Aligning the NWEA RIT Scale with South Carolina’s Palmetto Achievement Challenge Tests (PACT)

John Cronin, Ph.D.

November 2004
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Recently NWEA completed a project to update our 2002 study which connected the scale of the tests used for South Carolina’s state testing in English/language arts and mathematics (PACT) with NWEA’s RIT scale. Information from the South Carolina assessments was used in a study to update performance level scores on the RIT scale that would indicate a good chance of success on these tests.

Three South Carolina school systems, Horry County, Richland 2, and Charleston County participated in this study. They provided us with test information from a group of over 22,000 students who had taken both the NWEA and PACT during spring of 2004.

Three methodologies, linear regression, second order regression, and Rasch status on standards (called Rasch SOS) were used to derive estimates of cut scores for the performance levels on the PACT tests. In each case the most accurate of the three estimates was used to arrive at the recommended cut score you see in this report.

The findings from this study are detailed in a more complete report, but the primary findings are as follows:

- The PACT correlates closely with the NWEA assessments. Pearson coefficients for the PACT ELA were estimated at an average of about .77 with the NWEA reading assessment and about .78 with the NWEA language usage assessment. Pearson coefficients for the PACT mathematics assessment averaged about .83.

- 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, 80% to 82% of the cases when using NWEA reading to predict PACT ELA, and 80% to 83% of the cases when using NWEA language usage to predict PACT ELA. In terms of predicting performance level, the best RIT cut scores estimates correctly assigned performance levels for 60% to 68% of the cases in mathematics and 59% to 67% of cases using either reading or language usage.

Readers will note that the estimated cut scores deriving from this study are, in most cases, relatively close to the estimated cut scores from the prior study. However, there are a few grades in which we found larger changes from the original NWEA estimates. These changes are discussed in detail in the report Assessing Changes in the Projected NWEA RIT scale cut scores for the 2002 and 2004 Study of Alignment with the Palmetto Achievement Challenge Tests. This document is available on our website.

NWEA has also recently completed a study to align the South Carolina High School Assessment Program (HSAP). A summary of this study is also posted on our website.

Tables 1 through 3 show the best estimate of the RIT equivalent to each PACT performance level. The table may be used to identify students who may need additional help to perform well on these tests.

Tables 3 through 6 (with accompanying graphs) show the proportion of students achieving various RIT score ranges who also achieved “proficient” or passing performance on the PACT. 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.
Contact John Cronin (503) 624-1951 at Northwest Evaluation Association if you wish further information or have questions about this study.
### Table 1 – Recommended RIT cut scores for PACT ELA performance levels - Reading

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score</th>
<th>Method</th>
<th>% of students ID</th>
<th>Score</th>
<th>Method</th>
<th>Perf. Index</th>
<th>Score</th>
<th>Method</th>
<th>% of students ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>&lt;182</td>
<td>R</td>
<td>52.9%</td>
<td>182</td>
<td>SR</td>
<td>.887</td>
<td>211</td>
<td>R</td>
<td>57.8%</td>
</tr>
<tr>
<td>4</td>
<td>&lt;194</td>
<td>R</td>
<td>55.3%</td>
<td>194</td>
<td>LR</td>
<td>.881</td>
<td>226</td>
<td>R</td>
<td>37.7%</td>
</tr>
<tr>
<td>5</td>
<td>&lt;202</td>
<td>R</td>
<td>57.9%</td>
<td>202</td>
<td>L</td>
<td>.901</td>
<td>232</td>
<td>R</td>
<td>27.1%</td>
</tr>
<tr>
<td>6</td>
<td>&lt;210</td>
<td>R</td>
<td>68.7%</td>
<td>210</td>
<td>L</td>
<td>.899</td>
<td>233</td>
<td>R</td>
<td>39.9%</td>
</tr>
<tr>
<td>7</td>
<td>&lt;210</td>
<td>R</td>
<td>58.3%</td>
<td>210</td>
<td>LSR</td>
<td>.885</td>
<td>238</td>
<td>R</td>
<td>37.4%</td>
</tr>
<tr>
<td>8</td>
<td>&lt;213</td>
<td>R</td>
<td>58.4%</td>
<td>213</td>
<td>L</td>
<td>.898</td>
<td>240</td>
<td>R</td>
<td>44.0%</td>
</tr>
</tbody>
</table>

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

### Table 2 – Recommended RIT cut scores for PACT ELA performance levels – Language Usage

<table>
<thead>
<tr>
<th>Grade</th>
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<th>Method</th>
<th>% of students ID</th>
<th>Score</th>
<th>Method</th>
<th>Perf. Index</th>
<th>Score</th>
<th>Method</th>
<th>% of students ID</th>
</tr>
</thead>
<tbody>
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<td>R</td>
<td>53.0%</td>
<td>186</td>
<td>SR</td>
<td>.894</td>
<td>213</td>
<td>R</td>
<td>65.1%</td>
</tr>
<tr>
<td>4</td>
<td>&lt;197</td>
<td>R</td>
<td>57.1%</td>
<td>197</td>
<td>L</td>
<td>.884</td>
<td>226</td>
<td>R</td>
<td>50.5%</td>
</tr>
<tr>
<td>5</td>
<td>&lt;204</td>
<td>R</td>
<td>57.6%</td>
<td>204</td>
<td>S</td>
<td>.934</td>
<td>231</td>
<td>R</td>
<td>41.9%</td>
</tr>
<tr>
<td>6</td>
<td>&lt;210</td>
<td>R</td>
<td>59.1%</td>
<td>210</td>
<td>LS</td>
<td>.910</td>
<td>231</td>
<td>R</td>
<td>45.2%</td>
</tr>
<tr>
<td>7</td>
<td>&lt;211</td>
<td>R</td>
<td>62.7%</td>
<td>211</td>
<td>L</td>
<td>.898</td>
<td>235</td>
<td>R</td>
<td>41.0%</td>
</tr>
<tr>
<td>8</td>
<td>&lt;213</td>
<td>R</td>
<td>55.4%</td>
<td>213</td>
<td>L</td>
<td>.895</td>
<td>237</td>
<td>R</td>
<td>50.0%</td>
</tr>
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</table>

### Table 3 – Recommended RIT cut scores for PACT performance levels – Mathematics

<table>
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<th>Grade</th>
<th>Score</th>
<th>Method</th>
<th>% of students ID</th>
<th>Score</th>
<th>Method</th>
<th>Perf. Index</th>
<th>Score</th>
<th>Method</th>
<th>% of students ID</th>
</tr>
</thead>
<tbody>
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<td>46.6%</td>
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<td>.908</td>
<td>220</td>
<td>R</td>
<td>55.2%</td>
</tr>
<tr>
<td>4</td>
<td>&lt;202</td>
<td>R</td>
<td>60.5%</td>
<td>202</td>
<td>LR</td>
<td>.899</td>
<td>228</td>
<td>R</td>
<td>79.8%</td>
</tr>
<tr>
<td>5</td>
<td>&lt;212</td>
<td>R</td>
<td>62.6%</td>
<td>212</td>
<td>S</td>
<td>.905</td>
<td>236</td>
<td>R</td>
<td>73.8%</td>
</tr>
<tr>
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<td>&lt;215</td>
<td>R</td>
<td>60.8%</td>
<td>215</td>
<td>LS</td>
<td>.925</td>
<td>240</td>
<td>R</td>
<td>78.4%</td>
</tr>
<tr>
<td>7</td>
<td>&lt;223</td>
<td>SR</td>
<td>67.0%</td>
<td>223</td>
<td>LSR</td>
<td>.905</td>
<td>247</td>
<td>R</td>
<td>74.3%</td>
</tr>
<tr>
<td>8</td>
<td>&lt;228</td>
<td>R</td>
<td>67.9%</td>
<td>228</td>
<td>L</td>
<td>.938</td>
<td>256</td>
<td>R</td>
<td>67.9%</td>
</tr>
</tbody>
</table>
Using RIT scores to estimate student probability of achieving passing performance on the PACT

Tables 8, 9, and 10 show 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 4 – Proportion of students passing the PACT reading based on same spring RIT reading score**

<table>
<thead>
<tr>
<th>RIT</th>
<th>Grade 3</th>
<th>Grade 4</th>
<th>Grade 5</th>
<th>Grade 6</th>
<th>Grade 7</th>
<th>Grade 8</th>
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<td></td>
</tr>
<tr>
<td>155</td>
<td>9.09%</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>160</td>
<td>10.53%</td>
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<td></td>
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</tr>
<tr>
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<td>3.57%</td>
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<td></td>
</tr>
<tr>
<td>170</td>
<td>8.16%</td>
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<td></td>
<td></td>
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</tr>
<tr>
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<td></td>
</tr>
<tr>
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<td>6.78%</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>185</td>
<td>22.02%</td>
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<td>0.00%</td>
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<td></td>
</tr>
<tr>
<td>190</td>
<td>33.78%</td>
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<td>1.02%</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>195</td>
<td>62.03%</td>
<td>7.16%</td>
<td>1.55%</td>
<td>1.43%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>200</td>
<td>81.04%</td>
<td>19.18%</td>
<td>3.40%</td>
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<td>2.11%</td>
<td>0.93%</td>
</tr>
<tr>
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<td>92.18%</td>
<td>44.62%</td>
<td>10.94%</td>
<td>2.71%</td>
<td>0.95%</td>
<td>1.06%</td>
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<tr>
<td>210</td>
<td>98.19%</td>
<td>67.83%</td>
<td>24.24%</td>
<td>13.02%</td>
<td>4.68%</td>
<td>1.23%</td>
</tr>
<tr>
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<td>48.77%</td>
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<td>14.18%</td>
<td>7.14%</td>
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<td>29.81%</td>
<td>16.81%</td>
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<tr>
<td>225</td>
<td>96.50%</td>
<td>88.40%</td>
<td>74.35%</td>
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</tr>
<tr>
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<td>95.00%</td>
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</tr>
<tr>
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</tr>
<tr>
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<td>Grade 4</td>
<td>Grade 5</td>
<td>Grade 6</td>
<td>Grade 7</td>
<td>Grade 8</td>
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<td>5.85%</td>
<td>0.86%</td>
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</table>

Table 5 – Proportion of students passing the PACT ELA based on same spring RIT language usage score
<table>
<thead>
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<th>Grade 6</th>
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</tr>
<tr>
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</tr>
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<td>17.94%</td>
<td>1.41%</td>
</tr>
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<td>91.48%</td>
<td>79.10%</td>
<td>46.58%</td>
<td>6.27%</td>
</tr>
<tr>
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<td>100.00%</td>
<td>96.23%</td>
<td>95.73%</td>
<td>69.39%</td>
<td>21.17%</td>
</tr>
<tr>
<td>245</td>
<td></td>
<td></td>
<td>99.31%</td>
<td>98.87%</td>
<td>89.66%</td>
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<td>97.72%</td>
<td>74.94%</td>
</tr>
<tr>
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<td></td>
<td>100.00%</td>
<td>91.17%</td>
<td></td>
</tr>
<tr>
<td>260</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100.00%</td>
</tr>
</tbody>
</table>
Figure 1 –

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

Figure 2 –

Percent of Students Achieving Proficient Score on South Carolina PACT
Language Usage
Figure 3 - Percent of Students Achieving Proficient Score on South Carolina PACT Mathematics

Math RIT Score

Percent of Students

Grade 3
Grade 4
Grade 5
Grade 6
Grade 7
Grade 8

Grade 3
Grade 4
Grade 5
Grade 6
Grade 7
Grade 8