Right age of learning abacus?

Human brain starts to develop at the age of 3 years and extends to 100% between the age of 5-14 years. At 5 years the child has a very absorbent mind. Their mind is fresh and free from all the responsibilities and tensions of life. Therefore we believe in nourishing an absorbent mind.

Improved concentration skills by learning abacus

Indeed! Abacus mental arithmetic training here is a good example to explain why: working out a written- down problem on an abacus is one of the abacus calculations. When you work on addition & subtraction with 10 numbers of 2- digits each, you have to move abacus beads approximate 30 times and if you make even one mistake, your answer is incorrect! So to get the right alert! This gradual & regular process builds concentration with practice! Secondly, routine steps followed in classroom, build concentration.

· Dictation- This is also called listening mental arithmetic. Someone will read aloud the number and the listener will perform calculation

· Observation-the person will use the numbers that he sees and imagines the number to be the beads on an abacus. He will use this imaginary abacus to perform calculation.

· Mental calculations – The person will dictate to him self silently and use an imaginary abacus to perform the calculation.

Importance of abacus even today with the spread of office automation machines

There are various essential skills learnt in childhood, and calculation skills are one of them. It is the best way for children to learn how to calculate by practicing abacus. In addition, mental arithmetic calculation skills are useful for everyday life and effective for the right brain activation.

RESEARCH ON ABACUS

About abacus

Abacus is a popular tool used for doing mathematical calculations with fast speed and accuracy. It's the most simple and practical way to learn arithmetic & developing one's brainpower. Abacus uses math as the base subject. It's the earliest calculating device of the world.

ABACUS has a frame with colourful beads mounted on rods on it that are used for counting & doing the mathematical operations. Each bead has got a value. Moving the beads up and down does the calculations.

Abacus has proven to be an ultimate Brain Development program for children. It is the foundation for a strong mathematical Aptitude & improves concentration in all other areas.

The need of mental arithmetic for children

As we need physical exercise for physical fitness, similarly we need mental exercise for brain development and mental well being. Mental arithmetic helps children become more:-

· Competent
· Confident
· Improve their overall abilities
· Concentration in all areas!

Ability to concentrate(Concentration)

For the soroban examination, you have to provide a certain number of correct answers within the time limit of 10minutes. For e.g, in the first grade aexamination for multiplication, you have to move your fingers more than a 100 times to operate the soroban for multiplying a 6 digit number by a 5 digit number. During the calculation, the multiplication table is mentally recited 30 times. Then, an answer of 11 digits is provided. Not a single mistake can be allowed in this process. When a question such as this is repeated 20 times, the examination is completed. Fingers move more than 2000 times only for the multiplication test.you now understand that soroban education develops concentration through the training of finger movements.

Ability to visualize and to be inspired (Inspiration)

Ms. Kimiko Kawano at Nippon Medical School has demonstrated in her research that soroban users in high 'dan' (ranks) use their right brain in the soroban method of mental calculation. Inspiration, such as problem solving and invention, is said to come from the right brain. The “brain power” that enhances the shortest route for the thought process needed for problem solving is also developed there. In addition, Professor Toshio Hayashi at Osaka Prefecture University emphasizes that the training of finger movements encourages synapses to be entwined with each other and constructs neuron networks. Inspiration creates new concepts and is one of the “brain powers” that is required in many fields.

Ability to memorize (Memorization)

Mental calculation can be classified into 2 groups. One is the soroban method that uses the right brain. The other is the mathematical method that uses the left brain. In the soroban method of mental calculation, the right brain memorizes the patterns of answers processed. In this method, answers are stored in the long-term memory as intuitive images. The memorization method (which uses the left brain) that is commonly utilized for examinations only uses the short-term memory. There seems to be no wonder that 80% of the students at the University of Tokyo and Kyoto University have learned the soroban. This type of “brain power” is acquired through mental calculation training. People who start this training while still young are more likely to acquire this “brain power” effectively.

Ability to observe attentively (Insight)

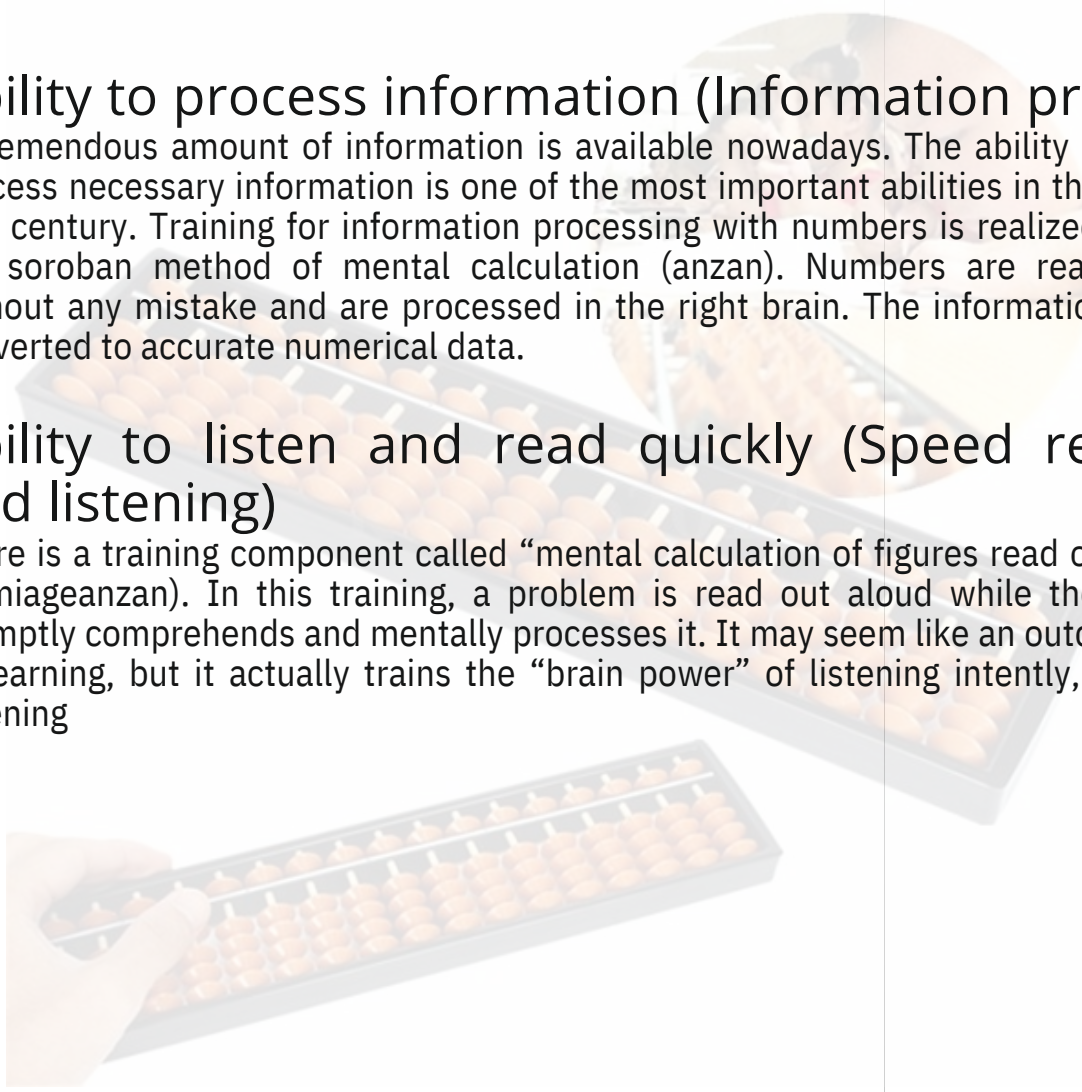
The ability to observe attentively is greatly improved through soroban training.You can learn to observe numbers attentively by training to carefully monitor them. No mistakes are excused in this process. You are considered successful when you are able to discover the workings of numbers.This practice leads to the ability to analyze various aspects with the use of numbers.

Ability to process information (Information processing)

A tremendous amount of information is available nowadays. The ability to rapidly process necessary information is one of the most important abilities in the twenty-first century. Training for information processing with numbers is realized through the soroban method of mental calculation (anzan). Numbers are read rapidly without any mistake and are processed in the right brain. The information is then converted to accurate numerical data.

Ability to listen and read quickly (Speed reading and listening)

There is a training component called “mental calculation of figures read out aloud” (yomiageanzan). In this training, a problem is read out aloud while the student promptly comprehends and mentally processes it. It may seem like an outdated way of learning, but it actually trains the “brain power” of listening intently, or speed listening



Soroban and the Right Brain

Recent studies have shown that the abacus method of mental calculation is effective in the development of the right brain. At first, this idea was only a hypothesis, but the recent development of high-tech machinery has helped provide tangible research data. In this section, we will present information provided by researchers who study the effects of abacus training. A

Contribution

The Ripple Effects and the Future Prospects of Abacus Learning.

Ms. Shizuko Amaiwa
Professor, Shinshu University, College of Education January 20, 2001

Lecture

What Abacus Education Ought to Be for the Development of the Right Brain.

Dr. Toshio Hayashi, Doctor of Engineering
Professor, Osaka Prefecture University
Director, Research Institute for Advanced Science and Technology (RIAST)
August 24, 2000

Contribution

Becoming Fond of Numbers and Math!

Ms. Kimiko Kawano
Researcher, Nippon Medical School, Center for Informatics and Sciences.
July 14, 2000

Contribution

The Ripple Effects and the Future Prospects of Abacus Learning.

Ms. Shizuko Amaiwa
Professor, Shinshu University, Faculty of Education

Introduction of the lecturer

1) The Development of Piagetian Psychology II : Cognitive -developmental Study.
(Piaget Sousho 5), Kokudo-sha (1982).

2) Transfer of subtraction procedures from abacus to paper and pencil computation.
The Japanese Journal of Educational Psychology, Vol. 35, No. 1, 41-48 (1987).

3) Effects of abacus learning on 3rd-graders' performance in paper-and-pencil tests of calculation.
Japanese Psychological Research, Vol. 31, No. 4, 161-168 (1989) (Joint work).

4) A continued instruction on number and calculation for handicapped-class students : A study of Improving methods of Instruction.
Journal of the Faculty of Education, Shinshu University, No. 94, 95-105. (1998).

5) The effects of abacus learning on solving arithmetic problems : A comparative study of elementary/junior high school students at upper level and inexperienced students.
Journal of the Faculty of Education, Shinshu University, No. 96, 145-156. (1999).

I have been engaged in research concerning the abacus for many years from the perspective of a psychologist. My research findings show that abacus study not only improves the ability to calculate both on the abacus and mentally, but also provides a beneficial ripple effect on other disciplines. This paper will explain what ancillary disciplines are influenced and the reasons for it. I will also discuss the characteristics of and future prospects for abacus learning.

The Ripple Effects of Abacus Learning

The first effect is improvement of numerical memory. The second is improvement of memory in spatial arrangement. The third is progress in solving general mathematical problems taught in elementary school, including the four fundamental arithmetic calculations and word problems.

The improvement of numerical memory

The first effect, the improvement of numerical memory, can be demonstrated by asking students to remember three- to nine-digit numbers read aloud and to recite the memorized items orally. Abacus students are found to be superior in the accuracy of their memory and the number of digits they are able to memorize when compared with non-abacus learners of the same age. This is because abacus students place numbers on the abacus image in their head as they mentally calculate with the abacus method. The retention of the numbers is certain if the number of digits does not exceed the limit of the mental image of the abacus.

High marks due to improvement in memory of spatial arrangement

The second beneficial effect is the improvement in memory of spatial arrangement. This was examined by assigning students to remove the location of several small black dot. These dots were placed on different intersection point of squares made with 3 to 5 lines in both vertical and horizontal directions. The students first looked at these dots for a few seconds to memorize their location, then they were asked to recreate the same picture by placing black dots on blank squares. As a result, abacus learners were found to score higher than non-abacus learners. The spatial arrangement of the dots does not have the same numerical values as beads on the abacus board. However, we can speculate that the training to obtain the abacus image visually had the effect of making students sensitive to spatial arrangement.

Progress in solving general mathematical problems

The following three points are confirmed in terms of the effects of abacus study on progress in solving mathematical problems.

. Findings from an investigation with third grade students show that about a year of study at an abacus school enabled the learners to score higher than non-abacus learners on certain mathematical problems. These mathematical problems include addition of one-digit numbers, multiplication of one-digit numbers, addition of multi-digit numbers, subtraction of multi-digit numbers, word problems in addition and subtraction, and fill-in-the-blank problems (e.g. providing the missing items in the following equation: [ ] 7 = 27). However, no difference was found in problems where conceptual thinking was required, such one in which

students were asked to figure out the digit positions (i.e. to decide if the following two items are the same: {nine 10s + nine 1s}and {eight 10s + ten 1s}). Even beginning abacus learners can be said to benefit from the ripple effect in solving mathematical problems, except for those involving conceptual understanding

.

According to the statistical analysis, the addition of one-digit numbers was affected most directly by abacus study. Accurate and rapid calculation of one-digit numbers was found to lead to better marks in multi-digit mathematical calculation, which further led to better marks on word problems and fill-in-the-blank problems. We can speculate that students had more time to think about the problems, and therefore scored higher on the assignment because they needed less time to work out simple calculations as a result of their abacus background.

2. On the higher level, advanced abacus learners were found to have received even more desirable effects in solving certain types of mathematical problems compared to non-abacus learners. These problems include the comparison of the size of the numbers (i.e. put the following five numbers in order: 0.42, 12, 3.73, 0.95, 10.1), the calculation of numbers with multiple choices of proposed answers (i.e. choose the correct answer from five choices of proposed answers for 1026.95 ÷ 103.1), and word problems. In addition, a positive effect was seen, not only in mathematical problems with integers and decimals, but also in those with fractions, especially when higher level thinking is required to solve them.

In the abacus training, there are no fractions involved, but the ripple effect even affected problem solving in fractions. The abacus students were found to have transformed the fractions into decimals, in order to solve problems with fractions. They tried solving the problems by changing the numbers into the form they understood best.

3. As mentioned above, abacus learners tend to solve problems in a form in which they can utilize their knowledge of abacus calculation when confronted with various mathematical problems. This tendency was shown when abacus students were given problems of computational estimation (such as an assignment where students were to pick the figure in the largest digit position of the answer). In solving these problems, many abacus learners first calculated the whole problem then picked the figure of the largest digit position in the answer.

Merits of abacus study

To acquire the ability to calculate rapidly and accurately and to calculate mentally
Based on the results mentioned above, some advantages and characteristics of abacus learning are revealed. One of the advantages of abacus study is that learners can calculate simple mathematical problems rapidly and accurately. In addition, they acquire the ability of do mental calculation utilizing the abacus image, which allows quick calculation without actually using the abacus.

These characteristics show positive ripple effects on the solution of various mathematical problems. On the other hand, the learners' calculation methods become fixed, and the students tend to lack flexibility in thinking out innovative ways to solve problems. It goes without saying that spending time on thinking out new ways to solve problems (such as thinking about the meaning of the calculation, or coming up with other ways to solve the problem) can be negative in terms of the amount of time needed to solve problems when the primary goal is rapid and accurate calculation. Since abacus training consists of accurate performance of simple procedures, there is no reason to change the method of traditional abacus education. However, I believe that some measures must be taken to keep the learners from being bored, since repetition of simple procedures is often accompanied by boredom.

At the beginning of the new century

I am currently considering adapting the principles of the abacus to computer software that teaches the concepts of digit position (meaning of zeros in numbers) to mentally challenged children. I have been trying to teach numbers and simple calculations to these children. They have great difficulty in understanding the concept of digit position, even though they could read and write numbers and do addition and subtraction of one-to two- digit numbers. In order to make learning fun, I have used an activity in which children carry a certain amount of money and go to their favorite store to buy something they like. However, the distinction between 13 yen and 130 yen was hard for them to grasp. I think the following reasoning could be used to provide a more easily comprehended explanation of the concept for them. On the abacus board, there can only be up to 9 in the units position. If 1 is added to 9, there will be a number in the 10s position and nothing, or zero, in the units column.

At the beginning of this, new century, I hope to expand the abacus education and give it new applications while, valuing its history.

Lecture
What Abacus Education Ought to Be for the Development of the Right Brain.
Dr. Toshio Hayashi, Doctor of Engineering
Professor, Osaka Prefecture University
Director, Research Institute for Advanced Science and Technology (RIAST)

Introduction of the lecturer

Brief personal history
March 18, 1939: Born in Otsu, Shiga prefecture
March 1962: Graduated from the Department of Applied Science, College of Engineering, Osaka Prefecture University
March 1967: Completed a Master's Program, Graduate School of Engineering, Kyoto University
March 1973: Earned a Doctorate Degree in Engineering, Kyoto University
July 1981: Assistant Professor, Kyoto University (Medical Polymer Research Center)
April 1994: Professor, Osaka Prefecture University Research Institute
April 1995: Professor, Osaka Prefecture University Research Institute for Advanced Science and Technology

April 1996 to present: Councilor, Osaka Prefecture University
February 2000 to present: Director, Research Institute for Advanced Science and Technology

Specialty

Biomaterial Design, Biodegradable Polymer Synthesis, Natural Polymer, Medical Adhesive/Bonding/Stabilizing Enzyme, Environmentally Harmonizing Material Design

Studying

February 1975 to September 1976, Case Western Reserve University, Ohio, USA, Research in Medical Material

Awards

1987 Japan Fiber Conference Award (Research in Medical Fiber) 1999 Japanese Society for Biomaterials Award (Basics and Application of Biomaterial)

Development of human brain

What is the structure of our brain like? How does the brain develop? Cerebral physiology has seen great developments. However, there still is much that is unknown about our brain. Our brain is truly amazing. What we know up to this point includes that the human brain is created at an early stage of embryo development and that cerebral nerve cells are already made by the time of birth. Within the brain, the brain stem (all living animals have it, and it controls the functions necessary for survival such as the functions of the heart and internal organs) and the cerebral archicortex (which controls basic instincts such as appetite, sexual desire, sleep, desire to belong to a group, and emotions such as pleasant and unpleasant feelings, fear, anger,etc) are basically completed while in the womb.

On the other hand, among animals of higher order, humans have the highly developed cerebral neocortex that can create nerve cells (some say there are 14 billion nerve cells!). This cerebral neocortex does not fully function at the time of birth. In the following years, suitable stimuli start to activate (to connect motor nerves and sensory nerves) the nerve cells in the neocortex. This is why children grow up well in many aspects if they receive appropriate stimuli that develop the nerve cells in the neocortex. The archicortex is more or less completed at the time of birth, but it of course can develop even further after birth. What is important here is that the archicortex requires “to be loved” and is responsible for the cultivation of aesthetic sentiments

.

Humans cannot live without “being loved”. Only those who grew up being loved can learn to love as they grow older. With the help of a good archicortex, the neocortex will be activated efficiently. Even with hard work, efficiency will not improve without cooperation from the archicortex. In order to activate the nerve cells in the neocortex, information or stimuli from outside the brain have first to be perceived as “pleasant” by the archicortex. This is when the activation of the brain improves and the systems to process information in the neocortex are most efficiently completed. On the other hand, if the information or stimuli are perceived as “unpleasant”, the activation of the brain does not occur and the neocortex is suppressed to grow any further.

Move the fingers and talk in a loud voice

What does the activation of the nerve cells in the neocortex mean? Nerve cells in the neocortex consist of 14 billion sets of motor nerves and sensory nerves. These sets create the network (synapses) in which they contact each other and make up a living nervous system. The importance lies in how many sets of nerve cells we can activate in our lives. We can activate the nerve cells by providing “stimuli”. Moving fingers and talking aloud lead to activation by providing appropriate stimuli in the large part of sensory to motor domains in the cerebral neocortex. In this sense, starting abacus learning as young as possible is useful in activating the brains of young children. However, if children learn to use the abacus without wanting to do it, there will be no positive effects. If they come to like learning the abacus and move the beads on the abacus with fun, they will receive benefits from this experience. There is a key in making abacus-learning fun for young children so that they will grow to like it.

Development of the right brain by the abacus method of mental calculation

The human brain consists of the right brain and the left brain. The shapes of these two parts are similar, but differences have been gradually found in their functions. The left brain is also referred to as the digital brain. It controls reading and writing, calculation, and logical thinking. The right brain is referred to as the analog brain. It controls three-dimensional sense, creativity, and artistic senses. These two work together to allow us to function as humans. The Japanese are thought to speak Japanese with their left brain, and this allows their left brain to be more efficient. On the other hand, westerners also utilize their right brain to learn their languages, so their right brain is usually more efficient. It is natural that young Japanese students are better at mathematical calculation than students in western countries who are the same age. It is also natural that, because of the better development in their right brain, students in western countries are more creative and original than Japanese students. In recent years, some have argued for the necessity of the Venture Promotion in Japan, but in order to foster this type of environment we need to develop an education system that would train the students' right brain first. In addition, it is also found that if one trains the right brain, it is less likely to get dementia. Here, I would like to introduce the abacus method of mental calculation. In the abacus method of mental calculation, the learners manipulate abacus beads in their head to carry out a calculation. This had led us to speculate that this

operation was effective in training the right brain or the analog brain. Thanks to the development of cerebral physiology and machines that can accurately measure the amount of blood flow in the brain, recent studies have proven that the abacus method of mental calculation is extremely effective in activating the right brain. This validated the speculation we had before. Therefore, I would like to ask all the abacus teachers to teach all learners the abacus method of mental calculation, no matter how briefly it may be. I consider the completion of abacus learning the mastery of the mental calculation.

Shining brain

Having grown up to be workers in various work places and providers for their families and contributors to society, many people retire from the forefront of the society and start the second stage of their lives. For these people, it is very important to live ample and healthy lives. In order to achieve this way of living, they have to remember to activate their brain as much as possible. There are many different ways to activate the brain, and one of them is the calculation with the abacus. In the abacus method of calculation, the abacus is not only the best way to exercise fingertips, but also positively influences the right brain to be activated. Although it may take a little more time than for younger people, activation in the cerebral nerve cells certainly does occur even at the age of a hundred. In this case also, they have to come to like the abacus first. Throughout the lifetime there is truth in the saying that you do well at what you like. A “master of life” is a person who has a cooperation of the archicortex and the neocortex throughout their lifetime. To become a “master of life”, we have to always aim high. There is happiness in this process to achieve the goals of our life. We all shine by pursuing our dreams with high hope and something to live for. The higher the goal of our growth, the better our lives are. If the purpose of life is the process to achieve this goal, then I believe that the abacus education can be one of the significant guidelines for life. I would like us all to be “life-long healthy people with abacus”.

(This article is the summary of a lecture presented in Nikko Kinugawa, Tochigi, Tochigi prefecture on July 30th, 2000.)

Contribution

Image thinking of abacus users in higher dan (ranks) by a study on brain waves

Ms. Kimiko Kawano

Researcher, Nippon Medical School, Center for Informatics and Sciences.

We have been studying brain waves (EEG; electroencephalography) during various kinds of brain activities for more than ten years. In the beginning of the study, subjects were mainly students. We made them listen to music or calculate mathematical problems and than measured their EEGs to investigate the brain activity. After statistically analyzing the data obtained from over two hundred students, we have found the tendency that b waves, which indicate the active area of the brain, appeared on the right hemisphere while listening to music and on the left while calculating. This confirmed the hypothesis that the right brain is used to recognize images, figures and music and the left brain (the linguistic brain) to deal with logical thoughts, such as a calculation. At that time, we were asked from one TV program to measure the brain waves of an abacus champion. I thought, however, it would be difficult to prove some differences in the EEGs which involved quite large individual variances.

Neural activity in the right brain

When we measured the champion, a middle school student, during the mental calculation, the result was unexpected. Usually the left temporal region is used for calculation, but here, it was almost entirely unused. Instead, the b waves appeared on the right occipital region. In other words, the student carried out calculation using the right brain. I was not quite convinced from only one person's result, because there are always exceptions and some individual differences in brain waves. However, we conducted the same investigation with another expert only to find the result almost identical to the previous case. We than asked more abacus users with high 'dan' (ranks) to let us measure their EEGs, and found almost the same results with only little individual variances. We inquired how they were calculating, and most of them gave the same reply that the image of the abacus beads in their head moved rapidly.

Verbal thinking and image processing

Usually, ordinary people calculate in their mind using inner voice, as in one hundred minus 7 is 93. They put mathematical notions into words. On the other hand, abacus users simply visualize an image of abacus in their head. They do not replace the image into words. This difference can be seen clearly in the EEGs. These tendencies in the brain uses can also be observed in professional players of Shogi, (Japanese chess,) while they are playing the games or solving Shogi problems. However, when they calculate, they use their left brains just as ordinary people do. This is the same with the abacus users. They do not use their right brains in all cases.

Yet it does not mean that abacus learning improves everything about the right brain, such as a sence of art and music. What is important is that the ability to visualize can be put to use for other subjects and behaviors. Some abacus experts use their ability for memorizing whole page of textbook or years in history. The abilily developed by abacas can be used effectively in different ways.

Not only for the experts but also for the beginners, abacus learning is useful to easily grasp images in addition and subtraction problems, because the beads are moving in front of their eyes. It also allows to understand the decimal system and the concept of digit positions. Once children understand numbers, they will probably become fond of mathematics. They will be more confident there may be many positive impacts in other subjects at school. The contemporary education focuses on theory and its rote memorization. Theory of course is important but many students cannot get an actual feeling of comprehension only through it. I believe an effective application of image thinking induces human creativity and inspiration.

AVAS Education Continuity Insurance Plan

AVAS has taken an insurance plan from TATA AIG GICL to present a value addition feature for all members of the AVAS family. The benefits are multiple and the scope of the insurance coverage for all the benefits is 24 hours worldwide. The insurance scheme is implemented from Every Next Month's Beginning.

Gist of value addition feature :

Benefit-1 Education Continuity Plan [Parental Coverage]

Benefit-1 Education Continuity Plan [Parental Coverage]

AVAS assures that the student continues to gain quality education even if his / her earning parent who covered under this scheme meets with an accident resulting in death. Sum of Rs 100000 (Rupees One Lakh Only) will be given to family of child by AVAS.

Benefit-2 Accidental Death and Dismemberment Plan [Student & Staff]

2a) AVAS assures a sum of Rs.1,00,000 (Rupees One Lakh only) to the parent/guardian in the event of death of the AVAS student by accident or in the event of the AVAS student being dismembered (severance of a body part) in an accident.

2b) The Technical Teaching Staff are also covered for any accidental death or in the event of being dismembered (severance of a body part) due to any accident. A sum of Rs.1,00,000(Rupees One Lakh only) is given to the family member of the staff in the event of death or to the staff in the event being dismembered (severance of a body part)

Eligibility

·The student / Technical Teaching staff should obviously be studying / working in any one of AVAS's program / centre at the time of the contingency arising to file a claim.

Categories covered

·Students studying in AVAS.
·One earning parent of AVAS student who covered under this scheme.
·Technical Teaching Staff.

Types of accidents cvered:

·Accidents during class / working hours.
·Accidents while travel from house to AVAS Learning Centre and vice versa.
·Accidents during excursion trips, trekking camps.
·Accidents during participating in sports, championships, competitions etc.
·Accidents from road traffic.
·Accidents from common carriers like train and bus.
·Accidents from air traffic.
·Accidents while climbing up or down the staircase.
·Animal bite (like dog bite, snake bite etc) or stampede.

Natural Calamities covered:

·Floods
·Tremors
·Earthquake
·Tsunami
·Volcanic eruptions

Types of losses covered:

·Loss of life (accidental death)
·Loss of limbs (in an accident)
·Loss of eyesight (in an accident)
·Loss of speech (in an accident)
·Loss of hearing (in an accident)

Special Features:

·Undivided attention for every claim
·Fast settlement of claims

Claims can be intimated in the prescribed simple format by e-mail to tataaig@abacus-vedicmaths.com or at call at +91 - 99999999

Sample claim format is available at all AVAS learning centers and also can be downloaded from www.aacus-vedicmaths.com