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Welcome to **ATTACK!** a two-page occasional publication. Most of **ATTACK!** will be concerned with the holistic curriculum which, if acted on, is a fundamental way to undermine the present undemocratic education system. Don't be discouraged if opportunities to teach holistically are limited, do your best, be a guardian, and act as a witness to this culturally significant and inspiring way of teaching and learning. **ATTACK!** is a partner to <https://networkonnet.wordpress.com>

## **Attack! 90 A threshold timetable Part 4**

### **Mathematics**

Shortly after lunch, perhaps following a story read by the teacher, could come mathematics.

An organisational practice has taken hold involving the streaming of children and their resulting movement to different classrooms.

Such a practice is disruptive, status confirming (winners and losers), and a cause of isolating maths from the rest of a class's programmes.

The contrary should be the practice, with children socially grouped for mathematics based on problem-solving possessing gradients of difficulty allowing children of all abilities initial entry.

A particular challenge comes from the nature of the curriculum area:

It seems to encourage overly structured responses from those who develop textbooks and programmes of work for teachers

Textbooks, worksheets, and mathematical programmes developed, often seem to be based on the idea that the sum total of a number of small steps will lead to satisfactory overall understanding

However, it doesn't, it leads, at best, to a satisfactory understanding of a number of small steps

What can be theoretically logical on paper can be educationally illogical for children

The overly structured response to the nature of the curriculum area often leads to mathematics becoming a learning of mathematical labels rather than an understanding of the meanings they encompass

As well, it tends to encourage teachers to become dominant in proceedings, which results in children being unable to see the mathematical rules for the explanations.

A further challenge becomes evident when the nature and practice of mathematics is compared with the nature and practice of reading:

To start with, but as an aside, nearly all teachers are enthusiastic about meaning expressed in words

Far fewer about meaning expressed in algorithms

More particularly, compared to mathematics, reading, as a curriculum activity, has far fewer major concepts inherent in it

As well, reading concepts are strongly and clearly interrelated

This means that when children read a book they are learning all the reading concepts in a cohesive way, all the time

Cohesiveness is further added by the nature of the basic reading resource – the book

The purpose of a book is obvious, it can be immediately attractive, and is easily obtained, stored, and carried around

And when it goes home, it can be readily understood and supported by parents.

What then should teachers interested in a threshold timetable do in mathematics?

To start with, teachers should recognise that children fail in mathematics not because of a lack of competence in the mechanics, but a lack of understanding of the concepts

The emphasis, as a result, should be on discovery and understanding

Next, teachers should take more control of their mathematics programmes, the syllabuses, textbooks, and other resources

From there, using a few major concepts, they should reorganise their mathematics to make mathematics more interrelated.

It would give more scope for:

- Exploration and discovery
- Problem-solving
- Children to find their level
- Understanding to be developed and extended
- Learning cohesiveness
- Children's weaknesses to be exposed and corrected
- Learning to be related to the everyday world
- Groups typically disadvantaged in mathematics to perform better
- Mathematics to be a way of viewing the world, rather than just something that is done at school, at a particular time.

As an ideal, and along the developmental continuum, mathematics should occur during most of the day as it does in reading:

Children, for instance, could have individual maths boxes (or storage places) in the way children have individual reading boxes in junior classes, with resources organised around concepts selected by teachers.

When a concept is being studied, children should use a variety of experiences and approaches in their activities:

Children should, as much as possible, choose their mathematics activity

Often this would be done within a designated range

These activities could be on task-cards, on charts, in parts of books, on display tables, and inherent in materials

As much as possible, teachers should help children find their own mathematics level, and be challenged from there. This could mean a s. 4 child, for instance, could do mathematics more typical of a f. 2 one.

In mathematics there is a step beyond using concepts as the basis for organising programmes:

That step is made by basing programmes on real-life problems, situations, and themes.

As part of learning, children should develop learning activities for themselves and other children:

For instance, they could be asked as part of homework to find a mathematical situation from everyday life that requires the operation of division. This situation could then be written up on newsprint sheets as a problem for other children to do

Games should be an important part of mathematical learning.

On a regular basis, say once a fortnight, mathematics could run for a good part of the day, for instance, from morning play onwards:

Teachers should be alert for learning opportunities that occur throughout the day

To help them in this, they could draw up a list with an introduction saying:

We are learning mathematics when ...

Children should be reminded that in classroom practice, as described above, there are times when rather than working with the rest of the class in another curriculum activity, they can pursue, for instance, mathematics.

Teachers should use the choice time to challenge children in mathematics, to encourage creativity, and to meet individual needs:

Teachers should regularly sit beside children and talk with them about mathematics

Indeed, they might develop a list of questions and activities which would act as a kind of mathematics running record

Children might develop newsprint booklets for younger children and do a form of partner (or buddy) mathematics with them

Alternatively the partner might simply use younger children's current mathematics books for discussion

Children should be able to read mathematics around the room – it should 'speak' to children from the walls.

### **Timetable blocking**

As has been discussed above, there is a centrality in the use of the threshold timetable and that is to regularly block the timetable so that curriculum areas can be pursued intensively in the interests of further child choice and learning depth.

All curriculum areas benefit from timetable blocking: mathematics, health, Maori language and culture, music, and physical education, as well as science, art, language, and social studies.

Timetable blocking encourages:

- Programme flexibility
- Innovation and creativity
- Learning depth and coherence
- Children's control of learning
- And programme individualisation.

Blocking needn't always be planned for, it will sometimes occur out of circumstances, for instance, teachers may see children so well involved that they decide to let matters run. It can occur at key times to build-up or sustain programme momentum. These times will often be at the early stages of topics, but they can also be near the end as a way of weaving together various learning strands.

### **Conclusion**

At a basic level, the threshold timetable is a way to free teachers and children from the stop-start, teacher-direction emphasis often typical of classrooms. Such a process becomes a career-defining behaviour for teachers and routine series of little commotions and minor hectoring for children. At a practical level, the threshold timetable provides children with more control over what they do and more continuity in doing it. At a fundamental level, it can free teaching and learning to consummate process and transcendent outcome.

