

## Abacus and Mental Arithmetic and Genius

### I. What is the mental calculation?

The mental calculation is defined as calculation of number conception and the way of imaging the abacus calculation in brain is called as the mental arithmetic by image of abacus and mental arithmetic. In recent years we have been discussing and studying the mental arithmetic by image of abacus and mental arithmetic, which is more advantageous than other skills in the light of the result of examination. However its teaching methods are still not satisfactory although there are several research materials.

Different from abacus and mental arithmetic, the mental arithmetic by image of abacus and mental arithmetic means that we calculate on the abacus in our brain without seeing the abacus, which maybe is the difficulty about its teaching. This article will further study what the mental arithmetic by image of abacus and mental arithmetic is and discuss the relations between the mental arithmetic and genius.

### 2. The ability of the mental arithmetic by image of abacus and mental arithmetic is congenital instead of postnatal

Although people have various abilities, the ones with a kind of genius have strong ability in related aspect. We take the swimming players for example. Under the same conditions for the same exercises, different swimming players make different degree of progress. It is known to all that whoever has genius will make a figure, therefore congenital factors play a very important role to great degree.

### 3. The relations between people with brain image and the mental arithmetic by image of Abacus and mental arithmetic

It is very difficult for us to describe the definition of real abacus and mental arithmetic. Among many arguments, one proposed suggestion is that abacus and mental arithmetic in nature is a kind of image of abacus in our brains. The proponent is Mr. Nakada Kona, he once aired his ideas in a research conference held by National Abacus Unit as follows:

Under such definition about brain images Nakada stressed that the training of the mental arithmetic by image of Abacus and mental arithmetic is carried out by making full use of brain images, namely turning abacus into brain images through related training.

The fastigium of brain images is the age of 11 to 12 for boys and 11 to 12 for girls, which almost disappears at the age of 14. After the fastigium, boys' ability of brain images will reduce dramatically while girl's ability will reduce gradually. During the fastigium 80 percent of boys have brain images and 38 percent of girls still have brain images at the age of 14. However even strong ability of brain images will gradually disappear without training, so we must apply, cultivate and exert it in time.

After observation and examination, the imaging situation of the trainees' ages and progress are approximately in line with Nakada's viewpoint despite of several exceptions. Nakada also thinks that Japanese people with perceptual brain images account for 75 percentage of the total, which almost equals to the ratio of people with brain images in the reality.

According to the ratio of people with brain images, 80 percent of children have the foundation to grasp the mental arithmetic by image of Abacus and mental arithmetic, which will not be forgot with lifelong benefits.

Because of different foundations, it is impossible that all trainees could take the mental arithmetic of over 8 digit numbers (the way of taking the mental arithmetic while listening to the numbers). Anyway his viewpoint is very interesting.

In addition someone advocates the idea of using remaining images for the mental arithmetic by image of abacus and mental arithmetic. In recent years the idea that the mental arithmetic relates to the cerebra and improves the development of right brain has also appeared. Therefore the study on the mental arithmetic by image of Abacus and mental arithmetic has taken a great progress.

The discussion will be taken on in the aspect of psychology as followed.

#### **4. Intelligence, knowledge and ability**

Intelligence is a potential, which is a genius based on biological function and desperately depends on heredity .In the view of psychology, intelligence is a congenital possibility whose role depends on how to tap it. In another word intelligence is a congenital genius. Based on the result of intelligence test, the intelligence quotient of most people is 100. The ratio of people both with lower or higher intelligence quotient than 100 is lower. Dividing the intelligence levels according to intelligence quotients, we call persons with intelligence quotient of over 140 as genius, which is one among four hundred people. It is said that the ratio of the genius with the intelligence quotient of over 160 is about 0.017 percentage.

After comparison, we found that the ratio of the talent of the mental arithmetic is in line with the distributing situation of the intelligence.

Intelligence is congenital while the knowledge is postnatal gained after training.

Ability is different from intelligence and knowledge. Intelligence is a general and formal ability while ability is an individual owed special ability, with which music and painting are created. Ability must go through some cultivation because there are no inherent musicians and painters. Therefore there are differences among intelligence, knowledge and ability. Then what category does the mental arithmetic by image of Abacus and mental arithmetic belongs to?

#### **5. Research and Summarization**

The initial research on the mental arithmetic by image of Abacus and mental arithmetic shows that the following conditions must be possessed to grasp this skill.

1) The genius of brain images. Since 80 percent of children have the genius of brain images based on the viewpoint of brain images, we can help them to love the mental arithmetic by image of abacus and mental arithmetic and to fully tap their potentials.

2) Exercise from the childhood. Because the fastigium of brain images is the age of 11 to 12, people can gain good effect of training if they calculate on abacus from the I childhood.

3) The ratio of the talent. According to distributing situation of the intelligence, there is one talent with genius among 400 people. Though there is still uncertain about the standards of the genius of mental arithmetic, generally speaking, those that can do the abacus /mental, arithmetic with over six-digit numbers (to do the mental arithmetic while listening others announcement numbers) can be called genius.

We cannot go into details due to the limitation of the article. Bold discussion has been made in the above on the issue of abacus /mental arithmetic and genius. The children can bring their genius into use when their potentials are taped. The teachers' functions are to realize their absolute potentials. We should believe in the children', probability and make constant efforts to enable them 10 master abacus / mental arithmetic.

About the key points of the mental arithmetic by image of abacus and mental arithmetic, there are already some books for reference, so we do not talk about it here any more.

Next using this opportunity, I will talk about my views on the expectation of 21<sup>st</sup> century abacus and mental, arithmetic education.

The advantages of abacus and mental arithmetic are' the education of mental arithmetic by image of abacus and mental arithmetic. The world is becoming gradually small and the machinery civilization is developing day by day, which will not retreat in the coming days. The era that use abacus to calculate has been replaced by computer. It is certain for abacus and mental arithmetic to shift to mental arithmetic by image of abacus and mental arithmetic. It is forever necessary to calculate with ones' own brains, which will attract much, more attention in the future. At present, obvious improvement has been made on the research of brains' mechanism of human beings and the conundrum on the relationship of mental arithmetic by image I of abacus and mental arithmetic to right brain is also being solved out. We believe that one day in the future we can totally work out the conundrum and at that time we will make further sure about the necessity of abacus and mental arithmetic. i Mental arithmetic by image of abacus and mental arithmetic that based on abacus and mental arithmetic is unique in the cultural circles of Chinese characters .We firmly believe that this kind of culture is sure to be popularized the whole world owing to its extreme superiority.

**Main reference:**

**Courtesy:**

[1] The second revised version of " guide on mathematics in primary school", chapter one "general outline"

[2] " Abacus and mental arithmetic world", the speech draft of research seminar

[3] "Psychology" (Juqi Mian)

[4] How to make your child bright-on the development of, the children's brains" (Nakada Kona)

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