A Study of the Ongoing Alignment of the NWEA RIT Scale with the South Carolina Palmetto Achievement Challenge Tests (PACT)

John Cronin, Ph.D

August 2004

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Each year, South Carolina students participate in testing as part of the South Carolina assessment program. Students in grades 3 through 8 take the Palmetto Achievement Challenge Tests (PACT) in English/Language Arts and Mathematics. Students in grade 10 take the High School Assessment Program (PACT) in English/Language Arts and mathematics. These tests serve as an important measure of student achievement for the state's accountability system. Results from these assessments are used to make state-level decisions concerning education, to meet *Adequate Yearly Progress* (AYP) reporting requirements of the *No Child Left Behind Act* (NCLB), and to inform schools and school districts of their performance. The South Carolina Department of Education has developed scales that are used to assign students to one of four performance levels on these tests.

Many students who attend school in South Carolina also take tests developed in cooperation with the Northwest Evaluation Association (NWEA). These tests report student performance on a single, cross-grade scale, which NWEA calls the RIT scale. This scale was developed using Rasch scaling methodologies. RIT-based tests are used to inform a variety of educational decisions at the district, school, and classroom level. They are also used to monitor academic growth of students and cohorts. Districts choose whether to include these assessments in their local assessment programs. They are not state mandated.

In order to use the two testing systems to support each other, an alignment of the scores from the state and RIT-based tests is as important as the curriculum alignment. NWEA has conducted two prior studies to investigate the alignment of cut scores between the spring 2002 administrations of the PACT and NWEA tests (Cronin, 2003). We have also just published a study investigating the alignment between the High School Assessment Program (PACT) tests and the NWEA scale (Cronin, 2004).

The current study of the PACT was undertaken in an effort to monitor the accuracy and stability of NWEA estimated cut scores relative to these tests. In addition, we have expanded the scope of this study to include estimation of cut scores in language usage that would correspond to each proficiency level on the English/Language Arts portion of the PACT.

The primary questions addressed in this study are:

- What RIT scores correspond to various performance levels on the PACT tests?

- How do these RIT scores differ from the 2002 estimates of performance levels?

- How well can performance on the South Carolina assessments be predicted from RIT scores when NWEA assessments are administered in the same time frame?

Method

Over 22,000 test records of students from the Horry County, Richland 2, and Charleston County school systems were included in this study. Student records were included when a student had both a valid NWEA scale score and a valid PACT score in the equivalent subject.

The methodology used to complete this validation study was identical to that used in prior studies to establish alignment of the RIT scale with state tests (Kingsbury et al, 2004) and in the two prior studies of

alignment with the PACT scale.   To conserve space, we refer readers to the more recent study (Cronin, 2003), which is available on our website, for more detail about the methods we use to conduct scale alignment studies.

Results

Descriptive Statistics

Table 1 reviews descriptive statistics for the PACT and NWEA assessments. The median RIT scores for this sample in reading and language usage are near the median for the NWEA norm population. The median RIT score in mathematics, however, is considerably above the median for the NWEA norm population. For example, the grade 6 mathematics medians for the study group exceed the national median by .57 standard deviations.

Normal distributions around a nationally-normed mean are desirable but not necessarily essential when conducting alignment studies. It is more important that the sample provide reasonable numbers of students who perform at all levels on the test scales than normal distribution so that the statistical methods applied have an adequately large sample to derive good estimates of performance levels that are at the higher and lower ends of a test scale. In this case we had reasonably large representations of students who performed at all performance levels.

Table 1 – Means, Standard Deviations, and Medians for PACT and NWEA assessments

PACT English/Language Arts						
Grade	3	4	5	6	7	8
N	3517	3612	3680	4023	3996	3714
Mean	316.13	408.33	506.69	605.95	706.62	807.42
Median	317	409	507	607	706	807
Std. Dev.	14.90	12.72	13.12	16.07	13.33	12.26
NWEA Reading						
Grade	3	4	5	6	7	8
N	3517	3612	3680	4023	3996	3714
Mean	199.99	207.16	213.00	216.61	220.19	223.52
Median	201	208	214	217	221	225
Std. Dev.	12.37	11.43	11.17	11.69	11.61	11.40
NWEA Language Usage						
Grade	3	4	5	6	7	8
N	2433	2456	2493	2585	2515	2273
Mean	202.65	208.67	214.65	217.20	219.33	222.29
Median	203	209	215	218	220	223
Std. Dev.	11.99	11.22	10.33	10.00	10.48	10.09
PACT Mathematics						
Grade	3	4	5	6	7	8
N	3481	3569	3654	3992	3945	3681
Mean	313.02	414.70	506.65	615.58	713.66	810.53
Median	314	415.00	507	618	714	811
Std. Dev.	12.43	14.67	13.13	14.95	15.41	13.88
NWEA Mathematics						
Grade	3	4	5	6	7	8
N	3481	3569	3654	3992	3945	3681
Mean	207.07	216.99	225.72	229.79	234.83	239.56
Median	207	217	227	230	236	240
Std. Dev.	11.69	12.62	12.89	13.59	14.09	14.53

Pearson correlations

Table 2 shows the results of this analysis for each grade. Concurrent validity was tested by examining same subject Pearson correlations between the NWEA and PACT. Same subject correlations were generally high, ranging from .73 to .85, numbers that suggest the tests were generally measuring the same constructs. Discriminant validity was tested by examining same subject Pearson correlations next to correlations for the alternate subject (math against reading and language usage). In all cases the same subject correlations were higher than correlations against the alternate subject.

Table 2 – Inter-test Correlations for PACT and NWEA assessments by Subject

	PACT		NWEA		
Grade 3					
	ELA	Mathematics	Reading	Language Usage	Math
PACT ELA	1	.63	.76	.79	.65
PACT Mathematics	.65	1	.55	.66	.76
Grade 4					
	ELA	Mathematics	Reading	Language Usage	Math
PACT ELA	1	.74	.79	.80	.65
PACT Mathematics	.74	1	.55	.66	.84
Grade 5					
	ELA	Mathematics	Reading	Language Usage	Math
PACT ELA	1	.76	.78	.79	.72
PACT Mathematics	.77	1	.72	.75	.84
Grade 6					
	ELA	Mathematics	Reading	Language Usage	Math
PACT ELA	1	.74	.77	.79	.69
PACT Mathematics	.72	1	.68	.71	.84
Grade 7					
	ELA	Mathematics	Reading	Language Usage	Math
PACT ELA	1	.70	.78	.78	.55
PACT Mathematics	.57	1	.70	.71	.85
Grade 8					
	ELA	Mathematics	Reading	Language Usage	Math
PACT ELA	1	.73	.76	.73	36
PACT Mathematics	.37	1	.68	.67	.85

*Same subject correlations are shaded

Linking PACT performance level cut scores to the RIT scale

The primary purpose of this study was to estimate the RIT scale scores that most closely correspond to the cut scores for different performance levels on the PACT. This information allows schools to identify students who may need additional support to reach state standards. It can also help schools identify students who are performing well enough that they are ready to tackle work beyond what the state standards require.

Table 3 shows several estimations of the Spring 2003 RIT score that correspond to the cut scores for the various performance levels on the PACT scales. As a rule the three methodologies came to similar estimates of cut scores for each of the performance levels, although the Rasch SOS methodology did produce somewhat higher estimates of the RIT score required to meet the basic standard at some grades.

Table 3 – Estimated points on the RIT scale equating to the minimum scores (rounded) for performance levels on the PACT

	Grade 3											
	Linear Regression				Second-order Regression				Rasch Status-on-Standard			
	BB	B	P	A	BB	B	P	A	BB	B	P	A
Reading	<179	179	193	216	<180	180	196	217	<182	182	196	211
Language Usage	<182	182	196	217	<182	182	198	218	<186	186	198	213
Mathematics	<190	190	212	226	<186	186	208	220	<193	193	210	220
	Grade 4											
	Linear Regression				Second-order Regression				Rasch Status-on-Standard			
	BB	B	P	A	BB	B	P	A	BB	B	P	A
Reading	<192	192	209	232	<190	190	208	229	<194	194	209	226
Language Usage	<195	195	211	232	<194	194	210	229	<197	197	210	226
Mathematics	<201	201	219	231	<200	200	218	228	<202	202	219	228
	Grade 5											
	Linear Regression				Second-order Regression				Rasch Status-on-Standard			
	BB	B	P	A	BB	B	P	A	BB	B	P	A
Reading	<200	200	218	240	<199	199	216	236	<202	202	217	232
Language Usage	<203	203	219	239	<204	204	221	238	<204	204	218	231
Mathematics	<211	211	228	240	<211	211	230	239	<212	212	228	236
	Grade 6											
	Linear Regression				Second-order Regression				Rasch Status-on-Standard			
	BB	B	P	A	BB	B	P	A	BB	B	P	A
Reading	<208	208	222	240	<206	206	220	236	<210	210	220	233
Language Usage	<209	209	222	237	<209	209	222	235	<210	210	221	231
Mathematics	<213	213	232	243	<212	212	232	243	<215	215	230	240
	Grade 7											
	Linear Regression				Second-order Regression				Rasch Status-on-Standard			
	BB	B	P	A	BB	B	P	A	BB	B	P	A
Reading	<208	208	226	245	<208	208	226	242	<210	210	226	238
Language Usage	<209	209	225	241	<207	207	223	237	<211	211	224	235
Mathematics	<220	220	238	249	<223	223	241	250	<223	223	238	247

	Grade 8											
	Linear Regression				Second-order Regression				Rasch Status-on-Standard			
	BB	B	P	A	BB	B	P	A	BB	B	P	A
Reading	<211	211	230	248	<210	210	229	244	<213	213	229	240
Language Usage	<211	211	228	245	<209	209	227	240	<213	213	227	235
Mathematics	<227	227	248	259	<224	224	247	256	<228	228	247	256

Establishing RIT score estimates for PACT performance levels.

Once the cut scores were estimated from the three methods, we evaluated each set of possible cut scores to determine how accurately it predicted students' actual performance on the corresponding PACT assessment. The most accurate method of prediction was generally used to derive the best estimate of RIT cut scores that equate to the different PACT performance levels.

The following methods were used to establish the most accurate method for each performance level:

- **Below Basic and Basic.** We selected the method that correctly identified the largest portion of students who scored in the *below basic* category on PACT.

- **Proficient.** We calculated a *prediction index* statistic, which is one minus the ratio of Type I errors to correct predictions that is based on the proposed proficient cut score and selected the method that produced the highest result.

- **Advanced.** We selected the method that correctly identified the largest proportion of students who scored in the *advanced* category on the PACT.

Tables 4, 5, and 6 show the recommended RIT cut scores for each of the PACT performance levels. In general, Rasch SOS methods were most reliable for establishing predictive cut scores for the highest and lowest performance levels, while linear and second order regression proved more effective for estimating cut scores at the proficient level.

In terms of predicting proficiency status, the best RIT cut score estimates for each grade correctly predicted PACT proficiency status for 79% to 87% of the cases in mathematics, for 80% to 83% of the cases when using language usgage to predict PACT ELA, and for 80% to 82% of the cases when using reading to predict PACT ELA. In terms of predicting performance level, the best RIT cut score estimates correctly assigned performance levels for 60% to 68% of cases in mathematics, 59% to 67% of cases using language usage , and 59% to 67% of cases using reading.

Table 4 – Recommended RIT cut scores for PACT ELA performance levels - Reading

	Below Basic			Basic	Proficient			Advanced		
Grade	Score	Method	% of students ID	Score	Score	Method	Perf. Index	Score	Method	% of students ID
3	<182	R	52.9%	182	196	SR	.887	211	R	57.8%
4	<194	R	55.3%	194	209	LR	.881	226	R	37.7%
5	<202	R	57.9%	202	218	L	.901	232	R	27.1%
6	<210	R	68.7%	210	222	L	.899	233	R	39.9%
7	<210	R	58.3%	210	226	LSR	.885	238	R	37.4%
8	<213	R	58.4%	213	230	L	.898	240	R	44.0%

(L= Linear Regression, S=Second Order Regression, R=Rasch SOS method)

Table 5 – Recommended RIT cut scores for PACT ELA performance levels – Language Usage

	Below Basic			Basic	Proficient			Advanced		
Grade	Score	Method	% of students ID	Score	Score	Method	Perf. Index	Score	Method	% of students ID
3	<186	R	53.0%	186	198	SR	.894	213	R	65.1%
4	<197	R	57.1%	197	211	L	.884	226	R	50.5%
5	<204	R	57.6%	204	221	S	.934	231	R	41.9%
6	<210	R	59.1%	210	222	LS	.910	231	R	45.2%
7	<211	R	62.7%	211	225	L	.898	235	R	41.0%
8	<213	R	55.4%	213	228	L	.895	237	R	50.0%

Table 6 – Recommended RIT cut scores for PACT performance levels – Mathematics

	Below Basic			Basic	Proficient			Advanced		
Grade	Score	Method	% of students ID	Score	Score	Method	Perf. Index	Score	Method	% of students ID
3	<193	R	46.6%	193	212	L	.908	220	R	55.2%
4	<202	R	60.5%	202	219	LR	.899	228	R	79.8%
5	<212	R	62.6%	212	229	S	.905	236	R	73.8%
6	<215	R	60.8%	215	232	LS	.925	240	R	78.4%
7	<223	SR	67.0%	223	238	LSR	.905	247	R	74.3%
8	<228	R	67.9%	228	248	L	.938	256	R	67.9%

We evaluate the relative accuracy of state alignment studies by comparing the prediction index statistics generated by these studies for accuracy in assessing proficiency status and performance level. Table 6 summarizes the accuracy of proficiency status prediction for this study relative to other state alignment studies and Table 7 summarizes the accuracy of performance level prediction. The results show that the prediction index statistics for proficiency status prediction are low when compared to other state studies. In addition, prediction index statistics for this study are slightly lower than those generated by our study of 2002 PACT data.

In terms of prediction of performance level, the prediction index statistics were in the lower half relative to those generated from other state studies and slightly lower than those generated by our prior study. In the case of reading and language usage, one reason for the comparatively low prediction index scores may have to do with content alignment. Since the PACT English/Language Arts assessment combines reading, language usage, and writing performance, it tests elements that will not be covered by a reading or language usage test that stands alone.

Table 6 – Prediction Indices (Based on Proficiency Status) for Previous NWEA State Alignment Studies

State	Reading	State	Language	State	Math
Texas	.974	Texas	.968	Texas	.970
Washington	.971	South Carolina Exit	.938	Wyoming	.961
Minnesota	.944	California	.913	Colorado '01	.957
South Carolina Exit	.940	Indiana '01	.907	Washington	.949
Wyoming	.931	Colorado '03	.903	Illinois	.946
Colorado '03	.931	Indiana '03	.894	Colorado '03	.943
Illinois	.928	South Carolina '04	.889	South Carolina '03	.943
California	.925	Arizona	.874	Minnesota	.936
Arizona	.912			Washington	.936
Colorado '01	.910			South Carolina Exit	.933
Nevada	.902			Arizona	.919
South Carolina '03	.902			South Carolina '04	.914
Indiana '01	.902			California	.910
Indiana '03	.900			Indiana '01	.899
Washington	.886			Nevada	.866
South Carolina '04	.884			Indiana '03	.860

Table 7 – Prediction index scores by performance level assignment for previous NWEA state alignment Studies

State	Reading	State	Math
Washington	.874	Washington	.928
Texas	.868	Texas	.900
Indiana	.860	Illinois	.888
Colorado	.840	Colorado	.808
Illinois	.804	Washington	.805
Nevada	.776	Indiana	.804
South Carolina '03	.757	South Carolina '03	.764
Arizona	.756	Arizona	.756
South Carolina '04	.717	Nevada	.742
Washington	.698	South Carolina '04	.741
South Carolina Exit	.649	South Carolina Exit	.705
Minnesota	.627	Minnesota	.611
California	.600	California	.565

Figures 1 and 2 seem to illustrate the possible problem with content alignment between the Reading and Language Usage assessments and the PACT ELA test which combines the two domains. Figure 1 shows a scatterplot of Reading RIT against the PACT ELA scores for grade 6, the grade at which the predictive effectiveness of NWEA RIT scores was lowest. The red lines on the chart depict the predicted RIT cut score for Basic performance relative to the actual cut score on the PACT. There is a range of over 80 PACT score points around the projected RIT cut score. Figure 2 shows a scatterplot of Mathematics RIT scores against the PACT mathematics scores for grade 6, the grade at which the predictive effectiveness of NWEA RIT scores was highest. Note that the range of PACT scores around the predicted Basic is considerably smaller, about 60 PACT score points, than the range for grade 6 Reading. Figure 1 shows considerably greater dispersion in scores than Figure 2.

The illustration shows that the PACT's inclusion of Reading, Language Usage, and writing elements in a single assessment probably makes it more difficult for an assessment in one domain to predict proficiency status or performance levels on the PACT with the level of accuracy that NWEA is able to achieve when the state assesses these domains individually. Despite this, the accuracy of PACT prediction from RIT scores, which is consistently above 80% when assigning proficiency status, and consistently above 60% when assigning performance level, is high enough to be useful as a tool to help teachers identify students' probable status relative to these standards.

Figure 1 – Scatterplot of PACT ELA scale scores against RIT Scores for Grade 6 Reading
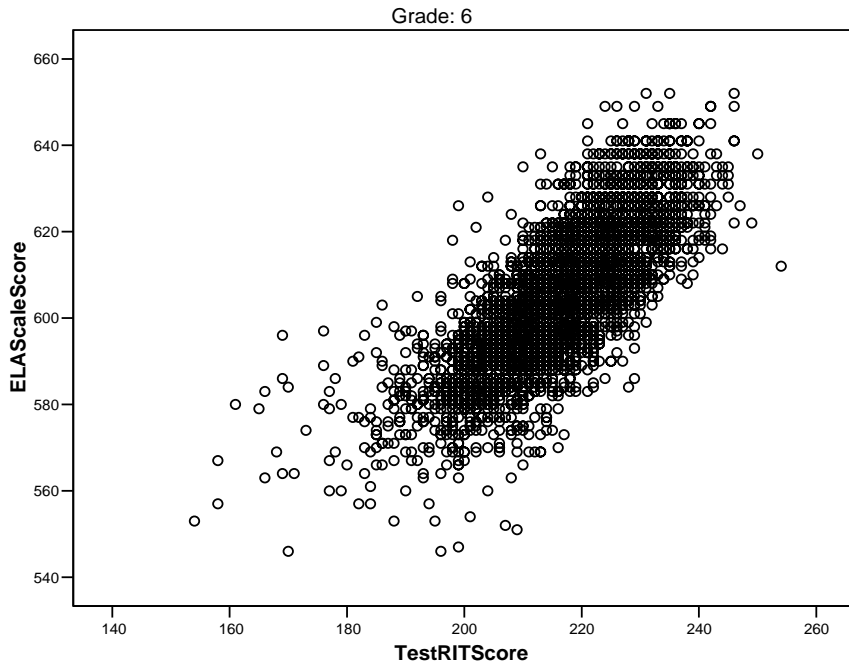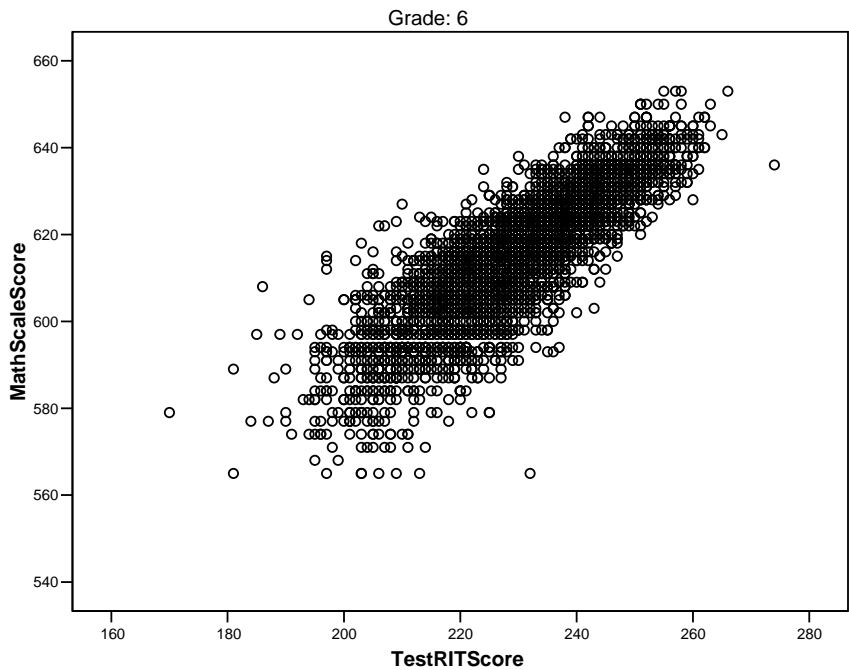

Figure 2 – Scatterplot of PACT mathematics scale scores against RIT scores for Grade 6 Mathematics

Using RIT scores to estimate student probability of achieving passing performance on the PACT

Tables 8, 9, and 10show the proportion of students at each 5 point RIT level who earned scores at or above the Proficient Level on their respective PACT assessment. Using reading as an example, we find that about 24% of the Grade 5 students who achieved a reading RIT score between 210 and 214 went on to achieve a passing score on the PACT ELA assessment. A reading teacher would know that only about one in four of these students will be proficient on the PACT unless they work harder, receive more focused instruction, or have access to additional resources.

On the other hand, about 95% of students performing between 230 and 234 achieved proficiency on the South Carolina ELA assessment. Teachers should feel free to focus their efforts with these students on content and skills that go beyond the minimum expectations for performance.

Figures 3, 4, and 5 are graphic depictions of the data in the tables.

Table 8 – Proportion of students passing the PACT reading based on same spring RIT reading score

RIT	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
150	0.00%					
155	9.09%					
160	10.53%					
165	3.57%					
170	8.16%					
175	10.58%					
180	16.34%	6.78%				
185	22.02%	0.95%	0.00%	0.00%		
190	33.78%	3.64%	1.02%	1.64%		
195	62.03%	7.16%	1.55%	1.43%	0.00%	0.00%
200	81.04%	19.18%	3.40%	2.11%	2.11%	0.93%
205	92.18%	44.62%	10.94%	2.71%	0.95%	1.06%
210	98.19%	67.83%	24.24%	13.02%	4.68%	1.23%
215	99.04%	86.88%	48.77%	32.03%	14.18%	7.14%
220	100.00%	95.42%	73.51%	56.51%	29.81%	16.81%
225		96.50%	88.40%	74.35%	53.51%	38.17%
230		97.62%	95.42%	85.30%	73.45%	61.69%
235		100.00%	97.92%	97.20%	90.20%	83.29%
240			100.00%	100.00%	97.70%	95.57%
245					100.00%	95.00%
250						90.00%
255						100.00%

Table 9 – Proportion of students passing the PACT ELA based on same spring RIT language usage score

RIT	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
165	0.00%					
170	8.00%					
175	2.78%					
180	10.39%	0.00%	0.00%			
185	8.51%	3.45%	4.00%			
190	15.87%	4.46%	4.88%	0.00%		
195	21.22%	7.94%	1.98%	4.41%	0.00%	0.00%
200	36.09%	16.43%	6.91%	8.61%	7.84%	1.79%
205	50.62%	35.82%	17.42%	16.41%	5.85%	0.86%
210	70.28%	59.07%	31.34%	25.23%	9.29%	2.24%
215	83.06%	76.62%	51.79%	47.29%	23.98%	9.39%
220	90.08%	90.08%	76.23%	71.08%	46.67%	18.10%
225	90.00%	95.28%	92.78%	89.81%	74.64%	39.63%
230	100.00%	97.44%	97.48%	98.00%	88.13%	65.90%
235		100.00%	100.00%	100.00%	97.87%	83.97%
240					100.00%	97.73%
245						100.00%

Table 10 – Proportion of students passing the PACT mathematics based on same spring RIT mathematics score

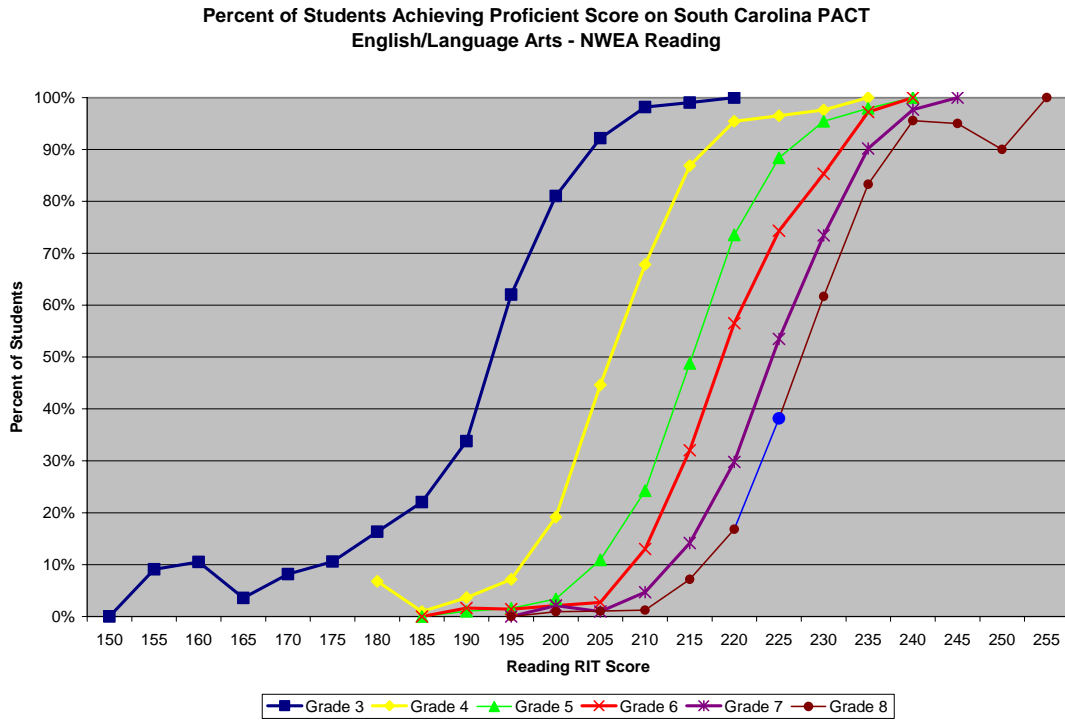| RIT	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
180						
185	0.91%					
190	4.24%					
195	6.24%	0.00%		0.00%		
200	17.61%	2.93%	0.00%	1.05%		
205	35.34%	10.59%	1.52%	1.83%	0.00%	
210	56.40%	15.66%	2.68%	2.18%	1.57%	
215	74.36%	40.23%	6.79%	5.16%	0.45%	0.00%
220	87.40%	65.71%	20.70%	14.22%	2.26%	1.27%
225	95.60%	87.06%	44.04%	31.82%	5.20%	0.32%
230	97.37%	96.04%	71.91%	59.40%	17.94%	1.41%
235	100.00%	97.86%	91.48%	79.10%	46.58%	6.27%
240		100.00%	96.23%	95.73%	69.39%	21.17%
245			99.31%	98.87%	89.66%	48.27%
250			100.00%	100.00%	97.72%	74.94%
255					100.00%	91.17%
260						100.00%

Figure 3 –

Percent of Students Achieving Proficient Score on South Carolina PACT
English/Language Arts - NWEA Reading

Figure 4 -

Percent of Students Achieving Proficient Score on South Carolina PACT
Language Usage

Figure 5 -

Percent of Students Achieving Proficient Score on South Carolina PACT Mathematics
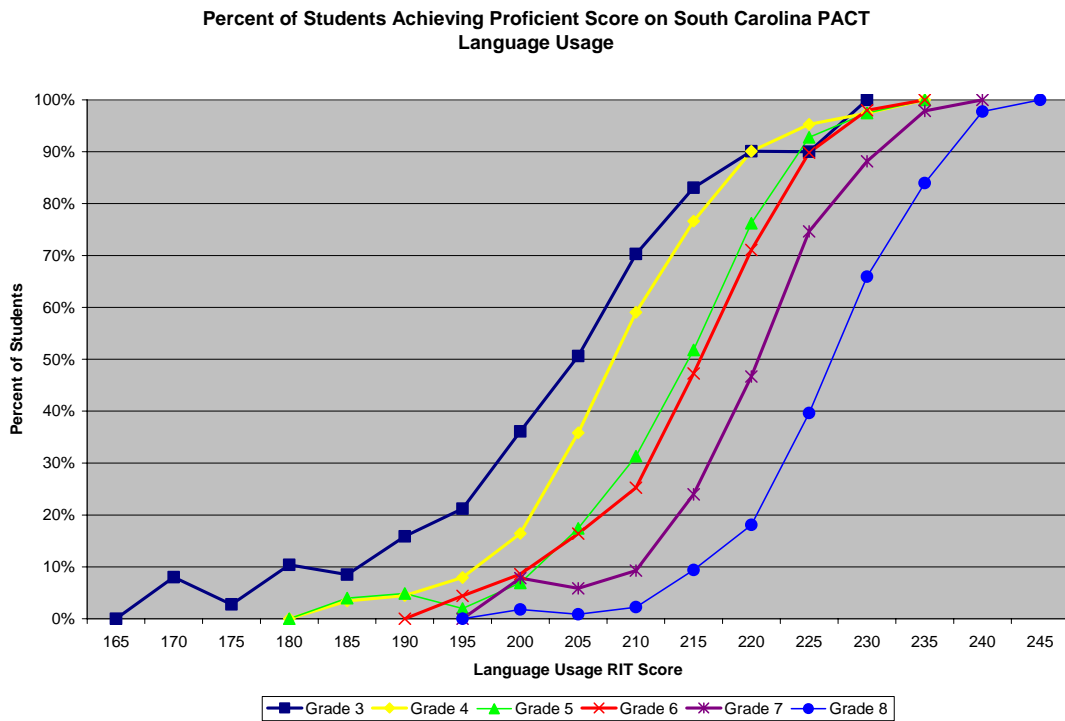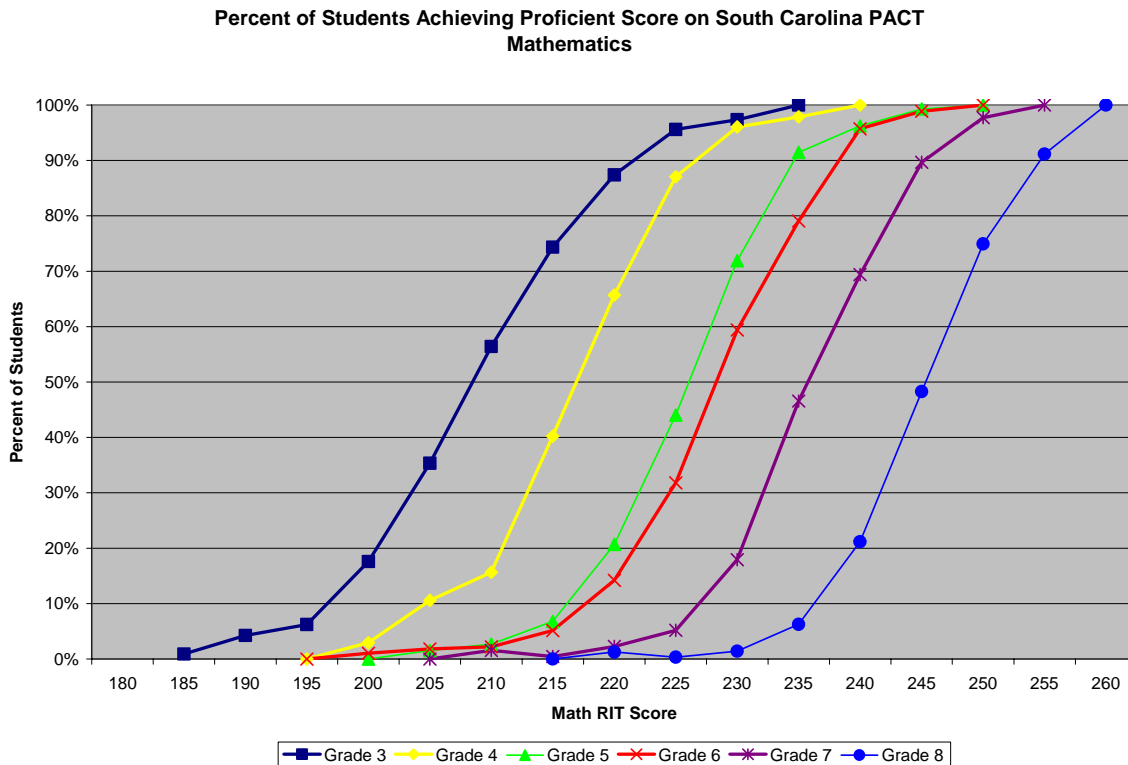

Comparing South Carolina PACT standards with the estimated standards reported in other state test alignment studies

Northwest Evaluation Association tests have been aligned with the cut scores for the state high school standards and/or proficiency tests in eight states. To get an estimate of the difficulty of the PACT in relation to other state tests, we evaluated the standard defined as the NCLB passing score and compared it to the cut score representing the same standard in these other states.

The results are summarized in Table 11. South Carolina's cut scores in reading are lower than five of the eight states studied. The cut scores in mathematics are the lowest of any state studied. We'd recommend caution about drawing any judgments about the quality of South Carolina's standards from that information. States establish standards for different purposes. States also attach different stakes to their standards. Some states, Oregon might be an example, set their high school standards prior to the adoption of NCLB. In Oregon's case, these standards were set at a level they believe appropriate for students pursuing some form of post-secondary education. In addition, Oregon does not require that students pass these standards as a condition for graduation. This confluence of factors explain why the Oregon standard was set relatively high.

Other states, California would be an example, established high school performance standards after the passage of NCLB. They were intended to reflect performance needed to pursue post-secondary education. They were however intended to be a prerequisite for graduation, although the state has postponed the requirement for now. Given that the standards were implemented with the intention that all students would be required to achieve this level of performance, it is not a surprise that the California standard is not as rigorous as Oregon's.

In general, standards should be judged on how well they align with the purposes the community has set for establishing standards, not purely on how high or low the "bar" is set. One thing the tables make clear is that proficiency standards vary widely from state to state and that proficiency is not yet a concept that has a shared definition, although greater consensus in standard setting seems to be emerging. It would be fair to say that most states that we have studied who have set standards since implementation of No Child Left Behind has begun have tended to establish standards near or below the 50th percentile on our norms.

South Carolina implemented the PACT to meet the No Child Left Behind Act's requirements for high school assessment. Passing the test is a prerequisite for graduation, so the stakes associated with this test are high. These factors may explain, at least in part, why the standard is low relative to some other states.

Table 17 - Cut scores representing "proficient" or "meets standards" level of performance on 16 state assessments

Reading

Grade 3			Grade 4			Grade 5			Grade 6			Grade 7			Grade 8			Grade 9			Grade 10		
State	Cut Score	%ile	State	Cut Score	%ile	State	Cut Score	%ile	State	Cut Score	%ile	State	Cut Score	%ile	State	Cut Score	%ile	State	Cut Score	%ile	State	Cut Score	%ile
SC03	205	67	WY	214	73	SC03	220	73	SC04	222	64	SC03	227	70	WY	232	74	MT	224	43	OR	236	77
NV	202	58	SC03	213	70	SC04	218	68	SC03	221	63	WA	226	67	SC03	230	68	IA	224	43	WA	227	53
CA	200	51	SC04	209	59	NV	215	59	CA	216	46	SC04	226	67	SC04	230	68	ID	221	37	ID	224	44
SC04	196	42	WA	207	53	CA	214	56	MT	211	35	CA	221	50	OR	227	58	CO	204	9	MT	224	44
OR	193	35	CA	205	46	PA	212	50	ID	211	35	MT	218	43	CA	226	54				SCL3	224	44
ID	193	35	ID	200	34	AZ	210	45	IN	210	32	IA	216	37	AZ	224	49				IA	223	42
MT	193	35	MT	196	26	OR	209	42	IA	209	30	NV	215	35	PA	223	46				CO	209	15
IL	193	35	IA	196	26	IL	207	37	TX	208	28	ID	215	35	IN	219	35				SCL2	209	15
IN	192	32	NV	194	22	MT	206	35	CO	197	11	TX	210	24	MT	219	35				CA	208	14
IA	191	31	CO	191	18	ID	206	35				CO	206	18	IA	219	35						
AZ	190	29				IA	205	32							ID	218	32						
TX	179	13				TX	204	30							IL	218	32						
CO	179	13				CO	197	18							MN	218	32						
															CO	206	12						

For grade 10, SCL2 represents the minimum score required to pass the HSAP while SCL3 represents the score reflecting "proficient" performance

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Table 18 - Cut scores representing "proficient" or "meets standards" level of performance on 16 state assessments - Mathematics

Grade 3			Grade 4			Grade 5			Grade 6			Grade 7			Grade 8			Grade 9			Grade 10		
State	Cut Score	%ile	State	Cut Score	%ile	State	Cut Score	%ile	State	Cut Score	%ile	State	Cut Score	%ile	State	Cut Score	%ile	State	Cut Score	%ile	State	Cut Score	%ile
SC04	212	84	WY	221	83	SC04	230	81	SC03	235	78	SC03	242	78	WY	257	89	MT	242	47	WA	257	73
SC03	208	75	SC04	219	78	SC03	227	76	SC04	232	73	WA	242	78	SC03	251	80	IA	241	44	MT	247	40
CA	204	63	WA	218	76	CA	225	71	CA	230	68	SC04	241	76	AZ	248	75	ID	240	42	IA	247	40
NV	203	59	SC03	217	74	AZ	220	59	IN	221	47	CA	238	71	SC04	247	73	CO	235	32	OR	245	33
IN	201	50	CA	212	59	NV	216	48	ID	219	42	ID	225	44	CA	240	60				ID	242	25
OR	199	46	ID	205	39	PA	216	48	IA	218	40	MT	224	42	PA	237	53				SCL3	237	18
AZ	199	46	IA	205	39	OR	215	46	MT	218	40	IA	222	38	OR	235	50				CO	233	14
MT	197	39	MT	205	39	ID	213	41	CO	207	19	TX	221	35	ID	233	46				CA	232	13
IA	197	39	NV	200	26	MT	212	38				NV	220	33	MN	231	42				SCL2	223	7
ID	196	36				IA	212	38				CO	216	26	IN	231	42						
IL	193	29				IL	210	33							IL	230	40						
						TX	209	31							MT	228	36						
						CO	201	15							IA	228	36						
															CO	225	31						

Summary and Conclusions

This study investigated the relationship between the scales used for the PACT assessments and the RIT scales used to report performance on Northwest Evaluation Association tests. The study determined the reading, language usage and mathematics RIT score equivalents for the PACT performance levels in English/Language Arts and Mathematics. Test records for more than 22,000 students were included in this study.

Three methods generated an estimate of RIT cut scores that could be used to project PACT performance levels. Rasch SOS methods generally produced the most accurate cut score estimates.   Accuracy of predicting PACT passing performance was above 80% for nearly all grades and subjects when using the best methodology.

Readers should exercise some caution about generalizing these results to their own settings. Curricular or instructional differences unique to your districts may influence the accuracy with which the estimated cut scores reflect actual performance in your setting. With this limitation in mind, we would encourage educators to use this data as one tool to inform standards-based decisions.

The information gathered in this study came from measures employing the NWEA RIT Scale.   Because all of the research that we have to date indicates that scores generated from computer-based tests and Achievement Level Test (ALT) scores are virtually interchangeable, readers should feel comfortable applying the results of this study in any setting that uses the RIT scale.

We hope that data from this study provides useful information to help South Carolina educators use NWEA assessments to better inform, plan and deliver student instruction. Good information, when matched with the professionalism and commitment of our South Carolina colleagues, will assure that every student has the opportunity to reach their aspirations.

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