



Continuous Improvement of the Level of the Teachers of Mental Arithmetic by Image of Abacus

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Because a great teacher produces a brilliant student, it is self-evident to strengthen the improvement of teachers. At present the mental arithmetic by image of abacus gradually spreads out and develops greatly, resulting in remarkable achievements. However we should pay attention to not only achievements but also shortcomings. The advantages of the mental arithmetic cannot be fully played because the teachers who take only several – day training teach it. Therefore it is necessary to improve the levels of the teachers.

There are many things we must do to boost the further sound development of the mental arithmetic by image of abacus. The author considers it from three aspects, namely continuous improvement of the teachers' morality, continuous improvement of their quality and continuous improvement of their teaching art.

I. The continuous improvement of teachers' morality

A teacher must be a paragon of virtue and learning, putting the improvement of morality on the first place.

1. Teachers must own good career morality, basing themselves on the popularity and paying attention to the improvement.

The main purpose of the mental arithmetic by image of abacus is popularity. Popularity is the basis and improvement is the guidance, affecting each other. Popularity refers to the improvement of teaching quality besides of the improvement of the trainees. However many teachers only pay attention to outstanding trainees instead of popularity, which is mainly caused by simple pursue for championship. Teachers always desire to cultivate top students in order to gain achievements in the contest while leaders also want to cultivate masters in order to gain medals in the competition. Let us make an assumption that there are two teachers – teacher A and teacher B who run four classes separately, 30 students in each class. Teacher A cultivates a top students after several competition and individual training in his four classes, but the ratio of input brain calculation (the result is that the total amount of students is divided by the students who have grasped the mental arithmetic) is only 23 percent. Though the grades of top student B in the four classes of teacher B is lower than that of teacher A, the ratio of input brain calculation accounts for 92 percent thanks to teacher B stress on popularity. Who makes greater contribution to the society, teacher A or teacher B? Can we think that teacher B is not as good as teacher A? It is certain that emphasis on popularity does not mean abandon or ignorance of improvement. On the contrary, we should pay attention to finding and cultivating top students for getting good achievements at early period when popularizing abacus and mental arithmetic education.

2. The teachers should hold strict teaching attitude with pursue for progress and further improvement.

We must remember this truth that modesty helps one to go forward whereas conceit makes one lag behind to go forward whereas conceit makes one lag behind. We cannot make continuous progress until we overstep ourselves. There is no doubt that we should cherish any achievement that is gained after years of research; however, let us consider whether it is really perfect in everyway. We must realize that there are some shortcomings in the achievement of high-ability people but some strong points in that of low-ability people, therefore if we are good at making use of these strong points we can further improve ourselves. I often take others' lessons and carefully make notes. At that time I don't mind whether the teacher has higher ability than me instead I try to acquire something to perfect my research. For example, I came to have the concept of geometric singular-principal after listening about the basis singular-principle from others; then I wrote the essay Charming Basis Singular-principle, with Singular Pithy Formula together with professor Yuan Yumin in Shandong Financial College and managed the application for national patent. Another example: In a Chinese song for children's sitting posture, I applied the sentence, "(learning a little forward,) to clear the abacus" just for rhythm. I considered deleting it for several years, but found no suitable substitute for it. Recently, I noticed some children raise shoulders for nervousness when I corrected their sitting posture. Therefore, now I turn it into the sentence, "(learning a little forward,) to relax the elbows and shoulders." Thus it appears better than the former.

II. Continuous Improvement of Teachers' Quality

1. Teachers must be proficient at driving beads with both hands, provide proper models and teach well finger method.

Deriving beads with both hands is the key content at the beginning of the course. If the teacher is not proficient or accurate at driving beads with both hands well, good teaching quality of the finger method cannot be guaranteed. I really found that some teachers misguided students in practice. The biggest distance between two adjacent beads in a rod is called the maximum open distance. Obviously, only when the maximum open distance is smaller than the biggest length between the thumb tip and index finger (or middle finger) tip, can the calculation of $0 + 9$ get proper operation. Otherwise, the two fingers or a single finger will leave the abacus, hence misguiding students with an improper model in the operation. In a teaching view and emulation, I noticed some children first move the upper bead and then raise fingers from the abacus, at last drive the lower bead to finally fulfill the operation. I asked one of them the reason. He said, "The teacher does so, so we do," When I looked up at the teaching model abacus hanging on the blackboard. I understood that the overlong maximum open distance caused the teacher's embarrassment. Children are not to be blamed for their strong model ability.

2. Teachers must bear solid foundation of multiplication, proficiency of free parallel arrangement, and frequency of pithy formulas.

The teacher who teaches multi-digit multiplication and division by means of single multiplication in consecutive operations (including consecutive addition and consecutive subtraction) in the way of speaking out a unit's results must be good at the method. The teacher who teaches multiplication and division in consecutive operations through parallel arrangement must be proficient at the parallel arrangement. The teacher who teaches multi-digit multiplication and division in the square system must have frequency on the square table.

Otherwise, if the teacher has a weak foundation of mental arithmetic on multiplication, you can imagine how poor his teaching effect of multi-digit multiplication and division will be.

3. Teachers must have comprehension of basic proposition common sense, and be able to improvise questions with balanced numerals.

At present, the proposition standard gets increasing perfection in Zhushuan circle. Teachers must learn about proposition general knowledge, and guarantee numeral balance in improvisation, to present children with the same or similar chance of each numeral. It seems difficult but appears easy in practice to ensure numeral balance.

4. Teachers must well grasp basic methods on checking computations, avoid application of computers, and make independent judgments.

When I gave lessons to train mental arithmetic by image of abacus teachers for the railway system and local area, I made a survey on their quality, I but found 92 percent of them have little general knowledge on checking computations, If a teacher grasps the basic method of checking computations, he can complete the operation and check it before students. Then students can check their answers with the teacher. The teacher should avoid application of calculators for computation check, in order to give a good impression to students.

5. Teachers must frequently organize competition and contest, for encouragement and interest stimulation.

Children are competitive and desire for various contests, such as single test, choice contest, and overall contest. The prizes such as place prize and advancement extent prize can be set to encourage students for continuous improvement and new progress. For example, the advancement extent prize is set for backward students, to timely encourage those who have a large advancement extent to catch up with the advanced, thus stimulating the latter to do better.

6. Teachers must perfect their knowledge structure, gradually make progress, and have special know-how of a kind and general knowledge on others.

Teachers' narrow knowledge scope will block them to fulfill their teaching task perfectly. Take multiplication and division as an example, the special know-how of a kind means much proficiency on the teaching contents; the general knowledge on others means familiarity or general knowledge of other calculation methods or mental arithmetic. Gradual progress should be made to make up for the knowledge gap and to strive towards a higher level. By the way, teachers in convenient conditions should often practice mental arithmetic, such as simple complete division and rolling multiplication.

III. The continuous improvement of the teachers' teaching art

1. The teachers must think over colorful teaching art in order to combine education with creation and make teaching interesting and absorbing

Because the students who take the lessons of the mental arithmetic by image of abacus are children at the age of 5 to 11, we should adopt various measures to strengthen the teaching effect

such as tales, riddles, games and nursery rhymes and the children languages to attract children. In fact there is a teacher who is good at expression for perfect teaching of the mental arithmetic by image of abacus without exception. The author also has thoughts and feeling and tries to organize exercises in various kinds of ways, for example, I ask the students to make continuous additions or subtractions of certain numbers, namely each student in order stands up to speak out the actions of driving beads to lead others' exercises. There is no problem for some student who makes mistakes since it is ok to correct him.

2. The Teachers must devote themselves to ongoing reform of teaching through diligence and innovation

The scope of the reform of teaching the mental arithmetic by image of abacus is very wide. At present the author only considers two points, one is how to realize the input brain calculation, namely to discuss the ways of input brain calculation for the students who have grasped addition and subtraction. Nowadays the ways in common use are transitional method of driving beads with blank rods and transitional method of tough – driving beads, which are primary exercises in use of number-bead exchange, but is it worthy to consider whether there are any other transitional methods? The other is appropriate adoption of several knowledge taught in the senior and middle schools, for example some students who have such ability of fast calculation that he completes the exercise of additions of 748 ($748 + 748 + 748 + \dots$) raise his hand for new calculation, so the author gives him other numbers for addition. Later I ask him to do the exercise of changing one number to six numbers with the concept of permutation. In addition the author cultivate the students' ability of space imagination by teaching.

Courtesy:

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