




PREFACE

Children love playing. They can play and play for hours on end. They don't seem to tire, and would even ignore calls for "bath-time" and "dinner", and go on playing.

Many children don't like work, especially school work or homework. In particular, many children don't like math. They find math difficult and incomprehensible. Reluctantly, they struggle at it, and endure the boredom, difficulties and unpleasantness. Sometimes when they do not fully understand what they are doing, they end up frustrated, and "hating math" in the process.

But math is vital in education, and students have to study it until the 10th grade (O-level). Math is also a "hierarchical" subject — it means that if you do not understand or know how to do math at lower levels (the foundations), you will have even greater difficulties at higher levels.

My five-year old granddaughter Rebecca  loves math. She can do mental and written sums for hours on end. She would even ignore "bath-time" and "dinner" calls, and continue doing her math. Except that she doesn't regard what she is doing as "math". She thinks she's "playing cards" with Grampa!



The games in this book are suitable for both boys and girls. For convenience, we will use the pronoun "he" in this book, instead of the more accurate "he or she".

I am a grandfather, with a special interest in teaching math to the young. I love my grandchildren; and I love math. So, I have read many books and articles on math; on the teaching of math; on “the math brain”; “the math gene”; “math puzzles”; “math circus”; “math delights” etc. I have spent many hours thinking about how to make math easy and fun for my grandchildren.

Last year, I was at a conference overseas. One day, over lunch, I happened to sit next to a mother with young children. The conversation drifted to the difficulties of bringing up young children. She confided that her children in primary school “couldn’t do math”; “couldn’t add”. I shared my experience with her, about how my then five-year old granddaughter could add and subtract triple digit numbers. She was surprised. I explained to her how we did it.

On another occasion, I was having a business lunch with some company directors, including two university professors. The subject of conversation drifted to the book that I was writing. One professor had a six-year old daughter. “She’s very bright. But from time to time, she has difficulties with her math.” The professor wanted to help her overcome her frustrations when she has her difficulties in math. I explained briefly how I “played cards” with my grandchildren. “You must hurry up and finish your book quickly. I’ll buy a copy from you right away.”

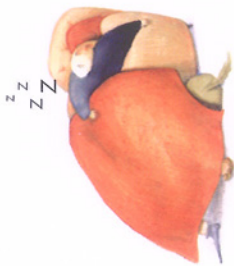
The thought that there may be other young children with similar difficulties with simple math prompted me to finish writing this little book, to help in a small way, children with similar difficulties. My hope is that parents and grandparents would read this book, spend some time “playing cards” with their young loved ones, and help them, in a fun and pleasurable way, to overcome their fear of and difficulty with math.



I am of the opinion that how you teach is more important than what you teach. Hence, whenever possible, parents and grandparents should play with their children. Teaching through play is a time-honour approach. Do not delegate this critical function to teachers, especially the teaching of this “difficult subject, math”. With limited time and resources at their disposal, teachers have to deal with classes with dozens of children, with different abilities.

Children, even very young children, enjoy competition, which gives an added sense of achievement when they “beat” some one else. (My grandchildren love “beating” Grampa in our card games. In their innocence, they know they are not “as clever as Grampa” but when the results showed that they had “beaten” Grampa, they are absolutely delighted, and tell everyone in the family about their achievements. Such achievements help them develop a healthy sense of self confidence and a positive self image in a world of gigantic grown-ups.

Children also learn through challenges — starting with the super-simple, and progressively, step-by-step, moving upwards, to higher and higher levels. A game (or task) that is too simple for a child soon becomes boring. Conversely, a game (or task) that is too difficult soon becomes frustrating. Therefore parents and grandparents must always bear this in mind. When a game becomes too easy or boring for a child, create your own variations on the same theme, or move upwards to a new game with a higher level of intellectual challenge. The art of keeping the child enjoying his games (and his learning) is to balance the ability of the child with the intellectual demands of the game at hand. Diagrammatically, this can be represented in the figure below.



Too Simple
(Boring)



Too Difficult
(Frustrating)



Child's
Progressive
Ability



Increasing
Intellectual
Challenge

* The concept represented in the above figure is compatible with the detailed results of decades of research by Mihaly Csikszentmihalyi, Professor of Psychology and Education at the University of Chicago. See, for example, his books "Living Well - the psychology of everyday life", "Flow: the psychology of optimal experience", and "Creativity: Flow and the psychology of discovery and invention".

As the child's abilities progress, move slowly up the ladder of intellectual challenge, always listening carefully to the child's preferences, for clues on how he's enjoying the game, and learning the math. Never rush a child when he is not ready, or does not fully understand the game, or is unable to do the task required. Do not push him to play the game that he doesn't like.

Even as you encourage the child to play the games at progressively higher levels, be sensitive to the child, and let him decide what he wants to play. This way, "math" will always be "play" to him.