COMET Admissions Examination Statistical Summaries Spring 2009

19 May 2009 Notes:

In this statistical summary those who took the College of Micronesia-FSM Entrance Test (COMET) are referred to interchangeably as "students" and "candidates." There is no distinction intended by these two terms.

As of 11 May 2009 Mortlocks high school, Neighboring Islands Central High School on Woleai, and Weipat high school had yet to sit the COMET.

On 19 May some tables and charts were update to include section break-out data for NMHS and PICS. This author thanks those at these two schools for sharing their class lists. Two new appendices have been added with essay and math sum means data by high school. Not all paragraph text was updated to reflect this new data.

Basic Statistics

The COMET admissions examination consisted of four main sections. The four main sections included an essay, vocabulary, comprehension, and a math section consisting of four subsections. The basic statistics for these sections and subsections are presented in the table one below.

2009	Essay	Voc	Comp	95	96	99	100	msum	z-score	COMET
count	1713	1710	1710	1715	1715	1715	1713	1721	1721	1721
min	0	0	0	0	0	0	0	0	-12.27	24.57
max	50	42	46	10	10	10	10	39	16.4	1264.3
range	50	42	46	10	10	10	10	39	28.67	1239.73
midrange	25	21	23	5	5	5	5	19.5	2.06	644.44
mode	0	11	16	9	7	2	2	18	-2.72	437.58
median	24	11	18	7	6	3	3	19	-0.19	546.86
mean	23.21	12.74	19.09	6.97	5.73	3.53	2.98	19.14	-0.06	552.76
stdev	11.99	6.25	7.41	2.19	2.51	2.11	1.88	7.07	5.1	220.6
cv	0.52	0.49	0.39	0.31	0.44	0.6	0.63	0.37	-90.34	0.4

Table 1: Basic statistics

Essay is the essay score out of 50.
Voc is the vocabulary score out of 45.
Comp is comprehension out of 48.
95 is the first math subsection and contains ten arithmetic level problems.

96 is the second math subsection and contains ten prealgebra level problems.
99 is the third math subsection and contains ten elementary algebra problems.
100 is the fourth math subsection and contains ten college level algebra problems.

msum is the sum of the math subsections and is out of forty.

Correlations

The math test was rewritten in 2009. The overall number of math problems performed correctlyremains, given the sample size, correlated moderately to the essay, vocabulary, and comprehension sections of the examination.

Correlations	Essay	Voc	Comp	Math sum
Essay	1	0.53	0.62	0.52
Vocabulary	0.53	1	0.72	0.46
Comprehension	0.62	0.72	1	0.59
Math sum	0.52	0.46	0.59	1

The moderate correlation for mathematics indicates that mathematics is linked to language skills, at the same time the mathematics score provides independent information on the abilities of the candidate. Thus the mathematics score is valuable for a more comprehensive picture of the skills the candidate possesses.

The question is often asked, would student "x" have been admitted if their math score was stronger. In other words, does the math section keep students from attaining associates degree admission. The above correlations should provide statistical assurance that the math section alone did not "sink" a student – the essay was the strongest driver of the rank order. In addition, there is a correlation between math and English, so a really weak math score for a given set of language scores may suggest the student is weaker than the language test results indicate. Again, the mathematics score is important to providing a broader picture of the student's academic abilities.

Distributions

The distribution of scores on each section is given in illustration one. The score is on the horizontal axis, the vertical axis is the number of students with that score.

Frequency distributions
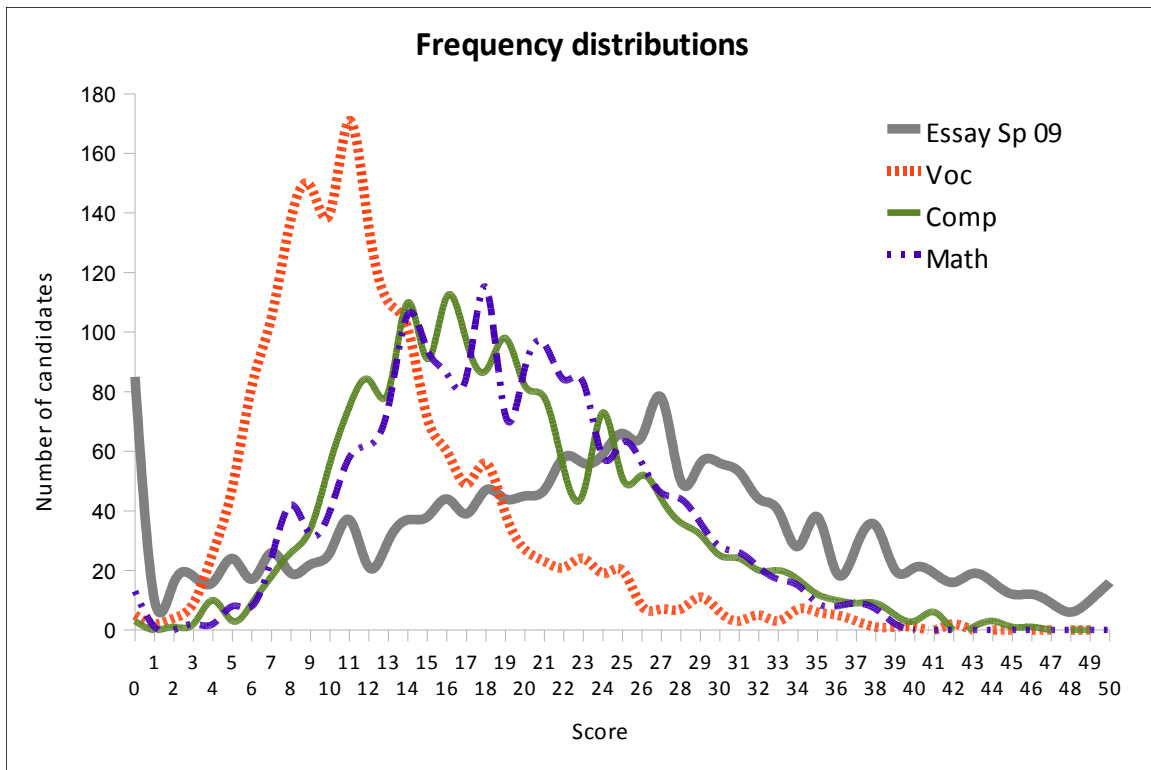
Illustration 1: Frequency distribution for the COMET subtests

With the exception of the essay section, the other sections distributed in a manner which is considered statistically reasonable. That is, the frequency (the number of students) rises with the score towards the mean, and then falls as the score continues to rise past the mean to the maximum possible score. If the distribution (the shape of the curve) is a symmetrical heap, the most common score is also the mean score as well as the median score. This distribution is sometimes called a "bell curve" and is mathematically described by the normal or student's t-distribution.

In the past, the writing section, the essay, has in performed in a statistically reasonable fashion except for the number of students who score a sum of zero. This was true again this year with 85 scores of zero. In the spring of 2006 there were 235 scores of zero for 1783 candidates (13%). In the spring of 2007 there were 144 scores of zero for 1608

candidates (9%). Spring 2008 there were 163 scores of zero for 1815 candidates (9%). The spring 2008 data increased to 9% from 8.1% when data came in from Mortlocks and Weipat High Schools. Original versions of the COMET report suggested a fall in the number of zeros, this was contradicted by late arriving data.

Spring 2009 the scoring rubric was altered in the way scores of zero are generated. In the past an off-topic paper was awarded a zero. This year the essay readers were instructed to mark off-topic papers for grammar and vocabulary, which greatly reduced the number of essays scoring a zero to 85 out of 1713 (5.0%).

In the spring of 2006, the most common score on the essay, except for zero, was the then maximum possible score of 40. There was anecdotal evidence that the rubric needed to be adjusted as papers that varied in quality were "maxing out" at 40. A change in the rubric permitted a maximum score of 50 in 2007. In both 2007 and the current run of the test, the right tail of the essay distribution now falls steadily from the mean to the maximum possible. With the adjustment in the maximum possible in 2006, the essay continued to behave in a statistically reasonable manner.

Spring 2009 a "fat tail" at 50 reappeared with sixteen near perfect essays. This is not presently a statistical concern as the number remains small. There is a little room for further adjustments in the rubric and no driving need for differentiating these students: these students are writing very capable essays.

Graders did raise questions on whether individual essay prompts behaved in a statistically equivalent manner. The lack of machine coding of the essay prompts and scores precluded analyzing the performance of individual prompts.

Year-to-Year Mean Scores by Section

The following table provides the mean score by entrance test subsection. Note that use of the reading section was discontinued in 2006. The grammar section was discontinued in 2007. A vocabulary and comprehension section based on the Gates-MacGinitie Level AR reading tests was added in 2008. The essay section was worth only 40 points in 2006, in 2007, 2008, and 2009 the essay section was worth 50 points. Spring 2009 the mathematics section of the COMET was completely rewritten.

Section	2006	Section	2007	Section	2008	2009
Reading	14.81					
Grammar	37.04	Grammar	34.87			
Essay (40)	20.69	Essay (50)	22.03	Essay (50)	23.87	23.21
				Vocabulary	12.23	12.74
				Comprehension	18.33	19.09
Math subsect one	6.69		6.63		6.83	6.97
Math subsect two	3.69		4.04		4.60	5.73
Math subsect three	3.51		3.40		3.60	3.53
Math subsect four	2.43		2.49		2.55	2.98
Math sum	16.21		16.44		17.50	19.14

Table 2: Year-to-year averages

The college might consider broadening the content scope of the COMET to provide an impetus for schools to improve in areas beyond English and Mathematics. The natural and social sciences are areas that might be explored for content oriented sections of the COMET.

Rank order and Program Placement

The admissions board approved a rank-order formula using z-scores. In spring 2008 the formula placed a 50% weight on the essay, 16.7% weight on vocabulary, 16.7% weight on comprehension, and a 16.7% weight on mathematics. The individual weighted z-scores were added to generate a sum of z-scores. The resulting z-score was linearly transformed to produced the final COMET score.

A COMET score of 700 was approved as the cut-off for admission to an associate degree program. A COMET score of 300 was established as the minimum score for admission to a certificate program. Students who have scored between 300 and 700 will be eligible to enroll in a certificate program.

Bear in mind that the college now operates based on fixed resources and specific projections of the number students that the college can serve. Each site has an target enrollment number and an maximum enrollment capacity limit. Like many smaller colleges, the college opts to admit a specific number of students.

The result is that the target associate admissions number is a fixed number. Put another way, there is not the possibility at present of all high schools increasing the number of students attaining associates admission to the college. If one high school sees an increase in the number of students who have attained associates admission, then some other high school (or high schools) must have seen a decrease in the number of students who gained associates admission. Thus admission is competitive and is mathematically termed a zero-sum game.

High schools that are using increases in associates admissions as an indicator do so at their own peril. If another high school improves by a larger amount, then that first high school could see a drop in admissions despite real improvement in their own educational processes. The college does not recommend using the entrance test as an performance indicator. The entrance test is designed solely for the internal admissions purposes of the college. That said, schools that still choose to use the entrance test as a performance measure should look at improving average performance by section. This data is reported later in this report.

The next table records the distribution by state and high school of the students into the three categories delineated above.

School	Sect	Non-admitted	Certificate	Associates	Total
Berea		6	11	7	24
CCA				10	10
CHS		50	71	7	128
CSC		20	80	2	102
CSDA		1	15	10	26
Faichuk		30	5		35
KHS	not specified	1	48	13	62
KHS	advanced			24	24
KHS	academic		10	11	21
KSC			3	1	4
MHS		7	75	8	90
Mizpah		2	20		22

School	Sect	Non-admitted	Certificate	Associates	Total
NMHS	undetermined		1		**1**
NMHS	a1		9	12	**21**
NMHS	a2		8	12	**20**
NMHS	b		11	2	**13**
NMHS	v1		16	4	**20**
NMHS	v2	1	29	1	**31**
Ohwa			6	3	**9**
OIHS		3	30	1	**34**
OLMS			6		**6**
PICS	undetermined		22	3	**25**
PICS	a1		3	29	**32**
PICS	a2	1	11	20	**32**
PICS	a3		14	16	**30**
PICS	a4		22	8	**30**
PICS	a5		21	10	**31**
PICS	a6	1	19	4	**24**
PICS	b	2	66	14	**82**
PICS	v	5	24	2	**31**
PLHA		5	19	2	**26**
PSC		17	150	23	**190**
PSDA			9	31	**40**
Saramen		2	35	7	**44**
SNHSF		32	12		**44**
SNHST		19	15	1	**35**
Weno		29	39	2	**70**
Xavier				31	**31**
YHS		9	79	58	**146**
YSC		3	49	17	**69**
YSC		1			**1**
YSDA			1	4	**5**
Overall		**247**	**1064**	**410**	**1721**

In recognition that the different high school programs may have different individual goals for their students, this section level data is broken out above. The college thanks the high schools and administrators who have provided this information. Better information from the high schools allows the college to provide more accurate feed back to those schools.

Note that the table above reports the high school name using the names provided to this author by those working on behalf of the admissions board.

The average COMET score seen in table four represents a measure of the relative performance across all sections as weighted by the z-score. High school names are as in the original data, refer to table three above for clarification.

School	COMET
CCA	1066
Xavier	1034.37
KHS advanced	887.62
PSDA	856.73
YSDA	777.03
KHS a2	678.35
CSDA	654.71
YHS	642.02
Nanpei Memorial HS	629.57
PICS	622.57
Ohwa	616.46
KHS non-a	602.49
KSC	602.06
YSC	587.26
Our Lady of Mercy	577.04
Saramen	561.27
Overall average	**552.76**
PSC	532.69
Madolehnihmw HS	525.81
Berea	522.87
Mizpah	482.49
Pentecostal Lighthouse	479.47
OIHS	452.43
CSC	408.59
CHS	380.84
Weno	364.52
SNHST	306.84
SNHS Fefan	279.68
Faichuuk	210.01

Table 3: Average COMET score by high school

A COMET mean below 400 is exceptionally weak and below 300 represents essentially random performance on all included subsections. Two high schools had an average COMET score below certificate admission level. This should be looked upon as an opportunity for improvement.

Bearing in mind that admissions is zero sum, it is not possible for all schools to score above 700. That said, schools or sections with averages above 700 deserve a "well done" for their strong performances.

While the individual high school scores are of interest to individual schools, state educational leadership might consider the mean performance of all of the schools in their state.

Where a performance is strong, no one effort can be credited with the success. Where a performance is weak, no one lack can be faulted as the cause of the poor performance. Education is a set of canoes with many people paddling. Students, parents, teachers, administrators, state leadership, and special programs should all share in the credit where credit is due, in the blame where performances are weak.
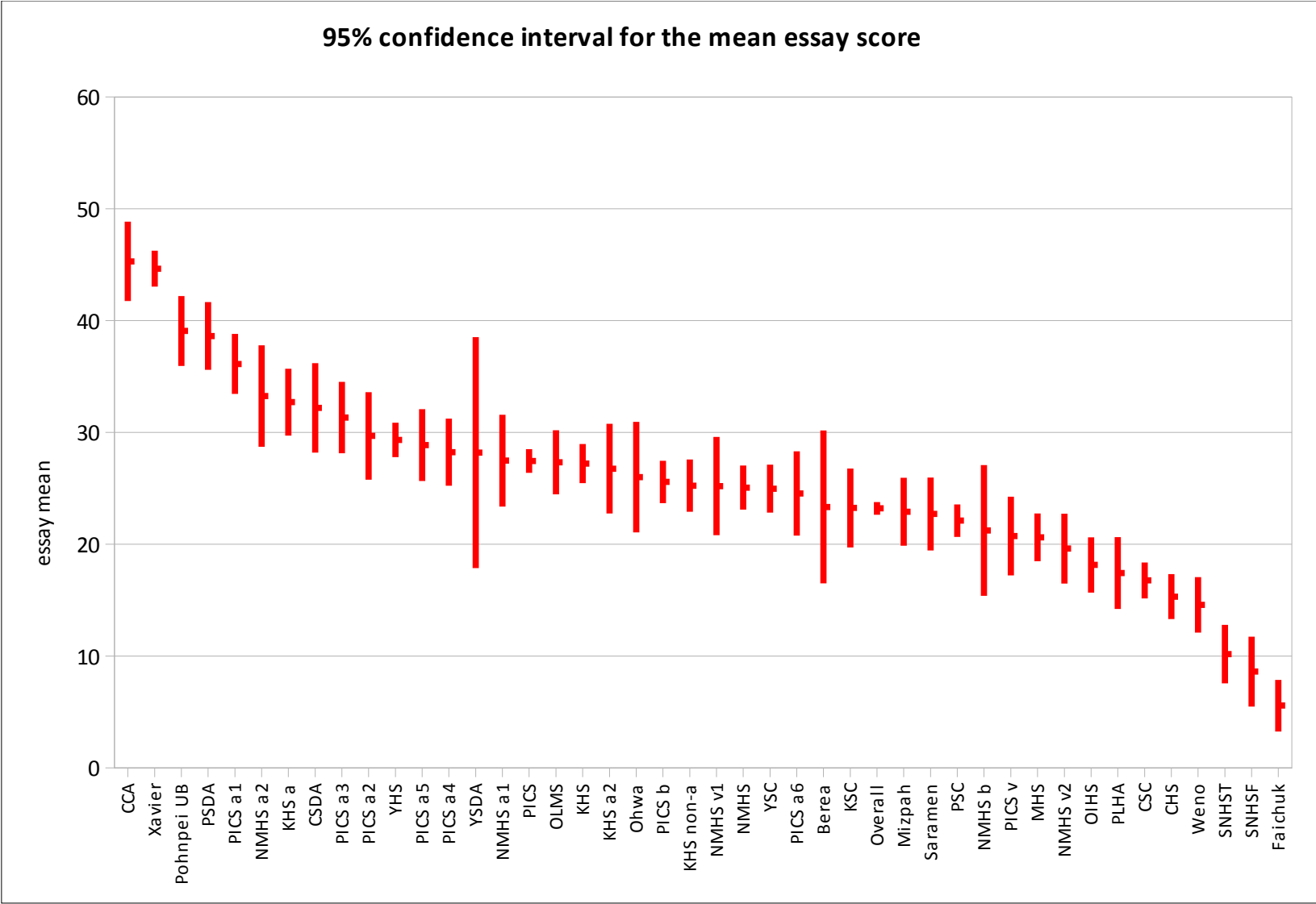
Essay section

The writing section is considered by both the language and literature division and by those from other divisions who mark this section to possibly be singularly indicative of the capacity of students to academically succeed at the college – if there is such a thing as a single indicator. The maximum possible score is a fifty. Scores of twenty and under are considered to be significantly weak and raise questions as to whether these students can tackle any program that requires the ability to communicate in written English.

Determining whether one high school is statistically significantly stronger in essay rank order than another high school requires determining whether the mean essays scores are sufficiently separated.

In illustration 2, the vertical bars show the extent of the 95% confidence interval for the mean essay score. Where a bar for one school overlaps the mean for another school, the former is not statistically separated from the mean of the later. The mean is marked by the horizontal line at the midpoint of the vertical bar.

The vertical axis in illustration two is the essay score, the high schools are listed in descending rank order.

95% confidence interval for the mean essay score

essay mean

Categories (left to right): CCA, Xavier, Pohnpei UB, PSDA, PICS a1, NMHS a2, KHS a, CSDA, PICS a3, PICS a2, YHS, PICS a5, PICS a4, YSDA, NMHS a1, PICS, OLMS, KHS, KHS a2, Ohwa, PICS b, KHS non-a, NMHS v1, NMHS, YSC, PICS a6, Berea, KSC, Overall, Mizpah, Saramen, PSC, NMHS b, PICS v, MHS, NMHS v2, OIHS, PLHA, CSC, CHS, Weno, SNHST, SNHSF, Faichuk

The mean essay scores suggest that Kosrae, Pohnpei, and Yap states are, to differing degrees, accomplishing the task of instructing students in the skills necessary to compose written English essays.

Yap High School is apparently unique. As far as th is author knows, the students are not "streamed" into academic, business, nor vocational programs. In rank order Yap High School tops the list of public high schools in performance on the essay test. Yap High School is clearly doing good things in English essay skills and is doing them with "every child."

PICS, Kosrae High School, and Nanpei Memorial round out the public high schools with an overall average above the national average. Madolehnihmw High School (MHS) performed below the national average on the essay section. With this section weighing in at 50% of the COMET score, this is an area worth focusing upon in terms of COMET success. Essay writing is also an intrinsically valuable skill.

Looking at the individual public high schools in Chuuk indicates an almost complete lack of ability to accomplish a written composition in the English language.

An average of 20 is the equivalent result of two essay readers rating the essay as being two in all categories. Averages below 10 would be the result of being awarded a one in all categories. Below 10, the essay has errors of grammar that are so severe as to make comprehension virtually impossible, the vocabulary is limited and misused, and the answer bears little relation to the task set by the essay question. The rubric is included at the end of this report.

While some fields such as science have significant support costs, English language and literature is likely the least expensive program on a per student basis. This is not likely a failure due to a lack of funding alone.

In spring 2008 the COMET report noted that the weaker performance of each newer high school in Chuuk casts doubt on the wisdom of splitting out the high school students from Weno back to their home islands in the lagoon. Each newer lagoon high school is weaker than the original high school from which the students had been split out. This is in contrast to Pohnpei where the new high schools perform on par with or better than the original "parent" high school. This note continues to hold true in 2009. There is no sign of change or improvement.

Changes in essay performance 2007, 2008, and 2009

The essays were marked against the same rubric in 2007 and 2008. In 2009 the scoring of off-topic essays was altered. In the past off-topic essays were scored a zero in all categories. In 2009 off-topic essays that were not obviously "canned" (memorized) essays were scored for syntax, vocabulary, organization, and cohesion. This would have the effect of lifting the average of any high school which had a significant number of scores of zero on the essay. The table is in roughly alphabetic order by high school.

Spring 2007		Spring 2008		Spring 2009	
HS essay	mean	HS essay	mean	HS essay	mean
Berea	15.7	BEREA	26.73	Berea	23.33
CCA	42	CCA PNI	39.25	CCA	45.3
CHS	9.97	CHS	17.04	CHS	15.32
CSDA	20.8	CSDA	28.38	CSDA	32.19
Faichuk	4.95	FHS	6.18	Faichuk	5.57
KHS	26.91	KHS	25.99	KHS non-a	25.24
KHS adv	37.27	KHS a1	40.71	KHS advanced	32.71
KHS a2	38.31	KHS a2	29.23	KHS academic	26.76
Mizpah	21.05	MCHS	20.1	Mizpah	22.91
Mado HS	26.36	MHS	24.59	MHS	20.62
Mortlocks			9.77		
NICHS	19.58	NICHS	13.98		
NMS	27.75	NMHS	22.58	NMHS	25.07
NMS a	36.74	NMHS a1	30.95	NMHS a1	27.48
		NMHS a2	22.43	NMHS a2	33.25
NMS b	23.74	NMHS b	20.2	NMHS b	21.23
NMS v1	19			NMHS v1	25.2
NMS v2	20.91	NMHS v	18.81	NMHS v2	19.61
		NMHS h	18.85		
Nukuno	12.91				
Ohwa	23.33	OCHS	16.17	Ohwa	26
OIHS	21.3	OIHS	18.87	OIHS	18.15
		OLMVTS	33.56	OLMS	27.33
PICS all	25.16	PICS all	28.73	PICS all	27.44
PICS a1	34.48			PICS a1	36.13
				PICS a2	29.69
				PICS a3	31.33
				PICS a4	28.23

Spring 2007		Spring 2008		Spring 2009	
HS essay	mean	HS essay	mean	HS essay	mean
				PICS a5	28.87
				PICS a6	24.54
PICS aca	28.68				
PICS bus	26.91			PICS bus	25.57
PICS voc	19.26			PICS voc	20.74
PLHA	14.69	PLHA	18.67	PLHA	17.42
PSDA	37.22	SDA PNI	41	PSDA	38.63
Saramen	28.69	SARAM	37	Saramen	22.7
YSDA	40.44	SDA (YAP)	30	YSDA	28.2
SNHS	14.05	SNHS	8.02	SNHSF	8.61
		SNHS-F	9.18	SNHST	10.18
Weipat			5.59		
Weno	14.81	WHS	17.65	Weno	14.57
Xavier	40.27	XHS	43.63	Xavier	44.65
YHS	23.86	YHS	28.99	YHS	29.33
Overall	22.03	Overall	24.35	Overall	23.21

Although year-to-year variation in the mean for schools is not known, changes of five or more may prove significant provided the sample size is thirty or more students. For smaller sample sizes, changes of ten or more would likely be statistically significant.

**Special note: Was the essay more difficult this year than last year?**

A comparison year-on-year returned the following statistics:

Statistic	Essay Sp 08	Essay Sp 09
Sample size	1815	1713
Stdev	12.92	11.99
lower bnd	23.27	22.65
upper bnd	24.46	23.78
mean	23.87	23.21
difference		-0.66
p-value		0.12

The average fell a statistically insignificant -0.66 points, p-value of 0.12. Significance would not be imputed until the p-value fell below 0.05. Statistically there was no
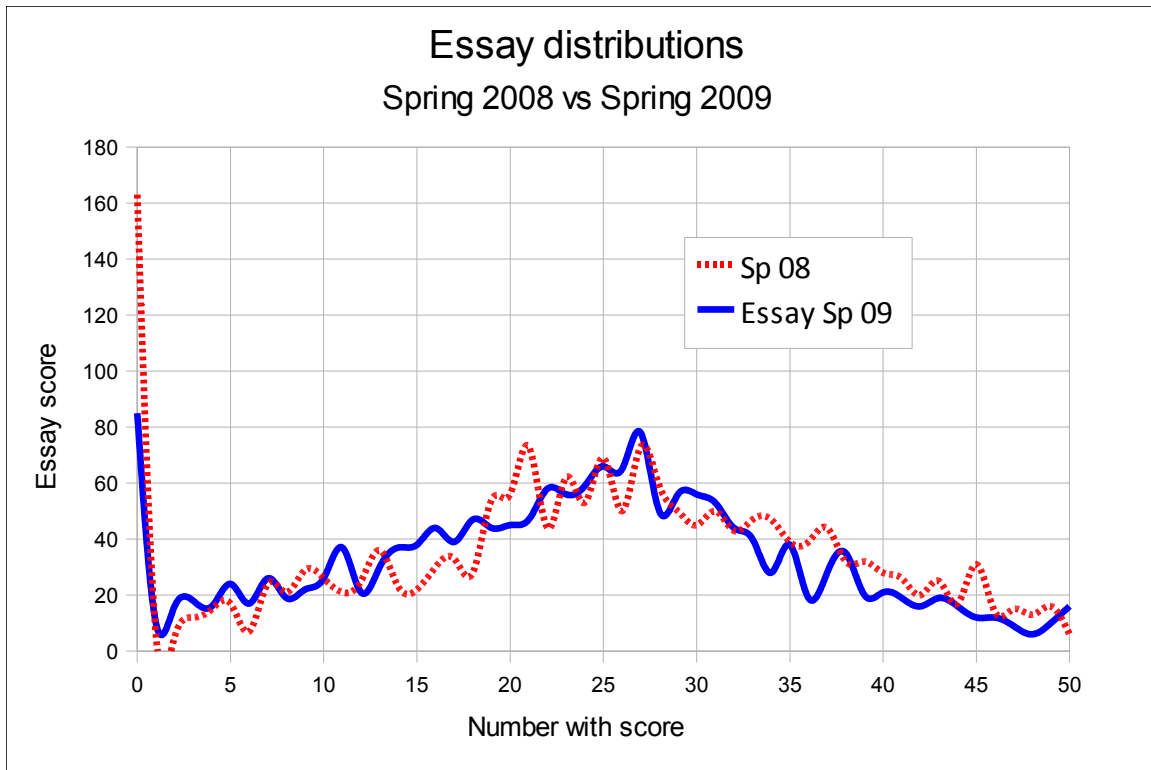
significant difference in performance year-on-year.

A visual chart of the 95% confidence intervals for the past three terms:
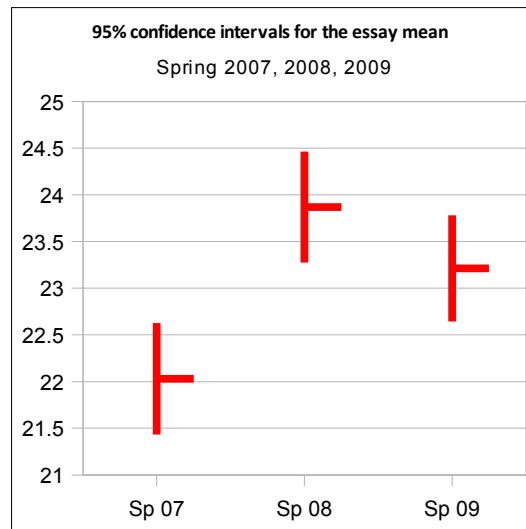
A statistical tie 2008 to 2009.. What about the frequency distributions, any sign of a difference visually that would indicate an increase in difficulty?

Illustration 2: Distribution of scores on the essay subtest of the COMET

One difference can be clearly seen: far fewer zeros due to the change in the way off-topic essays were scored . Otherwise the two frequency distributions are not all that dissimilar. The differences do not appear to be statistically significant.

The essay continues to perform in a statistically predictable manner with a reasonable distribution around a single central peak. The wobbliness appears to either be a byproduct of having two graders or simply natural random variation.

Were the essays too difficult this term? A final anecdotal single data point. An eight year old third grader who is an L1 English speaker was approached and asked to write an essay based on one of the topic questions. A grader was approached and the essay was marked as an 18. Doubled (two graders) that is theoretically a 36, which would put the third grader at fourth rank among the high school averages.

The essay was not too difficult, the vast bulk of the high school seniors in this nation cannot write a college level essay. Later in this report the grade level equivalents for vocabulary and comprehension will provide further insight into the weaknesses of the candidates.

Mathematics section: Mean Mathematics Scores by High School

The mean score by high school for the mathematics section represents the average number correct out of forty for a high school.

A student blindly guessing on all forty questions, each with five multiple choice options, should get at least eight correct. Given that the first few problems involve basic arithmetic, scores around twelve or under are extremely weak performances.

Illustration three on the next page depicts the 95% confidence interval for the mean mathematics scores, with the high schools in descending mathematics score order. The vertical bars are the extent of the 95% confidence interval for the sample mean. Where a vertical line for one school overlaps the mean (the center line) of a another school, the first school is not statistically significantly separated from the second school's mean.

95% confidence intervals for mean math sum
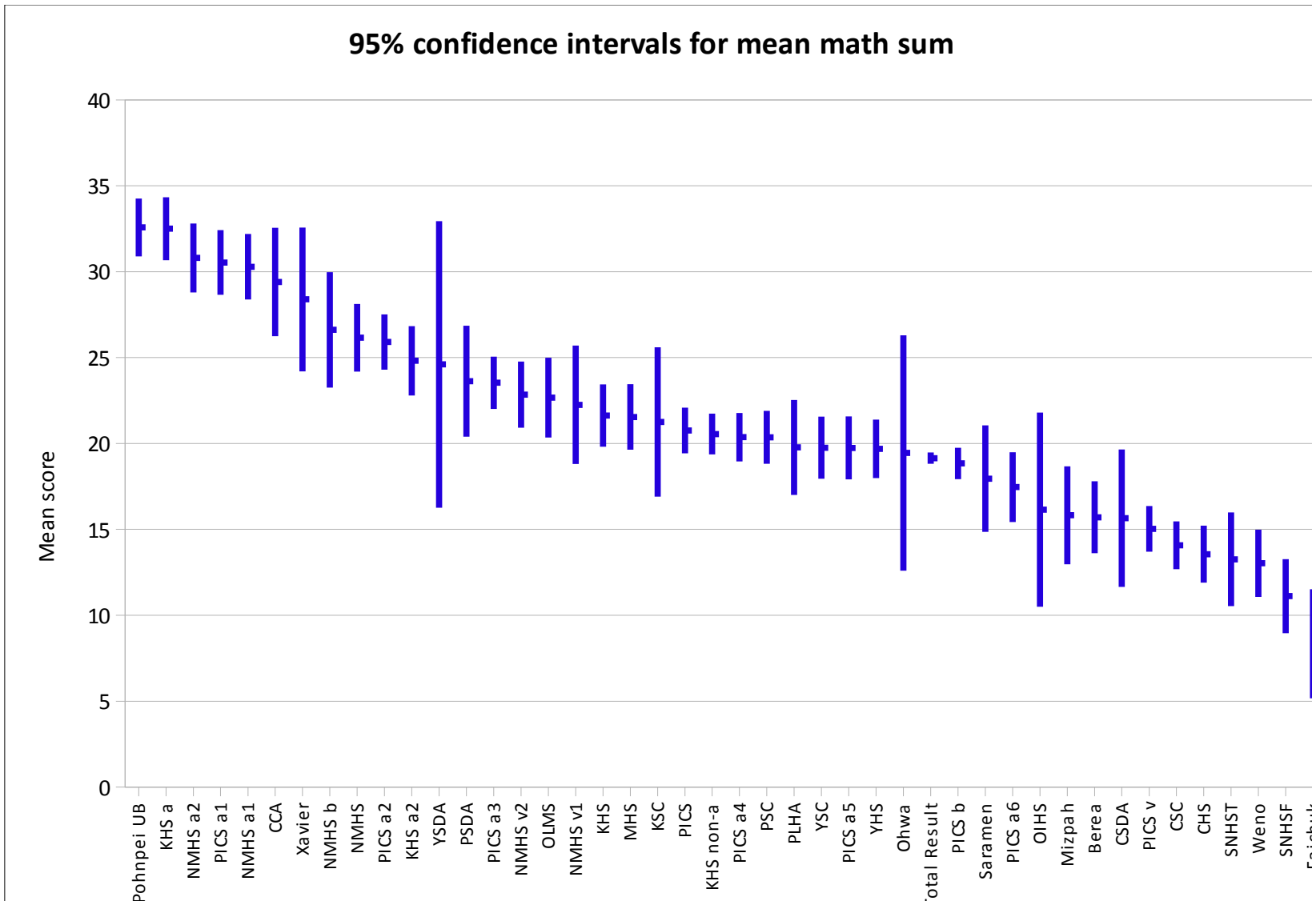
In 2008 the Kosrae High School advanced section topped the rank order for the public school students. This section repeated this strong performance in spring 2009.

In 2008 the academic section at Nanpei Memorial High school was the second ranked public school section. Spring 2009 Nanpei Memorial High School, all sections combined, achieved second rank, and number one for a high school as a whole. Statistically and mathematically this is a phenomenal achievement. Nanpei Memorial High School, all sections combined, is statistically achieving on par with students from top private schools, outscoring a number of these schools.

Nanpei Memorial section A1 are students with last names in the first half of the alphabet, A2 are those in the second half, with adjustment of the boundary to create equal sections size. Nanpei Memorial's A2 section rank ordered placed third in the nation. This is a phenomenal success. Anecdotally, credit is apparently being given to a physicist from England who led the senior year math classes 2008-2009. This suggests that in the secondary schools, the key is content not methods per se. While the physicist apparently did need and accept some guidance from veteran instructors at Nanpei, the physicist was able to lift all of the students at NMHS to strong performances, relatively speaking.

Of note on the chart above are the strong performances by the academic sections at Kosrae High School and Nanpei Memorial High School.

At under 12 were both Southern Noumeneas High School at Fefan and Faichuuk High School. These performances are so close to random that one could effectively argue there would be no significant impact from the cessation of the teaching of mathematics. Shift the resources into language acquisition skills. Both of these high schools were also below 12 on the spring 2008 run of the test. No improvement, no change, and Faichuuk is statistically indistinguishable from random spring 2009.

Diversity

The differences in the performances by state have repercussions on the make-up of the regular admissions. The table below compares the composition of the regular admissions to the state shares of the national population. The table reflects the state of the high school, not the cultural identity of the individual test takers.

	State	Chuuk	Kosrae	Pohnpei	Yap	Totals
2006	Assoc	75	55	225	67	422
	RF	18%	13%	53%	16%	100%
2007	Assoc	59	63	221	57	400
	RF	15%	16%	55%	14%	100%
2008	Assoc	93	47	201	63	404
	RF	23%	12%	50%	16%	100%
2009	Assoc	69	49	212	80	410
	RF	17%	12%	52%	20%	100%
	Pop 2000	53595	7686	34486	11241	107008
	Pop RF	50%	7%	32%	11%	100%
Factors	2006	0.35	1.81	1.65	1.51	
	2007	0.29	2.19	1.71	1.36	
	2008	0.46	1.62	1.54	1.48	
	2009	0.34	1.71	1.62	1.77	

A factor equal to one means that students from that state were admitted to associates degree programs at a proportion equal to their share of the national population. A factor of 2.0 would mean that students from that state were admitted to associates degree programs at twice their share of the national population. A factor of 0.5 would mean that students from that state are underrepresented with only a 50% share of the associates admissions relative to their share of the national population. Factors far from one are not necessarily "good" for long term national stability and unity in terms of educational opportunities.

Students from high schools in Yap are the most over-represented group in the regular admissions category with 1.77 times their share of the national population, up from 1.48 the previous year. For the past three years Kosrae has been the most overrepresented subpopulation.

Those from high schools in Chuuk are under-represented at a factor of 0.34 of their share of the national population, a drop from 0.46 the year before. While the table is

based on the location of the high school and not the actual cultural identity of the students, the data is still likely roughly reflective of the underlying cultural diversity of those who took the entrance test.

Note that as one state gains an increasing share of the 400 associate degrees slots, other states lose share. As noted earlier, this is a zero-sum game.

The complication in terms of actual diversity of the freshmen class at the national site is that the differential rates of matriculation into the college are not known. Anecdotally there is the suggestion that Pohnpeians are more likely to take up the offer to attend an associate degree program at Palikir than students in the other states. This may further skew the diversity away from the national share of the population.
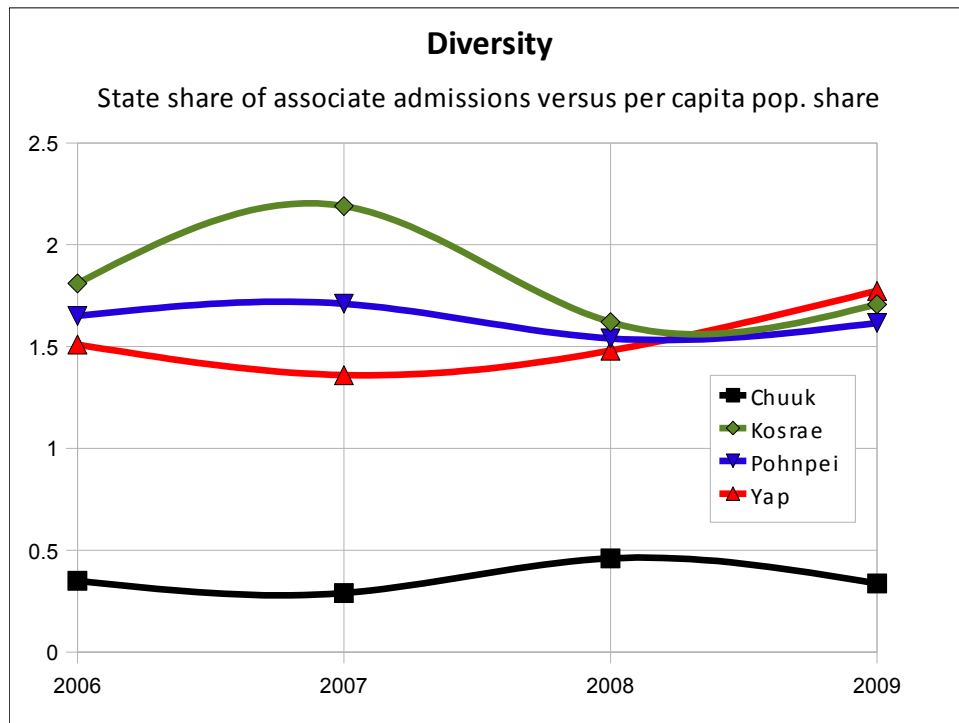
Illustration 3: Factors displayed graphically 2006 to 2009

Grade Level Equivalents

The vocabulary and comprehension tests permitted the calculation of grade level equivalents

Test	Non-Admit	Certificate	Associates	Overall
Vocabulary	3.3	4.4	6.7	4.7
Comprehension	5.6	7.3	11.5	7.9

Table 4: Mean grade level equivalent by admission status

Candidates accepted into associates degree programs have a vocabulary grade level equivalent of seventh grade with a comprehension grade level equivalent of nearly eleventh grade. The certificate program instructors can expect students with a fourth grade equivalent vocabulary level and a seventh grade equivalent comprehension. These grade levels are unchanged from the spring 2008 grade levels. The grade level equivalents appear to be stable across time.

The non-admitted students are properly non-admitted unless the college wants to start admitting third grade level equivalent students in terms of vocabulary.

The following table provides the vocabulary grade level equivalent for the high schools in descending rank order. Pilot studies have indicated that the college students are weaker in vocabulary than in comprehension. The argument made is that a student can "bridge" across misunderstood vocabulary from context, hence one's comprehension can exceed one's vocabulary.

School	Vocabulary Grade Equivalent	Comprehension Grade Equivalent
CCA	11.7	12.7
Xavier	9.5	12.8
KHS a	8.2	12.5
YSDA	7	12.6
PSDA	7	11
Private schools	5.8	9.7
KHS a2	5.5	9.7
Kosrae state	5.8	9.3
KHS	5.8	9.3
CSDA	5.5	9.3
YHS	5.5	9.1

School	Vocabulary Grade Equivalent	Comprehension Grade Equivalent
Ohwa	5.2	9.1
Yap state	5.2	8.6
Saramen	4.9	8.6
KHS non-admit	5.2	8.2
NMHS	4.7	8.6
PICS	4.9	8.2
Pohnpei state	4.9	8.2
Total Result	4.7	7.9
Public schools	4.7	7.8
Berea	4.4	7.8
PLHA	4.2	7.8
MHS	4.2	7.8
OIHS	4.2	7
Chuuk state	4.2	7
OLMS	3.6	7
Mizpah	3.3	7
CHS	3.9	6.4
Weno	3.9	6.2
SNHSF	3.6	5.9
SNHST	3.6	5.9
Faichuuk	3.3	5.4

Of interest is the strong performance by the advanced (a) and academic (a2) sections at Kosrae High School. The KHS advanced students outscored the next non-Kosrae public high school by three grade levels on comprehension. Note that on this chart KHS as a whole and YHS reverse their rank order from the essay.

The strong performance by the private schools as a group is partly a result of these schools having a larger percentage of students who are likely to have either grown up with English in their home or environment. Private schools such as Pohnpei SDA use English starting in preschool, and some students are from families where one or both parents are L1 speakers of English.

In the public schools, the vast majority of the students are L2 English. The balance that must be kept is ensuring that L1 local language skills not be neglected in the push to acquire English. L2 English skills can be improved in parallel with L1 local language learning. All high schools should have L1 local language programs.

The public high schools in Chuuk have used twelve years to produce 3.66 years worth

of vocabulary learning. The statewide average of a 4.2 grade equivalent vocabulary is being boosted by the presence of Xavier and Saramen in Chuuk. Comprehension grade level equivalents are grade 5.96, barely sixth grade. Ultimately no nation can move forward and develop by leaving half of its citizens behind educationally.

Author and contact information:

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Appendix A. Essay mean statistics including upper and lower bounds for the 95% confidence interval for the mean based on the inverse t-distribution.

School	n	lower	upper	mean	stdev
CCA	10	41.75	48.85	45.3	4.97
Xavier	31	43.03	46.26	44.65	4.4
Pohnpei UB	26	35.95	42.2	39.08	7.73
PSDA	40	35.6	41.65	38.63	9.46
PICS a1	32	33.45	38.8	36.13	7.43
NMHS a2	20	28.71	37.79	33.25	9.71
KHS a	24	29.71	35.7	32.71	7.09
CSDA	26	28.19	36.19	32.19	9.9
PICS a3	30	28.14	34.53	31.33	8.56
PICS a2	32	25.78	33.6	29.69	10.85
YHS	141	27.79	30.87	29.33	9.25
PICS a5	31	25.66	32.08	28.87	8.74
PICS a4	30	25.24	31.23	28.23	8.03
YSDA	5	17.87	38.53	28.2	8.32
NMHS a1	21	23.37	31.59	27.48	9.03
PICS	317	26.38	28.51	27.44	9.6
OLMS	6	24.47	30.2	27.33	2.73
KHS	107	25.47	28.96	27.21	9.13
KHS a2	21	22.76	30.77	26.76	8.8
Ohwa	9	21.06	30.94	26	6.42
PICS b	82	23.68	27.47	25.57	8.64
KHS non-a	62	22.91	27.58	25.24	9.2
NMHS v1	20	20.8	29.6	25.2	9.4
NMHS	106	23.1	27.04	25.07	10.23
YSC	69	22.83	27.11	24.97	8.91
PICS a6	24	20.77	28.32	24.54	8.94
Berea	24	16.5	30.17	23.33	16.19
KSC	4	19.72	26.78	23.25	2.22
Overall	**1713**	22.65	23.78	**23.21**	**11.99**
Mizpah	22	19.88	25.94	22.91	6.84
Saramen	44	19.44	25.97	22.7	10.74
PSC	190	20.67	23.56	22.11	10.1
NMHS b	13	15.39	27.07	21.23	9.67
PICS v	31	17.22	24.26	20.74	9.6
MHS	90	18.49	22.76	20.62	10.2
NMHS v2	31	16.48	22.74	19.61	8.54
OIHS	34	15.68	20.62	18.15	7.08

School	n	lower	upper	mean	stdev
PLHA	26	14.22	20.63	17.42	7.94
CSC	102	15.15	18.37	16.76	8.2
CHS	127	13.32	17.33	15.32	11.41
Weno	70	12.09	17.05	14.57	10.4
SNHST	34	7.56	12.8	10.18	7.51
SNHSF	44	5.48	11.75	8.61	10.3
Faichuk	35	3.27	7.88	5.57	6.71

Appendix B. Mean math sum statistics including upper and lower bounds for the 95% confidence interval for the mean math sum based on the inverse t-distribution.

School	n	lower	upper	mean	stdev
Pohnpei UB	26	30.89	34.26	32.58	4.17
KHS a	24	30.67	34.33	32.5	4.34
NMHS a2	20	28.79	32.81	30.8	4.29
PICS a1	32	28.65	32.41	30.53	5.22
NMHS a1	21	28.38	32.2	30.29	4.2
CCA	10	26.25	32.55	29.4	4.4
Xavier	31	24.2	32.57	28.39	11.41
NMHS b	13	23.25	29.98	26.62	5.56
NMHS	106	24.18	28.12	26.15	10.23
PICS a2	32	24.3	27.51	25.91	4.46
KHS a2	21	22.79	26.83	24.81	4.43
YSDA	5	16.26	32.94	24.6	6.71
PSDA	40	20.39	26.86	23.63	10.1
PICS a3	30	22.01	25.05	23.53	4.07
NMHS v2	31	20.91	24.76	22.84	5.25
OLMS	6	20.34	24.99	22.67	2.22
NMHS v1	20	18.8	25.7	22.25	7.36
KHS	83	19.81	23.44	21.63	8.32
MHS	90	19.63	23.46	21.54	9.13
KSC	4	16.9	25.6	21.25	2.73
PICS	317	19.43	22.08	20.76	11.99
KHS non-a	62	19.36	21.74	20.55	4.68
PICS a4	30	18.96	21.78	20.37	3.77
PSC	190	18.82	21.9	20.36	10.74
PLHA	26	17.01	22.53	19.77	6.84
YSC	69	17.95	21.56	19.75	7.51
PICS a5	31	17.91	21.57	19.74	4.99
YHS	146	17.98	21.39	19.68	10.4
Ohwa	9	12.6	26.29	19.44	8.91
Total Result	1721	18.81	19.48	19.14	**7.07**
PICS b	82	17.93	19.75	18.84	4.16
Saramen	44	14.85	21.06	17.95	10.2
PICS a6	24	15.42	19.49	17.46	4.82
OIHS	34	10.5	21.8	16.15	16.19
Mizpah	22	12.97	18.67	15.82	6.42
Berea	24	13.61	17.81	15.71	4.97
CSDA	26	11.66	19.65	15.65	9.9

School	n	lower	upper	mean	stdev
PICS v	31	13.71	16.36	15.03	3.61
CSC	102	12.69	15.47	14.08	7.09
CHS	128	11.9	15.21	13.55	9.46
SNHST	35	10.53	15.98	13.26	7.94
Weno	70	11.07	14.98	13.03	8.2
SNHSF	44	8.96	13.27	11.11	7.08
Faichuk	35	5.17	11.52	8.34	9.25

Appendix C.

	COMET Sub-Test 3 (Writing) Analytic Scale [Essay rubric]
	Syntax
5	Grammar and word order nearly perfect.
4	Some errors of grammar or word order but communication not impaired.
3	Errors of grammar or word order fairly frequent; occasional re-reading necessary for full comprehension.
2	Errors of grammar or word order frequent; efforts of interpretation sometimes required on reader's part.
1	Errors of grammar or word order very frequent; reader often has to rely on own interpretation.
0	Errors of grammar or word order so severe as to make comprehension virtually impossible.
	Vocabulary
5	Wide and correctly used vocabulary.
4	Occasionally uses inappropriate terms or relies on circumlocution; expression of ideas not impaired.
3	Uses wrong or inappropriate words fairly frequently; expression of ideas may be limited because of inadequate vocabulary.
2	Limited vocabulary and frequent errors clearly hinder expression of ideas.
1	Vocabulary so limited and so frequently misused that reader must often rely on own interpretation.
0	Vocabulary limitations so extreme as to make comprehension virtually impossible.
	Organization
5	Extremely well organized.
4	Material fairly well organized; links could occasionally be clearer but communication not impaired.
3	Some lack of organization; re-reading required for clarification of ideas.
2	Little or no attempt at connectivity, though reader can deduce some organization.
1	Individual ideas may be clear, but very difficult to deduce connection between them.
0	Lack of organization so severe that communication is seriously impaired.
	Cohesion
5	Strong cohesion with smooth transitions both within and between paragraphs.
4	Occasional lack of consistency in choice of cohesive structures and vocabulary but overall ease of communication not impaired.
3	'Patchy', with some cohesive structures or vocabulary items noticeably inappropriate to general style.
2	Cohesive structures or vocabulary items sometimes not only inappropriate but also misused; little sense of ease of communication.
1	Communication often impaired by completely inappropriate or misused cohesive structures or vocabulary items.
0	A 'hotchpotch' of half-learned misused cohesive structures and vocabulary items rendering communication almost impossible.

	Content
5	Full and complete answer, inclusive of all parts of the task.
4	Relevant and adequate answer to the task set.
3	For the most part answers the task set, though there may be some gaps or redundant information.
2	Answer of limited relevance to the task set. Possibly major gaps in treatment of topic and/or pointless repetition.
1	Answer bears little relation to the task set.
0	No evidence of assigned task. (If it is obvious that the student wrote on an unrelated topic give a zero for the content but mark the essay for syntax, vocabulary, cohesion, and organization. If there is found to be evidence that the essay is a "canned" or "memorized" essay, then the essay receives a zero on all metrics.)