

Some preliminary analyses of the three Cape York schools on NAPLAN

In the data set provided, there are 60 students at Aurukun, 18 at Coen and 44 at Hope Vale (N=122). There are, however, quite considerable missing data across these students. Overall there are data points for only 47% of all possible data points (122 students over 5 assessments over three occasions and administration of NAPLAN). There are only 22% of all possible *cohort matched data* over the three administrations.

It is not clear if these absent students were missing on the day of the tests, or not in the school at the time – the amount of missing data is concerning. It may be worthwhile to convince the NAPLAN administrators to allow testing of the students over a period of some time (with the usual constraints over confidentiality of items) to allow for the high levels of itinerary and absenteeism -- the good work of the school should not be hindered by not appreciating the realities of the absence situation. And any such data is better than none. But, any analysis must be tempered by this low level of data. The following table shows the number of students with cohort data (data on a test over two administrations of NAPLAN).

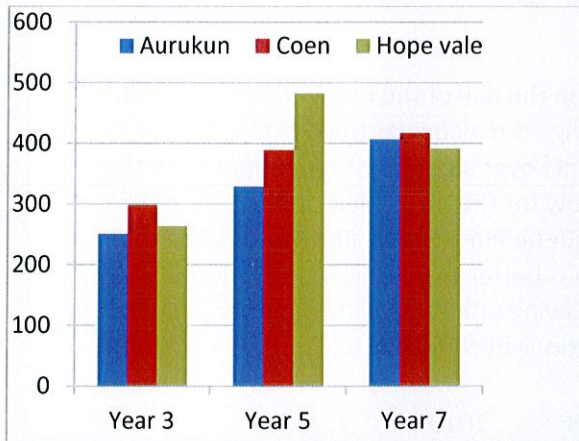
	Grade	2008	2010	2012
Aurukun	3	3	15	24
	5		20	14
	7			21
Coen	3	5	5	3
	5		6	6
	7			7
Hope Vale	3	22	8	9
	5		23	5
	7			20

One of the scoring rules in NAPLAN is that when a student begins a test but gets no answer correct they are then assigned a very low score (e.g., 87 when the next legitimate score could be 2-300 or thereabouts) – leaving these student's scores in the data base can led to major distortions to the estimates of the spread of scores, hence there removed. Clearly, writing is the most problematic, particularly in the 2012 administration. This points to the need for more basic instruction in writing as too many students are failing to score any marks in these assessments.

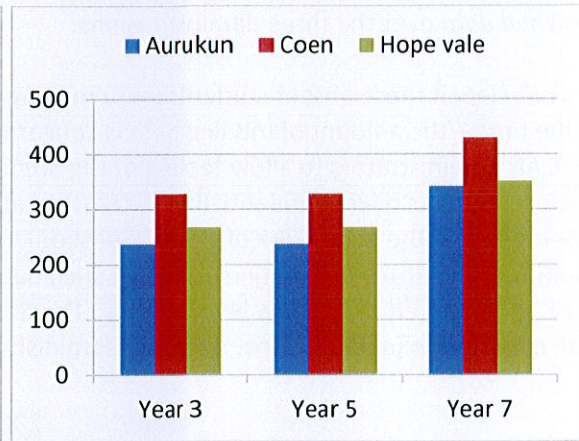
Year	2008	2010	2012
Reading	11	0	0
Writing	11	2	30
Spelling	0	0	0
Grammar	2	3	6
Numeracy	0	0	1

All but 2 students across the three schools are Aboriginal. There are similarly numbers of Females to males in Aurukun (45% F, 55% M) but many more males to females in Coen (33% F, 67% M) and Hope Vale (32% F, 68% M). The majority of students at Aurukun are classified Language other than English (97%), most are so classified in Hope Vale (89%), and equal numbers at Coen (50%),

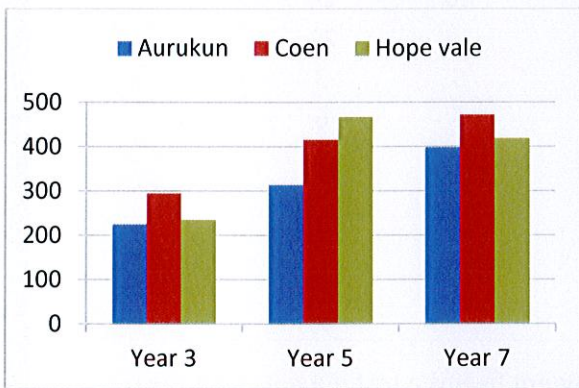
The following Figures show the means for each Grade (merged across the three administration years). There are only minor differences at Year 3 across all schools and subjects (perhaps a slight advantage for Coen students). By Year 5, however, differences in means across schools start to occur – Hope Vale higher in Reading at Year 5 but no differences at Year 7; Coen higher in Writing, no great differences in Spelling and Grammar and Punctuation; and Coen and Hope Vale having higher means than Aurukun in Numeracy,



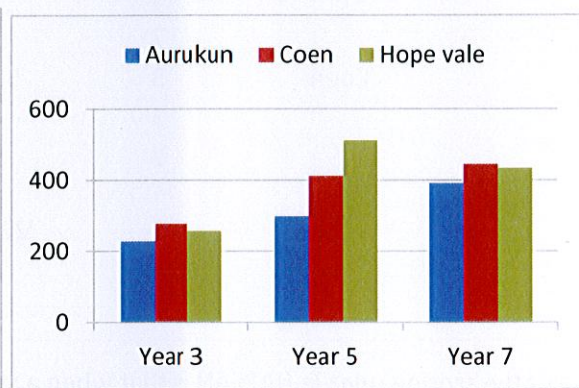
Reading



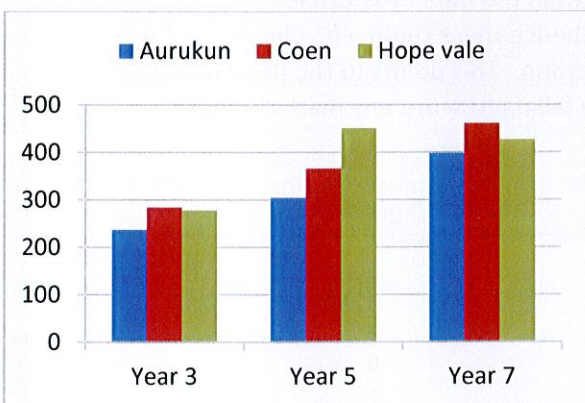
Writing



Spelling



Grammar & Punctuation



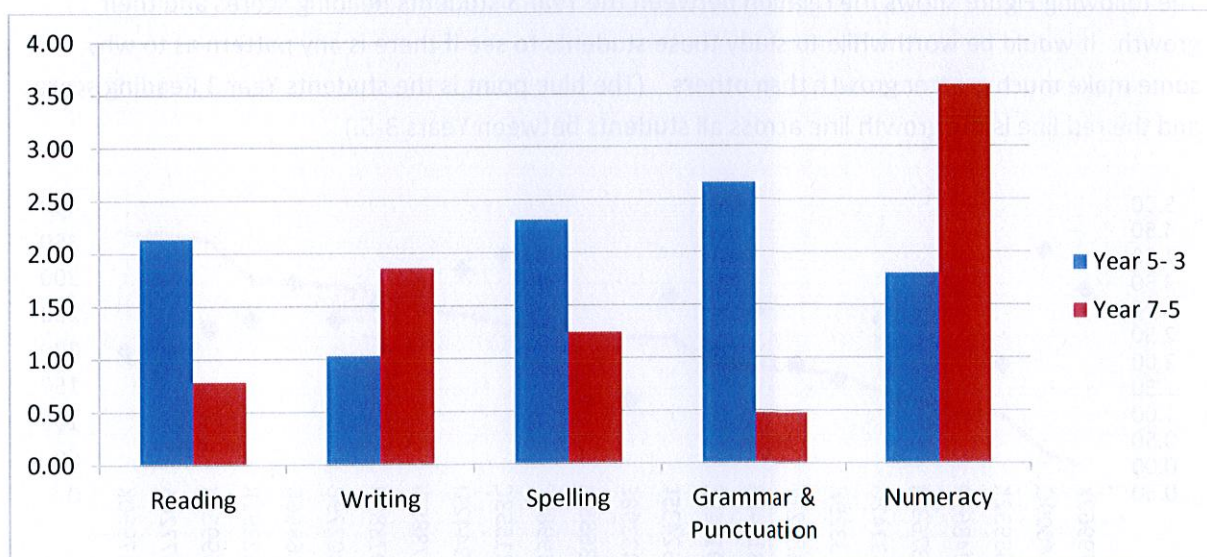
Growth

Growth effect-sizes were calculated for all students where they completed a NAPLAN test over two occasions (Year 3 and 5, or Year 5 and 7). There are too few data points over time to make much meaning of growth by school.

School	Year 5-3 Read			Write			Spell			Grammar			Numeracy		
	Mn	sd	N	Mn	sd	N	Mn	sd	N	Mn	sd	N	Mn	sd	N
Aurukun	2.71	1.18	19	1.27	0.62	13	2.61	1.37	17	2.97	1.29	15	2.13	1.34	19
Coen	1.75	0.53	4	-0.03	0.84	3	1.38	0.62	5	1.44	0.59	5	0.73	0.21	2
Hope vale	-0.02		1				1.27		1	1.57	.	1	0.31	0.57	2
Total	2.14	0.93	24	1.03	0.50	16	2.31	1.01	23	2.66	1.11	21	1.80	1.13	23

School	Year 7-5 Read			Write			Spell			Grammar			Numeracy		
	Mn	sd	N	Mn	sd	N	Mn	sd	N	Mn	sd	N	Mn	sd	N
Aurukun	-0.20	1.16	22	0.34	0.60	21	0.20	1.18	24	-	1.27	22	0.41	1.05	22
Coen	0.79	0.16	6	1.70	1.35	3	0.68	0.21	6	0.62	0.88	6	1.18	0.88	8
Hope vale	0.67	0.61	11	1.29	1.20	8	0.92	0.47	13	0.45	0.45	12	1.12	0.31	14
Total	0.79	0.82	39	1.86	1.61	32	1.25	0.84	43	0.48	1.41	40	3.58	1.23	44

The average effect-sizes are all substantial, but these students are starting from a very low base. Given the average effect-size for ALL Australian students across the five subjects is .4 per year (or .8 over two years for the cohort analysis, such as represented in this figure), then there is average growth in Writing between Years 3-5, in Reading and Grammar & Punctuation between Years 5-7, otherwise there has been greater than the Australian average growth for all other comparisons. Particularly noteworthy is the numeracy increases.



Overall the growth measures there is no major differences in growth between males and females: the overall male increase was 2.04 between Years 3-5 and .50 between Years 5-7, and overall female increase was 2.14 between Years 3-5 and .50 between Years 5-7.

Year 3-5	Read	sd	N	Writ	sd	N	Spell	sd	N	Gram & Punct	sd	N	Nu meracy	sd	N	All
Female	2.41	1.37	11	1.36	0.42	7	2.56	1.56	10	2.42	1.22	10	1.73	1.29	11	2.14
Male	2.45	1.17	13	0.76	0.98	9	2.08	1.12	13	2.65	1.43	11	1.97	1.49	12	2.04

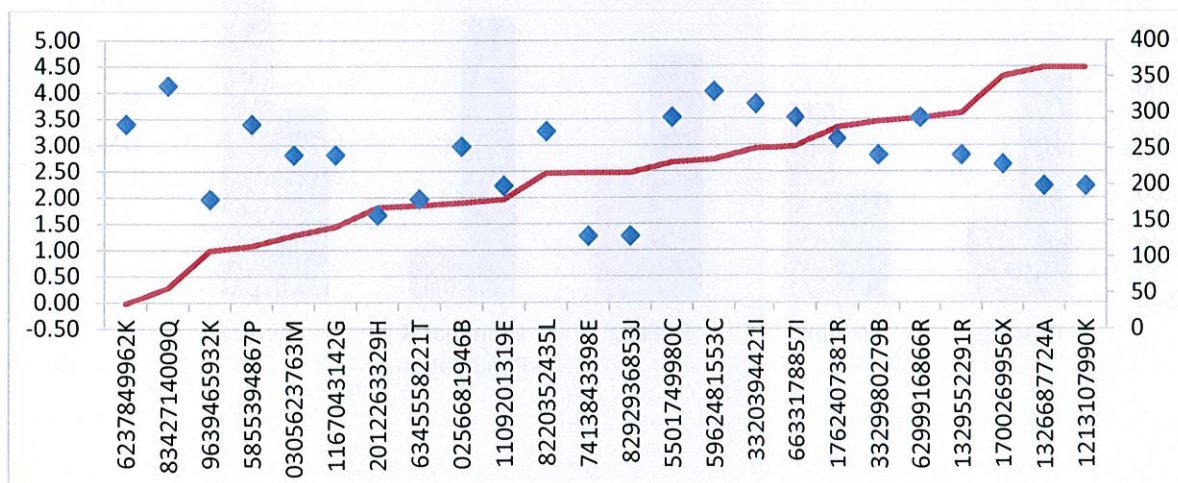
Year 5-7	Read	sd	N	Writ	sd	N	Spell	sd	N	Gram & Punct	sd	N	Nu meracy	sd	N	All
Female	0.18	1.01	19	0.82	0.88	15	0.42	1.07	19	0.22	1.12	19	0.91	1.01	20	0.50
Male	0.22	1.08	20	0.60	1.07	17	0.53	0.91	24	0.18	1.02	21	0.67	0.83	24	0.44

The correlation between the initial score and the Growth score indicate whether the lower or higher achieving students are more likely to make growth. In general those students who started lowest in the classes made the most growth. One explanation could be regression to the mean (those lower have a greater chance of making growth than higher, but these correlations are sufficiently high and negative that there is more than regression to the mean operating here. One change in strategy may be to increase the expectation of growth for those who are in the top 30-40% of the class as it seems to be the case for those in the bottom half of the distribution.

Correlations between initial score and Growth effect-size

	Reading	Writing	Spelling	Grammar	Numeracy
Year 3 and Growth	-0.12	-0.62	-0.30	0.32	-0.16
Year 5 and Growth	-0.87	-0.74	-0.75	-0.82	-0.82

The following Figure shows the relation between the Year 3 students Reading scores and their growth. It would be worthwhile to study these students to see if there is any pattern as to why some make much greater growth than others. (The blue point is the students Year 3 Reading score and the red line is the growth line across all students between Years 3-5.)



Conclusions

The lack of so many students' data over these measures must be the first concern. There is no notion whether those who did not attend on NAPLAN day were those who made most growth or not, where higher achievers or not. It would be important also to relate the growth measures to some estimate of attendance to further show the importance of attendance in class.

For those students who did have estimates such that a measure of growth could be estimated (about a quarter of all students), the growth is impressive – especially in Numeracy. There is every confidence to continue the current DI programs, given this current growth but the major aim should be to increase the number of students who can be evaluated to see the effects of instruction.