Forging a way forward for ‘learners left behind’: Key messages from recent research

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A Foreword:

There is considerable debate about the efficacy of using terms like ‘at risk’ and ‘learners left behind’ on the grounds that this implies a deficit view of learners.

However, the shift from *Curriculum Frameworks* to *Learning Standards* both at home and abroad, makes this inevitable.

Driven by policy imperatives such as “schooling should develop fully the talents and capacities of all students” (MCEETYA, 1999) and “no child will be left behind” (President Bush, 2002), education authorities have no option but to set goals, targets, benchmarks, and standards.

While arguably necessary to improve the educational outcomes of all, we need to remember that these ‘lines in the sand’ also serve to position, expose, and marginalise ...
Recent research has found that **up to 25% of Australian Year 8 and 9 students do not have the foundation knowledge and skills needed to participate effectively in further school mathematics**, or to access a wide range of post-compulsory training opportunities (Siemon & Virgona, 2001; Thomson & Fleming, 2004).

A **range of social background, developmental, and language factors** have been advanced as explanations of this phenomenon along with **inappropriate pedagogical practices, unrealistic curriculum expectations, and poor school environments** (Barber, 1999; Leong, 2002; Rothman & McMillan, 2003). However, virtually nothing is known about how to remediate this situation in the middle years of schooling.

The personal, social and economic costs of failing to address this problem are extremely high. It has been estimated that the cost of early school leaving, a direct consequence of underachievement in literacy and numeracy according to McIntyre and Melville (2005), is **$2.6 billion/year** (NATSEM, 1999; Kellock, 2005).
Overview:

- Learners ‘left behind’ - Understanding the dimensions of this issue in the middle years. Who are they? What do they think?
- Taking the first step – Tasks and tools to identify learning needs and starting points for teaching
- Forging a way forward – What works? Effective strategies to support ‘learners left behind’
Learners left behind

There are many reasons why learners might be ‘left behind’:

- Poverty, absenteeism;
- Social background;
- Abuse, insecurity,
- Mental illness;
- Physical handicap;
- Drug Dependence;
- Learning disabilities...

(Croniger & Lee, 2001; Sagor & Cox, 2004)

While schools and/or teachers may influence some of these, in the long run, they can only help to make schools and classrooms attractive places to be ...
In this context, Sagor and Cox’s (2004) definition of ‘at risk’ learners offers a useful way to think about ‘learners left behind’:

... [students who are] unlikely to graduate, on schedule, with both the skills and self-esteem necessary to exercise meaningful options in the areas of work, leisure, culture, civic affairs, and inter/intra personal relationships (p.1)

Understanding the dimensions … data from two projects:

• the *Middle Years Numeracy Research Project* (MYNRP, 1999-2001), and

• the recently completed *Scaffolding Numeracy in the Middle Years Project* (SNMY, 2003-2006)
4c) Expand \((a + b)^n\)

\[(a + b)^n = (a + b)^n = (a + b)^n = (a + b)^n\]

Very funny Peter!

\[
\frac{1}{n} \sin x = ?
\]

\[
\frac{1}{\sqrt{n}} \sin x = 6
\]

But first of all ... some data from another source!
What we learnt from the MYNRP (1999-2001):

- there is a significant ‘dip’ in Year 7 and 8 performance relative to Years 6 and 9;

Mean Adjusted Logit Scores by Year Level, November 1999 (N = 6859)
An interesting observation:

Mean Adjusted Logit Scores by location, November 1999
(N_{metro} = 4303, N_{rural} = 2556)
What we learnt from the MYNRP (1999-2001)

- there is as much difference within Year levels as between Year levels (spread);
- there is considerable within school variation (suggesting individual teachers make a significant difference to student learning);
- the needs of many students, but particularly those ‘at risk’ or ‘left behind’, are not being met; and
- differences in performance were largely due to an inadequate understanding of fractions, decimals, and proportion, and a reluctance/inability to explain/justify solutions.

<table>
<thead>
<tr>
<th>CSF Levels*</th>
<th>Description</th>
<th>Approx. Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>All aspects of rational number well established. Generalises, manipulates, and applies relationships to solve a broad range of problems. Explains and justifies solutions</td>
<td>(3.4%)</td>
</tr>
<tr>
<td>G</td>
<td>Interprets data appropriate to context. Renames fractions/decimals/per cent. Describes general relationships in words, applies to solve more complex problems. Solves multiple-step problems. Explains solution strategies</td>
<td>(13.5%)</td>
</tr>
<tr>
<td>F</td>
<td>Generally interprets data appropriate to context. Extends rule use. Solves problems involving rate and multi-step problems that do not require transposition. May check for meaning/applicability</td>
<td>(23.9%)</td>
</tr>
<tr>
<td>E</td>
<td>Renames, models simple fractions, percent. Recognises and applies general rule to solve simple problems. May check accuracy of procedures/actions but not meaning or relevance to context</td>
<td>(20.9%)</td>
</tr>
<tr>
<td>D</td>
<td>Describes simple patterns in terms of successive terms (eg, “it goes up by two”). Generally solves one-step problems (tenths to 3-digit numbers)</td>
<td>(16.0%)</td>
</tr>
<tr>
<td>C</td>
<td>Uses simple number patterns, recognises 2D representations of 3D shapes. Recognises relevant information but unable to use it effectively</td>
<td>(12.2%)</td>
</tr>
<tr>
<td>B</td>
<td>Continues simple number pattern. Tends to make perceptual judgments about data. Estimates or calculates with little regard for meaning or applicability</td>
<td>(5.2%)</td>
</tr>
<tr>
<td>A</td>
<td>Uses make-all, count-all strategies to solve one-step problems (1 to 2-digit numbers)</td>
<td>(4.8%)</td>
</tr>
</tbody>
</table>

* As these apply to multiplicative thinking and working and/or communicating mathematically.
What we learnt from the MYNRP (1999-2001):

Proportion of Students at each Level of the Numeracy Profile by Year Level, November 1999 (N=6859)
In their own words (MYNRP, 1999-2001):

“Change the way it’s explained, they need to think about how you understand, not how they explain” (Vincent, Year 9)

The most critical element in their learning from the students’ perspective is the quality of teacher explanations, in particular, the capacity of teachers to connect with their level of understanding and communicate effectively.

“Don’t understand how it is set out, don’t like to write it down if I don’t understand … idea there, but how to write it, what to do with it” (Carl, Year 9)

Student engagement is related to the capacity to read, write, speak and listen to mathematical texts (communicative competence), that is, access to the forms of communication used in mathematics.
In their own words (MYNRP, 1999-2001):

[Last enjoy maths?] “in class recently, doing fractions, changing fractions to decimals, it was good because I actually understood it and I felt better” (Matt, Year 6)

Success is crucial to engagement.

Relevance is about connectedness, not necessarily about immediately applicable, ‘real-world’ tasks, but about being able to access what is seen to translate to further opportunities to study ‘real maths’ and access to ‘good’ jobs.

Self-esteem - students believe that mathematics is important and relevant, they generally want to learn and be able to apply mathematics. Mathematics is not perceived to be as ‘boring’ or irrelevant as is often assumed.
Implications for teaching and learning:

- Plan to provide access and success for all
- Accurate and reliable assessment is essential to identify where to start teaching.
- The teaching focus needs to be carefully targeted on scaffolding student’s learning needs
- Extensive professional development is needed to equip teachers of mathematics with knowledge and skills to probe students understanding, support conversations about the ways in which mathematics is represented and used, and scaffold mathematical thinking.
- ‘Traditional’ text-only based approaches are seen as a major impediment to engagement and successful learning.

(MYNRP, Final Report, 2001)
What we learnt from the SNMY (2003-2006):

- the vast majority of students appear to have little difficulty using additive thinking strategies to solve problems involving relatively small whole numbers;

- students can work with sharing division, simple proportion, and simple Cartesian product problems earlier than expected;

- while initial ideas for multiplication and division appear relatively early, students may take many years to develop a flexible capacity for multiplicative thinking, particularly as it applies to rational number;

- a significant number of students are performing below curriculum expectations in relation to multiplicative thinking - at least 25% of students at each Year level might be regarded as ‘learners left behind’.
Adjusted Mean Logit Scores by Year Level and Gender for Victorian Students, Initial Phase, May 2004 (N=2064)
Inferred relationship between LAF Levels (Zones) and CSF/VELS Levels*

* As these apply to multiplicative thinking, and working and/or communicating mathematically
What we have learnt from the SNMY (2003-2006):

Proportion of Victorian Students at each Level of the LAF by Year Level, Initial Phase, May 2004 (N=2064)
Taking the first step

- Critically examine ‘taken-for-granted’ beliefs and values about teaching and learning - If we really care, why hasn’t our teaching changed all that much?
- Identify actual learning needs – assessment for learning
- Consider using rich tasks and scoring rubrics (MYNRP, 2001; SNMY, 2006)
- Target teaching to learning needs (SNMY, 2006)
- Regularly assess for learning – Criterion-referenced tests of Multiplicative Thinking (SNMY, 2006)
- Regularly assess for learning – Common Misunderstandings in Number Levels 1 to 6 (Siemon, 2003; Siemon & DE&T, under review)
How much has it changed?

If teaching mathematics still looks like this …
What does it imply about our theories of learning?
Our assumptions about learning needs?
Our capacity to cater for ‘learners left behind’?

Proportion of time given to various methods of instruction in a survey of 436 Year 7 to 12 mathematics lessons (David Clarke, 1984)
Assessment for learning

• Teaching informed by quality assessment data has long been recognised as an effective means of improving learning outcomes (eg, Ball, 1993; Black and Wiliam, 1998; Callingham & Griffin, 2000).

• Typically, the tasks used focus on what the student understands and can do (Darling-Hammond et al, 1995); they allow all learners to make a start, accommodate multiple solution strategies, and relate to the kinds of activities used in teaching and learning (Clarke & Clarke, 1999; Callingham & Griffin, 2000).

• Where teachers are supported to identify and interpret student learning needs, they are more informed about where to start teaching, and better able to scaffold their students’ mathematical learning (Clarke, 2001).
Rich tasks and scoring rubrics.

0. No response or ‘yes’ or ‘no’ without a reason.

1. Reasoning based on numbers alone, no recognition that ‘big’ is relative.

2. Reasoning shows some recognition that ‘big’ is relative to total sales, but unsupported conclusion, little/no explanation, eg, “it depends ...”.

- Reasoning concludes that increase is not ‘big’ relative to total sales, some attempt to relate this to proportion, eg, “15 out of 725 is not very big”.

- Correct conclusion, “not big”, %, fractions, ratio used correctly to support well-reasoned explanation.

From the *Middle Years Numeracy Research Project* (Siemon, Virgona & Corneille, 2001)
An Extended Task

This task had 9 items altogether including:

Items of **increasing complexity**, eg, “How many complete model butterflies could you make with 29 wings, 8 bodies and 13 feelers?”

Items involving **simple proportion and rate**, eg, “To feed 2 butterflies, the zoo needs 5 drops of nectar per day. How many drops would be needed per day to feed 12 butterflies?” …and

Items involving the **Cartesian product**, eg, given 3 different body colours, 2 types of feelers and 3 different wing colours, “How many different model butterflies could be made?”

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**BUTTERFLY HOUSE…**

Some children visited the Butterfly House at the Zoo.

They learnt that a butterfly is made up of 4 wings, one body and two feelers.
While they were there, they made models and answered some questions.
**For each question, explain your working and your answer, in as much detail as possible.**

a. How many wings, bodies and feelers would be needed for 7 model butterflies?

   ______ wings
   ________ bodies
   ________ feelers

b. How many complete model butterflies could you make with 16 wings, 4 bodies and 8 feelers?

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Adapted from ‘Butterflies and Caterpillars’ (Kenney, Lindquist & Heffernan, 2002) for the SNMY Project (2003-2006)
Open-ended question

Solution strategy unclear, problem solving

Reading and interpreting quantitative data relative to context

Recognising relevance of proportion

Mathematics used, eg, percent, fractions, ratio

A Short Task

ADVENTURE CAMP ...

Camp Reefton offers 4 activities. Everyone has a go at each activity early in the week. On Thursday afternoon students can choose the activity that they would like to do again. The table shows how many students chose each activity at the Year 5 camp and how many chose each activity at the Year 7 camp a week later.

<table>
<thead>
<tr>
<th></th>
<th>Rock Wall</th>
<th>Canoeing</th>
<th>Archery</th>
<th>Ropes Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 5</td>
<td>15</td>
<td>18</td>
<td>24</td>
<td>18</td>
</tr>
<tr>
<td>Year 7</td>
<td>19</td>
<td>21</td>
<td>38</td>
<td>22</td>
</tr>
</tbody>
</table>

Camp Reefton Thursday Activities

a. What can you say about the choices of Year 5 and Year 7 students?

b. The Camp Director said that canoeing was more popular with the Year 5 students than the Year 7 students. Do you agree with the Director’s statement? Use as much mathematics as you can to support your answer.

SNMY Project (2003-2006)
A Year 6 Student Response to Adventure Camp Short Task (SNMY, May 2004)
Allow all learners to make a start

Two Year 4 Student Responses to Missing Numbers Short Task (SNMY, May 2004)
**Performance Assessment:**

**Target teaching to identified learning needs:**

For example, 8 differentiated levels of multiplicative thinking determined on the basis of item analysis*

Teaching advice linked to levels (or zones)

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* From the *Learning and Assessment Framework for Multiplicative Thinking* (SNMY, 2006)

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<table>
<thead>
<tr>
<th>Learning &amp; Assessment Framework for Multiplicative Thinking</th>
<th>Consolidate/establish:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 1 – Primitive Modelling</strong></td>
<td>Trusting the count for numbers to 10 (eg, for 6 this involves working with mental objects for 6 without having to model or count-ally). Use flash cards to develop <em>subitising</em> (ie, ability to say how many without counting) for numbers to 5 initially and then to 10 and beyond using part-part-whole knowledge (eg, is 8 is 4 and 4, or 5 and 3 more, or 2 less than 10). Practice regularly</td>
</tr>
<tr>
<td>Can solve simple multiplication and division problems involving relatively small whole numbers (eg, <em>Butterfly House parts a and b</em>), but tends to rely on drawing, modelling and count-all strategies (eg, draws and counts all pots for part a of Packing Pots). May use skip counting (repeated addition) for groups less than 5 (eg, to find number of tables needed to seat up to 20 people in <em>Tables and Chairs</em>).</td>
<td></td>
</tr>
<tr>
<td>Can make simple observations from data given in a task (eg, <em>Adventure Camp a</em>) and reproduce a simple pattern (eg, <em>Tables and Chairs a to e</em>).</td>
<td></td>
</tr>
<tr>
<td>Multiplicative thinking (MT) not really apparent as no indication that groups are perceived as composite units, dealt with systematically, or that the number of groups can be manipulated to support a more efficient calculation</td>
<td></td>
</tr>
</tbody>
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*Scaffolding Numeracy in the Middle Years Linkage Project 2003-2006*
Assessment for learning – class administered materials:

From the Assessment Materials for Multiplicative Thinking (SNMY, 2006)
Assessment for learning – individual tools

5.3 Understanding Scale Factors Tool

Proportional reasoning is often more apparent in relation to visual images, e.g., recognizing shapes that have been enlarged or reduced, than it is in word problems that require interpretation relative to context. However, where students have had a limited exposure to the skills and strategies needed to enlarge or reduce shapes or drawings there is a distinct possibility that misunderstanding tendency to focus on area when attempting to identify how smaller, similar shapes.

This task examines the extent to which students are able to make an enlargement, and use a scale factor to reduce a shape area map.

<table>
<thead>
<tr>
<th>Observed response</th>
<th>Interpretation/Suggested test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little/no response, possibly recognizes shapes and/or notes one is bigger than the other, may be able to explain meaning of map scale</td>
<td></td>
</tr>
</tbody>
</table>

5.3 Understanding Scale Factors Tool

Materials:
2 Pentagon Cards (cut out so that they can be manipulated, see Level 5 Resources)
Dot Paper Worksheet (see Level 5 Resources)
Map Worksheet (see Level 5 Resources) and pen
A ruler

Instructions:
Place the two cards in front of the student and say, “What can you tell me about these two shapes? ...” Note student’s response, then say, “How would you be able to tell if they were equal?” Note student’s response.

Place the Dot Paper Worksheet in front of the student and say, “Could you make this shape half as big please?” Note and retain student’s response.

Place the Map Worksheet in front of the student and say, “This is a map of a suburb in Perth. Can you find Nicholson Road?” ... Point to the scale, and ask, “Can you tell me what this means? ... Can you give me an example?” ...

If no response, say, “If you walked the full length of Arthur Street (indicate this, it is just to the right of the red star), about how far would you have walked?” ... Note student’s response, then say, “Jo walks to Rosalie School which is here (indicate the red star). She lives on the corner of Nicholson and Rupert Street (indicate). About how far does she walk to school in the morning?” ... Indicate that the bottom of the page can be used for any working required. Note student’s response and ask him/her to explain their reasoning.

If correct (i.e., about 375 metres), say, “Thuan lives on the corner of Redfern Street and View Street (indicate upper left-hand corner of the map). About how far does he have to ride to school?” ... Note student’s strategy and response in each case, retain any working.
5.3 Understanding Scale Factors Tool

Proportional reasoning is often more apparent in relation to visual images, eg, recognising shapes that have been enlarged or reduced, than it is in word problems that require interpretation relative to context. However, where students have had a limited exposure to the skills and strategies needed to enlarge or reduce shapes and/or to construct and interpret scale drawings there is a distinct possibility that misunderstandings will arise. One of these is the tendency to focus on area when attempting to identify how ‘many times larger’ one shape is of a smaller, similar shape.

This task examines the extent to which students are able to recognise and describe enlargements, and use a scale factor to reduce a shape and estimate distances on a scale map.

**Observed response** | **Interpretation/Suggested teaching response**
--- | ---
Littlehe response, possibly recognises shapes and/or notes one is bigger than the other, may be able to explain meaning of map scale

- May not understand the spatial task or have access to the skills and strategies needed to interpret maps
  - Ensure that what is meant by statements such as, “3 times as big as” or “half the size of” are understood, i.e., they can be modelled and interpreted relative to context
  - Use peg boards, dot paper, cm grid paper etc to enlarge and reduce shapes by simple scalar amounts, discuss this in terms of what happens to corresponding sides (they are multiplied or divided by the same factor)
  - Discuss which attribute is relevant and why for 2D shapes (ie, length not area, as object is to produce similar shapes)
  - Provide opportunities to work with maps and scale diagrams, make thinking explicit, scaffold appropriate strategies for calculating or estimating distances

Recognises shapes are the same, may identify scale factor (3) but unable to halve the quadrilateral, although may make a start (eg, draw relevant diagonal), explains meaning of map scale but may not be able to use this to provide an example or reasonable estimates for both map questions (eg, may treat as 1 cm is 300 metres)

- Suggests a limited understanding of the scale factor idea for multiplication
  - Use cm grid/dot paper, peg boards etc to review the processes and language involved in enlarging and reducing 2D shapes by a range of different factors starting with simple shapes such as rectangles and moving to more complex shapes such as scalene triangles and irregular quadrilaterals
  - Practice map reading skills and strategies, talk about the use of scales, construct scale drawings of the classroom, school grounds, students homes and/or backyards etc discuss equivalent scales (eg, 2 cm to 150 metres is the same as 1 cm to 75 metres)
  - Explicitly link the use of scales to multiplication using the term scale factor, explore the impact of different scale factors, including scale factors less than 1

Recognises scale factor for pentagons, able to halve the quadrilateral, may use diagonal from right angle vertex to opposite vertex to locate corresponding point, can explain meaning of map scale and provide reasonable estimates of distances

- Indicates a solid understanding of scale factors and how it relates to multiplication in this context
  - Provide opportunities for students to work with an extended range of scale factors, eg, very large whole numbers, decimals, mixed fractions, percentages, ratios, etc
  - Extend scale drawing skills and strategies to include the idea of perspective and the use of a centre of enlargement (or dilation)
  - Link solution strategies to proportional reasoning problems more generally, eg, finding for 1 and multiplying or finding for a common composite unit and multiplying
  - Practice map reading skills and strategies, talk about the use of scales

*From the Common Misunderstandings in Number Levels 1 to 6 (prepared by Dianne Siemon for DE&T, October 2006)*
Forging a Way Forward

- Theories of Learning – ‘Horses for courses’
- Ability-grouping, tracking, streaming?
- Adaptive Teaching, targeted intervention
- Whole-of-person approach – what about cross-age tutoring?

Teachers “pedagogical thinking must be built on knowledge of students and how they learn mathematics” (Simon, 1995, p.120) …

Teachers of mathematics must have “a bifocal perspective – perceiving the mathematics through the mind of the learner while perceiving the mind of the learner through the mathematics” (Ball, 1993, p.159)
Theories of learning – A matter of ‘horses for courses’:

Sagor and Cox (2004)* argue for a range of views, eg,

Classical Positivism
Instructed skills ➔ Success ➔ Application ➔ Meaning

Developmental constructivism
Meaning ➔ Constructed ➔ Application ➔ Success
Understanding

While acknowledging the desirability, relevance, and efficacy of the second (ie, a social constructivist or interactionist view), they argue strongly for a mix of both when it comes to meeting the needs of ‘learners left behind’.

Ability-grouping, tracking, streaming?

“One of the most widespread methods of grouping students in the same grade is ability grouping, either on a subject-by-subject basis (tracking) or for all subjects at once (streaming).

Tracking and streaming are widely viewed as the best way to improve the scholastic achievements of all students ... Studies have shown that most teachers [in the US] have a positive attitude toward ability grouping ...

Many of them justify ability grouping on the basis of the need to adapt class content, pace, and teaching methods to students functioning at different levels ...

In the case of mathematics it is also justified by the ‘nature’ of the subject. Mathematics is perceived as ‘graded’, ‘linear’, ‘structured’, ‘serial’, and ‘cumulative’ – making it difficult to work with groups of students with different levels of knowledge and ability”. (p.533)

A sample of the evidence

• “the achievements of students need not be compromised in a heterogeneous setting: on the contrary, the achievement of our average and less able students proved to be significantly higher when compared to their peers in the same-ability classes, whereas highly able students performed about the same.

  “… past research has shown that ability grouping results in an increase in the gap between high- and low-ability students beyond that expected on the basis of the initial differences between them.” (Linchevski & Kutscher, 1998, p.533-534)

• “Heterogeneous groups appear to give the best opportunity to learn for both low-achieving pupils and average pupils.” (Hootveen, van der Grift & Creemers, 2004, p, 345)

• “research [findings] on the relative merits of heterogeneous and homogeneous grouping are mixed (Slavin, 1990), but a large number of studies over an extended period have found a pattern which is in accord with the one [here] – that grouping by ability produces slightly better results for high-attaining students, whilst lowering the results of average and below-average attainers” (Venkatakrishan & Wiliam, 2003)
Adaptive Teaching, targeted intervention:

The following classes of variables were evaluated in a large-scale study of effective school improvement in mathematics:

- **Monitoring students results**: setting goals for students, diagnosing students’ academic problems through testing; relating learning needs to given instruction; implementing prescribed learning plans for ‘at risk’ students; team discussion of student progress

- **Optimising instruction**: giving extended direct instruction; optimising instruction time; supporting self-confidence of students

- **Supporting active learning**: supporting self-regulated learning; creating and explorative learning environment

Of these … “diagnosing pupil’s academic problems, implementing prescribed learning plans for pupils identified as at risk, giving extended direct instruction, supporting self-confidence of pupils, and creating an explorative learning environment were significant … in (Houtveen, van der Grift, & Creemers, 2004, p.365)

Note the implicit mix of learning ‘theories’
Targeted intervention and differential teaching work

For example, students in an identified sub-sample of ‘at-risk’ students within the SNMY Project demonstrated major shifts in achievement against the *Learning and Assessment Framework for Multiplicative Thinking (LAF)* as a result of an 18 week, 3 sessions per week teaching program* (Margarita Breed, 2006)

Participants: 9 Year 6 students identified at Level 1 of the Framework in May 2004

Results: All 9 students achieved at Level 4 or 5 of the Framework in November 2005

* A copy of the *Intervention Teaching Program for At Risk Students* is included in the *SNMY Project Findings, Materials and Resources* CD-Rom, which was made available to DE&T and Tasmanian Education Department in October 2006
A ‘whole-of-person’ approach:

The issues of agency and identity are often ignored in programs designed to improve school mathematics outcomes or attempts to understand why some students are indifferent or resistant to mathematics (Sfard & Prusak, 2005).

Sagor and Cox (2004) have identified five essential feelings they believe are crucial to a young person’s well-being and success at school: “the need to feel competent, the need to feel they belong, the need to feel useful, the need to feel potent, and the need to feel optimistic” (p.4)

They explain why working on the behaviours and attitudes of discouraged learners alone is insufficient and suggest the inclusion of an additional dimension, that of role.

Cross-age tutoring is one method they suggest for managing the dissonance phenomenon at this level.
In Conclusion

The issue of ‘learners left behind’ is serious and there is a risk that it will become even more serious in the current climate, particularly, if targets are set too high.

We can’t afford to ignore this issue – the personal, social, and economic costs are just too high.

We need to actively lobby for a dramatic increase in our nation’s investment in the future -

\[
\text{
$2.6 \text{ billion} = 2.6 \times 10^9$
}
\]

\[
10\% \text{ of } 2.6 \times 10^9 = 2.6 \times 10^8
\]

That’s $260,000,000

I’d settle for 1%, wouldn’t you?
References:


