Service-Learning and Standards-Based Instruction in Middle Schools

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ABSTRACT National curriculum standards call for meaningful teaching and learning that are developmentally appropriate and that help all students reach proficiency not only in basic skills but also in higher order thinking skills and real-world application of skills. Service-learning (SL) is among recommendations from educators for including real-world experiences into students' education. The paucity of research and mixed findings on academic outcomes from K–12 SL led the author to examine opportunity-to-learn conditions and practices of 2,164 teachers in 271 middle schools involved in school improvement. The author analyzed teacher reports to determine (a) attitudes and beliefs toward SL; (b) extent to which teachers implemented SL; and (c) relationships between teachers' attitudes and beliefs, SL, and standards-based instructional practices. Although teachers believed that SL was essential for effective education, most teachers used SL infrequently. One-way multivariate analysis of variance revealed that teachers who implemented SL regularly used standards-based instructional practices more often than did their colleagues. Implications for preservice and inservice teachers are discussed.

Key words: middle schools, opportunity-to-learn, service-learning, standards-based instruction

Systemic school reform encompasses the alignment of federal, state, and local policies; curricular standards; and the opportunity for all students to learn (Smith & O'Day, 1991). Nationally developed and locally adapted curriculum and performance standards across content areas extend instruction and assessment of foundational skills to emphasize critical thinking and inquiry, often in the context of real-world problem solving (American Association for the Advancement of Science, 1993; National Council of Teachers of English [NCTE]/International Reading Association [IRA], 1996; National Council of Teachers of Mathematics [NCTM], 1989, 1995, 2000; National Research Council, 1995). The national voluntary opportunity-to-learn (OTL) standards determine the conditions and instructional strategies that states, districts, and schools must meet to ensure all students an equal opportunity to attain proficiency on performance-based assessments (Pub. L. No. 103-227, §3 [7]).

Although those instructional approaches are part of modern recommendations for education reform, they existed as central elements of reform since at least the beginning of this century (Dewey, 1902, 1938; Lipka et al., 1998). Resnick (1987) noted that,

> Although it is not new to include thinking, problem-solving, and reasoning in someone's curriculum, it is new to include it in everyone's curriculum. . . . It is a new challenge to develop educational programs that assume that all individuals, not just an elite, can become competent thinkers. (p. 7)

As educators have sought instructional strategies for fostering student proficiency in higher order thinking and subject-matter integration, schools have developed a broad range of real-world experiences. However, the degree to which efforts to involve students in the community have been fully integrated or coordinated with classroom instruction has been highly variable and has led to two different approaches. The first approach, community service, "doing good for others" should foster a sense of belonging, caring, and responsibility for one's community (Wade, 1997). School-based community service is often an extracurricular or add-on activity; it is not connected with academic learning or formal instruction. By contrast, "service–learning," the second major approach for involving students in the community, uses community-based learning experiences as an integral element of the teaching and learning process (Kendall, 1990; Kunin, 1997; Wade).

Service-learning includes community service and goes further as an instructional strategy. The Alliance for Service-Learning in Education Reform (ASLER, 1993) definition of service-learning illustrates the complexity of this approach as a method of education, as well as the highly specific "operationalization" of the concept, at least as its proponents meant it to be applied. ASLER describes service-learning in the following way:

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"A method by which young people learn and develop through active participation in thoughtfully organized service experiences"

- that meet actual community needs;
- that are coordinated in collaboration with the school and community;
- that are integrated into each young person's academic curriculum;
- that provide structured time for a young person to think, talk, and write about what he or she did and saw during the actual service activity;
- that provide young persons with opportunities to use newly acquired academic skills and knowledge in real-life situations in their own communities;
- that enhance lessons taught in school by extending student learning beyond the classroom;
- that help to foster the development of a sense of caring for others. (p. 2)

The National and Community Service Trust Act of 1993 (Pub. L. No. 103-82), the Council of Chief State School Officers (1993), and others offered similar definitions.

Despite the arguments in favor of service-learning, more than 30 years after Ramsey and Sigmon coined the phrase in 1967 (Sigmon, 1990; Southern Regional Education Board, 1973), researchers conducted only a limited number of controlled studies on its impact (Billig, 2000). One set of those studies focused on the social and psychological outcomes for postsecondary students (e.g., Cohen & Kinsey, 1994; Giles & Eyler, 1994) and for middle school and high school students (e.g., Conrad & Hedin, 1981; Kinsley, 1992). Another limited set of studies reported the effects of service-learning on academic achievement, intellectual development, and school behavior for college students (e.g., Eyler & Giles, 1999; Markus, Howard, & King, 1993; Shumer, 1994) and for middle school and high school students (e.g., Melchior, 1998; Roberts & Moon, 1997; Scales, Blyth, Berkas, & Kielsmeier, 2000; Schollenberger, 1985). Of those studies, a significant proportion focused on service-learning in higher education. (I did not discuss those studies because the focus of this study is on K–12 school-based service learning, especially students' academic and intellectual development.) A review of research on higher education service-learning programs is available from Kraft and Krug (1994).

Research that supports school-based service-learning as an instructional method for enhancing student outcomes in adjustment and achievement has not kept pace with growing participation and increased financial support (Billig, 2000; Shumer & Cook, 1999; Skinner & Chapman, 1999; Wade 1997; Waterman, 1997). The extant studies on service-learning in K–12 schools have yielded inconsistent results regarding student achievement (Conrad & Hedin, 1981; Melchior, 1998; Roberts & Moon, 1997; Scales et al., 2000; Schollenberger, 1985). The reason may be that few studies have adequate comparison groups, random assignments, or tests of actual integration of service-learning into the ongoing curriculum. However, one noteworthy finding in virtually every study on service learning is participant satisfaction (Conrad, 1991). A dearth of systematic research exists on the processes and effects of service-learning on other areas of student functioning (Schine, 1997; Wade) and the degree to which service-learning, as implemented, is aligned and complementary with other elements of successful school reform and improvement initiatives (Bhaerman, Cordell, & Gomez, 1998; Waterman).

An examination of the OTL conditions and practices in schools and classrooms engaged in systemic school improvement may provide insight into students' opportunities to learn through service-learning. Porter (1993) and others argued that OTL standards have the potential to support school improvement through the development of process indicators as a guide for increasing student achievement. McDonnell (1995) advocated the use of teacher surveys to collect data on school-level conditions and practices. Surveys of teachers, students, administrators, and parents regarding the school structure and organization, resources, teacher qualifications, curricular content, instructional practices, and student course-taking patterns have been administered by the National Center for Education Statistics (NCES) since the early 1980s (NCES, 1996) and by the National Assessment of Educational Progress (NAEP). The NAEP surveys measure students' opportunities to learn the content offered as well as determine how and by whom the content was presented (Goertz, 1994).

Although helpful at a national level for understanding how a curriculum is taught and by whom, it is not always possible for the data from national surveys such as the NCES Schools and Staffing Survey and the NAEP Eighth Grade Mathematics Teacher Questionnaire to be disaggregated to the local and school levels (McDonnell, 1995). Teacher survey data that are comparable across local jurisdictions and disaggregated to the school level are needed to provide important and useful information on how content is presented and by whom. One such survey tool is the High Performance Learning Community (HiPlaces) Assessment (Brand, Felner, Shim, Seitsinger, & Dumas, 2003; Felner et al., 2001; Felner, Shim, Brand, Favazza, & Seitsinger, 2000).

I drew on a relatively unique data set in terms of its size and scope. Over the last 2 decades, the Project on High Performance Learning Communities (Project HiPlaces) has amassed data from more than 2,000 schools that serve students in Grades pre-K to 12 across 25 states. Project HiPlaces is a comprehensive whole-school research model that meets the needs of policymakers and educators for a more complete and practical knowledge base about what works in school reform (Brand et al., 2003; Felner et al., 2000, 2001). Schools have participated in data collection as part of broader self-study, accountability, and school improvement planning efforts that were initiated or supported by district, state, and foundation sources. Because of the active commitment of schools to

use the data, response rates have been high and representative of the underlying populations across samples. Staff participation levels, particularly among classroom teachers of core academic subjects, have averaged between 80%–90% or more per school across years. Student response rates have averaged approximately 90% overall; 94% of those students attended class on the day of survey administration and provided usable survey data. Because I focused on middle schools, I included a sample of teachers in Grades 6 through 8 who taught in middle-level schools.

I report on a study that was conducted as part of the Project HiPlaces. I sought to identify by whom and how service-learning was implemented in middle-level schools across the country.[1] I examined teacher reports of their (a) attitudes and beliefs toward educational practices and (b) classroom instructional practices, including service-learning. The specific questions that I investigated were (a) what educational attitudes and beliefs were associated with the practices of service-learning, (b) to what extent was service-learning implemented in these middle-level schools, and (c) what were the relationships, if any, between teachers' educational attitudes and beliefs, service-learning, and standards-based instructional practices

Method

Sample and Procedures

I drew on data obtained from a sample of 4,434 teachers in 324 middle schools participating in Project HiPlaces during 1 academic year. I examined data from the participating teachers to ascertain whether they completed the survey items that assessed the 48 variables of concern in this study. I retained only those teachers who completed those items for the present study, resulting in a final sample for the current work of 2,164 core classroom teachers[2] from 271 middle schools. Those middle schools were involved in five school improvement initiatives[1] that occurred during the academic year that served as the basis of this study. The schools in the initiatives were participating in the larger investigation of the nature and impact of education environments and change efforts (Project HiPlaces) on student achievement, performance, and adjustment (Brand et al., 2003; Felner et al., 2000, 2001).

I compared the educational background and experience of the teachers in the sample with those of the overall project population and a national population of public school teachers. As shown in Table 1, approximately one seventh of the teachers in the sample had taught 3 years or less, and one third had been teaching more than 20 years; 80% majored in education; virtually all held a bachelor's degree; nearly half held a master's degree; and 95% of the teachers were fully certified. Those percentages were similar for teachers from which the sample was drawn and the national population of public school teachers. Therefore, regarding the educational background and experience variables that I considered, the teachers in the sample appeared to represent teachers in middle schools who were involved in school improvement efforts and teachers in public schools nationally.

Participation in the HiPlaces Assessment staff survey, described in the Measures section, was voluntary and based on informed consent. Each teacher completed the measures individually and anonymously during the spring semester.

When considering the sociodemographic characteristics of the schools from which the sample was drawn, approximately 92% of the 143,877 students (n = 132,822) who attended the schools were enrolled in Grade 6 (24%), Grade 7 (36%), and Grade 8 (33%). The remainder of the student population were in Grades 5 or 9. The Grades 6–8 student population split evenly between boys (51%) and girls (49%). The racial and ethnic composition of the student population included 52% White students, 15% African American students, 21% Hispanic students, 4% Asian American students, 2% Native American students, and 6% multiracial students. The overall sample contains an oversampling of schools with high levels of economically

TABLE 1. Percentage of Teacher Qualifications, by Sample

Variable	Sample[a]	HiPlaces population[b]	National population[c]
Years of teaching experience			
3 or fewer	14	15	12
4–10 (4–9)	31	29	21
11–20 (10–19)	22	25	32
More than 20 (20 or more)	33	30	35
College major			
Education	81	80	87
Degree held			
Bachelor's	99.8	99.8	99.3
Master's	49	48	47
Sixth-year	6	6	5
Doctorate	0.7	0.8	0.7
Certification			
Full	95	95	91
Provisional	4	5	4
None	0.5	0.5	4

Note. National population of public school teachers was taken from *America's Teachers: Profile of a Profession, 1993–94* (National Center for Education Statistics, 1997). Categories used in *America's Teachers: Profile of a Profession, 1993–94* are in parentheses.
[a]n = 2,164. [b]n = 4,435. [c]n = 2.7 million.

and socially disadvantaged students. I estimated students' level of poverty by their eligibility for federally subsidized free or reduced-price lunches; 51% of the students were eligible. Thirty-two percent of the students attended urban schools, 36% attended suburban schools, and 32% attended rural schools. The percentages of student enrollment in schools by locality (e.g., urban, suburban, rural) were similar to student enrollment in public schools nationally (NCES, 1998).

Measures

Central to Project HiPlaces is a set of survey instruments known collectively as the HiPlaces Assessment, which includes survey data from staff, administrators, students, and parents on critical elements of the teaching and learning environment, such as school climate, student behavior, and performance (Brand et al., 2003; Felner et al., 2001). The HiPlaces Assessment collects the kinds of information that Porter (1995), McDonnell (1995), and others have called for regarding quantity and quality of instruction provided by schools (Felner et al., 2000). I examined data collected from the HiPlaces Assessment staff survey regarding teachers' classroom instructional practices and educational attitudes and beliefs (Shim, Felner, Brand, Favazza, & Gu, 2000; Shim, Felner, Shim, & Brand, 2001; Shim, Felner, Shim, & Noonan, 2001).

Classroom instructional practice scale. I assessed teachers' classroom instructional practices by using the Classroom Instructional Practice Scale (CIPS; Shim et al., 2000; Shim, Felner, Shim, & Brand, 2001; Shim, Felner, Shim, & Noonan, 2001) and the Standards-Based Instruction Scale (Shim, Felner, Favazza, Brand, & Seitsinger, 1999). The CIPS consists of 16 subscales: (a) Small-Group Active Instruction, (b) Community-Based Learning Opportunities, (c) Critical Thinking Enhancement Activities, (d) Citizenship and Social Competence Instruction, (e) Integration and Interdisciplinary Practices, (f) Integration and Coverage of Health Topics/Activities, (g) Mastery-Based Assessment and Student Recognition, (h) Instructional Practices for Heterogeneous/Multi-level Groups, (i) Basic Skills, (j) Mathematical Reasoning and Skill Enhancement Across the Curriculum, (k) Practices for Reading Skill Enhancement, (l) Practices for Writing Skills, (m) Availability and Integration of Literacy Resources, (n) Traditional Practices, (o) Authentic Instruction, and (p) NCTM-Based Practices. The first 8 subscales were statistically derived and tested with exploratory and confirmatory factor analyses (Shim et al., 2000, 2001). The other 8 subscales are conceptually derived reconfigurations of items in Scales 1–8 and new items undergoing testing. Internal reliability estimates ranged from .57–.89 for all subscales, with the exception of the Basic Skills subscale (α = .31). The CIPS, scored for 82 items, has high internal consistency with $\alpha > .95$ (Shim et al., 2000; Shim, Felner, Shim, & Brand, 2001; Shim, Felner, Shim, & Noonan, 2001).

Over the last decade, ongoing work has focused on the creation of a set of scales and subscales derived from existing and newly developed items of the CIPS that measure standards-based practices (SBP). Initially, researchers identified existing items on the CIPS that corresponded to SBP, which appeared in content standards developed by professional organizations (e.g., NCTE/IRA, 1996; NCTM, 1989, 2000). In addition, teachers in a northeastern state identified gaps in the practices covered on the CIPS. Over the last 4 years, researchers have statistically evaluated items and scales for reliability and construct validity (Shim et al., 1999). Currently, the SBP scale consists of 32 items. Confirmatory factor analyses yielded four subscales: (a) Cross-Content Area Standards-Based Practices, (b) Standards-Based Practices for Literacy Instruction, (c) Standards-Based Practices for Applied Literacy: Analysis and Interpretation, and (d) Standards-Based Practices for Numeracy. The SBP scale has high internal consistency, α = .93; the subscales have moderate to high internal consistency with alpha coefficients in the .67–.87 range.

For each item on the classroom instructional practices scales, teachers reported the frequency with which they used each practice in their primary content classes by using a 7-point scale with a range of 1 (*never*), 2 (*several times a year*), 3 (*monthly*), 4 (*several times a month*), 5 (*weekly*), 6 (*several times a week*), and 7 (*daily*).

Service-learning is a synthesis of community service and academic learning. In this study, I used the Community-Based Learning Opportunities scale to assess service-learning. The scale consists of eight items that measure the construct of teaching students to be active citizens through community service. It has maintained high internal consistency over the years with alpha coefficients in the .83–.86 range. The items from the Community-Based Learning Opportunities scale were independently mapped to the ASLER Standards (1993) definition of service-learning with interrater reliability estimates in the .82–.92 range.

Attitudes and beliefs. I used the Attitudes Toward Educational Practices Scale (ATEPS), which was derived from the CIPS, to assess teachers' attitudes and beliefs toward traditional and reform-recommended educational practices. The ATEPS consists of 55 items and yields 13 subscales: (a) Authentic/Mastery Assessment and Instruction; (b) Citizenship, Social Competence, and Critical Thinking; (c) Community-Based Learning; (d) Inclusion; (e) Health Instruction; (f) Integration and Interdisciplinary Practices; (g) Mathematics Skill Development and Integration; (h) Reading Skill Development and Integration; (i) Small-Group Instruction; (j) Traditional Practices; (k) Parent Involvement; (l) Need for Guidance and Social Services; and (m) Standards-Based Instruction. The Standards-Based Instruction attitudes scale was conceptually derived from reconfiguration of 15 items from the ATEPS that corresponded to standards-based practices. The ATEPS have internal consistency with alpha coefficients in the .50–.91 range (National Center on Public Education and Social Policy, 1998).

The ATEPS, scored for 49 items, has high internal consistency ($\alpha > .94$). Teachers report on a Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) their level of agreement toward each practice as essential for effective education in the grade level(s) they teach.

Results

The results are presented in three sections. First, I present the analyses of teachers' attitudes and beliefs toward educational practices. In the second section, I present the findings regarding the extent to which they implemented service-learning. In the third section, I compare the use of classroom practices associated with service-learning with standards-based practices, along with teachers' attitudes toward these practices.

Attitudes and Beliefs

To compare the degree to which teachers embraced service-learning and other reform-recommended educational practices, I calculated means and standard deviations for each subscale of the ATEPS (see Table 2). Core classroom teachers, on average, agreed that the practices measured by 11 of the 13 Attitudes Toward Educational Practices subscales, including Community-Based Learning Opportunities, the scale used to measure service-learning, were essential to effective education in the grade levels that they taught. Teachers were not as supportive of the practices measured by the Traditional Practices and Inclusion subscales.

To further examine the relationships, if any, among teachers' attitudes toward the educational practices, I computed correlation coefficients (see Table 3). The top half of the matrix reports correlation coefficients for all the teachers (N = 2,164) in the study. The correlations between attitudes toward traditional practices and attitudes toward the other educational practices were slight (*r*s ranging from –.03 to .12; mean r = .08), whereas the correlations between attitudes toward the other 12 educational practices subscales were generally moderate to high (mean r = .53), as were the correlations between these attitudes and attitudes toward the standards-based instruction subscale (*r*s ranging from .33 to .90; mean r = .67). All but two correlation coefficients were significant at the .01 level.

To determine whether similar patterns emerged for teachers with a higher level of implementation of service-learning, I examined correlation coefficients for the attitudes toward educational practices and standards-based instruction for teachers (n = 268) who reported using service-learning strategies at least monthly. The way that I selected those teachers is described in the next section. Nearly two thirds of the correlation coefficients were slightly larger for that subsample, as displayed in the bottom half of the correlation matrix in Table 3.

TABLE 2. Means and Standard Deviations for Attitudes Toward Educational Practices Scales

Subscale	*M*	*SD*
Reading Skill Development and Integration	4.47	.55
Small-Group Instruction	4.31	.55
Citizenship, Social Competence, and Critical Thinking	4.28	.53
Standards-Based Instruction	4.20	.48
Integration and Interdisciplinary Practices	4.12	.56
Mathematics Skill Development and Integration	4.08	.76
Health Instruction	4.06	.61
Need for Guidance and Social Services	4.05	.70
Parent Involvement	4.02	.66
Authentic/Mastery Assessment and Instruction	3.96	.57
Community-Based Learning	3.91	.77
Traditional Practices	3.51	.61
Inclusion	3.47	.91

Note. N = 2,164. Response selections ranged from 1 (*strongly disagree*) to 5 (*strongly agree*).

Service-Learning and Other Classroom Instructional Practices

To better understand how often service-learning occurred in core teachers' classrooms, absolutely and comparatively, I computed descriptive statistics for all the classroom instructional practices scales. The means, standard deviations, and frequencies of the 20 instructional practices scales are presented in Table 4. Core classroom teachers reported that classroom instructional practices measured by 15 of the scales occurred an average of several times a month. Instructional practices measured by 3 scales occurred an average of monthly. In addition, the teachers used service-learning strategies an average of several times a year. That practice had the lowest frequency of all the classroom instructional practices measured.

Closer examination of the distribution of the Community-Based Learning Opportunities scale revealed that 268 teachers reported using service-learning strategies at least monthly. Of those teachers, one third reported implementing the practices from several times a month to weekly.

I next examined associations among frequency and use of classroom instructional practices. Several interesting patterns emerged for the full sample of core classroom teachers (N = 2,164). As shown in Table 5, the correlations between the subscales of the CIPS were moderate to high (mean r = .55), excluding the Traditional Practices and Basic Skills scales. Positive research-based practices correlated only weakly with the Traditional Practices and Basic Skills scales (*r*s ranging from .09 to .37; mean r = .15). The correlations between the standards-based practices scales were moderate in magnitude (*r*s ranging from .27 to .66; mean r = .50). In addition, service-learning practices were associated more strongly with the Critical Thinking, Authentic Instruction, Cross-

TABLE 3. Intercorrelations Between Subscales of Attitudes Toward Educational Practices Scale

Subscale	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Authentic/Mastery Assessment and Instruction		.69	.51	.35	.55	.63	.54	.53	.59	.11	.51	.49	.87	.83
2. Citizenship, Social Competence and Critical Thinking	.69		.60	.30	.74	.59	.51	.72	.59	.09	.57	.67	.82	.89
3. Community-Based Learning	.55	.65		.25	.58	.45	.37	.42	.44	.07	.72	.48	.55	.71
4. Inclusion	.41	.30	.28		.26	.42	.19	.19	.25	–.03	.24	.26	.33	.45
5. Health Instruction	.54	.75	.57	.20		.48	.43	.53	.51	.12	.52	.87	.62	.80
6. Integration and Interdisciplinary Practices	.67	.59	.46	.47	.47		.46	.49	.62	.01	.41	.43	.68	.76
7. Mathematics Skill Development and Integration	.59	.49	.37	.25	.48	.48		.43	.42	.11	.36	.38	.71	.61
8. Reading Skill Development and Integration	.54	.78	.48	.20	.51	.50	.48		.51	.11	.47	.46	.80	.72
9. Small-Group Instruction	.64	.60	.48	.40	.52	.72	.54	.53		.09	.43	.45	.68	.70
10. Traditional Practices	.22	.21	.08	.11	.17	.19	.09	.15	.16		.07	.11	.12	.11
11. Parent Involvement	.45	.56	.76	.24	.43	.36	.32	.48	.38	.09		.45	.55	.71
12. Need for Guidance and Social Services	.47	.68	.45	.20	.88	.36	.44	.46	.40	.13	.33		.56	.72
13. Standards-Based Instruction	.87	.81	.57	.39	.62	.69	.77	.81	.73	.19	.51	.55		.90
14. Total	.84	.89	.74	.48	.78	.78	.65	.74	.76	.23	.67	.67	.91	

Note. Correlations were computed for the full sample of core classroom teachers and for the subsample of teachers who reported using the strategies of service-learning at least monthly (SL_{HI}). The correlation coefficients for the full sample are reported in the top half of the table. The correlation coefficients for the SL_{HI} subsample are reported in the bottom half of the table. Full sample ($N = 2,164$) above the diagonal; coefficients > .06 significant at the .01 level, two-tailed. SL_{HI} subsample ($n = 268$) below diagonal; coefficients > .11 significant at .05; > .15 significant at .01, two-tailed.

TABLE 4. Means and Standard Deviations for Subscales of Instructional Practices Scales

Subscale	*M*	*SD*
Classroom instructional practice		
Basic Skills	4.19	1.14
Citizenship and Social Competence Instruction	4.18	1.41
Traditional Practices	4.15	1.21
Availability and Integration of Literacy Resources	4.08	1.24
Mathematical Reasoning and Skill Enhancement	4.05	1.77
Mastery-Based Assessment and Student Recognition	3.84	1.08
Practices for Reading Skill Enhancement	3.76	1.26
NCTM-Based Practices	3.70	1.14
Practices for Writing Skills	3.68	1.27
Small-Group Active Instruction	3.67	1.23
Authentic Instruction	3.66	1.21
Heterogeneous/Multi-Level Grouping	3.51	1.22
Critical Thinking Enhancement Practices	3.22	1.11
Integrated and Interdisciplinary Practices	2.76	1.08
Integration and Coverage of Health Topics/ Activities	2.41	1.24
Community-Based Learning Opportunities	1.91	0.76
Standards-based practice		
Literacy instruction	4.41	1.29
Numeracy	3.68	1.23
Cross-content areas	3.54	1.17
Applied literacy: Analysis and interpretation	3.21	1.17

Note. Response selections are 1 (*never*), 2 (*several times a year*), 3 (*monthly*), 4 (*several times a month*), 5 (*weekly*), 6 (*several times a week*), and 7 (*daily*). NCTM = National Council of Teachers of Mathematics.

Content Area Standards-Based Practices, and Total Classroom Instructional Practices scales (*r*s ≥ .50) than with the other practices. All correlations were significant at the .01 level, which may be an artifact of the sample size.

To determine whether the relationships remained the same for the teachers with a higher level of implementation of service-learning, I computed correlations for this subsample of teachers (n = 268). The correlation coefficients appear in the bottom half of the correlation matrix (see Table 5). Again, positive research-based practices correlated less strongly with the Traditional Practices and Basic Skills subscales (mean r = .24) than with the other practices (mean $r \geq .50$); 76% of the correlation coefficients were greater than or equal to .30. Forty-one percent of the correlation coefficients were larger for the sample of teachers with a higher level of implementation of service-learning than those for the full sample.

Service-Learning and Standards-Based Instruction

I conducted a one-way multivariate analysis of variance to examine teachers' use of service-learning associated with their attitudes toward standards-based instruction and use of standards-based practices. I split the independent variable, service-learning, into three levels of implementation (high, moderate, and low). I assigned the 2,164 teachers in this study to one of three groups on the basis of their reported use of instructional strategies measured by the Community-Based Learning Opportunities scale. Group 1, low implementation level of service-learning (SL_{LO}, n = 320), included teachers with average scores between 1.0 and 1.15 or more than one standard deviation below the mean, which was 1.91. Group 2, moderate implementation level of service-learning (SL_{MOD}, n = 1,576), included teachers with scale scores between 1.16 and 2.66 or within one standard deviation of the mean. Group 3, higher implementation level of service-learning (SL_{HI}, n = 268), comprised teachers with scale scores between 2.67 and 7.0, that is, more than one standard deviation above the mean.

The five dependent variables pertained to standards-based instruction. Four of the variables were measures of standards-based instructional practices: (a) cross-content area standards, (b) literacy instruction, (c) literacy application and analysis, and (d) numeracy. The fifth dependent variable was the measure of teachers' attitudes toward standards-based instruction.

The results of evaluation of assumptions of normality, homogeneity of variance, linearity, and multicollinearity were satisfied. That is, the large sample size was robust to violations of normality. Although robustness to homogeneity of variance was not guaranteed (Box's M < .001), the ratio of largest to smallest variance did not approach 10:1 for any dependent variable. The largest ratio was 1.4:1 for SL_{LO} versus the SL_{HI} on literacy instruction. Examination of bivariate scatterplots indicated linearity. The bivariate correlations ranged from .28 to .66, satisfying threats of multicollinearity (Tabachnick & Fidell, 1996).

The results indicate that core classroom teachers' use of service-learning strategies differentiated their use of standards-based instructional practices and their endorsement of these practices (see Table 6). Twenty percent of the variance in the linear combination of standards-based variables was accounted for by the level of service-learning implementation. The univariate F tests for each dependent variable were all significant (p < .001); cross-content area standards-based practices, $F(2, 2161) = 219.88$; literacy instruction, $F(2, 2161) = 130.89$; literacy application and analysis, $F(2, 2161) = 166.39$; numeracy $F(2, 2161) = 111.45$; and attitudes toward the standards-based instruction, $F(2, 2161) = 19.48$. I examined specific differences between the levels of service-learning implementation and each dependent variable with Tamhane's T2 post hoc test, a conservative pairwise comparisons test based on the t test when variances are unequal.

TABLE 5. Intercorrelations Between Subscales of Instructional Practices Scales

Subscale	Classroom instructional practice																	Standards-based practice			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	A	B	C	D
1. Authentic Instruction		.18	.59	.50	.70	.59	.38	.52	.51	.28	.61	.57	.62	.68	.13	.63	.82	.85	.63	.55	.49
2. Basic Skills	.28		.30	.14	.10	.17	.21	.10	.16	.30	.19	.18	.12	.25	.52	.12	.26	.12	.19	.10	.25
3. Citizenship and Social Competence	.51	.38		.46	.50	.52	.48	.43	.45	.31	.45	.57	.48	.58	.27	.49	.76	.57	.61	.43	.46
4. Community-Based Learning Opportunities	.35	.21	.26		.51	.43	.44	.47	.37	.22	.39	.44	.45	.45	.16	.43	.64	.50	.40	.46	.38
5. Critical Thinking	.64	.25	.40	.38		.54	.42	.57	.55	.12	.52	.74	.57	.56	.10	.91	.79	.83	.74	.84	.37
6. Heterogeneous Grouping	.54	.36	.39	.24	.54		.37	.53	.54	.30	.58	.53	.58	.63	.15	.51	.79	.63	.58	.45	.51
7. Health Integrations	.31	.34	.37	.34	.41	.26		.45	.36	.25	.34	.44	.36	.38	.25	.39	.56	.40	.40	.41	.36
8. Integrated/Interdisciplinary	.57	.25	.32	.38	.37	.34	.46		.52	.24	.48	.52	.50	.46	.09	.52	.70	.57	.51	.53	.41
9. Literacy Resources	.54	.37	.46	.30	.56	.52	.38	.37		.08	.45	.67	.39	.53	.11	.57	.67	.53	.80	.52	.30
10. Mathematics Reasoning/Skill Enhancement	.30	.31	.22	.16	.22	.27	.27	.28	.22		.54	.07	.45	.28	.37	.05	.43	.28	.06	.05	.84
11. NCTM-based	.61	.30	.34	.24	.51	.57	.29	.54	.51	.56		.41	.72	.54	.17	.44	.75	.67	.44	.42	.85
12. Reading Skill Enhancement	.49	.34	.53	.33	.74	.50	.39	.48	.66	.12	.41		.45	.49	.16	.80	.74	.63	.90	.73	.28
13. Small-Group Active Instruction	.59	.23	.31	.30	.56	.58	.27	.55	.38	.39	.72	.43		.54	.14	.51	.78	.78	.46	.45	.72
14. Mastery-Based Assessment and Student Recognition	.62	.33	.52	.39	.54	.52	.35	.47	.50	.27	.50	.43	.41		.25	.50	.79	.69	.56	.44	.48
15. Traditional	.07	.52	.25	.15	.13	.14	.36	.07	.19	.31	.15	.24	.02	.28		.09	.25	.10	.14	.10	.30
16. Writing Skills	.58	.26	.45	.32	.89	.50	.39	.54	.57	.17	.45	.79	.50	.45	.13		.74	.71	.84	.79	.28
17. Total	.79	.44	.65	.51	.79	.74	.52	.75	.70	.45	.76	.72	.75	.75	.24	.75		.87	.77	.68	.68
A. Cross-Content Area	.82	.23	.44	.36	.82	.59	.34	.59	.52	.30	.66	.59	.76	.64	.05	.68	.84		.66	.63	.55
B. Literacy Instruction	.58	.34	.61	.27	.71	.54	.36	.49	.76	.17	.46	.87	.41	.48	.21	.83	.76	.60		.63	.28
C. Literacy Analysis	.54	.27	.39	.35	.87	.48	.41	.53	.57	.17	.45	.79	.47	.43	.16	.80	.71	.65	.66		.27
D. Numeracy	.49	.33	.34	.25	.43	.48	.35	.50	.41	.83	.88	.33	.70	.43	.27	.37	.71	.55	.36	.37	

Note. Correlations were computed for the full sample of core classroom teachers and for the subsample of teachers who reported using the strategies of service-learning at least monthly (SL_{HI}). The correlation coefficients for the full sample are reported in the top half of the table. The correlation coefficients for the SL_{HI} subsample are reported in the bottom half of the table. Full sample (N = 2,164) above the diagonal; all correlations significant at .01, two-tailed. SL_{HI} subsample (n = 268) below the diagonal; correlations > .15 significant at .01, two-tailed. NCTM = National Council of Teachers of Mathematics.

TABLE 6. MANOVA of Standards-Based Instructional Practices and Attitudes Toward Standards-Based Instruction, by Level of Service-Learning Implementation

		Standards-based instructional practices[a] and attitudes[b]									
		Cross-content area		Literacy instruction		Literacy: Application and analysis		Numeracy		Attitudes	
Group	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
SL_{HI}	268	4.60***	1.03	5.29***	0.99	4.12***	1.23	4.54***	1.15	4.31**	0.48
SL_{MOD}	1,576	3.52***	1.07	4.41***	1.22	3.20***	1.08	3.64***	1.16	4.21**	0.47
SL_{LO}	320	2.76***	1.04	3.65***	1.40	2.48***	0.96	3.12***	1.22	4.07***	0.50

Note. MANOVA = multivariate analysis of variance.
[a]Response selections are 1 (*never*), 2 (*several times a year*), 3 (*monthly*), 4 (*several times a month*), 5 (*weekly*), 6 (*several times a week*), and 7 (*daily*).
[b]Response selections ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Wilks's $\Lambda = .80$, $F(10, 4{,}314) = 52.49$, $p < .001$.
$^{**}p < .01$. $^{***}p < .001$.

The results indicate that teachers within each service-learning implementation level reported significant differences in their attitudes toward standards-based instruction and their use of these practices. Teachers who frequently used service-learning more readily endorsed the standards-based practices ($p < .01$) than those who did not often use service-learning. The frequent users also reported using the standards-based practices of cross-content area, literacy instruction, literacy application and analysis, and numeracy more often (all ps $< .001$).

Discussion

I examined several key opportunity-to-learn conditions in middle schools involved in systemic school improvement initiatives. I analyzed core classroom teacher reports to determine (a) attitudes and beliefs toward service-learning, (b) extent to which service-learning was implemented in the classrooms, and (c) relationships between teachers' educational attitudes and beliefs, service-learning, and standards-based instructional practices.

Attitudes and Beliefs Toward Service-Learning

Middle school teachers involved in the school improvement initiatives believed that service-learning was essential for their students' effective education. The correlation analyses suggest that, in general, when teachers reported their belief in service-learning practices, the teachers also believed that other reform-based classroom instructional practices were essential to effective education. However, the level of endorsed service-learning did not translate to implementation.

Implementation of Service-Learning

When compared with the other classroom instructional practices that the teachers reported, service-learning strategies were used least frequently. Teachers reported using service-learning strategies, on average, only several times a year, whereas they reportedly used other classroom practices an average of several times a month. The patterns that emerged among the correlation coefficients for classroom instructional practices indicate that teachers who used service-learning strategies tended to use the instructional practices of critical thinking, authentic instruction, and cross-content standards-based instruction, rather than practices related to basic skills and traditional practices.

Service-Learning and Standards-Based Instruction

The examination of standards-based instructional practices by service-learning implementation level revealed significant differences in the use of standards-based practices. Middle school teachers who reported using service-learning strategies on a regular basis also reported using the standards-based practices for literacy, numeracy, and cross-content area practices. That finding supports the position argued by Waterman (1997), Bhaerman et al. (1998), and others that service-learning is aligned and complementary with reform-recommended instructional practices for meaningful teaching and learning. The middle school teachers provided their students with frequent opportunities to engage in and develop their higher order thinking skills through practices that included small-group discussions, group projects, written reports and papers, reflection and analysis of written work, mathematical reasoning, and problem solving, as well as community service opportunities. That finding also supports Schollenberger's (1985) position that service-learning has the potential to provide more opportunities for students to engage in higher order thinking.

Although the educational background and experience of the teachers in this sample were representative of a national population of teachers, their classroom instructional practices may not have been representative of practices in middle level schools. The participating teachers in this study

taught in schools that were actively involved in implementing and documenting school-based reform recommendations, including Turning Points (Task Force on Education of Young Adolescents, 1989) and New Standards (National Center on Education and the Economy and the University of Pittsburgh, 1997). Many of the schools had been involved with school improvement initiatives for many years. Yet, even with a focus on systemic school reform, the level of service-learning implementation was infrequent. One can theorize that in most middle level schools, service-learning is almost nonexistent.

Considerable expertise and advanced abilities often are required for teachers involved with service-learning so they can effectively address the ill-structured problems encountered in the community (Eyler & Giles, 1999). Teachers need expertise in subject matter and in facilitating students' critical thinking and problem solving. Several institutions of higher education are responding to the need by offering preservice and inservice teacher education courses on the philosophy and methodology of service-learning (Wade, 1997). As more teacher education programs focus on preparing teachers to teach young adolescents in middle level schools, educators should investigate the pedagogy and philosophy of service-learning as an instructional approach aligned with standards-based practices for meeting the educational and psychological needs of these students.

Excellence, equity, and social change influence the American curriculum. Systemic school reform focuses on excellence and equity with high standards for all students (No Child Left Behind Act of 2001; Task Force on Education of Young Adolescents, 1989). When service-learning is implemented by knowledgeable teachers, connections may be constructed between the social change view of education and the standards-based approach of educational excellence and equity. Service-learning is more than community service; meeting the educational needs of students, as well as the needs of the community, is integral to service-learning. Students' educational needs may be met through teacher-facilitated critical thinking, problem solving, and standards-based practices focused on issues raised during the community experience. Implementation of service-learning in classrooms may provide students with an equitable opportunity to learn a standards-based curriculum that is developmentally appropriate and may help them participate in community service that is integrated into the curriculum.

Next Steps

I examined teachers' attitudes and beliefs and classroom instructional practices associated with service-learning in middle level schools involved in documenting school improvement. Researchers need to examine other components to better understand the context in which service-learning occurs. The components include the structural/organizational characteristics of the school, the climate/experiential conditions, and teachers' skills, background, and preparation. Issues for further research include (a) examination of the structural/organizational characteristics of the schools where the strategies of service-learning were used more frequently; (b) differences, if any, in the school climate and students' experiences; and (c) preparation and professional development opportunities available to teachers. Does the longitudinal data from the HiPlaces Assessment suggest any change in the frequency of service-learning in the participating schools and its relationship to other dimensions of the school context?

Among the findings, service-learning strategies were associated with significantly more frequent use of standards-based instruction. That does not mean that service-learning caused higher levels of standards-based instruction to occur. Nor does it mean that standards-based instruction occurred only in classrooms in which teachers implemented service-learning. Other considerations need to be examined. Do students have opportunities to learn higher order thinking skills when not participating in service-learning? When these questions are addressed, we may be better able to examine the relationship between service-learning and student outcomes, including achievement and performance.

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1. Jefferson County (Colorado) School District, Kentucky Middle Level Initiative, Middle Grade School State Policy Initiative, Middle Grades Improvement Program (Indiana), and School Accountability for Learning and Teaching (Rhode Island). For a more detailed description of these projects, see the Special Issue "Research on Middle Grades," 1997, *Phi Delta Kappan*, 78(7).

2. School staff are classified as core classroom teachers if they selected "classroom teacher" as their primary role in the school and indicated that they spent at least 50% of their time teaching mathematics, reading, science, language arts, and/or social studies.

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