

Abacus Mental Arithmetic System can promote All-round development of students

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The writer has engaged in teaching Abacus Mental Arithmetic since 1990. It is proved by several years' teaching results that Abacus Mental Arithmetic is remarkable for developing children's potential intelligence. It has strengthened children's memory、attention、imagination as well as logical thinking capacity, making children develop in all-around way. In order to further explore and validate the effects acquired, the writer has carried out contrast experiments based on current Abacus Mental Arithmetic class, which has 48 students, among them 26 are boys and 22 are girls. 70% of them are from countryside, and did not receive good preschool and family educations. The corresponding class (contrast class) has 25 boys and 21 girls. Abacus Mental Arithmetic lecturers have been offered to the abacus class since primary 1 (grade 1); while the corresponding class (contrast class) has been offered mathematic texts of centralized compilation in Jilin province, and the math teachers are with seasoned experience. Scores of both classes since primary 1 are shown in table 1.

Table 1	Comparison of Scores			
	Primary 1		Primary 2	
	Exp. Class	Corr. Class	Exp. Class	Corr. Class
Numbers of student	48.00	46.00	48.00	46.00
Average mark	93.60	90.50	90.20	89.00
Excellence rate (%)	94.80	82.00	86.00	65.00
Passing rate (%)	98.00	94.00	97.00	90.00

Average mark、excellence rate、passing rate of Abacus Mental Arithmetic class were generally higher that those from the corresponding class (contrast class).

We conducted a basic-operation of mathematic contest in the 1st semester of Grade 3 in primary school. Contest tasks were determined by math teachers of the corresponding class (contrast class). After test, their average mark、excellence rate and passing rate of Abacus Mental Arithmetic class still rank first (shown in Table 2).

Table 2	Score of Mathematic Contest			
Class	Numbers of Student	Average Mark	Highest Score (100 - 90)	Excellent Rate (%)
Experimental	48	92.80	15	85
Corresponding	46	82.50	1	38

The teacher who offered contest tasks excitedly said: “Abacus Mental Arithmetic is really good. It shall be advocated and developed.” Calculation ability of students from abacus class is undoubtedly perfect; what is their thinking ability and logical reasoning competence? Thus another practice contest on subjective sums was offered for the same group. Test questions were decided by the same teachers. Results are shown in table 3.

Table 3	Subjective Sum Contest				
Class	Numbers of Student	Highest Mark	>80 mark (%)	60 - 79 (%)	<59 mark (%)
Experimental	48	98	15.00	25.00	60.00
Corresponding	46	83	1.80	8.00	90.20

The highest score in abacus class is 98, but 83 in the corresponding class (contrast class). The passing rates differ 30.2%. What is the language score? Table 4 shows the results of reading and listening of language competition held in grade 3 from primary school.

Table 4	Listening and Reading Competition				
Class	Numbers of Student	Average Mark	Pass (%)	Credit (%)	Excellent (%)
Experimental	48	72.60	60.00	29.00	11.00
Corresponding	46	59.20	48.20	50.00	1.80

As shown above, the average mark、excellence、credit and passing rates of Abacus Mental Arithmetic class were generally higher than those from the corresponding class (contrast class).

More strikingly, we found that memory competence of students from abacus class is particularly good. To verify it, a reciting match was prepared. A short article was offered by the headmaster. Students had 3 minutes for preparation. Then they should begin to recite. Results are shown in table 5.

Table 5	Reciting Match		
Class	Numbers of Student	Numbers of Qualifier	Excellent Rate (%)
Experimental	48	42	87.50
Corresponding	46	1	2.20

Gap between the excellent rates is 87.5%. Obviously, introduction of Abacus Mental Arithmetic in class is not only a scientific method, but can help to develop students' potential intelligence, to promote children's memory、reaction、logical thinking、reading capabilities and enhance their imaging abilities.

With respects to moral trait and physical quality, students from abacus mental arithmetic class are gracious in character, and always rank first in sports competition organized by all primary schools in the town. Physical marks are shown in table 6.

Table 6	Physical Report				
Class	Numbers of Student	Excellence		Credit	
		Students	Rate (%)	Students	Rate (%)
Experimental	48	32	66.70	16	33.30
Corresponding	46	23	50.00	23	50.00

The gap between the excellence rates remains at 16.7% that is again higher than that in contrast class.

Why Abacus Mental Arithmetic Education can promote all-round development of students? The reasons may be as follows.

1. Abacus Mental Arithmetic can help student firmly master basic knowledge and skills. Arithmetical competence is a key point for the math-teaching in primary schools. By employing abacus computation rules and laws, students can easily know the addition and subtraction of multi-digits through the systems of decomposition of 5、combination of 10 and the simplification of addition and subtraction within the 20.
2. "Thinking power" is the core of intelligence. Abacus Mental Arithmetic Education can easily help to cultivate students' competence of logical thinking through practices. From the point of psychology, children recognize a certain matter through actions. Since thought stems from actions, introducing abacus into class

will surely do a good job. Firstly, by bead-move beads, students will become more active and positive than before. Secondly, with the help of abacus, either the “overall development” or the “individual development” has to undergo the following three procedures, “action from intuitive thinking” → “specific image thinking” → “abstract logical thinking”. The learning phase for children, mainly featured with the development from “action from intuitive thinking” to “specific image thinking” and subsequently transited to “abstract logical thinking”, complies with the criteria of Abacus Mental Arithmetic Education. Therefore, abstract problems are simplified through a direct and actual method. Abacus as a teaching tool in school is basically and obviously important.