

## Cape York Aboriginal Australia Academy NAPLAN Results Analysis 2009 to 2013

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There were 262 students who had some NAPLAN scores across the three schools and across three year groups (Years 3, 5, and 7). Altogether there were 148 students from Aurukun, 32 from Coen, and 83 from Hope Vale. Almost all (98.9%) were Aboriginal, and there were equal numbers of males and females. The majority (70%) were classified as LOTE. There was also some attendance data but the sample size is small and thus difficult to use in any analyses: 17 for Year 3, 59 for Year 5, and 109 for Year 7. It is highly likely that attendance is an important moderator of these NAPLAN results. The numbers per year are presented below (noting that many repeated their assessments over the 2 year assessment cycle).

*Numbers of students at each of the three Cape York schools for the three years of schooling for 2009, 2011, and 2013 NAPLAN*

Year 3	Aurukun	Coen	Hope Vale	Year 5	Aurukun	Coen	Hope Vale	Year 7	Aurukun	Coen	Hope Vale
<b>2009</b>	18	7	13	<b>2009</b>	27	7	13	<b>2009</b>	27	4	16
<b>2011</b>	28	4	21	<b>2011</b>	19	7	13	<b>2011</b>	22	7	16
<b>2013</b>	41	6	15	<b>2013</b>	31	5	20	<b>2013</b>	19	7	9
<b>Total</b>	<b>87</b>	<b>17</b>	<b>49</b>	<b>Total</b>	<b>77</b>	<b>19</b>	<b>46</b>	<b>Total</b>	<b>67</b>	<b>18</b>	<b>41</b>

The means and standard deviations for the three years across all schools show a much greater spread for writing than the other subjects. This should be of major interest and concern – interest as it shows there is wide variation (and thus pockets of success) and concern as there are many students performing poorly relative to their peers.

*Means and standard deviations (sd) for the five NAPLAN tests across Years 3, 5 and 7.*

	Yr. 3			Yr. 5			Yr. 7		
	No.	Mean	sd	No.	Mean	sd	No.	Mean	sd
<b>Reading</b>	124	287	56	118	358	54	109	418	41
<b>Writing</b>	126	228	98	124	307	96	107	321	125
<b>Spelling</b>	128	279	69	124	371	66	107	426	86
<b>Gram &amp; Punct</b>	121	266	76	124	328	82	107	377	81
<b>Numeracy</b>	115	273	63	112	360	41	109	416	44

The all-important **growth effect-sizes are quite high for Years 3-5 – and most are well above the expected .80 for all Australian students.** The exception is writing, particularly for Years 5-7 where the effect is very small relative to the national norms.

*Growth effect-sizes over the two year period for Cape York students (expected value  $d=.80$ ).*

	Growth d			Growth d		
	No.	Yr. 3-5	sd	No.	Yr. 5-7	sd
Reading	66	1.52	1.23	56	1.56	1.04
Writing	67	0.73	1.28	56	0.26	0.96
Spelling	68	1.68	0.78	57	0.92	0.59
Gram & Punct	62	1.03	1.13	57	0.62	1.06
Numeracy	52	1.60	1.35	45	1.19	1.08

The following are the two year effect sizes for Indigenous and non-Indigenous students across Australia (based on the 2013 National NAPLAN report). The average growth for Indigenous students is exactly the same as for Non-Indigenous students (.77 and .76 for Reading, and .93 and .90 for Numeracy); showing that all students, on average, make similar growth.

*Average two year **growth** effect-size for ALL Australian Indigenous & non-indigenous students (NAPLAN, 2013).*

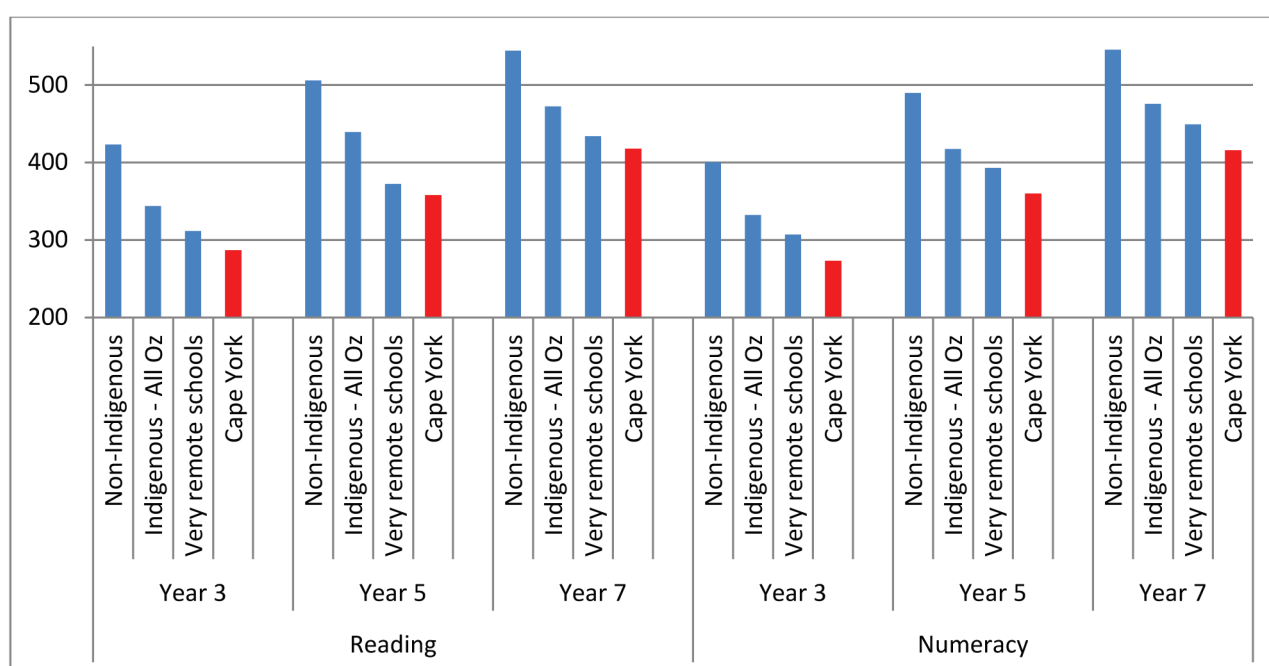
	Reading						Numeracy					
	2008	2009	2010	2011	2012	2013	2008	2009	2010	2011	2012	2013
<b>Yr 5-3</b>												
Indigenous	0.97	1.01	0.92	0.91	0.81	1.27	1.18	1.40	1.29	1.34	1.26	1.29
Non-Indigenous	1.08	1.04	0.95	0.91	0.93	1.17	1.17	1.35	1.36	1.32	1.34	1.33
<b>Yr 7-5</b>												
Indigenous	0.76	0.75	0.90	0.88	0.79	0.47	1.03	0.82	0.88	0.83	0.79	0.90
Non-Indigenous	0.74	0.65	0.83	0.74	0.67	0.61	1.00	0.84	0.85	0.83	0.70	0.80
<b>Yr 9-7</b>												
Indigenous	0.63	0.51	0.42	0.64	0.49	0.69	0.59	0.71	0.57	0.64	0.77	0.47
Non-Indigenous	0.63	0.60	0.42	0.60	0.50	0.63	0.53	0.67	0.53	0.53	0.48	0.56

The issue is that the starting points between Indigenous and non-Indigenous students are so far apart – at every year level. The average difference in the means for Indigenous students compared with Non-Indigenous students is 1.03 in Reading and 1.00 in Numeracy. Thus given the growth effects above, Indigenous students will need to make 2 to 2.5 times the growth to catch up to the average mean of non-Indigenous students.

*Effect-size differences between Indigenous and non-Indigenous students.*

Year	Reading						Numeracy					
	2008	2009	2010	2011	2012	2013	2008	2009	2010	2011	2012	2013
3	1.03	1.02	1.03	1.02	1.02	0.99	1.05	1.05	1.05	1.00	1.09	1.06
5	1.05	1.05	1.05	1.05	1.06	1.02	1.08	1.05	1.09	1.08	1.11	1.07
7	1.04	1.03	1.08	1.03	1.01	1.06	1.04	1.08	1.08	1.07	1.05	1.05
9	0.98	1.07	1.09	0.98	1.01	1.00	1.05	1.12	1.10	1.07	0.88	1.05

The following figure shows the means for each year for non-Indigenous and Indigenous across Australia, for Remote Schools, and for Cape York (red) for Reading and Numeracy. **In all cases, the Cape York mean is below all other comparisons.**



The effect-size differences between Cape York and Very Remote, All Indigenous and All non-Indigenous students are presented in the next Table. Cape York students are about one year growth below other Very Remote students, two years behind All Indigenous, and five-six years behind All non-Indigenous students. Can this be done? Yes ... although it is a tough ask -- Given the starting mean for Year 3 Reading (for example) Cape York students need to make a 1.9 per year effect growth to catch up to Year 5 All Australian mean – and currently the growth is .75 per year (and it is .50 for all Australians). Another example – the growth effect between the All Australian Year 7 Reading mean and the Year 3 Cape York mean is 4.30 and the current Cape York growth is 2.70 from Year 3 to Year 7. Thus, Cape York students needs to make gains of 1.59 above the current rate (4.30-2.70) or .40 extra per year (from the current growth) to catch up to the Year 7 all Australian mean.

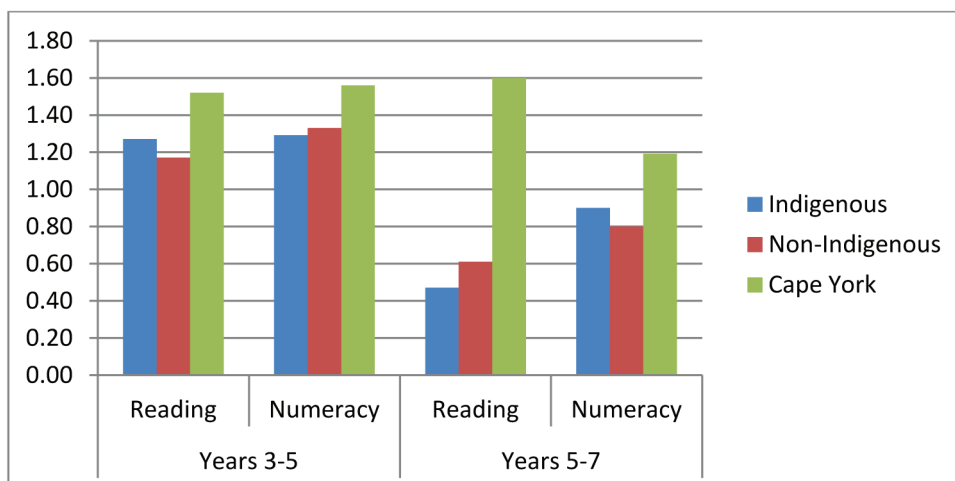
The acceleration for Cape York students is underway, the program seems appropriate, so more foot to the pedal.

*Effect-size differences between Cape York, and Very Remote, All Indigenous, and All Non-Indigenous students*

	Year 3		Year 5		Year 7	
	Reading	Numeracy	Reading	Numeracy	Reading	Numeracy
<b>Cape York - Very Remote</b>	-0.44	-0.54	-0.27	-0.81	-0.39	-0.76
<b>Cape York - All Indigenous</b>	-0.82	-0.92	-1.34	-1.07	-0.96	-1.11
<b>Cape York - Non-Indigenous</b>	-2.03	-2.01	-2.53	-2.34	-2.41	-2.28

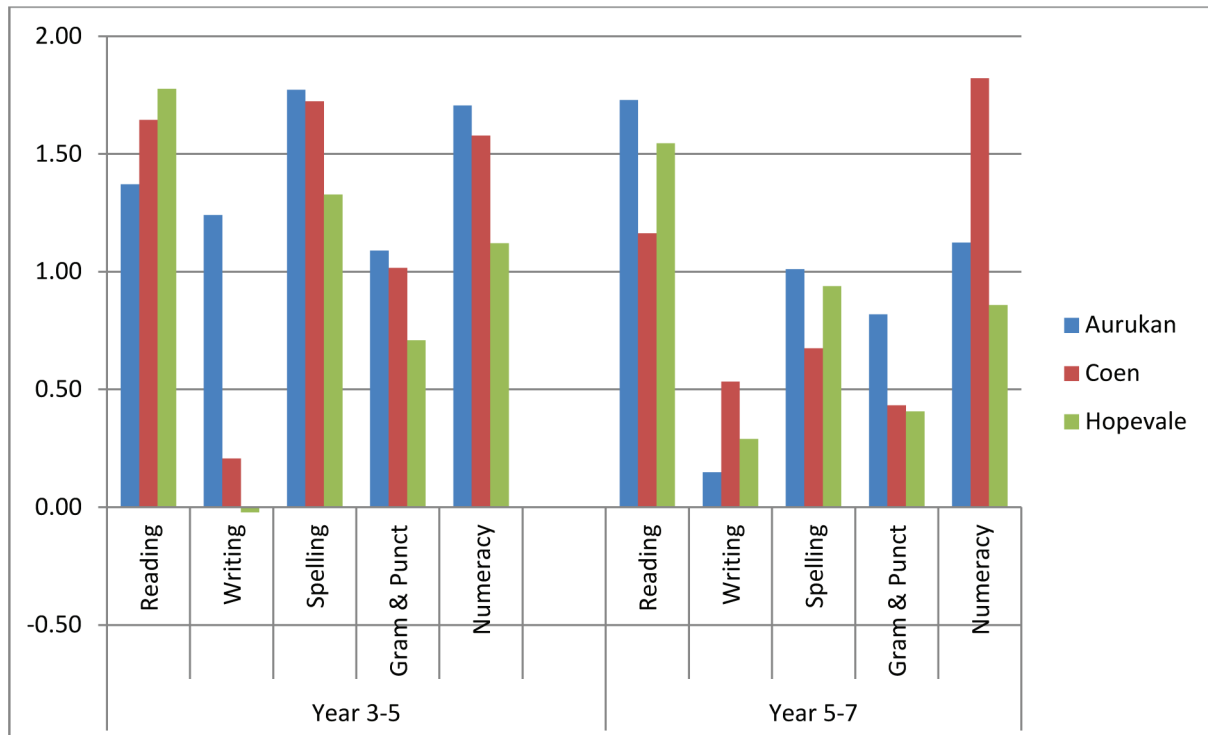
The comparison of growth changes for the three Cape York schools (across all comparisons) and for similar schools is shown below and should provide much confidence that the programs and teaching is making major differences (with the exception of writing). Yes, the levels of achievement are still not similar to the national averages but the growth trajectories are excellent. On the bases of these data the three Cape York schools are making, on average 1.5 times the growth of similar students. This growth needs to be maintained if these students are to catch up to their other Australian peers.

Recall, the current growth for Cape York students exceeds both the All Indigenous and All Non-Indigenous students. In Years 3-5 it is 20% for both Reading and Numeracy, and in Years 5-7 it is 240% for Reading and 32% for Numeracy – these should provide confidence in the programs in place for accelerating the growth, and obviously it needs to be sustained and even increased. Recall, that such growth, if apportioned, to each year of the seven years of primary school should make a major difference in the growth of the Cape York students.



## Other comparisons

There are other comparisons that can be made within the Cape York schools. There are no *sex* differences in the growth measures across all comparisons (Wilks Lambda = .88, Mult.F = 1.04, df-5,37, p=.411). At the Years 3-5 growth there are no *school* differences in Reading, Spelling, Grammar but there are differences in Numeracy and Writing. Aurukun shows the way in writing, with Coen and Hope Vale adding no value over the two years. In Numeracy, Aurukun and Coen exceed Hope Vale in adding growth.



At the Years 5-7 there are no *school* differences in Reading, Spelling and Grammar. In writing Coen is ahead of the other two in Writing and Numeracy. Across all growth comparisons, Aurukun (1.20) and Coen (1.08) exceed Hope Vale (.89) in overall growth. Hope Vale growth is particular low in Writing and Numeracy.

The overall attendance across the three schools was 72%: Aurukun 69%, Coen 86%, and Hope Vale 78%. But the sample sizes are small and probably exclude those who leave for sustained times and who move to other schools altogether. It is important to collect attendance data for all students as it is likely that the growth of those who attend >80% is much higher than those with less attendance. Determining the minimum attendance is worth knowing as then it can be more effectively communicated to all.

### Change over the two years for Cape York students

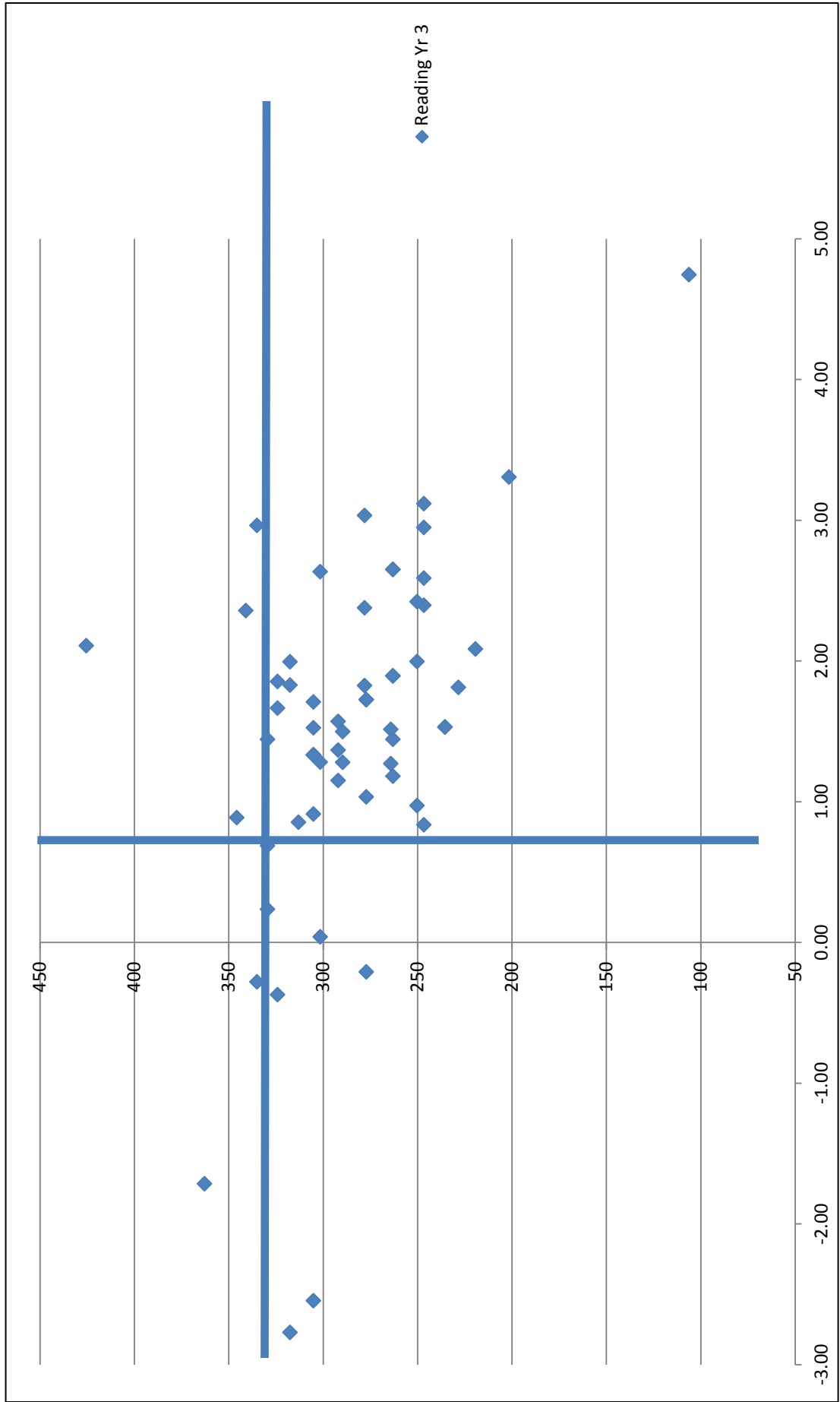
The remarkable churn in numbers means that there are far fewer students to compare changes over time. There are 64 Year 3 to 5 and 56 Years 5 to 7 comparisons. In many senses these are a particular sample but the comparison in growth effect size between this cohort and all the students shows remarkable similarities. Hence, there is little reason to believe that those who stay (or go) are necessary that different in their growth patterns.

#### *Growth effects-sizes for those with data over time (Cohort) and All students in the Cape York schools*

	Reading	Writing	Spelling	Gram & Punct	Numeracy
<b>Years 3-5</b>					
Cohort	1.47	0.68	1.61	0.97	1.28
All students	1.52	0.73	1.68	1.03	1.60
<b>Years 5-7</b>					
Cohort	1.56	0.24	0.92	0.55	1.25
All students	1.56	0.26	0.92	0.62	1.19

It is the case that the majority of students are below the NAPLAN “at and above standard” level of achievement. The horizontal line shows the students above and below this standard, and the vertical line shows the students above and below the expected ES=.8 growth over two years. The majority are making excellent growth but are below the standard, but there a few that are below standard and far from satisfactory progress. Attention to the individual changes may lead to some critical stories and implications.

# CYAAA Year 3 Reading: Mean Scale Score and Effect Size by Student



## Conclusions

The program in Cape York shows greater growth than the Australian averages. While there appears to be important school differences, **the overall program appears to be making a greater-than-average difference. Persistence in ensuring as complete-as-possible data for achievement and attendance for every student is critical to showing the impact of the program.** So many throughout Australia have their eyes focused on the Cape York program, there is every reason to believe it is successful, but only careful and deliberate evaluation of the program will be convincing. The students and families of Cape York are the beneficiaries, and all credit must be given to the educators in these three schools for implementing the 'three-C' program (Class, Club, Culture), for attaining the growth success – and may there be more of this success.