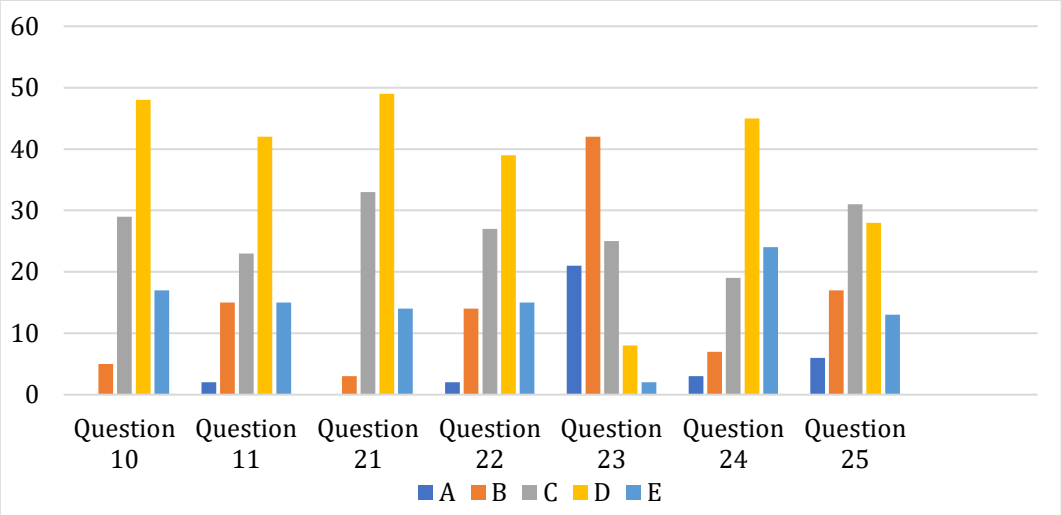

Figure 10: Dimension 2 Overall Statistical Chart

In general, surveyed teachers attach great importance to teaching in their usual teaching work, and 63.58% of teachers said that they will always apply results of each time to subsequent teaching activities, which indicates that teaching reflection is carried out. It will affect teacher's subsequent teaching effect, but each teacher is affected to a different degree. From above data, we can also see that teaching environment and atmosphere in schools are not good, some schools do not pay enough attention to reflection, and there are few corresponding system regulations to protect them, especially schools located in townships and rural areas. This phenomenon is more common, which will affect effect and enthusiasm of teachers' reflection to a certain extent, and also affect quality of teachers. The situation is not optimistic.

Among them, about question 10: Do you often conduct teaching reflection in your usual teaching, whether it is written or oral? The survey results are shown in the Figure 11:

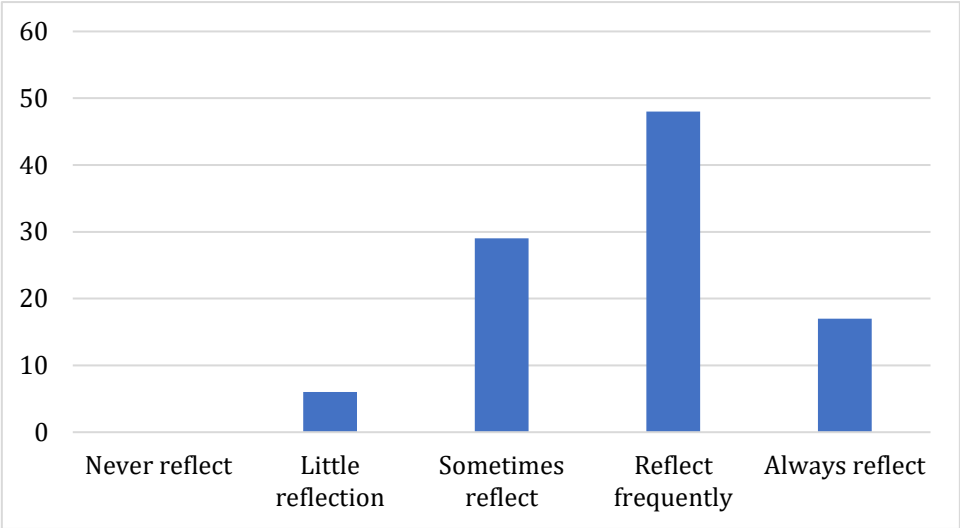

***Figure* 11:** Statistical chart of frequency of question 10

The survey data shows that teachers who never reflect or rarely reflect only account for 5.3% of respondents in this survey, 17.22% of teachers reflect frequently, and 48.34% of teachers often reflect on their own teaching in their daily work. In addition to 29.14% who sometimes reflect, we can judge that vast majority of teachers will reflect on their own teaching in their usual teaching. Question 26: Your main method of teaching reflection is that statistical results are shown in Figure 12:

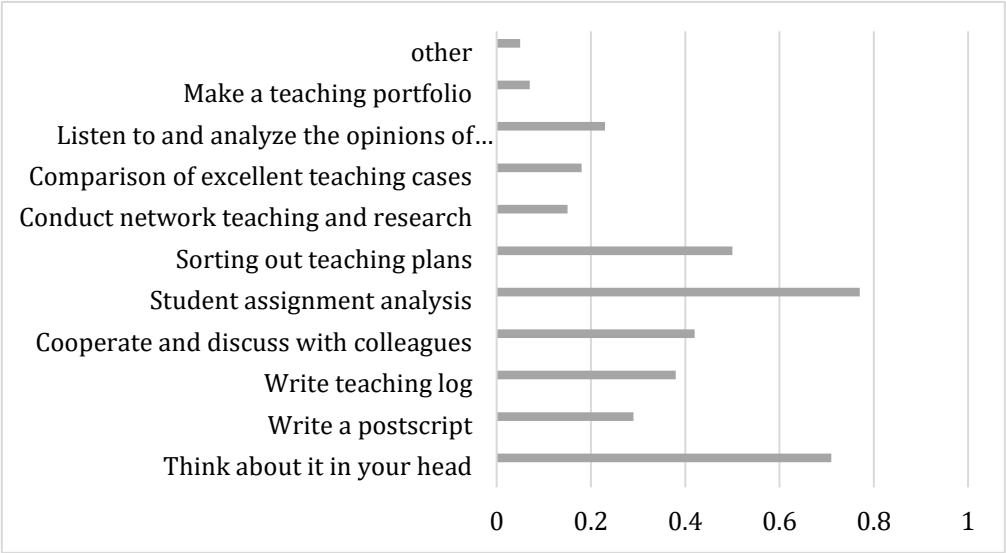

***Figure* 12:** Statistical chart of frequency of question 26

As can be seen from figure above, reflection methods frequently used by these teachers are mainly students' homework analysis (77.48%), thinking in their minds (71.52%) and organizing lesson plans (50.33%), but generally speaking "thinking in their minds" This method is relatively random and lacks certain scientificity, and corresponding effect will be unsatisfactory.

Compared with methods mentioned above, number of teachers who choose to do teaching portfolios is relatively small, only 7.28%. As one of most commonly used methods for teachers to write teaching postscript and writing teaching log, there are not many teachers selected.

The reason is that most of working time of teachers is used to allocate more heavy teaching tasks, so it is left to teachers. There is less time for writing a teaching journal. In general, more teachers choose to adopt self-reflection method than teachers who choose peer-to-peer method. Question 27: When you carry out teaching reflection, what aspects do you mainly focus on? The statistical results are shown in Figure 13:

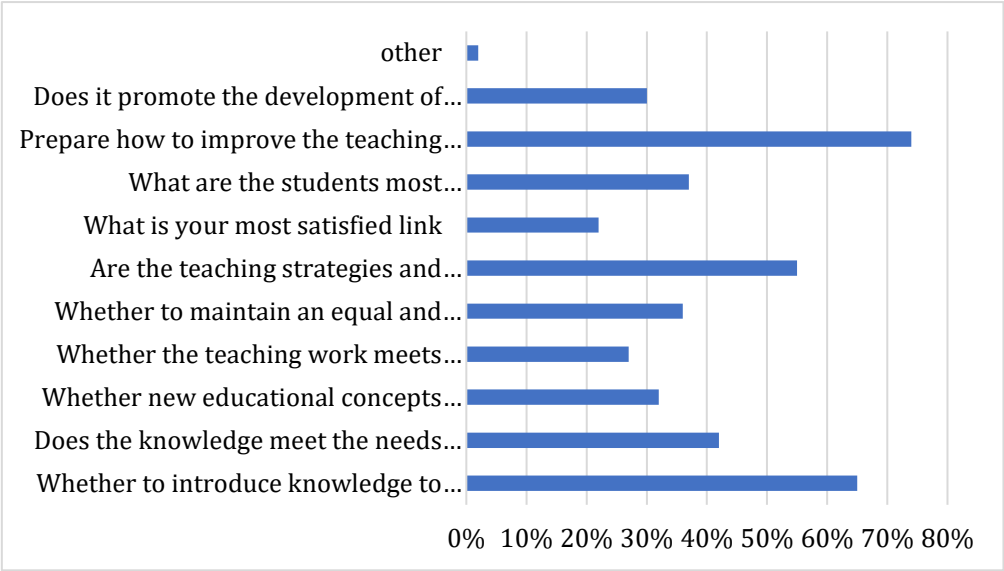

Figure 13: Statistical chart of frequency of question 27

According to survey data, 74.17% of teachers believe that "how to prepare to improve future teaching work" is content they must reflect on, followed by "whether to introduce knowledge to students accurately", accounting for 65.56%, and again "selected".

Whether teaching strategies and methods are reasonable", accounting for 55.63%, it can be seen from above data analysis that when teachers teach, they involve various aspects such as teaching content, teaching strategies, and student development, but relatively speaking, vast majority of of primary school mathematics teachers still focus more on reflection on teaching strategies and skills, but less on student needs, student development, student interests and their own feelings.

Question 28: What do you think is main factor that hinders your reflection on teaching? The statistical results are shown in Figure 14:

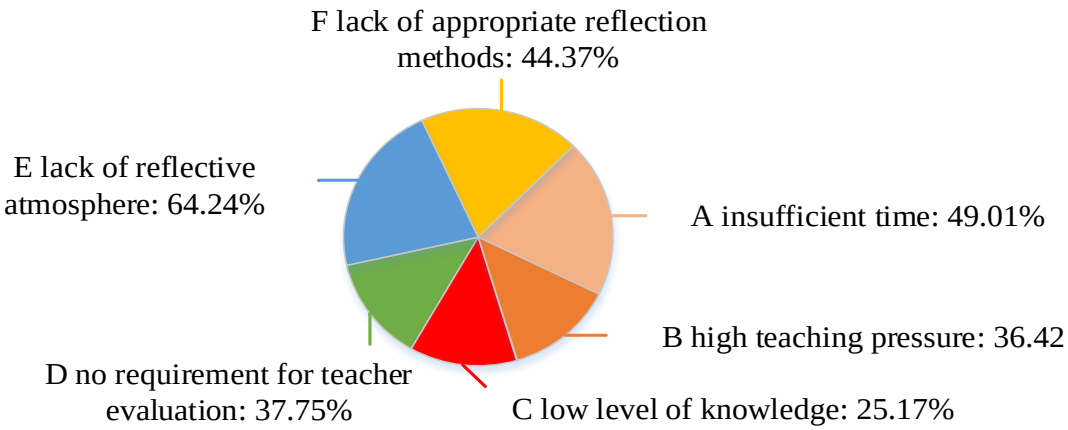

Figure 14: Statistical chart of frequency of question 28

After understanding and analyzing basic situation of teachers on teaching reflection, it is necessary for us to further understand degree of teachers' awareness of cultivation of students' core literacy in process of reflection, 12,13,14, 15, 16, 17, 18, 19, 20 questions are discussed, and basic situation of teaching based on cultivation of students' core literacy is analyzed. The data statistics are shown in Figure 15:

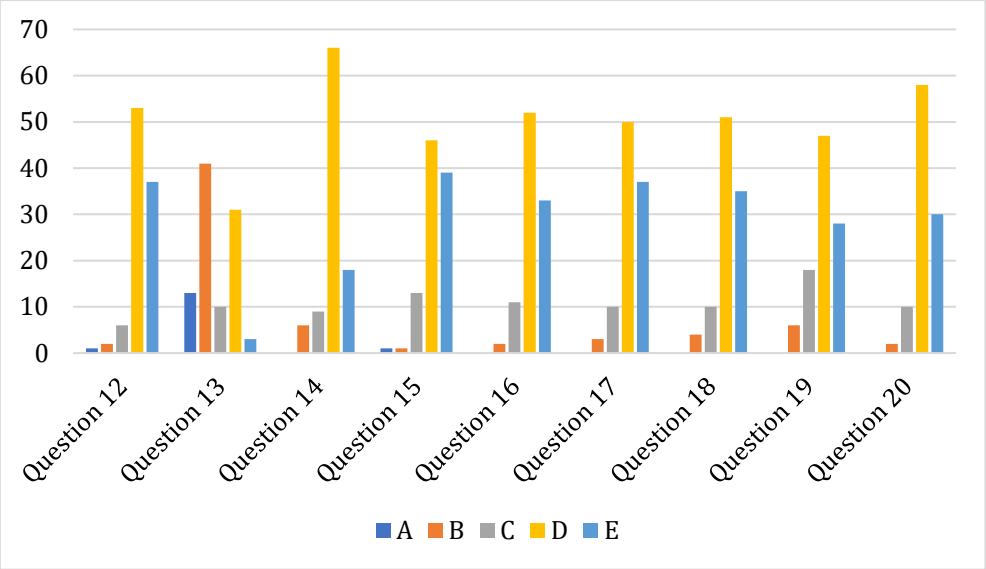

Figure 15: Dimension 3 Overall Statistics Chart

The survey results show that 84.77% of teachers agree with view that "teaching can promote development of students' core literacy", but most teachers pay more attention to students' mathematics achievement than to development of students' mathematics core literacy in their usual teaching. The improvement of students' basic knowledge is also more concerned. Most teachers believe that policies and policies of relevant education departments have little impact on their own teaching, indicating that their attention and thinking on some new policies and systems proposed by education department need to be further improved. The survey shows that teachers pay more attention to students' grades, accounting for 86.75%, but at same time, they also pay more attention to students' mathematical learning ability, application ability, innovation ability and mastery of mathematical thinking methods. All are related to development of students' core literacy of mathematics, because core literacy of mathematics, to a certain extent, is generalization and sublimation of students' abilities in all aspects of mathematics learning.

6. Conclusion

Primary school is a critical period for children to develop good study habits, accumulate knowledge, develop interests, and acquire abilities, and plays a role in life of a child. In primary school, in addition to knowledge education, there should also be spiritual education and learning ability education, that is, education to cultivate core literacy. Students' mathematical core literacy is a community of students' personal mathematical knowledge, skills and attitudes, closely related to life, and is also performance of students' abilities as a qualified citizen. The cognitive level of students in primary school is limited, so teachers' guidance and supervision are very important, and primary school mathematics teachers play an extremely important role in implementation of students' core mathematics literacy. Therefore, in process of implementing core literacy of mathematics in primary schools, it is necessary to strengthen improvement of teachers' abilities in all aspects, especially teaching reflection as an important part of teaching activities, which can improve quality of teaching by more than 28%, which should be paid enough attention.

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