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Because of this amazing effect, we can see many whizkids in abacus mental arithmetic calculating numbers faster than electronic calculators. They can even answer 20 math questions using numbers of more than eight digits.

Tai Chiang Ching's teaching has also proved that, when children learn abacus mental arithmetic, they know how to utilise the function of imagery memorisation. Afterwards, they can also utilise the same method of image memorisation for every subject in school, thus enhancing their concentration.

Thus, the method of image memorisation can help to enrich children's intelligence. That's the reason why children who learn abacus mental arithmetic become smarter.

Of course, they also have to learn it in through perseverance. Tai Chiang Ching said, "According to psychological study, the principle of a 'forgetting curve' means that the materials that have just been learned will be forgotten fast. It has to be learned for a while so it'll take a longer time to forget. In other words, in order to remember one thing for longer, you have to practise it consistently." Therefore, children must practise repeatedly even when they have learned how to use "image memorisation" to perform abacus mental arithmetic. Nevertheless, they need to practise more and review their progress repeatedly in order to maintain its effect.

Constructive mathematics and the education of abacus mental arithmetic

Taiwan's education in its early days was frequently criticised as being a "spoon-fed education". Since teachers taught in a rigid and formulaic way without flexibility, students only learned how to cram for exams. However, if the questions on the exam were posed in a more flexible way and were not just copied from textbooks, students often wouldn't know how to answer. Students didn't only know how to put to use what they had learned, but they also applied what they had learned to their life experiences. Thus, this kind of education

was criticised as “just spoon-feeding the ducks,” implying that it was an unproductive method of education.

After 1996, the Ministry of Education started reforming the education system in Taiwan and carried out “constructive math” in elementary schools, hoping that “guided thinking” could replace “spoon-fed memory.” According to the spirit of “construction,” knowledge must be “constructed” by students themselves based on their own life experiences. Math questions in the exams were designed to be more attached to life, such as the addition and subtraction of coin values, fruits, animals and plants, exchange of merchandise, etc. The teaching method of constructive math emphasised the understanding of concepts and learning in order to apply them to life experiences.

This kind of teaching should be good initially. However, in order to make students understand the meaning and concepts of calculation, much teaching of constructive math broke a simple math question down into several calculating methods. In this way, the process of calculation became more complicated and student took much more time to finish calculations. Students therefore faced a heavier burden in calculation and sometimes got confused. Thus, some parents criticised this kind of teaching, accusing it of causing their children’s calculation skills to be worse than sixth graders.

As a result of Tai Chiang Ching’s experiences in teaching, he suggested that, before carrying out a “constructive math teaching method,” children should learn to build their “basic skill in calculation.” For example, before a building is built, there must be blueprints, tools and labour in place.

Thus, children should be trained in basic calculation skills before talking about so-called “constructive learning.” After their foundation of calculation skills has been built, they can start to move on to the next levels.

On the other hand, Tai believed that we should not avoid memorising the multiplication table.