Analysis of the Successful Practices Network
We Learn (Grades 6-12) Student Survey

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Introduction

   The We Learn Student Survey assesses student perceptions of the three "R's" and of school leadership by asking for responses to statements based on these critical elements. *WE LEARN* provides school leadership and teachers with a powerful tool for understanding what students believe about the school.

Purpose

   The purpose of the current report was to examine the psychometric properties of the We Learn survey.

Sample

   The sample size in the We Learn Student Survey included 40,608 participants in grades 6 through 12. Among the participants 48.6% were female (n = 20,210) while 50.3% were male (n = 20,922). Note 476 participants did not submit a response to this item (1.1%). Further, the majority of participants (20.6%) were enrolled in ninth grade (n = 8,564), while 9.6% were enrolled in grade 6, 9.6% in grade 7, and 10% in grade 8. In addition, 17.2% were enrolled in grade 10, 16.8% in grade 11, and 14.7% were enrolled in grade 12. Note 569 participants (1.4%) did not indicate the current grade in which they were enrolled. Regarding ethnicity, 20, 255 participants (49.2%) were identified as White, 8,024 (19.3%) as Black or African-American, 7,987 (19.2%) Hispanic, 1,880 (4.5%) Asian, 390 (.9%) American Indian or Alaska Native, while 161 (.4%) were identified as Other Pacific Islander. Finally, 118 (.3%) were identified as Native Hawaiian, while 2,237 (5.4%) were identified as "Other." Among the participants, the majority (43.1%, n = 17, 948) indicated that they worked less than one hour per day, while 39.4% (n = 16,396) indicated they worked two to three hours per day on homework. Only 5.5% (n = 2,300) indicated that they worked more than 3 hours per day on homework activities. As for extra-curricular activities, almost half of the participants indicated they were involved sports activities (46.2%), while 46.1% were involved in academic clubs, student council, and service organizations. Finally, 20.1% were involved in other activities. While the results revealed that more than 80% of all participants did not have a part-time job, 15.5% of twelfth grade participants indicated they worked more than 16 hours per week, and 9.6% worked 5-10 hours per week.

Results

   Initially descriptive analyses were conducted to validate data entry, examine the completion of individual survey items, as well as check for pair-wise variable concordance and unit non-response. Forty-nine respondents completed the demographic portion of the survey but did not respond to the survey items. In addition, 859 participants did not respond to at least 50% of the survey items. Subsequently, 908 participants (2.2%) were removed from further analyses. The results displayed in Appendix A reveal that the percentage of missing responses among survey items in the analysis ranged from .79% (survey item 1) to 6.30% (Item 58). In-depth analysis indicated that the increased percentage of non responses may have been due to the length of the survey. More concretely, as the number of questions increased, the percentage of non-response increased. This was most noticeable beginning with survey item number 30 and continuing to the end of the survey.

Range of Survey Item Means

   Participants rated survey item based on a corresponding 5 choice scale that included 1 = Strongly Disagree, 2 = Disagree, 3 = Undecided, 4= Agree, and 5 = Strongly Agree. Negatively stated questions

were reverse coded. The item means ranged from 2.42 (SD = 1.24) for item 21, which maintained that the state test is the most important thing students do in school to 4.45 (SD = .871) for item 12, which was related to student preparedness for college (see Appendix B). The overall median response across all survey items comprising the We Learn survey was 3.67. Table 1 displays the range of means among the 60 survey items.

Table 1
Range of Item Means

Range of Means	Frequency	Percent	Cumulative Percent
2.4-2.6	2	3.3	3.3
2.6-2.8	2	3.3	6.7
2.8-3.0	3	5.0	11.7
3.0-3.2	7	11.7	23.3
3.2-3.4	8	13.3	36.7
3.4-3.6	15	25.0	61.7
3.6-3.8	12	20.0	81.7
3.8-4.0	7	11.7	93.3
4.0-4.2	2	3.3	96.7
4.2-4.4	1	1.7	98.3
4.4-4.6	1	1.7	100.0
Total	60	100.0	

Scale Properties

Regarding individual survey items, the greatest amount of variation in responses was associated with item number 27 (SD = 1.29) regarding the presence of bullying at school, while the least varied response among participants was on item 12, which related to student preparedness for college. The overall mean response to this item was 4.45 (SD = .871).

To gain insight into the underlying structure of the SPN instrument, principal component analysis was conducted utilizing a Varimax orthogonal rotation. Based on the principal component analysis (PCA) and the results of the Parallel analysis (O'Connor, 2000), it was determined that four underlying constructs should be retained. As reported in Table 2, construct one included fifteen items measuring rigor, which means that critical thinking takes place on a regular basis. Construct two included fourteen items measuring relevance, which enables students to connect what they are learning to their experience. Construct three included sixteen items measuring relationships, which are developed through a culture of respect, caring, and concern for one another. Construct four included eleven items measuring leadership, which relates to establishing and communicating a clearly defined set of beliefs about teaching and learning is a collaborative effort. The four extracted constructs explained approximately 40% of the variance among total responses to the 60 item survey instrument. Initial reliability ranged from .73(construct one) to .83 (constructs two and three).

Following the identification of the four constructs, in-depth reliability analyses were conducted. The results indicated that the reliability would improve for construct one (Rigor) with the deletion of three items, which included items 21, 52, and 59 while reliability for construct two (Relevance) would improve with the deletion of one item (Item 23). Further analysis regarding constructs three (Relationships) and four (Leadership) revealed that scale reliability would not improve with further reduction in survey items. The PCA procedure was repeated with the identified survey items removed and pattern/structure coefficients examined. The results indicated that the survey items shared a statistically significant association with the hypothesized construct. Reliability analysis was repeated. The resulting

reliability estimates and the total number of survey items for each construct as measured by Cronbach's alpha are displayed in Table 2. Note George and Mallery (2003) provide the following rules of thumb: "> .9 – Excellent, > .8 – Good, > .7 – Acceptable, > .6 – Questionable, > .5 – Poor, and < .5 – Unacceptable" (p. 231).

Table 2
Reliability Estimates and Number of Survey Items for Each of Five Constructs

	Scale Length				Reliability			
Constructs	Rigor	Relevance	Relationships	Leadership	Rigor	Relevance	Relationships	Leadership
Initial	18	15	16	11	. 74	.80	.83	.83
Final	15	14	16	11	.84	.84	.83	.83

Inter-Scale Correlations

    Table 3 displays the inter-scale correlations. Correlations ranged from r = .754, between Relevance and Leadership, to r = .824, between Relevance and Rigor. The results suggest a substantial degree of shared variance (57% to 68%) and a lack of independence among the five scales. Ideally, the inter-scale correlations should not be statistically significant. When the inter-scale correlation is not statistically significant, the scales lead to separate implications about student perceptions of the three "R's" and school leadership.

Table 3
Inter-Scale Correlations

	Relevance	Rigor	Relationship	Leadership
Relevance	1.00			
Rigor	.824**	1.00		
Relationship	.790**	.798**	1.00	
Leadership	.754**	.789**	.810**	1.00

**. Correlation is significant at the 0.01 level (2-tailed).

Discriminant Validity

    To provide insight into how participants with differing characteristics responded to the subscales measured by the We Learn Student Survey, confidence interval charts were calculated. The charts plot participants' current grade by the mean score on each subscale. The results displayed in Figures 1 through 4 indicate that middle school participants (Grades 6-8) rated each subscale higher when compared to high school participants (Grades 9-12). The results below support discriminant validity of the We Learn survey, with significant differences in scores for populations with different characteristics. Significant mean differences are noted when there is no overlap of confidence interval bars.
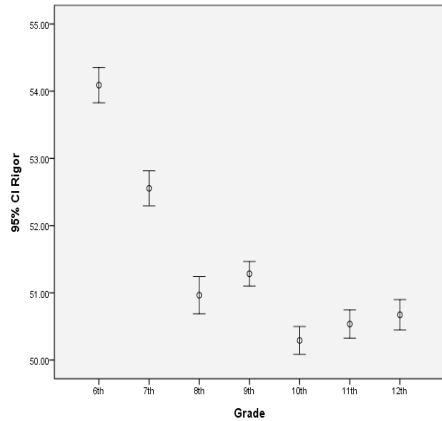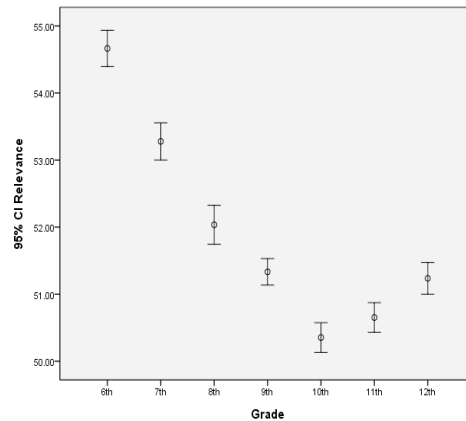
Figure 1 . Comparison of Rigor by Grade

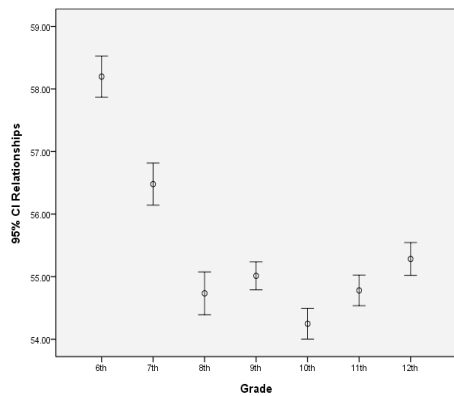Figure 2. Comparison of Relevance by Grade

Figure 3. Comparison of Relationships by Grade
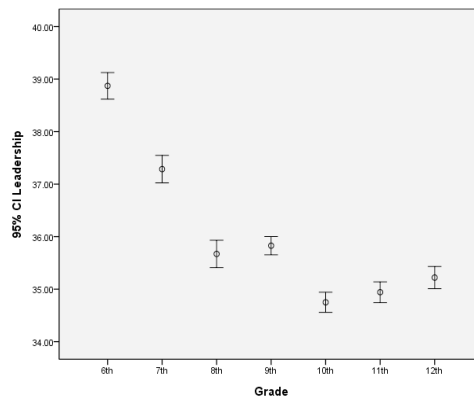
Figure 4. Comparison of Leadership by Grade

Summary

There is high level of confidence in the reliability and validity of the We Learn survey.
The We Learn Student Survey demonstrates evidence of, or supports:
- That the total assessment and the four content areas reliably measured student perceptions
  of the three "R's" and of school leadership.
- Inter-scale correlational studies demonstrated high commonality between the
  content areas.
- PCA analyses and reliability indices indicated that We Learn survey items measure a
  single dimensional construct which supports construct validity.
- There is support for discriminant validity.

Recommendations

- Further work on validating the We Learn Student Survey and on improving the specific items to reduce
  inter-scale correlation is recommended.
- Consider reducing the length of the We Learn Student Survey while collecting relevant information
  among the four constructs. Participant response rates decreased sharply as the survey increases in
  length. This pattern of non-responses began at the mid-point of the survey (see Appendix A)

References

George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update* (4th ed.). Boston: Allyn & Bacon.

O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instrumentation, and Computers, 32,* 396-402.

Appendix A
Percent Missing by Survey Item

Survey Item	Number Missing	Percent Missing
1. In than one answer.	326	0.79
2. I life.	531	1.29
3. I vision.	787	1.92
4. My life.	824	2.01
5. My me.	728	1.77
6. classroom.	831	2.02
7. My lessons.	671	1.63
8. I others.	776	1.89
9. me.	858	2.09
10. Students .	812	1.98
11. My I learned.	950	2.31
12. for college.	841	2.05
13. Teachers .	852	2.08
14. Students .	927	2.26
15. If do it.	835	2.03
16. assignments.	1003	2.44
17. My goals.	918	2.24
18. students.	1010	2.46
19. My best.	1074	2.62
20. I'm nteresting.	930	2.27
21. I do in school.	592	1.44
22. I teachers.	819	1.99
23. I assignments.	954	2.32
24. When .	1011	2.46
25. School .	1066	2.60
26. Some subjects.	1197	2.92
27. school.	1091	2.66
28. I progresses.	1205	2.94
29. I problems.	1207	2.94
30. My leader.	1186	2.89
31. one answer.	1421	3.46
32. My fun.	1319	3.21
33. My class.	1444	3.52
34. I (i.e. speaking, writing).	1262	3.07
35. There students.	1379	3.36
36. I responsible way.	1474	3.59
37. I .	1570	3.82
38. My classmates.	1594	3.88
39. I others.	1496	3.64
40. My choices.	1663	4.05
41. My information.	2323	5.66
42. I .	2281	5.56
43. Doing school.	2295	5.59
44. My things.	2358	5.74
45. I .	2395	5.83
46. assignments.	2387	5.81

47. My	school.	2243	5.46
48. At	academically.	2290	5.58
49. I	year.	2318	5.65
50. I	in my future.	2297	5.60
51.	other.	2339	5.70
52. My	know.	2312	5.63
53.	in this school.	2419	5.89
54.	classroom.	2463	6.00
55. My	solutions.	2531	6.17
56. I	best.	2574	6.27
57.	suggestions.	2524	6.15
58. I	my life.	2585	6.30
59. I	.	2464	6.00
60. Doing	in this school.	2195	5.35

Appendix B
Descriptive Measures of Individual Survey Items

Survey Item	M	SD	Min	Max
1. In one answer.	3.84	.880	1	5
2. I life.	3.47	1.067	1	5
3. I vision.	3.43	1.133	1	5
4. My my life.	3.85	.956	1	5
5. me.	3.67	1.066	1	5
6. classroom.	4.02	.987	1	5
7. lessons.	3.06	1.086	1	5
8. I with others.	3.47	1.055	1	5
9. My me.	4.00	.931	1	5
10. welcome.	3.12	1.150	1	5
11. My of what I learned.	3.44	1.032	1	5
12. When for college.	4.45	.871	1	5
13. Teachers other.	3.85	.899	1	5
14. Students decisions.	3.01	1.158	1	5
15. If , I would do it.	3.36	1.218	1	5
16. Students assignments.	3.45	1.097	1	5
17. My goals.	3.07	1.151	1	5
18. This students.	3.68	1.145	1	5
19. My best.	3.02	1.171	1	5
20. I'm interesting.	3.77	1.065	1	5
21. in school.	2.42	1.236	1	5
22. I can teachers.	3.51	1.083	1	5
23. I assignments.	2.80	1.182	1	5
24. help.	3.69	1.023	1	5
25. concerns.	2.95	1.188	1	5
26. Some subjects.	3.47	1.087	1	5
27. school.	2.91	1.292	1	5
28. I progresses.	3.49	1.084	1	5
29. I problems.	3.70	1.025	1	5
30. My leader.	3.21	1.115	1	5
31. On answer.	3.55	1.040	1	5
32. My fun.	3.07	1.243	1	5
33. My .	3.81	1.065	1	5
34. I , writing).	3.76	.990	1	5
35. and students.	3.29	1.113	1	5
36. I way.	3.59	1.121	1	5
37. I .	3.26	1.113	1	5
38. My classmates.	3.64	1.031	1	5
39. I am others.	3.59	1.219	1	5
40. My choices.	3.38	1.152	1	5
41. My information.	3.76	.960	1	5
42. I leader.	3.75	1.143	1	5
43. school.	3.57	1.187	1	5
44. My things.	3.42	1.087	1	5
45. I am .	3.89	.986	1	5
46. class assignments.	3.77	1.024	1	5
47. My of school.	2.72	1.232	1	5
48. At academically.	3.18	1.143	1	5

49. I know	year.	3.25	1.220	1	5
50. I	in my future.	3.84	1.102	1	5
51.	other.	3.56	1.100	1	5
52.	know.	2.61	1.081	1	5
53.	this school.	3.73	1.101	1	5
54.	classroom.	3.86	1.004	1	5
55.	olutions.	2.59	.955	1	5
56. I	their best.	3.59	1.078	1	5
57. My	suggestions.	3.37	1.098	1	5
58. I	to my life.	3.64	1.065	1	5
59. I	academically.	4.23	.941	1	5
60. school.	in this	3.34	1.231	1	5