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Appendix

Eight learning stages of CMA

Principle Liu Da-an, who has joined Taiwan's CMA franchise system for more than ten years, was promoted and carried out Tai's teaching projects and methods in abacus mental arithmetic. He compiled "eight learning stages for abacus mental arithmetic" based on the teaching experiences from the teachers of CMA as follows:

The stage of exploration: Beginner's stage

The beginner's stage of abacus mental arithmetic is the beginning for children to learn abacus mental arithmetic. When children start to learn abacus mental arithmetic, teachers and parents can immediately explore and find out the children's "learning behaviour" (focusing or not), characters of learning (responsible or not), attitude of learning (active or not), and so on. When children love to learn, their parents should encourage them in order to stimulate their interest in learning. When children avoid learning, parents should cooperate with teachers to direct and instruct children to learn in order to prevent them from learning bad habits and affect the result of learning.

※ Parents and teachers should observe children's "learning ability," "personality," and "attitude" carefully at this stage. Children's cognitive development is built by "themselves," "parents" and "teachers" together.

If the direction is correct, children's learning achievement can be very effective.

Stage of recognition: Level 13 to 11 of mental arithmetic

In this stage, children mostly are curious about the exam on abacus mental arithmetic. Teachers and parents therefore should encourage children to take the exam (it's better to begin with level 13). Children can not only understand the meaning of the exam, but

also get familiar with the exam in order to avoid problems while facing a larger scale exam or competition. On the other hand, children can enhance their “sense of achievement” and “learning interest” by providing them a chance and environment for “group learning experience”.

✧ This stage will train children to ask the questions, face problems and develop the ability to solve the problems.

Stage of adoption: Level 10 to 6 in mental arithmetic

After the stages of exploration and recognition, children are rather familiar with mental arithmetic. In this stage, children will make great progress in skills of mental arithmetic. They will be more willing to learn if parents and teachers can encourage them to take the exam, they will make greater progress and have more confidence with a sense of achievement.

✧ At this stage, if children can avoid the temptation of television and video games, they will be able to make greater progress. However, they should practise in a correct way and right speed, as well as know how to manage time properly.

The stage of proficiency: Level 5 to 3 in mental arithmetic

In this stage, children are prone to give up, especially those with lower resistance to stress will encounter more difficulties in learning. Although children have already established a good foundation for mental arithmetic this stage, they will face more difficulties and challenges. If teachers and parents can encourage them in a timely manner and try to increase their calculating speed while enhancing their accuracy while practicing, children’s courage and endurance can be improved. Training them to face any problems and challenges in order to overcome any learning barrier would help as well.

✧ At this stage, parents should try to understand what their children are thinking. This is in order to help children face and solve

difficulties through cooperating with the teacher, in order to prevent children from giving up on learning.