Semas helps learners "see" Maths – Part one

Marlene Ras sits with a simple abacus frame, her fingers flying as she intones "Sharp! Mommy gives you one sweetie, one sweetie, one sweetie."

History shows that abacus works

No, this is not a woman gone mad. Ras is a passionate Maths teacher – "I love kids, and I love Maths" – and the Semas system she introduces to South African teachers and learners could very well be the turn-around factor that will change our current appalling Maths results.

Semas (short for Soroban Education Mental Arithmetic System) does not utilise a fancy technologically advanced twenty-first century tool. The "X" factor is a simple Japanese abacus, used in that country for hundreds of years. "Most Asian countries have always used an abacus to teach and learn Maths, and each culture makes use of a slightly different one," says Ras.

Ras explains further that the abacus was originally composed of beans or stones that moved in grooves in sand or on tablets of wood, stone, or metal. The abacus was in use centuries before the adoption of the written modern numeral system and is still widely used by merchants, traders and clerks in Asia, Africa and elsewhere. Many Asian countries are therefore world leaders in the teaching and learning of Maths.

Ras the model of entrepreneurship

Ras is an example for all South Africans. She's not only committed to improving the learning of Maths, but is the model of a determined, enthusiastic entrepreneur.

She says she first discovered the abacus method quite by chance while watching a television programme. "I saw young Asian learners sitting around a little table. There was a wall clock that timed them for one minute. Immediately all the little heads attended to the pages, and added millions of numbers, making little pinching movements with their fingers all the while."

Ras pinpoints the problems

Ras was instantly fascinated. "Like so many Maths teachers, I had always experienced frustration with my Grade 11 and 12 learners who struggle so with the subject.

"They tend to fail their exams, because they are so reliant on calculators to provide an instant answer. They don't understand what they are doing."

Ras elaborates: "You will often find that it's the simple issues in Maths with which learners struggle, like adding and subtracting. Once they understand the logic behind these concepts, the rest becomes easy.

"But nowadays kids are being told in Grade 1 to take calculators to school. I have seen learners use

Semas students recieved international acclaim at the 10th PAMA Abacus and mental Arithmetic competition hosted by India in 2008. Marlene Ras stands centre, with Wilhelm Erasmus

calculators to attempt to add 10 + 1. They will arrive at the answer 2, because they forgot to press the nought, and they'll be satisfied with the incorrect answer."

Ras believes that another fundamental problem in this country is that learners only start formal reading, writing and numeracy in Grade 1. "Many educationalists will tell you that eight is too late. All of the crucial neuron networks are hard wired by then. In many overseas countries, kids are reading and writing by the age of five."

Ras does her research

The strange pinching movements had Ras perplexed at first. Then she learned that learners schooled in this way use a mental picture of an abacus to complete sums. The hand movements mirror the adding and subtracting they do on the beaded frameworks.

This evidence of integrated brain activity excited Ras. "I couldn't believe it. I didn't sleep for seven days. I researched on the Internet, and new worlds opened up in front of my eyes. I entered the abacus community and discovered countries where the abacus-based method has been incorporated into the curriculum for years."

Ras's next move was get hold of an abacus. "I downloaded some exercises and started turning that frame round and round.

"Eventually I came across Mr Shihan Pushpanathan in India who created the Semas Brain Development courses, and wanted to spread them around the globe. When I met him in 2005, he had only one franchise outside of his country. He was a quality-control engineer who had visited Japan, and seen this system in action. After negotiations with the Institute of Soroban Education, Osaka, Japan he took the system to India, and the rest as they say, is history. He was the one to formalise the programme into levels, and to create supplementary books and other learning materials."

Plunging into productivity

It took Ras three months of soul-searching to make up her mind to buy the first South African franchise. "But I maxed out all my assets anyway, because of my gut feeling," she smiles.

Ras knew that if the Semas system was genuine, it could change the lives of millions of children. She underwent an intensive training course, and then plunged straight into marketing Semas to schools. "That was harder than any Maths," she recalls.

"In that first year, 2006, I think I must have met over 2 000 educators, and given them all presentations. Here and there a school said, ok, we'll try it, like Muldersdrift Laerskool. It was there that we started a three month pilot project, and the results were so phenomenal that three months later in September, we were able to launch Semas formally. There was immediate interest because we had learners able to demonstrate the method."

Semas enables learners to "see" Maths

So how does Semas work? Despite the use of an abacus, it's most definitely not mindless repetition. "Our aim is to achieve whole brain development," enthuses Ras.

"It's much more than a Maths course. Semas will also sharpen skills learners need across all learning areas, like comprehension, concentration, listening, creativity and problem-solving. Ultimately, Semas fosters a love of Maths in children."

The Semas classroom will be peopled by learners no younger then 4 ½. "It is no good teaching a child this method when he is twelve. He must start at the age of four or five when he is able to absorb essential skills development, and the technique becomes the dominant one for him".

"Then it becomes a skill like learning to play the piano. If you don't practise a lot, you can still play, but you would not reach the same levels of expertise."

The Semas system is also sensitive to the fact that very young learners respond best to periods of intensive activity. "A session will kick off with brain gym, because it achieves integration of the left and right brain hemispheres, then we do flash cards and speed writing. The kids move around. They'll be on the carpet, on their feet, then we'll continually use the big abacus to familiarise them with the concept.

"Then they will start refining motor skills by practising the finger exercises they will need for the abacus, and they will learn to work with rhythms and key words like 'Big Friend' to illustrate mathematical processes. This moves learning from the abstract to the concrete and helps them to understand the notions of adding and subtracting, and then they will be able to increase the amounts with which they are dealing."

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Semas means Maths takes no time at all

While *"Education Southern Africa"* has not yet observed a Semas class, Ras assures us that witnessing a five-year-old utilise the technique is a powerful experience. "She will easily conquer concepts and problems that you and I would not be able to master without a great deal of paper, time and probably a calculator."

Ras is quick to point out that Semas is there to complement the school Maths curriculum. "We consider it a way of learning. We offer the programme to be either implemented into the school curriculum in the Foundation phase up to about Grade 3, or we offer extramural classes."

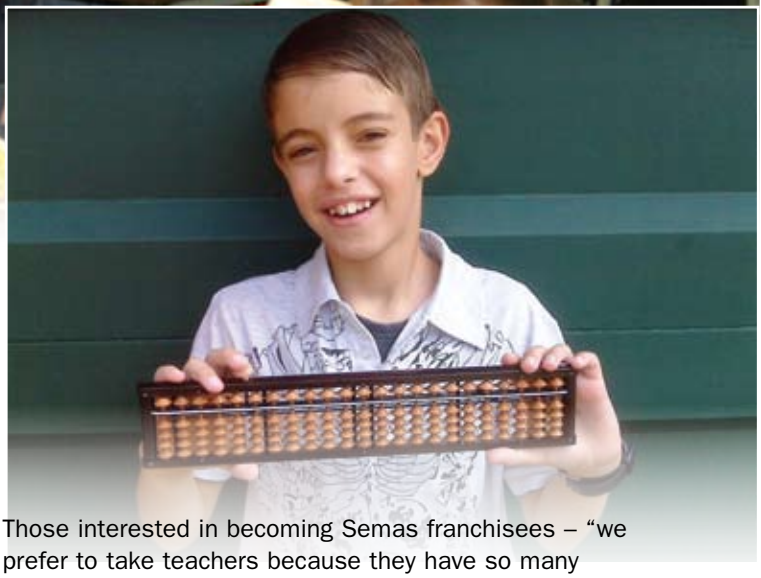
A well-structured system

The system is divided into different levels. Learners will first learn to add and subtract, divide and multiply; and will then move on to decimals, and eventually, square roots, percentages and fractions.

"We are always at pains to point out to learners that they will come to the same answers as they will do in Maths class in school. The difference is that once the skill is mastered, the Semas child will take only seconds to complete a Maths problem. This will boost their confidence, so that from then on, it doesn't matter what gets thrown at them, they will easily be able to do it."

Semas growing every day

Right now the Semas course will take a child to the age of 11 at the cost of R280 per month. Ras says there's more to come. "We now have about 1 000 Semas kids in action in eight country-wide franchises, and they are all doing phenomenal things with Maths."



Those interested in becoming Semas franchisees – "we prefer to take teachers because they have so many innate skills"–must complete a five day training course that is very thorough, and then they must shadow a practicing Semas teacher for at least a week. Each Semas practitioner is closely monitored and assessed on a regular basis. Each teacher will also undergo training for another three years to complete the 10 levels or Kyu's.

Ras has also held productive meetings with the Department of Education to fill them in on this powerful system. Additionally, she has launched two new Semas franchises this year, in Pretoria, as well as in Rustenburg, and is planning two more for Durban and Lenasia. She's also busy putting a sample demonstration on YouTube, which will be linked to the website.

"No one should have to struggle with Mathematics, or to fear it," is her firm belief. ●

Contact: Tel: 086 11 SEMAS(0861173627)
Cell: 0823317014 info@semas.co.za
Fax: 086 614 1775 Website: www.semas.co.za

Don't miss our April issue where we will report back on a Semas class.