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Supplemental Report on the Effects of the ASCD Program for Building Academic Vocabulary on Students Classified as Eligible for Free and Reduced Lunch (FRL) and Students Classified as English Language Learners (ELL)

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During the 2004–05 academic year, an evaluation study was conducted of the Building Academic Vocabulary (BAV) program. The theory and past research supporting the development of this program are articulated in *Building Background Knowledge for Academic Achievement* (Marzano, 2004). Briefly, the basic assumption underlying the BAV program is that teaching standards-based academic terminology using a specific six-step process can enhance students' abilities to read and understand subject-area content and ultimately help students build a store of academic background knowledge that enhances academic achievement. The findings from the 2004–05 evaluation study are reported in the document *Preliminary Report on the 2004–05 Evaluation Study of the ASCD Program for Building Academic Vocabulary* (Marzano, 2006). The study found that students who participated in the BAV program exhibited greater ability to read and understand grade-appropriate materials in mathematics, science, and general literacy than their counterparts who did not participate in the program, after scores were adjusted for ability prior to the intervention. This report addresses the findings for a subsample of students involved in the study—those classified as English language learners (ELL) and those classified as eligible for free and reduced lunch (FRL).

Design of the Evaluation Study

At a very basic level, the evaluation study for the subsample of students asked two questions:

1. What is the impact of the BAV program on students' ability to read and comprehend subject-area content?
2. Does the impact of BAV differ from grade level to grade level?

The Sample

The sample was drawn from volunteer schools and teachers across the United States. Specifically, in the summer of 2004 the Association for Supervision and Curriculum Development (ASCD) issued an invitation for schools to participate in an evaluation of the BAV program. Participating schools were required to furnish both experimental-group and control-group teachers and students. In all, 5 districts involving 11 schools, 118 teachers, and 2,683 students accepted the invitation. These districts, schools, teachers, and students represented a broad range of demographic and socioeconomic factors.

Of the 2,683 students in the study, 1,677 were classified as FRL and 1,044 as ELL. Figure 1 depicts the number of FRL students in the experimental and control classes. Figure 2 depicts the number of ELL students in the experimental and control classes.

Figure 1: FRL Students in Experimental/Control Conditions by Grade Level

Grade Level	Control	Experimental (BAV)
1	94	36
2	204	99
3	144	75
4	77	138
5	102	144
6	90	162
7	76	67
8	48	0
9	51	70
Total	886	791

Figure 2: ELL Students in Experimental/Control Conditions by Grade Level

Grade Level	Control	Experimental (BAV)
1	76	25
2	140	67
3	111	49
4	22	125
5	30	105
6	47	136
7	34	32
8	17	0
9	9	19
Total	486	558

The Intervention

In September of 2004, teachers participating in the experimental classes met in Denver, Colorado, for a two-day training on the BAV protocols. Each member received a draft copy of the BAV teacher's manual (Marzano & Pickering, 2005). Each district brought a contact person whose task it was to coordinate data collection for the project and communicate with ASCD. The two-day training was the only formal training provided.

The Dependent Measures

In all, four dependent variables were addressed:

- Ability to read and understand information about mathematics.
- Ability to read and understand information about science.
- Ability to read and understand information about general literacy.
- Aggregated ability to read and understand information across the three subject areas.

Each of the four dependent *variables* was assessed in two formats: multiple-choice and constructed-response. In effect, then, eight dependent *measures* were employed in this study:

- Mathematics assessed using multiple-choice items.
- Mathematics assessed using a constructed-response item.
- Science assessed using multiple-choice items.
- Science assessed using a constructed-response item.
- General literacy assessed using multiple-choice items.
- General literacy assessed using a constructed-response item.
- The combined scores for multiple-choice items regarding mathematics, science, and general literacy.
- The combined scores for the constructed-response items regarding mathematics, science, and general literacy.

For each dependent measure, four levels of assessments were constructed. Level 1 assessments were designed for students in grades K–2; level 2 assessments were designed for students in grades 3–5; level 3 assessments were designed for students in grades 6–8; level 4 assessments were designed for students in grades 9–12. Two versions of each assessment were developed: one to be used as a pre-test and one to be used as a post-test for both experimental and control subjects.

The estimated reliabilities for the multiple-choice and constructed-response dependent measures were within an "acceptable range" for the social sciences as reported by Osborne (2003) and Lou and colleagues (1996).

Data Analysis

For each of the eight dependent measures, the data were analyzed using the general linear model as employed by the SPSS, version 12.0. The two independent variables (experimental/control condition and grade level) were analyzed as fixed effects. In each case, the pre-test was used as the covariate. In effect, a fixed-effects analysis of covariance (ANCOVA) was executed for each of the eight dependent measures.

The advantage of using an analysis of covariance with the pre-test as the covariate is that it statistically adjusts for students' initial status on the measure in question. (For a discussion of the use of ANCOVA, see Technical Note 1.) Metaphorically, one might say that ANCOVA starts all students at the same point relative to the dependent measure. In the absence of random assignment to groups or classes (which this study did not employ), use of the ANCOVA design with the pre-test acting as the covariate is a commonly used technique to address the issue of students' prior achievement relative to the dependent variable.

As mentioned previously, two evaluation questions were addressed in this study:

1. What is the impact of the BAV program on students' ability to read and comprehend subject-area content?
2. Does the impact of BAV differ from grade level to grade level?

Results are discussed for the FRL population first.

Findings for FRL Students

The first evaluation question addressed the general impact of BAV aggregated across grade levels for the FRL students. Figure 3 provides a brief summary of the findings for each of the dependent measures.

Figure 3: Summary of Fixed-Effects ANCOVAs for Dependent Measures for FRL Students

Dependent Measure	Experimental-Group Mean	Control-Group Mean	Significance	Differences in Percentage Passing a 50/50 Test
Total for Written Responses	5.64	5.03	.001	11.4%
Total for Multiple-Choice Responses	11.57	10.81	.001	10.0%
General Literacy Written	1.77	1.51	.001	11.8%
General Literacy Multiple- Choice	3.91	3.48	.001	12.3%
Math Written	2.00	1.84	.010	7.1%
Math Multiple-Choice	4.19	4.00	.050	4.5%
Science Written	1.93	1.71	.001	10.0%
Science Multiple-Choice	3.57	3.31	.001	7.7%

As depicted in Figure 3, the mean score for the experimental group (i.e., teachers who used the BAV program) was greater than the mean score for the control group (i.e., teachers who did not use the BAV program) for all eight dependent measures. The "Significance" column in Figure 3 is of particular importance. It indicates that six of eight of the differences between experimental and control means were significant at the .001 level. One difference was significant at the .01 level and the other at the .05 level. The standards typically employed in educational evaluation studies for statistical significance are the .05, .01, and .001 levels. The .05 level of significance is generally interpreted as an indication that the observed difference in the means could have occurred fewer than five times in 100 studies if there is no “true difference” between experimental-group and control-group means. The .001 level of significance is generally interpreted as an indication that the observed differences could have occurred fewer than one time in 1,000 if there is no true difference between experimental and control means. (For a detailed discussion of the meaning of statistical significance, see Harlow, Mulaik, & Steiger, 1997.) Taking these conventions at face value, Figure 3 indicates that the differences between experimental-group and control-group means typically would be considered “highly” significant.

Statistical significance indicates that observed differences between the experimental-group means and the control-group means most probably aren’t simply a function of chance. However, it does not address how strong the relationship is between the use of the BAV program and student scores on the eight dependent measures. To address this issue, consider the last column of Figure 3, “Differences in Percentage Passing a 50/50 Test.” Technical Note 2 explains how the values in this column were computed. Briefly, though, to interpret this column, consider the dependent measure of the multiple-choice responses (row two of Figure 3). This represents the total score on all multiple-choice items for the mathematics, science, and general literacy passages. The value for the last column in that row is 10 percent. To interpret this value, assume that students in both the experimental and control classes in this study took the same multiple-choice tests after reading the same passages. Also assume that when the responses of all students were examined, the overall passing rate was 50 percent; that is, half of the students in the combined sample passed the assessment and half failed it. However, if one were to separate out the experimental group (the BAV group) from the control group, important differences would be observed, as depicted in Figure 4.

Figure 4: Expected Passing Rate for Experimental and Control Groups on Multiple-Choice Items for All Passages

Group	Expected to Pass	Expected to Fail
BAV	55%	45%
Control	45%	55%

As illustrated in Figure 4, the BAV group would have an expected passing rate of 55 percent and the control group would have an expected passing rate of only 45 percent--a 10 percent difference, as depicted in the last column of Figure 3. For comparative purposes, Figure 5 reports the expected passing rates between the BAV and control groups as well as the net difference in passing rates for all eight dependent measures.

Figure 5: Expected Passing Rates for Eight Dependent Measures for FRL Students

Dependent Measure	Group	Expected to Pass	Net Difference in Passing Rate
Total for Written Responses	BAV	55.7%	11.4%
	Control	44.3%	
Total for Multiple-Choice Responses	BAV	55.0%	10.0%
	Control	45.0%	
General Literacy Written	BAV	55.9%	11.8%
	Control	44.1%	
General Literacy Multiple-Choice	BAV	56.15%	12.3%
	Control	43.85%	
Math Written	BAV	53.55%	7.1%
	Control	46.45%	
Math Multiple-Choice	BAV	52.25%	4.5%
	Control	47.75%	
Science Written	BAV	55.0%	10.0%
	Control	45.0%	
Science Multiple-Choice	BAV	53.85%	7.7%
	Control	46.15%	

As illustrated in Figure 5, the difference in expected passing rates between students in the BAV and control groups is substantial for most of the eight dependent measures.

To put these findings into perspective, it is useful to consider interventions that are considered part of the Comprehensive School Reform Program (CSRP), a federally funded initiative that provides grants to schools to adopt proven comprehensive reform models (see Borman, Hewes, Overman, & Brown, 2003). The U.S. Department of Education (as cited in Borman, Hewes, Overman, & Brown, 2003) defines a comprehensive school reform (CSR) model in terms of a number of criteria, many of which center on the research supporting the program's effect on student achievement. According to the meta-analysis by Borman and his colleagues, the average effect of 29 CSR models in terms of the metric presented in the last column of Figure 3 is 7.5 percent (see Technical Note 3 for a discussion). Comparing this general finding with the values in the last column of Figure 3 indicates that BAV had a greater effect than the average for six out of eight dependent measures. This said, it is important to realize that the CSR studies reviewed by Borman and colleagues typically involved standardized achievement tests, whereas this evaluation study used assessments specifically designed for the study. When "curriculum-specific" assessments (such as those employed in this study) are used, the estimated effect sizes are typically much larger than those estimated using standardized achievement tests. It must also be noted that the meta-analysis by Borman and colleagues identified a number of studies within their set of 1,111 that exhibited much larger effect sizes than the average effect size of 7.5 percent.

Another interesting comparison between the finding in this evaluation study and those found in studies of comprehensive school reform models involves the issue of cost. Because teachers in this study's experimental group were involved in a two-day training only, this might be considered a relatively short intervention that would not involve great cost to a school or district. In contrast, among the 29 CSR models reviewed by Borman and his colleagues, first-year (start-up) personnel costs (e.g., for training and new hires) *per school* ranged from a low of $0 to a high of $208,361, with a median cost of $13,023. First-year nonpersonnel costs (e.g., for materials and equipment) ranged from $14,585 to $780,000 per school, with a median cost of $72,926.

Effects at Different Grade Levels

The second evaluation question addressed the differential impact of BAV at various grade levels. Within the fixed-effects ANCOVA design used in this study, this issue is addressed in the interaction effect for the treatment condition and grade levels. (See Technical Note 4 for a discussion.) Briefly, within the context of this study, an interaction effect indicates whether the differences between BAV-group and control-group means are different across the grade levels. For all eight dependent measures, the interaction effect was significant at the .05 level or greater. This implies that the pattern of differences between BAV-group and control-group means was not the same from grade level to grade level. Figure 6 depicts some of the findings regarding these interaction effects.

Figure 6: Group with Greater Mean at Various Grade Levels for Dependent Measures for FRL Students

Grade Level	9	7	6	5	4	3	2	1
Total for Written Response	**BAV**	**BAV**	**BAV**	C	**BAV**	**BAV**	**BAV**	**BAV**
Total for Multiple-Choice Response	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**
Reading Written	C	**BAV**	**BAV**	C	**BAV**	**BAV**	**BAV**	**BAV**
Reading Multiple-Choice	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**
Math Written	**BAV**	**BAV**	**BAV**	C	C	C	**BAV**	**BAV**
Math Multiple-Choice	C	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**
Science Written	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**
Science Multiple-Choice	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**

Note: For grades K and 8, data with which to construct a comparison were not available for the experi mental or control group.

For each of the eight grade levels for which experimental-group and control-group means could be computed, Figure 6 identifies which group (BAV or control) had the greater mean. In the 64 cases where data were available to compare the two groups' means, the BAV group had a greater mean in 57 instances or about 89 percent of the cases. One might interpret these findings as an indication that, with a few exceptions, BAV students exhibited greater means across all grade levels for all dependent measures. However, given the significant interaction of effects mentioned earlier, these differences were not uniform from grade level to grade level for a given dependent measure.

Findings for ELL Students

The first evaluation question addressed the general impact of BAV aggregated across grade levels for the ELL students. Figure 7 provides a brief summary of the findings for each of the dependent measures.

Figure 7: Summary of Fixed-Effects ANCOVAs for Dependent Measures for ELL Students

Dependent Measure	Experimental-Group Mean	Control-Group Mean	Significance	Differences in Percentage Passing a 50/50 Test
Total for Written Responses	5.93	4.58	.001	26.1%
Total for Multiple- Choice Responses	11.71	10.33	.001	18.5%
General Literacy Written	1.83	1.28	.001	24.7%
General Literacy Multiple-Choice	3.96	3.34	.001	18.2%
Math Written	2.06	1.44	.010	19.0%
Math Multiple-Choice	4.18	3.76	.001	11.4%
Science Written	2.03	1.71	.001	14.2%
Science Multiple-Choice	3.02	3.24	.001	11.4%

As depicted in Figure 7, the mean score for the experimental group (i.e., teachers who used the BAV program) was greater than the mean score for the control group (i.e., teachers who did not use the BAV program) for all eight dependent measures. The "Significance" column in Figure 7 indicates that each of the differences between experimental-group and control-group means was significant at the .001 level. Again, using standard conventions, these differences typically would be considered "highly" significant.

The last column in Figure 7 indicates the expected difference in passing rates between the BAV-group and control-group students. Figure 8 provides more detail about these differences.

Figure 8: Expected Passing Rates for Eight Dependent Measures for ELL Students

Dependent Measure	Group	Expected to Pass	Net Difference in Passing Rate
Total for Written Responses	BAV	63.05%	26.10%
	Control	36.95%	
Total for Multiple-Choice Responses	BAV	59.25%	18.5%
	Control	40.75%	
General Literacy Written	BAV	62.35%	24.7%
	Control	37.65%	
General Literacy Multiple-Choice	BAV	59.10%	18.2%
	Control	40.90%	
Math Written	BAV	59.50%	19.0%
	Control	40.50%	
Math Multiple-Choice	BAV	55.70%	11.4%
	Control	44.30%	
Science Written	BAV	57.10%	14.2%
	Control	42.90%	
Science Multiple-Choice	BAV	55.70%	11.4%
	Control	44.30%	

As illustrated in Figure 8, the difference in expected passing rates between students in the BAV and control groups is substantial for all eight dependent measures. To illustrate, consider row two of Figure 8, which depicts the differences in passing rates between BAV-group and control-group students in the total for the written responses. On a test where the passing rate is 50 percent for the total ELL population, 63.05 percent of the BAV class would be expected to pass, whereas only 36.95 percent in the control-group classes would be expected to pass. In general, the expected passing rates for BAV students were much greater in the ELL subsample than they were in the FRL subsample or in the overall population.

Effects at Different Grade Levels

The second evaluation question addressed the differential effect of BAV at various grade levels. Again, within the context of this study, an interaction effect indicates whether the difference between BAV-group and control-group means are different across the grade levels. For all eight dependent measures, the interaction effect was significant at the .05 level or greater. This implies that the pattern of differences between BAV-group and control-group means was not the same from grade level to grade level. Figure 9 depicts some of the findings regarding these interaction effects.

Figure 9: Group with Greater Mean at Various Grade Levels for Dependent Measures for ELL Students

Grade Level	9	7	6	5	4	3	2	1
Total for Written Response	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**
Total for Multiple-Choice Response	C	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**
Reading Written	C	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**
Reading Multiple-Choice	**BAV**	**BAV**	**BAV**	**BAV**	C	**BAV**	**BAV**	**BAV**
Math Written	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**
Math Multiple-Choice	**BAV**	C	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**
Science Written	**BAV**	**BAV**	**BAV**	**BAV**	C	**BAV**	**BAV**	**BAV**
Science Multiple-Choice	C	C	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**	**BAV**

Note: For grades K and 8, data with which to construct a comparison were not available for the experi mental or control group.

For each of the eight grade levels for which experimental-group and control-group means could be computed, Figure 9 identifies which group had the greater mean. In the 64 cases where data were available to compare the two groups' means, the BAV group had a greater mean in 59 instances or about 89 percent of the cases. Again, one might interpret these findings as an indication that, with a few exceptions, BAV students exhibited greater means across all grade levels for all dependent measures. However, given the significant interaction effects mentioned earlier, these differences were not uniform from grade level to grade level for a given dependent measure.

Conclusions

This evaluation study addressed two basic issues: (1) whether the BAV program exhibited a positive effect on students' abilities to read and comprehend subject-area content, and (2) whether such an effect was similar from grade level to grade level. Both issues were addressed for two subsamples of students, FRL students and ELL students. Relative to the first issue, the BAV program exhibited a statistically significant positive effect for all eight dependent measures for FRL and ELL students. Relative to the second issue, students in the BAV classes exhibited greater mean scores about 89 percent of the time for grades 1, 2, 3, 4, 5, 6, 7, and 9 for the FRL and ELL students. However, the differences between BAV-group and control-group means were not uniform from grade level to grade level within a given dependent measure. Finally, the positive effect of the BAV program appears most pronounced for ELL students, even though it exhibited highly significant positive effects with FRL students as well as the overall sample of students. This is depicted in Figure 10.

Figure 10: Greater Passing Rates for BAV (Versus Control-Group) Students in Overall Sample and FRL and ELL Subsamples

Dependent Measure	Overall Sample	FRL Subsample	ELL Subsample
Written Responses Across All Subject Areas	14.8%	11.4%	26.1%
Multiple-Choice Responses Across All Subject Areas	11.0%	10.0%	18.5%

In the overall sample, BAV students had a 14.8 percent greater passing rate than the control-group students for the written responses across all subject areas and an 11.0 percent greater passing rate for the multiple-choice responses across all subject areas. Among the FRL students, those in the BAV group had an 11.4 percent greater passing rate for the written responses and a 10.0 percent greater passing rate for the multiple-choice responses. Among the ELL students, those in the BAV group had a 26.1 percent greater passing rate for the written responses and an 18.5 percent greater passing rate for the multiple-choice responses. Each of the differences between BAV-group and control-group passing rates is significant at the .001 level, and each can be considered substantial in terms of the number of students who would be expected to pass (as opposed to fail) a test. However, the difference between the groups' passing rates for ELL students is dramatically larger for both written and multiple-choice responses.

Technical Notes

Technical Note 1: With an ANCOVA design, the covariate is used to predict students' performance on the post-test. The residual scores for each student are then used as the dependent measure. To illustrate, consider the multiple-choice scores for mathematics. Using ANCOVA, each student's post-test score was predicted using the student's pre-test score. The difference between the predicted post-test score and the observed post-test score, which is referred to as the residual score, was then computed for each student. This score represents the part of each student's post-test score that can not be predicted from the pre-test score. Theoretically, use of residual scores based on pre-test predictions is an attempt to equate all students on the dependent measure prior to execution of the intervention—in this case the BAV program. However, Berk (2004) warns that in actual practice this interpretation is not always appropriate.

Technical Note 2: The Binomial Effect Size Display (BESD) was used to compute the values in the last column of Figure 3. According to Rosenthal and Rubin (1982), the BESD is a translation of the Pearson product moment correlation (*r*) into a situation in which the independent and dependent variables are considered dichotomous. That is, the independent variable is thought of as being dichotomized into two distinct groups—in this case, the experimental or BAV group and the control group. Additionally, the dependent variable (in this case, performance on the eight dependent measures, all of which are continuous variables) is thought of as dichotomized into two distinct groups--in this case, those who *pass* and those who *fail*. Ideally, the passing students and the failing students constitute normal distributions. With both independent and dependent variables dichotomized, it is possible to compute the proportion or percentage of subjects from the two groups represented by the independent variable who would be expected to pass and fail the test represented by the dependent measure. Generally a passing rate of .50 is assumed for the dependent variable. Given these assumptions, the BESD is easily computed from *r* by simply dividing *r* by 2 and then adding to and subtracting from .50. For example, if $r = .50$, then .50 divided by 2 is .25. The proportion of subjects in the experimental group who would be expected to pass the test represented by the dependent variable would be the expected passing rate (i.e., .50) plus one-half of *r*, or .75 in this case. The proportion of subjects who would be expected to fail the test represented by the dependent variable would be the expected passing rate minus one-half of *r*, or .25. In this study, partial *eta*, as opposed to *eta*, was used as the estimate of *r* for each dependent measure. *Eta* is appropriate for balanced designs in which there is no confounding of effects. In such cases, *eta* is defined as the square root of the sum of squares for the effect—experimental versus control condition—divided by the total corrected sum of squares (i.e., [SS effect/SS corrected total]^.5). In contrast, the formula for partial *eta* is the square root of the sum of squares for the effect divided by the sum of squares for the effect and the sum of squares for error (i.e., [SS effect/(SS effect + SS error)]^.5).

Technical Note 3: The Borman, et al. study (2003) examined the results of 1,111 experimental versus control comparisons across 29 CSR models. The average effect size was found to be .15 (Cohen's *d*), which translates roughly into a correlation of .075. Using the BESD as described in Technical Note 2, one can estimate that the expected passing rate of students in schools who use the CSR models would be 53.75 percent, as compared to an expected passing rate of 46.25 percent in schools where CSR models were not used.

Technical Note 4: In this study, the interaction effect addressed the pattern of differences between BAV-group and control-group means at different grade levels. If an interaction is deemed not to be significant, a common interpretation is that the pattern of differences is similar from grade level to grade level. The interaction effect in this study was significant at the .05 level or higher for all dependent measures, indicating that the pattern of differences between BAV-group and control-group means was not the same from grade to grade. However, this does not mean that control-group means were greater than experimental-group means. As illustrated in Figure 6, the BAV group's mean was greater than the control group's mean in about 89 percent of the cases. However, the significant interaction effect does indicate that the difference between the two groups' means might have been quite substantial at one grade level but relatively small at another grade level.

References

Berk, R. A. (2004). *Regression analysis: A constructive critique*. Thousand Oaks, CA: Sage Publications.

Borman, G. D., Hewes, G. M., Overman, L. T., & Brown, S. (2003). Comprehensive school reform achievement: A meta-analysis. *Review of Educational Research, 73*(2), 125–230.

Harlow, L. L., Mulaik, A. A., & Steiger, J. H. (Eds.). (1997). *What if there were no significance tests?* Mahwah, NJ: Erlbaum.

Lou, Y., Abrami, P. C., Spence, J. C., Poulsen, C., Chambers, B., & d'Appollonia, S. (1996). Within-class grouping: A meta-analysis. *Review of Educational Research, 66*(4), 423–458.

Marzano, R. J. (2004). *Building background knowledge for academic achievement*. Alexandria, VA: Association for Supervision and Curriculum Development.

Marzano, R. J. (2006). *Preliminary report on the 2004–05 evaluation study of the ASCD program for building academic vocabulary*. Alexandria, VA: Association for Supervision and Curriculum Development.

Marzano, R. J., & Pickering, D. J. (2005). *Building academic vocabulary: Teacher's manual*. Alexandria, VA: Association for Supervision and Curriculum Development.

Osborne, J. W. (2003). Effect sizes and disattenuation of correlation and regression coefficients: Lessons from educational psychology. *Practical Assessment, Research and Evaluation*, *8*(11). [Online]. Retrieved March 27, 2006, from http://PAREonline.net/getvn.asp?v=8&n=11

Rosenthal, R., & Rubin, D. B. (1982). A simple general purpose display of magnitude of experimental effects. *Journal of Educational Psychology, 74*(2), 166–169.

About ASCD

Founded in 1943, the Association for Supervision and Curriculum Development (ASCD) is a nonprofit, nonpartisan organization that represents 175,000 educators from 135 countries and more than 60 affiliates. Our members are professional educators from all levels and subject areas—superintendents, supervisors, principals, teachers, professors of education, and school board members. Because our membership is so large, we represent as many members of individual professions as do the profession-based cohort groups, with the exception of teachers.

We are education's largest leadership organization:

- About one in three principals and assistant principals in the United States is a member.
- Nearly half of all U.S. district-level administrators belong to ASCD.
- Many of the nation's top teachers are members.

As our name reflects, ASCD was initially envisioned to represent "curriculum" and "supervision" issues. Over the years, our focus has changed. We now address *all aspects of effective learning, teaching, and leadership*—e.g., professional development, educational leadership, and capacity building. We do so by advocating for policy and practice that is in the best interest of children. Since its inception, ASCD has built on a core set of values and beliefs in support of the whole child. We believe that student success is dependent not only on academic knowledge but also on physical and emotional health, engagement, and motivation.

ASCD as an Advocate

ASCD offers broad, multiple perspectives—across all education professions—in advocating sound education policies and best practices. We provide "in the field" perspectives on policies and practices that positively influence learning, teaching, and leadership. Because we represent all educators, we are able to focus solely on professional practice within the context of "Is it good for the children?" In short, ASCD reflects the *conscience* and *content* of education.

ASCD as an Expert Source and Content Provider

ASCD is known throughout the profession for identifying educational trends and translating research into practice. ASCD is an award-winning publisher of books, periodicals, and a variety of multimedia products. ASCD's flagship, award-winning publication, *Educational Leadership,* is recognized as a balanced and reliable source of information on trends, research, and professional practice in education.

ASCD has been advocating for educational excellence and equity since the mid-1940s—shortly after the organization's inception. Through our involvement in key education issues worldwide, ASCD provides resources and expert opinion ranging from broad issues (such as school reform, professional development, and organizational leadership) to specific issues (such as the learning gap, high-stakes testing, and health and learning).

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