MLATS
MATHEMATICS LEARNING & TEACHING FOR SUCCESS

gnoman
in touch with MLATS

# Mathematics Learning and Teaching for Success

***This newsletter has been produced in consultation with Geoff White from Humans Count who has had half a century in the education business.***

## Inside this issue:



**When a student perceives a teacher to be an authentic, warm and curious person, the student learns. When the student does not perceive the teacher as such a person, the student does not learn.**
***Neil Postman***

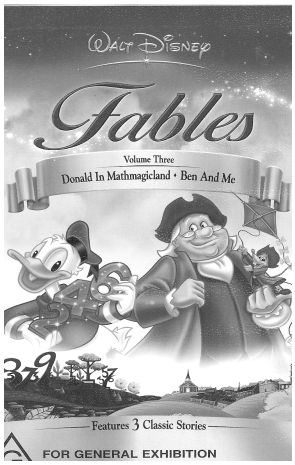
***for things to change...first, I must change***

## Take control of any change

Recently, I unearthed a well-used copy of *Schools, Kids, Teachers, Things and What To Do* written by (the late) Bruce Wicking, an educational pioneer who, in the 1970's, conducted an exciting and innovative classroom called "The Pottery" as an annex to Glamorgan of Geelong Grammar School in Victoria. The first chapter opened with "some generalizations - not all rash", the last being most appropriate for this newsletter. *Reforms are only possible when the 'classroom' teachers are determined to implement them, no matter what the opposition. Opposition is overcome and doubts are most swiftly dissolved when a teacher has ground out for himself* a coherent philosophy, when he knows why he wants to make changes and when he can explain how he is going to do it. … that change is being made so as to benefit each child, not merely because it is the trendy thing to do.*
(*Please note that Bruce is talking about all teachers.)

That children can and do need to enjoy a vital and stimulating mathematical experience is unarguable.

Our greatest reform is to ensure that the mathematical experiences we share with the children in our classes are both enjoyable and stimulating, not only for them but for ourselves, also. Then, fun will take on a new meaning.




Look what I discovered in the Target video shop: *Donald in Mathmagicland*. I saw this wonderful (and humorous!) Disney cartoon in my high school days. While I advise that this videotape is not for public broadcasting, you would do well to obtain a copy and become inspired at the broad mathematical picture introduced by Donald Duck.

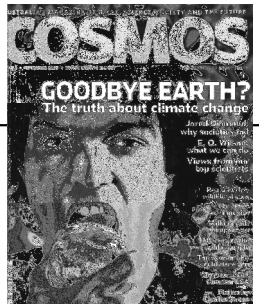
## Re-discovering Neil Postman

His death two years ago caused me to reflect about the influence this modest, self-effacing person had on my teaching career and life. I met him first in a book called ***Teaching as a Subversive Activity*** (1969) in which the first chapter is headed **Crap Detecting**. Belying the possible initial reaction to the title of the book, the main theme is dedicated to fostering the art and science of asking vital questions. Later I discovered a booklet called ***How to Recognise a Good School*** (Postman and Weingartner, 1973 ). Today, the words are as refreshing, challenging and as "spot-on" as they were thirty years ago. If you would like to read this article please contact Karen for a copy.

In his 1995 book, ***The End of Education: Redefining the Value of School***, one of his most telling comments for me appears in the last pages: (our) "culture is not presently organized to promote the idea of childhood; and without that idea schooling loses much of its point."

When you see this, you are on a change pathway.

# It is not difficult to encourage thinking skills




A teacher's knowledge is as important as children's knowledge, for it is from a teacher that many great ideas will spring and these may spark a child's interest.

Where does a teacher get many of these great ideas? Reading, yes! Watching informative TV, yes! Perusing magazines, yes! Ideas jump out of these sources and spark a train of thought in the mind. The other day I was talking with a young teacher who proudly showed me his collection of bridges. Bridges, you might well ask. I did. His passion for these wonders of construction had taken him on many a "journey" of discovery. We shared knowledge of the Narrows bridge (Tacoma, Washington State) which in a certain wind was whipped into a frenzy and disintegrated. My spin on the story was that the site manager had purloined the insurance money. His spin was on the amazingly complicated feats of engineering human kind has created and yet mistakes can be made. Since 1952, I have subscribed to *National Geographic*; I have every copy of *Australian Geographic*; now, a new journal has arrived. ***Cosmos***. The latest issue of this magazine will provide sufficient incentive for a huge study into the finite resources/life of planet Earth. If nothing else, it will prove why our society needs mathematicians who can think flexibly.

**ABOUT COUNTING**

**Stated in 1968**

There is a persistent myth that counting is the basic "operation" of arithmetic. This idea can be found in the arithmetic methods books and, in the recent past, over nationwide television programs about educating the pre-school child. It is high time that this idea be laid away among the dodo birds, Nothing less than such as drastic burial will enable the universities, colleges and schools to develop a sound arithmetic program for the preschool child.

H. Van Engen in **Mathematics is a Verb**, Schminke and Arnold (Eds),1971

I understand the difficulties in introducing a "thinking" aspect into your teaching of mathematics. We have been conditioned to apply a set of rules to a situation in order to obtain a certain result or answer. In our mathematics learning, how many of us relied on the answers at the back of the text to get us through? In stark contrast, the use of "thinking" teaching materials provides a catalyst for exploration of new ideas, both to the teacher and to the learner. I have used these teaching materials for more than thirty years and I am constantly amazed at the amount of original thought, taxing challenges and "aha" results the learners experience as they manipulate the materials to meet their thinking needs.

Even more exciting, is to see these ideas and patterns of thinking used in areas of learning other than mathematics. The students have gained confidence to think, to use language and to work out a sensible meaning. So, I see learning benefits for all students emerging when you develop a thinking program in your classroom.

But, beware! Do not spoil the students' developing thinking patterns by inflicting a rigid recording regime. Generally, it is quite late in the primary school experience when formal recording becomes genuinely meaningful to the learner.

## Benezet's experiment

Around 1930, Louis Benezet, a School Superintendent in New Hampshire (USA) conducted a most amazing experiment over a period of years.

Benezet stated, *it seems to me that we waste much time in the elementary schools wrestling with stuff that ought to be omitted or postponed until the children are in need of studying it. If I had my way, I would omit arithmetic from the first six grades .*

. . I will not spoil the story. Type **benezet centre** into Google and discover the full details for yourself. Can't do that; then contact MLATS for a copy which was downloaded from the www. We have a lot to learn from a careful reading of this story.

## Mathsemantics

In more recent times, Edward MacNeal presented **Mathsemantics: Making Numbers Talk** (1994) where he proposed that one of the major difficulties in learning mathematics is the confusing relationship between school maths and what all that really means. MacNeal tested all his prospective employees and their results may astound you! The test is presented in this book—have a go at it and maybe your results will too. A search under **www.mathsemantics.com** will provide more details.

Perhaps the greatest strength to be gained from applying a wide range of thinking encouragement materials is the development of free and wide-ranging language skills. These skills are applied naturally to day-to-day activities, especially discussions. Children are not afraid to experiment with language. Parents have shared with me their delight as children have freely demonstrated their thinking language skills at home.

This inspired me to provide a "different" form of homework, For example, I encouraged many children to take home a small set of materials to "teach" Mum and Dad what to do with them. This broke down many of the traditional barriers between school and home that we teachers experience.

Having being taught by the children a thinking procedure, parents were encouraged to create problems for their son or daughter to bring to school. Of course, this did not work every time, but results were encouraging and the idea was worth maintaining.

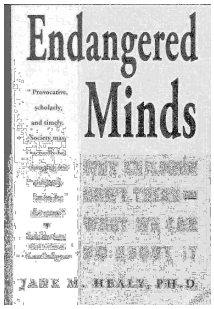
The thinking classroom does not just occur during the mathematics lesson. It is a continuous process: thinking floods over into all facets of classroom life.

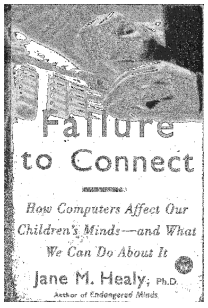
## Mathematical success in the classroom depends on all-round health

Coupled with this idea is a most important aspect of child development, especially in the junior school: Physical (kinaesthetic) development! I am convinced that there is a close and vital link between mental development and sound physical maturation. In recent times, this idea was manifested by the Perceptual Motor Program (PMP) which systematically introduced a range of physical developmental skills for young children. As an example, I am convinced that if a child does not have a sense of balance (equality) such as one would gain on a see-saw or a balance beam, this lack of an internal sense of equality will hinder the development of "equalness" understanding in mathematics. I believe a great deal of thought needs to be given to the developmental relationship between the physical and the mathematical being. It is more than being able to "graze" (nibble) when needed, even though that is one vital aspect of overall child health in the classroom.

Thinking skills - in mathematics education we can call it "working mathematically" - is a vital and exciting aspect of any thriving classroom.

**Imagine! Children are taught no formal arithmetic for the first six years of their primary school life.**


ISBN 9 671 67349 1 (1990) ISBN 0 684 83136 8 (1999)

Jane Healy, educator, scholar and experienced educational psychologist, hits home with a no-nonsense assessment of the roots of a major crisis in schooling - why today's children are less able to concentrate, less able to absorb, etc. - a comment expressed widely in many circles. When first introduced to **Endangered Minds**, I was skeptical but it did not take long for Healy's erudite and clear scientific knowledge to make me look at teaching today with fresh eyes and deeper understanding. Some have said that over the past few years knowledge has out-paced Healy's work. Maybe! But, I suspect that the majority of our teaching practices have yet to recognise her most important message that the developmental relationship between language, learning and brain development is being sabotaged by electronic over-exposure.

**WHO IS THIS MAN?** - This man made life into an eternal day. He didn't do very well at school, either. While it is claimed, or better still, he is said to have claimed, to have invented the first successful filament for an electric light globe, that is not quite the truth. He was a hero of car producer, Henry Ford who built a museum dedicated to him. He was very influential in the invention of this machine.

# Who would think that camels can be linked to mathematics?

*The camel's hump is an ugly lump.*
*Which well you see at the zoo.*
*But, uglier yet is the hump we get*
*For having too little to do.*

So wrote Rudyard Kipling over 100 years ago as an after-word to his famous story *How the camel got its hump* in the whimsical book, **Just So Stories**.

Camels have an involvement in Australian history dating back to 1840 when 3 camels were brought to the country. By 1922, it was estimated there were about 12 000 in the working camel population and today it is thought that more than 20 000 roam inland Australia.

**Links or starting points for thinking**

For the Burke and Wills expedition 24 camels were imported. (Interestingly, an archeological study is attempting to prove a collection of bones is the remains of a camel which was killed for food on this expedition.)

Thomas Elder imported 1 200 camels to South Australia in 1866. In 1890, it was estimated there were more than 500 camels and their Afghan drivers serving the gold explorations around Kalgoorlie.

Why do camel wagons have such large wheels? Hint: careful study of a circle will give you a clue.

Why did Henry Ford's Model T car have large wheels and the Mini-minor (Cooper) have such small wheels?

**Who said?***

**Let the children reinvent arithmetic . . . Since there is absolutely nothing arbitrary in logico-mathematical knowledge, children are bound to find the truth if they argue long enough.**

**Until you work it out for yourself,**
**two times two makes four only because the teacher says so.**

## More on Latitude

Does Perth have a higher latitude than Sydney? There is just about one degree difference between Adelaide and Sydney: what does that mean? I discovered a most comprehensive website at www.csu.edu.au/australia or type Guide to Australia into Google and spend hours discovering. As well, you can obtain detailed driving directions between various towns in the country.

## How old am I?

I am _____ years old.

$33 + 22 + 11$

3.3 score

$7^2 + 4^2 + 1^2$

$264 \div 4$ or

66% of 100

Got the idea? Children never give a direct solution to a problem: it needs to be "coded" in other numerical terms.

## Hope there is not a catch?

Preparing for my next Space workshop, I explored Geo Australia where I found a link to www.tagteacher.net Well worth the visit, for I discovered a list of sites which could be used for educational purposes. From there, I explored, exploratorium - to discover a huge range of inspirational ideas. Have a look; it's worth spending the time!

www.exploratorium.com

*Edward McNeal

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## Innovative education for educators

The MLATS professional presentation team addresses the needs of teachers working with students from 4 to 15 years of age. Courses provide a collaborative framework, enabling teachers to engage with, and reflect on, significant ideas related to the teaching and learning of mathematics and the development of numeracy. Constructivist in nature, the workshops are aimed to strengthen the knowledge, hence confidence, of participants and are designed to provide successful strategies in educational practice.

**MLATS**

Celebrating the best in teacher learning

# COURSES

**Here are some ideas for Courses available. For a more comprehensive list, please refer to the Course Guide which is also available from our website www.mlats.com.au**

- MLATS Core Course
- MLATS How to use… Series
- MLATS Learning and teaching… Series
- MLATS Strategies to Support Learning… Series
- MLATS in the Preschool
- MLATS for Parents 1 & 2
- MLATS in the Classroom
- MLATS Intervention Program
- Developing Numeracy through Literature

**Contact us now to discuss your Training and Development requirements or to obtain a registration form.**
**We also conduct Whole School workshops and training courses**

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**MLATS sell books and teachings aids and have a comprehensive list of recommended readings, materials and children's literature that are available through our suppliers.**

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