



CATTAI
SCHOOL
OF AART

R
R
R

THE 3RS
THE

New Millennium Maths

Numbers In A Nutshell

NO MORE ROTE-LEARNING

NO MORE TABLES

Intelligent Numeracy Through:

- General Principles
- The Bark Recipes
- Newly Discovered Patterns
- Visualisation
- Number Awareness
- Imagination

***A Direct Approach
Professional and Practical***

***Without Arbitrary
Assumptions and Theories
How numeracy has to be taught***

Because

The Human Medium is the Message

ISBN 0 949 384 97 6 ISBN 0 949 384 89 5 / Set

THE 3RS THE PROFESSIONAL WAY

COPYRIGHT ©

Numbers In A Nutshell



Numbers in a Nutshell grew out of necessity.

When students have copied the times tables over and over again in Primary and still don't know that $3 \times 4 = 12$ or that $13 \times 10 = 130$ because they only went up to twelve, a private tutor has to come up with something different.

Abolishing thoughtless habits came first. Since we don't work with shillings and inches any longer, multiplications involving numbers greater than ten are solved according to one simple procedure:
 $14 \times 5 = 5 \times 10 + 5 \times 4 = 70$.

Writing out the nought times tables is of course extremely silly if not stupid; one general rule covers the lot: anything $\times 0 = 0$. Writing out the 1 x table is worse because the definition of 8 for instance is 8×1 .

As far as three fours was concerned-not three times four because it stops

fluency- I started with the philosophy that if my car would break down in the middle of the Simpson Desert, I would open the bonnet rather than look at the moon, because the solution lies in the problem.

It took a whole week to see that the answer to three fours is "sitting" right in front of it. One second later, I discovered that $56 = 7 \times 8$.

It immediately prompted me to look for other pairs or even larger groups that could be solved with one single "recipe". From then on, the road to discovery was toll free.

The advantage is clear. Whereas rote learning only offers two possibilities- you either know or you don't - Numbers in a Nutshell provides you with a way to remember. It will hopefully improve a student's self-image as well.

**"The road
to
discovery
is
toll free"**

Tasked Based Memory Training Exercises

They are done during the pre-learning stage.

They are designed to foster awareness and interest.

Sorting and matching involves manipulating number cards. It cannot be done properly without attention and concentration.

The eyes are preparing the video for the memory bank so to speak. These mental pictures are of vital importance because they make it possible for the student to visualise numbers and to allow them to perform mental arithmetic.

The Educational blunder of making students write down unnecessary "Necessary working" prevents them from acquiring that necessary skill.

World famous musicians use it to prepare their concerts during travelling.

Timothy Gallwey wrote "The Inner Game of Tennis".

In 1955, Professor R. Freeman Butts remarks, "The chances for new ideas from people with different backgrounds are limited in a system that breeds its own teachers in its own schools and then gives them professional training in its own teachers' colleges."

I found relatively little concern among teachers or inspectors to re-examine fundamentally their practices or assumptions."

Unfortunately, to no avail. The Educational Hierarchy is like Antarctica: frozen.



"No More Tables"

There Is Absolutely No Need to Hurry

Primary schools should only concern themselves with numeracy. Students can only be called numerate if they know the basic facts.

If someone throws you from a high cliff into a swimming pool with only two centimetres of water, you will never become an Olympic swimmer, at most a quadriplegic. Metaphorically speaking, that's what's happening in schools.

Cramming workbooks with blunt pencilled atrocities is mathematical blasphemy.

Any premature, impractical or piece-meal performance using temporary names and ways that have to be altered later on is an unwanted hindrance and an unnecessary hurdle, especially since at least one book currently used in year seven states that the authors assume little or no previous knowledge. Although it is the worst book on the market and excessively thick like all other books for commercial reasons, it is saying a lot.

It's like the pot blaming the kettle though.

All simple sums are now deviously trapped in commercialised short stories with multiculturally named children buying balloons and ice creams for birthday parties, videos, cassette players, electric guitars and amplifiers for their already stuffed bedrooms, and speakers for a new car.

It's not Maths at all. It's subliminal

advertising. If you don't see it, you had better go to the optometrist.

The beauty of numbers is that they are naked like mannequins, ready to be dressed up according to an infinite number of situations.

An electrician talks about a 6-volt battery. If he has a large property, he might have 6 cows, 6 dogs, 6 rats, and 6 possums. He might even have married 7 times because 6 wives got electrocuted, but arithmetic is a science concerned with naked numbers only.

Once the base has been determined-base 10 in schools, base 2 (binary) in supermarkets-numbers obey certain laws that have to be applied, not pulled apart and analysed. When you see a red traffic light, you don't write down what you see. You put your foot on the brake peddle instead.

However, even then do students' minds suffer under the yoke of understanding. The same way their backs do under the excessive weight of their schoolbags. Instead of throwing out the outrageous books and doing away with homework and assignments- done while lying on the floor in front of the T.V. and having dinner- Manufacturers of Need design bigger bags for the juvenile camels. Read the statistics in "Sydney's Child", May 2002.

Here are a few more reasons why "Jack and Jill Can't Do Maths".



"The Eyes Have it"

**"It's not
Maths
at all.**

**It's
subliminal
advertising"**

Place Value

What's the value of 7 in 376? What's the point? When Jack says, "three hundred seventy six," he has already given the right answer. "No," says the teacher. "You must say 7 tens." Do you say that your green slip costs 3 hundreds, 7 tens and 6 units? What nonsense!

When Jill lines up the following subtraction, she has subconsciously used place value.

376 Modern gurus always anticipate failure, that's why they print it like 376-
- 25 25

"Lest they forget." Their concern for the underdog is obviously more important than the fact that there are only positive and negative numbers, and that the sign appears in front of the number. There is really no such thing as "take away" except in the case of fish and chips or a hamburger.



"The Bark Recipes"

Numeracy is the foundation of Mathematics.

Numeracy is the foundation of Mathematics.

To be effective and efficient, it has to be taught in a direct and practical way, which means without involving intelligence because that is the most unreliable factor in learning. Besides, the period between the ages of seven and fourteen is one of programming, not of understanding. You don't have to be a mechanic to drive a car.

The numbers themselves lead the way. You shouldn't have to rediscover what was discovered a long time ago, so leave your fingers alone. You can't score goals while doing up your shoelaces.

Any artificially designed method- New Maths for commercial reasons- is based on the fact that Maths students must understand because we have been indoctrinated for years to believe that. It is negative. It activates the failure-mechanism.

Forget about the so-called experts. They have closed doors that should have been left open or at least ajar. If someone says that it can't be done, someone else has already done it (Chinese Proverb)

"Show the necessary working," is the request in High Schools. "We want to check whether you did understand because, if you didn't, we will show you where you went wrong." It invariably means that the foundation consists of quick sand. Poor kids, they could do so much better.

In the Dutch Merchant Navy, I learnt to

see. It's not enough to understand why you must not hit an iceberg head-on.

You must see it first!

It is totally different from watching T.V. though.

Numbers are like icebergs. They are quiet and motionless, but not treacherous.

Many Primary School children will say that $8-3=11$. When you ask them why they give such a funny answer, they will tell you that there are more sums with +, and that they didn't see the - .

The most frequently made mistake in High School occurs when expanding an expression like $-3(2x-5)$.

It is totally useless to understand or to remember that two negatives make a positive if you didn't see them!!

Students have to be taught what to look for, where to look and, above all, to see.

For most students, the skills needed to do Maths are universal and therefore more important than the subject itself. Since it is abstract and free from opinions and emotions, it is an excellent vehicle to take on that function.

Fortunately, the ability to see and to remember can be improved to an amazing degree.

In the case of 6% of 200, you tell them to ignore the two noughts on either side and that the answer is 12. "No," says the school, you must write what it looked like fifty years ago: $6/100 \times 200 =$ no, not yet. You must first cross out the 200 and the 100 and replace them by 2 and 1 respectively = $12/1$ (twelve over one; ruined for life) = 12, tick.

The first answer yields 1/2 mark because the student didn't....

The second one yields 1 mark because the student did.....

When these students leave school and start to work for a Real Estate Agent, they have to be recycled because you must not fiddle around like that in front of customers.

Another classic presents itself during the H.S.C. when students are asked to calculate the perimeter of a 10 by 8 rectangle. Two possibilities: they mix it up with area although the meaning is in the word itself (around measure) or they will only add the measurements of the marked sides because they didn't see the unmarked ones.

To try and overcome this problem, a formula is now given, which will make it even worse.

How on earth can these students eventually be useful to a Master Builder? The tragedy is that they're not at fault.

Formulas and fingers are a hindrance. Repeating the question is another drawback. Isn't it quicker to see Ayers Rock than it is to say that you see it? Of course it is!

Eyes operate at a speed one million times faster than sound. Shouldn't they be your messengers to activate the memory bank?

Learning number facts should not be different from recognising and subsequently memorising the names of classmates. It has nothing to do with understanding.

VIDEO REHEARSALS

In October, twelve keen and alert Primary School students will be needed to participate in the production of

NUMBERS IN A NUTSHELL.

In order to familiarise them with the totally new way of learning all the basic number facts, lessons will be provided in the August-and September issues of The Bush Telegraph.

For more details, ring AART on 45 728 568