California
LINKING STUDY

A Study of the Alignment of the NWEA RIT Scale with the California Standardized Testing and Reporting (STAR) Program

March 2010

The Kingsbury Center at Northwest Evaluation Association

KINGSBURY
CENTER AT NWEA

NWEA
Northwest Evaluation Association
Partnering to help all kids learn

A STUDY OF THE ALIGNMENT OF THE NWEA RIT SCALE WITH THE CALIFORNIA STAR PROGRAM

KINGSBURY CENTER AT NWEA

MARCH 2010

Recently, NWEA completed a project to connect the scale of California Standards Tests (CSTs) mathematics and reading assessments with NWEA's RIT scale. Information from the state assessments was used in a study to establish performance-level scores on the RIT scale that would indicate a good chance of success on these tests.

To perform the analysis, we linked together state test and NWEA test results for a sample of 27,901 California students from 106 schools who completed exams in the spring of 2009. The California state test is administered in spring. For the spring season, an equipercentile method was used to estimate the RIT score equivalent to each state performance level. For spring, we determined the percentage of the population within the selected study group that performed at each level on the state test and found the equivalent percentile ranges within the NWEA dataset to estimate the cut scores. For example, if 40% of the study group population in grade 3 mathematics performed below the proficient level on the state test, we would find the RIT score that would be equivalent to the 40th percentile for the study population (this would not be the same as the 40th percentile in the NWEA norms). This RIT score would be the estimated point on the NWEA RIT scale that would be equivalent to the minimum score for proficiency on the state test. Documentation about this method can be found on our website.

Tables 1 through 4 show the best estimate of the minimum RIT equivalent to each state performance level for same-season (spring) and prior-season (fall) RIT scores. These tables can be used to identify students who may need additional help to perform well on these tests.

Tables 5 through 8 show the estimated probability of a student receiving a proficient score on the state assessment, based on that student's RIT score. These tables can be used to assist in identifying students who are not likely to pass these assessments, thereby increasing the probability that intervention strategies will be planned and implemented. These tables can also be useful for identifying target RIT-score objectives likely to correspond to successful or "proficient" performance on the state test.

Table 9 shows the correlation coefficients between MAP and the state test for reading and mathematics at each of the grades 3 through 8. These statistics show the degree to which MAP and the state test are linearly related, with values at or near 1.0 suggesting a perfect linear relationship, and values near 0.0 indicating no linear relationship. Table 10 shows the percentages of students at each grade and within each subject whose status on the state test (i.e., whether or not the student "met standards") was accurately predicted by their MAP performance and using the estimated cut scores within the current study. This table can be used to understand the predictive validity of MAP with respect to the California state tests.

TABLE 1 – MINIMUM ESTIMATED SAME-SEASON (SPRING) RIT CUT SCORES CORRESPONDING TO STATE PERFORMANCE LEVELS – MATHEMATICS

MATH-Current Season								
Cut Scores and Percentiles for each State Performance Level								
Grade	Far Below Basic	Below Basic		Basic		Proficient		Advanced	
	Cut Score	Cut Score	Percen-tile	Cut Score	Percen-tile	Cut Score	Percen-tile	Cut Score	Percen-tile
2	*<171*	*171*	*4*	*179*	*17*	*187*	*39*	*197*	*70*
3	<179	179	4	191	17	200	39	209	70
4	<185	185	4	198	16	208	39	219	70
5	<196	196	7	208	22	219	47	232	79
6	<199	199	7	215	27	228	57	243	90
7	<202	202	7	219	27	233	57	249	90
8	<204	204	7	224	28	239	61	257	94

[*]Note: the cut scores shown in this table are the **minimum** estimated scores. Meeting the minimum MAP cut score corresponds to a 50% probability of achieving that performance level. Use the probabilities in Tables 5-8 to determine the appropriate 'target' scores for a desired level of certainty. Italics represent extrapolated data.

TABLE 2 – MINIMUM ESTIMATED SAME-SEASON (SPRING) RIT CUT SCORES CORRESPONDING TO STATE PERFORMANCE LEVELS – READING

READING-Current Season								
Cut Scores and Percentiles for each State Performance Level								
Grade	Far Below Basic	Below Basic		Basic		Proficient		Advanced	
	Cut Score	Cut Score	Percen-tile	Cut Score	Percen-tile	Cut Score	Percen-tile	Cut Score	Percen-tile
2	*<169*	*169*	*7*	*179*	*22*	*192*	*55*	*201*	*81*
3	<178	178	7	189	22	202	55	211	81
4	<177	177	3	188	11	202	35	211	61
5	<187	187	6	197	14	210	41	220	73
6	<186	186	4	203	18	215	45	227	80
7	<196	196	8	205	16	217	42	229	77
8	<199	199	7	212	22	223	50	233	79

[*]Note: the cut scores shown in this table are the **minimum** estimated scores. Meeting the minimum MAP cut score corresponds to a 50% probability of achieving that performance level. Use the probabilities in Tables 5-8 to determine the appropriate 'target' scores for a desired level of certainty. Italics represent extrapolated data.

TABLE 3 – MINIMUM ESTIMATED PRIOR-SEASON (FALL) RIT CUT SCORES CORRESPONDING TO STATE PERFORMANCE LEVELS – MATHEMATICS

MATH-Prior Season								
Cut Scores and Percentiles for each State Performance Level								
Grade	Far Below Basic	Below Basic		Basic		Proficient		Advanced	
	Cut Score	Cut Score	Percen-tile	Cut Score	Percen-tile	Cut Score	Percen-tile	Cut Score	Percen-tile
2	*<164*	*164*	*4*	*170*	*17*	*176*	*39*	*184*	*68*
3	<172	172	4	181	17	189	38	198	67
4	<180	180	4	191	16	200	38	209	68
5	<191	191	7	202	22	211	47	223	79
6	<196	196	7	210	27	222	57	237	90
7	<200	200	7	215	27	228	57	244	90
8	<203	203	7	220	27	235	60	254	94

[*]Note: the cut scores shown in this table are the **minimum** estimated scores. Meeting the minimum MAP cut score corresponds to a 50% probability of achieving that performance level. Use the probabilities in Tables 5-8 to determine the appropriate 'target' scores for a desired level of certainty. Italics represent extrapolated data.

TABLE 4 – MINIMUM ESTIMATED PRIOR-SEASON (FALL) RIT CUT SCORES CORRESPONDING TO STATE PERFORMANCE LEVELS – READING

READING-Prior Season								
Cut Scores and Percentiles for each State Performance Level								
Grade	Far Below Basic	Below Basic		Basic		Proficient		Advanced	
	Cut Score	Cut Score	Percen-tile	Cut Score	Percen-tile	Cut Score	Percen-tile	Cut Score	Percen-tile
2	*<161*	*161*	*7*	*168*	*20*	*181*	*54*	*192*	*81*
3	<171	171	7	181	22	194	55	203	79
4	<172	172	3	183	11	196	34	205	61
5	<184	184	6	192	14	205	40	215	71
6	<184	184	4	200	18	211	43	223	79
7	<195	195	8	202	15	214	41	226	76
8	<197	197	7	210	22	220	48	231	79

[*]Note: the cut scores shown in this table are the **minimum** estimated scores. Meeting the minimum MAP cut score corresponds to a 50% probability of achieving that performance level. Use the probabilities in Tables 5-8 to determine the appropriate 'target' scores for a desired level of certainty. Italics represent extrapolated data.

TABLE 5 –ESTIMATED PROBABILITY OF SCORING AS PROFICIENT OR HIGHER ON THE STATE MATHEMATICS TEST IN SAME SEASON (SPRING), BY STUDENT GRADE AND RIT SCORE RANGE ON MAP MATHEMATICS

MATH-Current Season						
Estimated Probability of Passing State Test Based on Observed MAP Score						
RIT Range	2	3	4	5	6	7	8
120	*0%*	0%	0%	0%	0%	0%	0%
125	*0%*	0%	0%	0%	0%	0%	0%
130	*0%*	0%	0%	0%	0%	0%	0%
135	*1%*	0%	0%	0%	0%	0%	0%
140	*1%*	0%	0%	0%	0%	0%	0%
145	*1%*	0%	0%	0%	0%	0%	0%
150	*2%*	1%	0%	0%	0%	0%	0%
155	*4%*	1%	0%	0%	0%	0%	0%
160	*6%*	2%	1%	0%	0%	0%	0%
165	*10%*	3%	1%	0%	0%	0%	0%
170	*15%*	5%	2%	1%	0%	0%	0%
175	*23%*	8%	4%	1%	0%	0%	0%
180	*33%*	12%	6%	2%	1%	0%	0%
185	*45%*	18%	9%	3%	1%	1%	0%
190	*57%*	27%	14%	5%	2%	1%	1%
195	*69%*	38%	21%	8%	4%	2%	1%
200	*79%*	50%	31%	13%	6%	4%	2%
205	*86%*	62%	43%	20%	9%	6%	3%
210	*91%*	73%	55%	29%	14%	9%	5%
215	*94%*	82%	67%	40%	21%	14%	8%
220	*96%*	88%	77%	52%	31%	21%	13%
225	*98%*	92%	85%	65%	43%	31%	20%
230	*99%*	95%	90%	75%	55%	43%	29%
235	*99%*	97%	94%	83%	67%	55%	40%
240	*100%*	98%	96%	89%	77%	67%	52%
245	*100%*	99%	98%	93%	85%	77%	65%
250	*100%*	99%	99%	96%	90%	85%	75%
255	*100%*	100%	99%	97%	94%	90%	83%
260	*100%*	100%	99%	98%	96%	94%	89%
265	*100%*	100%	100%	99%	98%	96%	93%
270	*100%*	100%	100%	99%	99%	98%	96%
275	*100%*	100%	100%	100%	99%	99%	97%
280	*100%*	100%	100%	100%	99%	99%	98%
285	*100%*	100%	100%	100%	100%	99%	99%
290	*100%*	100%	100%	100%	100%	100%	99%
295	*100%*	100%	100%	100%	100%	100%	100%
300	*100%*	100%	100%	100%	100%	100%	100%

*Note: This table provides the estimated probability of passing the state test based on a MAP test score taken during that same (spring) season. Example: if a fifth grade student scored 200 on a MAP test taken during the spring season, her/his estimated probability of passing the state test is 13%.

Italics represent extrapolated data.

TABLE 6 –ESTIMATED PROBABILITY OF SCORING AS PROFICIENT OR HIGHER ON THE STATE READING TEST IN SAME SEASON (SPRING), BY STUDENT GRADE AND RIT SCORE RANGE ON MAP READING

READING-Current Season						
Estimated Probability of Passing State Test Based on Observed MAP Score						
RIT Range	2	3	4	5	6	7	8
120	0%	0%	0%	0%	0%	0%	0%
125	0%	0%	0%	0%	0%	0%	0%
130	0%	0%	0%	0%	0%	0%	0%
135	0%	0%	0%	0%	0%	0%	0%
140	1%	0%	0%	0%	0%	0%	0%
145	1%	0%	0%	0%	0%	0%	0%
150	1%	1%	1%	0%	0%	0%	0%
155	2%	1%	1%	0%	0%	0%	0%
160	4%	1%	1%	1%	0%	0%	0%
165	6%	2%	2%	1%	1%	1%	0%
170	10%	4%	4%	2%	1%	1%	0%
175	15%	6%	6%	3%	2%	1%	1%
180	23%	10%	10%	5%	3%	2%	1%
185	33%	15%	15%	8%	5%	4%	2%
190	45%	23%	23%	12%	8%	6%	4%
195	57%	33%	33%	18%	12%	10%	6%
200	69%	45%	45%	27%	18%	15%	9%
205	79%	57%	57%	38%	27%	23%	14%
210	86%	69%	69%	50%	38%	33%	21%
215	91%	79%	79%	62%	50%	45%	31%
220	94%	86%	86%	73%	62%	57%	43%
225	96%	91%	91%	82%	73%	69%	55%
230	98%	94%	94%	88%	82%	79%	67%
235	99%	96%	96%	92%	88%	86%	77%
240	99%	98%	98%	95%	92%	91%	85%
245	100%	99%	99%	97%	95%	94%	90%
250	100%	99%	99%	98%	97%	96%	94%
255	100%	100%	100%	99%	98%	98%	96%
260	100%	100%	100%	99%	99%	99%	98%
265	100%	100%	100%	100%	99%	99%	99%
270	100%	100%	100%	100%	100%	100%	99%
275	100%	100%	100%	100%	100%	100%	99%
280	100%	100%	100%	100%	100%	100%	100%
285	100%	100%	100%	100%	100%	100%	100%
290	100%	100%	100%	100%	100%	100%	100%
295	100%	100%	100%	100%	100%	100%	100%
300	100%	100%	100%	100%	100%	100%	100%

*Note: This table provides the estimated probability of passing the state test based on a MAP test score taken during that same (spring) season. Example: if a fifth grade student scored 200 on a MAP test taken during the spring season, her/his estimated probability of passing the state test is 27%.

Italics represent extrapolated data.

TABLE 7 –ESTIMATED PROBABILITY OF SCORING AS PROFICIENT OR HIGHER ON THE STATE MATHEMATICS TEST IN PRIOR SEASON (FALL), BY STUDENT GRADE AND RIT SCORE RANGE ON MAP MATHEMATICS

MATH-Prior Season						
Estimated Probability of Passing State Test Based on Observed MAP Score						
RIT Range	2	3	4	5	6	7	8
120	*0%*	0%	0%	0%	0%	0%	0%
125	*1%*	0%	0%	0%	0%	0%	0%
130	*1%*	0%	0%	0%	0%	0%	0%
135	*2%*	0%	0%	0%	0%	0%	0%
140	*3%*	1%	0%	0%	0%	0%	0%
145	*4%*	1%	0%	0%	0%	0%	0%
150	*7%*	2%	1%	0%	0%	0%	0%
155	*11%*	3%	1%	0%	0%	0%	0%
160	*17%*	5%	2%	1%	0%	0%	0%
165	*25%*	8%	3%	1%	0%	0%	0%
170	*35%*	13%	5%	2%	1%	0%	0%
175	*48%*	20%	8%	3%	1%	0%	0%
180	*60%*	29%	12%	4%	1%	1%	0%
185	*71%*	40%	18%	7%	2%	1%	1%
190	*80%*	52%	27%	11%	4%	2%	1%
195	*87%*	65%	38%	17%	6%	4%	2%
200	*92%*	75%	50%	25%	10%	6%	3%
205	*95%*	83%	62%	35%	15%	9%	5%
210	*97%*	89%	73%	48%	23%	14%	8%
215	*98%*	93%	82%	60%	33%	21%	12%
220	*99%*	96%	88%	71%	45%	31%	18%
225	*99%*	97%	92%	80%	57%	43%	27%
230	*100%*	98%	95%	87%	69%	55%	38%
235	*100%*	99%	97%	92%	79%	67%	50%
240	*100%*	99%	98%	95%	86%	77%	62%
245	*100%*	100%	99%	97%	91%	85%	73%
250	*100%*	100%	99%	98%	94%	90%	82%
255	*100%*	100%	100%	99%	96%	94%	88%
260	*100%*	100%	100%	99%	98%	96%	92%
265	*100%*	100%	100%	100%	99%	98%	95%
270	*100%*	100%	100%	100%	99%	99%	97%
275	*100%*	100%	100%	100%	100%	99%	98%
280	*100%*	100%	100%	100%	100%	99%	99%
285	*100%*	100%	100%	100%	100%	100%	99%
290	*100%*	100%	100%	100%	100%	100%	100%
295	*100%*	100%	100%	100%	100%	100%	100%
300	*100%*	100%	100%	100%	100%	100%	100%

*Note: This table provides the estimated probability of passing the state test based on a MAP test score taken during the prior (fall) season. Example: if a fifth grade student scored 200 on a MAP test taken during the spring season, her/his estimated probability of passing the state test is 25%.

Italics represent extrapolated data.

TABLE 8 –ESTIMATED PROBABILITY OF SCORING AS PROFICIENT OR HIGHER ON THE STATE READING TEST IN PRIOR SEASON (FALL), BY STUDENT GRADE AND RIT SCORE RANGE ON MAP READING

	READING-Prior Season						
	Estimated Probability of Passing State Test Based on Observed MAP Score						
RIT Range	2	3	4	5	6	7	8
120	0%	0%	0%	0%	0%	0%	0%
125	0%	0%	0%	0%	0%	0%	0%
130	1%	0%	0%	0%	0%	0%	0%
135	1%	0%	0%	0%	0%	0%	0%
140	2%	0%	0%	0%	0%	0%	0%
145	3%	1%	1%	0%	0%	0%	0%
150	4%	1%	1%	0%	0%	0%	0%
155	7%	2%	2%	1%	0%	0%	0%
160	11%	3%	3%	1%	1%	0%	0%
165	17%	5%	4%	2%	1%	1%	0%
170	25%	8%	7%	3%	2%	1%	1%
175	35%	13%	11%	5%	3%	2%	1%
180	48%	20%	17%	8%	4%	3%	2%
185	60%	29%	25%	12%	7%	5%	3%
190	71%	40%	35%	18%	11%	8%	5%
195	80%	52%	48%	27%	17%	13%	8%
200	87%	65%	60%	38%	25%	20%	12%
205	92%	75%	71%	50%	35%	29%	18%
210	95%	83%	80%	62%	48%	40%	27%
215	97%	89%	87%	73%	60%	52%	38%
220	98%	93%	92%	82%	71%	65%	50%
225	99%	96%	95%	88%	80%	75%	62%
230	99%	97%	97%	92%	87%	83%	73%
235	100%	98%	98%	95%	92%	89%	82%
240	100%	99%	99%	97%	95%	93%	88%
245	100%	99%	99%	98%	97%	96%	92%
250	100%	100%	100%	99%	98%	97%	95%
255	100%	100%	100%	99%	99%	98%	97%
260	100%	100%	100%	100%	99%	99%	98%
265	100%	100%	100%	100%	100%	99%	99%
270	100%	100%	100%	100%	100%	100%	99%
275	100%	100%	100%	100%	100%	100%	100%
280	100%	100%	100%	100%	100%	100%	100%
285	100%	100%	100%	100%	100%	100%	100%
290	100%	100%	100%	100%	100%	100%	100%
295	100%	100%	100%	100%	100%	100%	100%
300	100%	100%	100%	100%	100%	100%	100%

*Note: This table provides the estimated probability of passing the state test based on a MAP test score taken during the prior (fall) season. Example: if a fifth grade student scored 200 on a MAP test taken during the spring season, her/his estimated probability of passing the state test is 38%.

Italics represent extrapolated data.

TABLE 9 – CORRELATION COEFFICIENTS BETWEEN MAP AND STATE TEST FOR EACH GRADE AND TEST SUBJECT

Grade	Math Correlation Pearson's *r*	Reading Correlation Pearson's *r*
3	0.801	0.835
4	0.807	0.810
5	0.789	0.862
6	0.814	0.858
7	0.820	0.841
8	0.801	0.769

* Note: Correlations range from 0 (indicating no correlation between the state test score and the NWEA test score) to 1 (indicating complete correlation between the state test score and the NWEA test score).

TABLE 10 – PERCENTAGE OF STUDENTS WHOSE PASS STATUS WAS ACCURATELY PREDICTED BY THEIR MAP PERFORMANCE USING REPORTED CUT SCORES

Grade	Sample Size	MAP Accurately Predicted State Performance	MAP Underestimated State Performance	MAP Overestimated State Performance
Mathematics				
3	4504	88.32%	5.31%	6.37%
4	4589	88.71%	5.21%	6.08%
5	4589	88.36%	5.75%	5.88%
6	4460	87.11%	5.43%	7.47%
7	3967	86.92%	5.60%	7.49%
8	3143	77.98%	10.31%	11.71%
Reading				
3	4612	84.48%	6.98%	8.54%
4	4570	87.66%	5.56%	6.78%
5	4500	85.40%	6.64%	7.96%
6	4236	86.38%	6.19%	7.44%
7	3593	86.06%	6.46%	7.49%
8	3401	84.00%	7.29%	8.70%

[*]Note: The third column of this table shows the percentage of students whose Pass/NotPass status was predicted accurately when their state test score was linked to their MAP score based on this linking study. The fourth column shows the percentage of students whose MAP score predicted they would not pass the state benchmark but they did pass. The last column shows the percentage of students whose MAP score predicted they would pass the state benchmark but they did not pass.

Due to rounding, percentages may not add to 100%.

The Kingsbury Center at NWEA
5885 SW Meadows Road, Suite 200
Lake Oswego, OR 97035-3526

www.kingsburycenter.org

Tel 503-624-1951
Fax 503-639-7873