

启发儿童智慧的奥秘28

Psychologist Anokhin calculated that the total number of an average cerebrum's synaptic junctions and message delivery paths is the number 1 followed by 15 million kilometers of "0." This number is many times that of the total number of atoms in the universe. It is no wonder Professor Anokhin says the human brain has unlimited potential!

Suppose a Chinese character takes up the capacity of ten message deliveries. If a person reads ten thousand words a day for eight hours, then the brain's trillion-cell capacity is sufficient for a person to use for three trillion years! This is ten thousand times the number of books--fifteen trillion in American city libraries!

Modern education trends toward developing children's potential instead of just accumulating knowledge. Learning abacus mental arithmetic is one of the methods to effectively stimulate cerebral functions.

Optimum age: 4-12

Su Wan Ting's motto:

Yield twice the result with half the effort, and not half the result with twice the effort.

From an accumulation of experience and observations in abacus and mental arithmetic education, ages four to twelve are the best time to learn abacus and mental arithmetic.

This period of time is the "enlightenment period" and "best period" for cultivating human brain functions. Children's hand muscles start growing at age five and by eight or nine years old the speed of growth increases; the greater strength and nimble fingers are perfect for manipulating the abacus, qualifying these children to train their brainpower via this skill which requires the simultaneous use of eyes, ears, hand, mouth, brain and other organs.

In addition, abacus and mental arithmetic belong to the fundamental educational fields of counting and arithmetic. With lighter workloads from school, children at these ages can seize the opportunity to strengthen skills in abacus and mental arithmetic both to avoid having to do so with greater workloads later on and to build a good foundation for learning other subjects in the future.

Some abacus and mental arithmetic teachers think that the effectiveness of teaching five and six year old kindergarteners is better than elementary students. This is because for kindergarteners, math is still a blank piece of paper in their heads. Without the concept of counting, it is easier to be taught abacus and mental calculation.

Chen Wan Fa, Director of the Association of Children's Abacus Calculation in Taiwan says, "the learning age can be lowered to four years old, but the prerequisite is the ability to write Arabic numerals. Four to five year olds already have the ability to identify changes in quantity and are not under stress from schoolwork. Their ability to absorb is as fast as their language development, making their learning effectiveness as strong as those of first or second graders. It is very common for those who start to learn at age four and learn diligently to reach at least the preliminary level in mental calculation by age six."

National Taichung Institute of Technology professor Yang Chu Hung references the "cognition theory" to explain how an individual's brainpower develops gradually in stages. In other words, children must reach a certain age to be mentally mature enough to learn a certain subject. At every stage there is an age limit; by learning too early on, it would be like pulling up seedlings to help them grow faster, harmful instead of helpful for children. Therefore, teachers ought to pay attention to the age of pupils, and not use the same standards for the few outstanding students, that is to say those with the brainpower of geniuses, and the average child. In other words, teachers ought to pay attention to individual "differences" and "teach students in accordance with their aptitude."

Overall, the age of learning abacus and mental arithmetic in Taiwan is gradually lowering. This may be due to progress in society and advancements in technology which have helped children to develop faster mentally. The two children of CMA founder Tai Chiang Ching both started learning abacus and mental arithmetic by age four, and have yielded good results.

For children learning abacus and mental arithmetic, the abacus is a tool for calculation as well as an amazing toy which displays numeral concepts unpredictably. The abacus is clear in image and simple in structure; by producing numbers with the moving of beads, it possesses both abstract and concrete characteristics. It forms tangible numeral concepts, then by moving the beads, the numbers change again, adapting to children's fondness for movement.