PENGUIN CLUSTER: SOME LESSONS FOR LITERACY AND NUMERACY FROM THE NAPLAN DATA

Introduction

The analysis presented here seeks to be faithful to the ‘School Literacy and Numeracy improvement’ principles identified in Supporting Literacy and Numeracy Success (Tasmania Department of Education, 2013) p.21. Two factors cited are:

- An explicit school improvement agenda; and
- Analysis and discussion of data.

There is then talk of ‘implementing effective evidence-based interventions’.

Moreover, development in specific aspects of literacy and numeracy is predicated upon high quality ‘Conditions for learning’ (p.23) – especially engagement, immersion, demonstration, and expectation – and ‘Targeted teaching to address individual needs’ (p.26)

This report also assumes that the schools will be looking for outcomes in the following three areas from their involvement in the 2013 Literacy/Numeracy project:

- Building capacity and the pedagogical subject knowledge (PCK) of staff;
- Changes in attitudes, expectations and elements of professional practice in literacy and numeracy through whole-staff professional learning and engagement;
- Greater use of data in planning for progress in literacy and numeracy.

Some digested thoughts

1. A top-line is that 2012 NAPLAN Summary data is not at all bad in terms of comparison with Australian, Tasmanian, and similar school NMS % data. Penguin HS and the two feeder Primary schools perform ahead of these metrics for all areas except Spelling. The baseline is respectable! HOWEVER for Years 5, 7, and 9 Tasmania is below the national means in Persuasive Writing, Spelling, Grammar and Punctuation, and Numeracy.

2. The Penguin cluster does a bit better than this - nevertheless drilling down into item level results indicates a number of areas where all three schools are more than 10% below the national average in relation to some aspects of literacy and numeracy (and on occasions this rises to more than 20% below within parts of the cluster and some year groups). Moreover, the NMS is a pretty low baseline – the Penguin data highlights a clustering of students at Bands 5 and 6 – at or just above the NMS – and comparatively few ‘top end’ students (7-9 for Y7 students).

3. **Spelling** is the weakest area (something that can be traced back in the data to Y3 and Y5). At Riana, 18 spelling items for Year 3 students scored as more than 20% below the national average in 2012. At Penguin PS 10 spelling items for Year 5 students scored as more than 10% below the national average in 2012. Another stand-out number is that in Year 7 16 spelling items came in at more than 10% below the Australian average. And the Year 9
results dipped significantly in 2012 compared to 2011 (85% at or beyond NMS as opposed to 95%). 91% of this cohort had been at or beyond NMS in 2010 – so evidence of slippage.

Tentative recommendation: All of the schools might explicitly identify spelling as an area of focus within their literacy plans. The secret here may be simple immersion/contact with a greater range of – especially information - texts [Examples of poorly performing results on particular words – guidance, laboratory, exaggerated, precision, adequate, guarantee (Y9); ineffective (Y7)]. Sustained and monitored use of existing spelling resource banks might also be beneficial. Equally – more explicit teaching of spelling rules beyond Year 6 might be considered. Moreover, changing the mindset/framing of this area might freshen teachers’ thinking too – the 2012 Tasmanian framework delineates it as ‘Word Knowledge’ – ‘What subject-specific vocabulary will students need to express concepts and ideas accurately’? Might all schools look to promote the fun/engagement element e.g. internal Spelling Bee competitions? Perhaps not a PL focus?

4. Numeracy. Riana’s achievement of 100% at or beyond NMS at both Year 3 and Year 5 in 2012 is worthy of note! At the High School, there are some patterns in evidence in relation to numeracy at the item level. For example there are seven Year 9 items bearing upon algebraic understanding where the school was more than 8% below the national average. Similarly there are seven ‘Number’ items where the Y9 students struggled – although the areas were diverse: decimals, square roots, solving word problems, ratios, percentages. The children were not great on probability or measurement either. In Year 7 probability also stood out as a problem area with three items more than 11% below the Australian average.

A Maths educator at UTas who is a national leader in this field writes very persuasively – in the context of this project - as follows……..

“Student outcomes are enhanced when teachers deliberately, and in a structured way, incorporate higher order thinking into their classrooms. This cannot be done unless teachers focus on some substantive content area. Higher order thinking in mathematics is NOT more difficult worksheets, it is a way of approaching the mathematics itself.

There is also little point in dealing with decontextualized splinter skills which is the danger with item analysis from NAPLAN items. A data-driven approach requires considerable work by the teachers standing in front of classes to identify not just “they can’t do fractions” but exactly what knowledge in fractions is missing and how to address this. In general this means developing
1. A better understanding of the mathematical content at a personal level;
2. A better understanding of the content from the perspective of what students have difficulties with; and
3. Crucially, an understanding of HOW to address the issues.

Research also shows that teachers may have 1 (eg they can add fractions but not know why it works); they perhaps have some of 2 (eg they can recognise to some extent what students might have trouble with) but that it takes considerable effort to deal with 3, and that many
teachers, even those with good mathematics backgrounds, often cannot suggest what to do next, or how to change what they have done to improve students’ learning outcomes.”

Another highly respected UTas Maths teacher educator writes: “Too often numeracy strategic plans assume that the teachers have well developed understanding of mathematics and well understood values/beliefs regarding the learning and teaching of mathematics and numeracy. This is not the case in most schools. Just providing teachers with “resources that are ready to go” has little chance of success”.

Tentative recommendation: The cluster decide upon one or two specific areas of Mathematical learning with a focus on elements 2 & 3 above. The NAPLAN data suggests that algebraic understanding and to a lesser extent probability or measurement would be useful areas of focus for PL in a wider context of developing Maths PCK. Interventions should be about more than ‘more/different resources’.

5. **Reading of information texts** (or ‘Comprehending Texts’). Penguin PS’s Y3 data of 100% of children reading at or beyond NMS is worthy of note! On three items relating to reading/deciphering information texts, Year 9 students performed 17-18% worse than the Australian average in 2012:
- Locating specific information in a report
- Identifying the purposes of a visual representation in a report
- Identifying the purpose of emotive language to build the reader’s appreciation in an article

Tentative recommendation: Literacy plan signposts use of a wider range of information texts that engage the children’s interests through use of real-life and local contexts – advertisements, brochures, newspaper reports, tourist information, marketing websites etc...Enhanced use of the interactive whiteboard to model/exemplify annotation of text and dissection of key themes might also be a PL focus. Is the pedagogy ‘active’ in this area with plenty of purposeful student talk and discussion?

6. **Persuasive writing** (or ‘Composing Texts’). There is evidence of a number of areas of weakness coming through from the Year 5 data for 2011 from Penguin PS – with eight headings under persuasive writing being more than 10% below the Australian average (the 2012 figures for persuasive writing were much better!). Similarly there were significant issues emerging from the Year 3 data from Riana from 2011 – with eight headings under persuasive writing more than 20% below the Australian average (again, less obviously problematic in 2012). There is a significant drop-off by Year 9 in, for example, the use of persuasive devices and students’ choice of rich and precise language to convey their ideas. The Australia-wide data for Year 7 performance in persuasive writing provides very clear signposts towards possible goals in this area. The students need to move from text containing two structural components (90% achieve this nationally) to text containing an introduction, body, and conclusion (45% only). They need to move from some development and elaboration of ideas (83% achieve this nationally) to ‘ideas are elaborated and
contribute to an argument’ (only 19% achieve this). And whilst 91% of Year 7 students can use three or more persuasive devices, only 44% can use these devices to ‘persuade effectively’.

**Tentative recommendation:** Although the Penguin schools generally perform relatively well against this metric, as compared to Tasmanian, Australia-wide, and especially similar school metrics, there is plenty of scope to focus upon building the quality and structure of children’s persuasive extended writing. **PL focus?**

### Links to Cluster/Individual School Planning

I have been fortunate enough to be able to access copies of all three schools’ literacy and numeracy plans via Sarah Horsman. I am grateful for this access. The issues identified above will certainly not be news to you. Each school will clearly also be looking to embed good practice from *Tasmania’s Literacy and Numeracy Framework 2012-2015* (Department of Education, 2012) and *Supporting Literacy and Numeracy Success* (Department of Education, 2013)

Good practice guidance in the research literature on literacy plans (e.g. Education Queensland, 2000; Sharratt & Fullan, 2006; Murphy, 2004) identifies:

- coordinated focus on pedagogy across the school (how the school’s pedagogical approach to literacy was articulated);
- clear & measurable key performance indicators (how the school aimed to monitor the literacy activity within the school),

as two of the ten clear criteria. In general these two elements were indistinct in the planning that I have seen.

**NB** There is commendable evidence from the **Penguin PS** Literacy and Numeracy plans of these kinds of conclusions already being drawn, using the NAPLAN data and feeding into strategic planning and target-setting (e.g. on the areas of spelling, information texts, persuasive writing, and aspects of numeracy identified above). However, within the literacy plan there is little evidence of operationalization steps, monitoring and review strategies, staging posts, or details of strategies to bring about the desired changes (there is more flesh on the numeracy plan – albeit mainly at the level of resources to support change).

**NB** **Riana PS** literacy and numeracy plans also identify many of the key issues and demonstrate commendable target-setting. But there is little focus on PL (and its potential impact) or changing pedagogy.

**NB** There is evidence of potentially influential and useful PL having been undertaken at the **high school** over the past three years and of a range of literacy and numeracy intervention strategies, but the focus of planning has tended to be more structural and generic than pedagogical and focused upon the quality of classroom learning. The numeracy plan does engage with NAPLAN data; the literacy plan does not.

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