

An Analysis and Recommendation on the Setting of Readiness Ranges in the SmarterMeasure Learning Readiness Indicator

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One of the useful features of the SmarterMeasure Learning Readiness Indicator is that school leaders (faculty and/or administrators) can view SmarterMeasure scores through a

dashboard which allows them to at-a-glance identify students who might be at risk of not doing well based on their SmarterMeasure scores. Then based on these findings the school can provide remediation and support as appropriate. This serves as a valuable student service which can increase retention rates.

Figure 1 below illustrates how that through the use of green, red or black icons schools can tell at a glance which students are classified as “high,” “medium,” or “low” on the sections of SmarterMeasure.

Figure 1 – SmarterMeasure Administrative Dashboard

Because the student population of each school is unique, one of the features of SmarterMeasure is that schools can set the grading thresholds to determine what level of SmarterMeasure scores should classify a student as “high,” “medium,” or “low.”

The image below is the dialogue box through which schools can set these grading thresholds to set these colors on the administrative dashboard.

Figure 2 – Grading Threshold Dialogue Box

It is important to note that these grading thresholds only change the indicating colors on the administrative dashboard, NOT on the score report which the student sees.

The grading threshold settings which are standard when a school first begins using SmarterMeasure are indicated above in Figure 2. Schools are urged to re-set these grading thresholds to more appropriately match their student population. For example, one school is using SmarterMeasure in their College of Technology. They would expect the students entering this program to have higher technology related scores. So they increased the grading thresholds in this area. Others schools may have many students who request remediation in reading. If this is the case this school may choose to lower the expected

grading threshold in reading. Recommendations for more appropriate settings based on recent research will be provided below. However, schools are free to set the grading thresholds as they consider best represents their student population.

The grading thresholds that are standard when a school begins using SmarterMeasure were determined very early in the development of SmarterMeasure. Most of these numbers were determined by roughly dividing the range of scores from 0 – 100 into thirds. There was nothing strongly scientific about this method. However, the company which provides SmarterMeasure (SmarterServices, LLC) is resistant to changing these pre-sets for existing accounts because they have been set this way and the hundreds of SmarterMeasure administrators who are accustomed to seeing these values would be confused if the company automatically imposed a change.

ANALYSIS OF GRADING THRESHOLD VALUES

In July, 2008 SmarterServices, LLC conducted an analysis of SmarterMeasure scores to determine a more appropriate guideline for grading thresholds. During the one-year period from July 28th, 2007 to July 28th, 2008 a total of 108,423 persons took the SmarterMeasure assessment. For the purposes of this analysis 35,111 of these cases were randomly selected. When a student did not complete a section of SmarterMeasure a zero value existed in the database. For the purposes of this analysis zero values were deleted resulting in the number of valid cases indicated in Table 1 below. Zero values were not considered in the calculation of the means.

There are five sections of SmarterMeasure for which a grading threshold can be modified by the school: Overall Technical Competency, Technical Knowledge, Individual Attributes, Life Factors and Reading Competency. Each of these four constructs is measured on a scale of 0 – 100. The score for Life Factors was set to parallel that of Individual Attributes. The mean scores and standard deviations are indicated in Table 1 below.

Statistics

				Reading
	Overall Tech. Comp	Tech. Knowledge	Indiv. Attributes	Comp
N Valid	21330	20827	28863	26694
Missing	13781	14284	6248	8417
Mean	94.32	58.11	79.80	72.65
Std. Deviation	9.082	9.457	7.877	18.322

Table 1: Measures of Central Tendency

The scores for Technical Knowledge, Individual Attributes, and Reading Competency were more normally distributed than those for Technical Competency which were skewed toward a grade of 100. This finding is congruent for the plans to revise the Technical Competency section to make it more difficult in an upcoming version of SmarterMeasure. See Figures 3, 4, 5 and 6 below for a visual representation of the distribution of SmarterMeasure scores for these categories.

RECOMMENDATIONS FOR FUTURE PRACTICE

1. **SmarterServices, LLC is not going to modify the pre-set grading threshold values for existing schools.** However we do suggest based on the data in this analysis the following values if a school would like to modify the scores to more accurately represent the normal distribution of scores:

2. **Recommended Grading Threshold Values:**

Category	Failed	Questionable	Passed
Overall Technical Competency	Below 80	80 - 90	90+
Technical Knowledge	Below 50	50 - 75	75+
Individual Attributes	Below 70	70 - 85	85+
Life Factors	Below 70	70 - 85	85+

Reading Competency	Below 65	65 - 85	85+
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It should be noted that these suggested grading threshold values are more stringent than the previous standard values and will result in more students being directed toward support services from the institution.

2. The second recommendation for practice is that **when new schools create a SmarterMeasure account the grading threshold values which are set will be based on the newly calculated values above.**

Histograms

Figure 3 – Overall Technical Competency Scores

Figure 4 – Technical Knowledge Scores

Figure 5 – Individual Attributes Scores

Figure 6 – Reading Comprehension Scores

Note: Because of the way the reading comprehension exam is scored, not all scores in the range of 0 – 100 are possible scores.

Frequency Tables

OverallTech.Comp					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10	2	.0	.0	.0
	20	7	.0	.0	.0
	30	8	.0	.0	.1
	40	29	.1	.1	.2
	50	70	.2	.3	.5
	60	184	.5	.9	1.4
	70	566	1.6	2.7	4.1
	80	1807	5.1	8.5	12.5
	90	5423	15.4	25.4	38.0
	100	13234	37.7	62.0	100.0
	Total	21330	60.8	100.0	
Missing	System	13781	39.2		
Total		35111	100.0		

Tech.Knowledge					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	6	1	.0	.0	.0
	13	1	.0	.0	.0
	14	2	.0	.0	.0
	15	5	.0	.0	.0
	16	4	.0	.0	.1
	18	3	.0	.0	.1

19	3	.0	.0	.1
20	2	.0	.0	.1
21	5	.0	.0	.1
23	8	.0	.0	.2
24	8	.0	.0	.2
25	14	.0	.1	.3
26	17	.0	.1	.4
28	24	.1	.1	.5
29	26	.1	.1	.6
30	37	.1	.2	.8
31	44	.1	.2	1.0
33	46	.1	.2	1.2
34	71	.2	.3	1.5
35	85	.2	.4	1.9
36	103	.3	.5	2.4
38	118	.3	.6	3.0
39	155	.4	.7	3.8
40	192	.5	.9	4.7
41	238	.7	1.1	5.8
43	267	.8	1.3	7.1
44	290	.8	1.4	8.5
45	384	1.1	1.8	10.3
46	405	1.2	1.9	12.3
48	454	1.3	2.2	14.5
49	542	1.5	2.6	17.1
50	608	1.7	2.9	20.0
51	704	2.0	3.4	23.4
53	822	2.3	3.9	27.3
54	813	2.3	3.9	31.2
55	946	2.7	4.5	35.8

56		1057	3.0	5.1	40.8
57		1117	3.2	5.4	46.2
59		1144	3.3	5.5	51.7
60		1230	3.5	5.9	57.6
61		1196	3.4	5.7	63.3
63		1209	3.4	5.8	69.1
64		1129	3.2	5.4	74.6
65		937	2.7	4.5	79.1
66		855	2.4	4.1	83.2
68		737	2.1	3.5	86.7
69		655	1.9	3.1	89.8
70		580	1.7	2.8	92.6
71		421	1.2	2.0	94.7
73		347	1.0	1.7	96.3
74		270	.8	1.3	97.6
75		190	.5	.9	98.5
76		142	.4	.7	99.2
78		94	.3	.5	99.7
79		45	.1	.2	99.9
80		25	.1	.1	100.0
	Total	20827	59.3	100.0	
Missing	System	14284	40.7		
Total		35111	100.0		

Indiv.Attributes					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	27	1	.0	.0	.0
	34	2	.0	.0	.0
35		1	.0	.0	.0
43		1	.0	.0	.0
45		3	.0	.0	.0
46		2	.0	.0	.0
47		26	.1	.1	.1
48		7	.0	.0	.1
49		7	.0	.0	.2
50		10	.0	.0	.2
51		8	.0	.0	.2
52		9	.0	.0	.3
53		11	.0	.0	.3
54		23	.1	.1	.4
55		16	.0	.1	.4
56		29	.1	.1	.5
57		44	.1	.2	.7
58		67	.2	.2	.9
59		102	.3	.4	1.3
60		116	.3	.4	1.7
61		120	.3	.4	2.1
63		186	.5	.6	2.7
64		203	.6	.7	3.4
65		237	.7	.8	4.3
66		317	.9	1.1	5.4
67		366	1.0	1.3	6.6
68		564	1.6	2.0	8.6
69		507	1.4	1.8	10.3

70	583	1.7	2.0	12.4
71	680	1.9	2.4	14.7
72	791	2.3	2.7	17.5
73	852	2.4	3.0	20.4
74	961	2.7	3.3	23.7
75	1025	2.9	3.6	27.3
76	1163	3.3	4.0	31.3
77	1187	3.4	4.1	35.4
78	1368	3.9	4.7	40.2
79	1410	4.0	4.9	45.1
80	1524	4.3	5.3	50.3
81	1505	4.3	5.2	55.6
82	1547	4.4	5.4	60.9
83	1519	4.3	5.3	66.2
84	1575	4.5	5.5	71.6
85	1431	4.1	5.0	76.6
86	1279	3.6	4.4	81.0
88	1312	3.7	4.5	85.6
89	1005	2.9	3.5	89.0
90	917	2.6	3.2	92.2
91	792	2.3	2.7	95.0
92	527	1.5	1.8	96.8
93	381	1.1	1.3	98.1
94	301	.9	1.0	99.2
95	116	.3	.4	99.6
96	62	.2	.2	99.8
97	49	.1	.2	99.9
98	11	.0	.0	100.0
99	3	.0	.0	100.0
100	2	.0	.0	100.0

	Total	28863	82.2	100.0	
Missing	System	6248	17.8		
Total		35111	100.0		

ReadingComp

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	9	33	.1	.1	.1
	10	49	.1	.2	.3
	18	110	.3	.4	.7
	20	131	.4	.5	1.2
	27	314	.9	1.2	2.4
	30	240	.7	.9	3.3
	36	660	1.9	2.5	5.8
	40	499	1.4	1.9	7.6
	45	1055	3.0	4.0	11.6
	50	850	2.4	3.2	14.8
	55	1348	3.8	5.0	19.8
	60	1565	4.5	5.9	25.7
	64	1486	4.2	5.6	31.2
	67	1	.0	.0	31.2
	70	3024	8.6	11.3	42.6
	73	1510	4.3	5.7	48.2
	80	5080	14.5	19.0	67.3
	82	1378	3.9	5.2	72.4
	90	4645	13.2	17.4	89.8

	91		1063	3.0	4.0	93.8
	100		1653	4.7	6.2	100.0
	Total		26694	76.0	100.0	
Missing	System		8417	24.0		
Total			35111	100.0		