

**Service-Learning Evaluation Project:
Program Effects for At-Risk Students**

by

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Background of the Study

Quest International created a curriculum called *Skills for Action* designed to help teachers, students, and community members in planning comprehensive skill-based service activities using principles of experiential learning and emotional literacy. This curriculum uses social learning theory (Bandura, 1973;1977) as its central theoretical justification. This framework suggests that humans learn appropriate behavior by viewing positive role models and imitating or practicing behavior. Other humans reinforce certain behaviors and these become habits.

A second theory supporting service-learning is based upon adolescent development literature describing how to build resiliency and student empowerment. This theory suggests that older teenagers in the United States need more opportunities to care for others and be effective citizens by having more significant roles in society (Scales and Blyth, 1997; Benard, 1990, 1991; Lofquist, 1989). Other researchers in late adolescent theory building have said that service-learning seems to help students handle interactions with adults (Rutter and Neumann, 1989) and develop skills toward independent life and career orientation.

Sagor (1996) expanded the theory and defined the emotional needs of at-risk youth in adolescence. He defined resiliency as "the set of attributes that provides people with the strength and fortitude to confront overwhelming obstacles they are bound to face in life." Five emotional feelings are key to developing resiliency in at-risk youth and these are:

- a feeling of Competence
- a feeling of Belonging
- a feeling of Usefulness
- a feeling of Potency
- a feeling of Optimism

The classroom learning and service experience in a service learning program based in school settings can help at-risk students develop resiliency when:

- students gain authentic evidence of academic success or accomplishments of goals (competence),
- students realize through group projects, that they are valued members and part of a community (belonging),
- the service experiences reinforce feelings that students have that they can make a positive contribution to society and can complete tasks/projects (usefulness),
- the mastery experiences in the problem-solving tasks of service-learning make students feel empowered (potency),
- with reflection on the goals accomplished during a service-learning project, the students perceive that they can make progress in their life and that the future is hopeful (optimism).

In a research project funded by the W.K. Kellogg foundation, the author (Laird, Bradley, and Black, 1998) found service-learning participation by at-risk students reduced their risk of dropping out of school and improved interpersonal attitudes. Other research has supported these findings. In 1994-95, Florida's Learn and Service project staff found that 42 percent of their projects reported a .50 grade point increase for all students involved in service learning projects, and 36 percent of the at-risk students improved at this same level (half a grade; see Follman and Muldoon, 1997).

Site Description and Goals of this Project

On the western edge of metropolitan Detroit is a school district with 15,000 students called Wayne-Westland Community Schools. Many of the adults living in this district work in jobs related to the auto industry or in businesses supporting this industry. The population is largely working to middle class in socioeconomic status, but 30% of parents of schoolchildren qualify for free or reduced lunches. The district has 17 elementary schools, four middle school, two traditional high schools, one career/vocational high school, and an alternative high school.

Since 1996-97 teachers at the alternative schools have integrated

service-learning into their pedagogy. Two teachers in the district were designated in 1997-98 as master teachers in service-learning, and they have participated with Quest International staff and other teachers in Michigan in an At-Risk Academy devoted to disseminating service-learning teaching strategies to other teachers in their school district (this effort is federally funded by The Corporation for National Service).

The students at the alternative high school in Wayne-Westland come to it for behavioral and academic reasons. Often, they have been suspended from the traditional high school for misbehavior, and their records show they have had irregular attendance (by eighth or ninth grade they are, in effect, dropping out of school, although it is illegal until age 16). These students have the characteristics of the "discouraged learner" as described by Conrath in *Our Other Youth* (1986): they possess low self-confidence and have a lack of self-worth, they avoid conflict, are distrustful of adults and institutions, have limited notions of the future, have poor academic skills, have external loci of control, and prefer practical, as opposed to abstract, learning.

Several teachers in this Michigan alternative school (named Tinkham Alternative) attended a Quest International training on service-learning. They quickly agreed with Sagor (1993) that the at-risk student had the most to gain from service-learning.

Description of the Service-Learning Intervention

In 1997, teachers at Tinkham began to use Quest International's *Skills for Action* Parts 1 and 2 and its supplement to the curriculum called *Promoting Peace and Preventing Violence* (Keister, Laird, Immell, and Barr, 1995). Using these resources, the alternative school teachers facilitated group brainstorming sessions with students concerning reducing prejudice, and they explored ways to build a learning community. Once a week they explored personal and social responsibility in a "Forum" period in which students discussed and resolved conflicts, in other sessions, they practiced social competency skills.

In the Spring, teaching staff used the third part of the curriculum to plan in-school service-learning projects, such as a yearbook that was self-published, artwork and murals were created for the school, and students printed flyers for any meetings held at the school.

As teachers integrated service-learning into core subject areas

they used a four-phase cycle of learning: **preparation** and needs assessment, **action/experience** (giving service), **reflection** on the service and analysis, and **demonstration/celebration**. Through this educational model students learned how to access community resources, process information, make and fulfill plans, demonstrate mastery of tasks, and celebrate their successes.

In the 1998-99 school year, the service projects began to extend beyond the walls of the school. Teams of students learned to be tutors in *Literacy Corps* where they used strategies of teaching phonics, story mapping, lesson planning, and other literacy education skills. After eight weeks of classroom learning and practice at the alternative school, these high school youth visited an elementary school (during regular school hours) and tutored second graders who experienced difficulty in reading.

The service experience for these alternative school students consisted of three days a week tutoring, while the remaining days of the week were spent preparing lessons, and reflecting on the experience or sharing/celebrating their experiences. In the Fall of 1998, the first group of tutors consisted of nine students. The program was so successful that teaching and administrative staff expanded it and created new "classes" of tutors (who also went through eight weeks of training). By May, 25 students had given service through the *Literacy Corps* (of the 60 students still attending the alternative school).

There are other service-learning projects at Tinkham, with students helping create art objects, or printing materials, while one student helps in a ropes course (an experiential education setting where students learn in teams).

Description of the Site of the Comparison Group

The traditional high school, Wayne-Memorial, has a much larger student body. The student population lives in the same geographic area of the alternative school. In September, 1998, Wayne Memorial had 1,980 students and by May, 1999, the enrollment had dropped to 1,865. Service-learning has not been used as a comprehensive teaching method at this school (although a few teachers may attend training in late June, 1999).

The populations of the two schools are similar in racial diversity, with the majority of students being Caucasian. Nineteen percent of the student body is African American at the traditional high school and 17% at the alternative. In terms of socioeconomic status, 15% of the high schoolers at the

traditional school return the eligibility forms for reduced/free lunches, although staff believe that 30% of the parents would qualify (students may be too embarrassed by this label of low income status). At the alternative school, students are monitored concerning this form and 60% of the parents qualify. In addition, 2% of the traditional high school students are Special Education students, while 5% of the alternative high schoolers, are placed into this category.

Selection Procedures and Research Design

When an evaluator on the service-learning program visited the alternative school in 1998, staff approached her and conveyed anecdotes of changes attributed to service-learning's impact on students. Teachers talked about the responsibility they saw from the students involved in service-learning projects, especially the *Literacy Corps*.

The administrator shared the fact that calls to the police department for assistance with student fighting, substance use, or carrying weapons had decreased from 50 in 1996 to 3 in 1997 to 1 in 1998. One student shared with the evaluator that she no longer used marijuana at night before tutoring days because "the second grader looks up to me and I can't have her smelling that."

This study was created as an exploratory quantitative investigation to check on whether these claims by the staff could be actual pattern changes in student behavior.

The principal investigator asked the secretarial staff to create a list of students who had attended Tinkham for two years. This strategy allowed for collection of baseline data from 12 months previous to current school records. The post period was defined as mid-May, 1999. The list of continuers at Tinkham resulted in an experimental sample of 26 students. Cumulative academic records were coded by research assistants.

At the traditional school, a "wait list" or comparison group of students who seemed eligible for the alternative school was created. Counseling staff with student cumulative folders were kept "blind" to the research intentions and asked to randomly draw from their files 35 records of students with any level of behavioral problem.

In a given year at Wayne Memorial High School, 60% of the students have a discipline offense (approximately 1100 students). Three hundred students were assigned to each counselor. The sample of 35 was drawn randomly from approximately 900 folders

from three counselors' files. The random assignment was stratified for at-risk status. Counselors were instructed to choose files from the set of students with academic and behavioral problems (since that was typical of the alternative school population).

The traditional school's at-risk student folders were then reviewed and coded by two research assistants. (Note: For confidentiality of records, all coding was supervised by a psychologist and done in a private office. No academic records ever left the building except in numerically coded form.)

Results

There were 26 alternative and 35 traditional high school students in this study for a total count of 61 students. The demographic description of the two samples can be found on the following table ("Service-Learning Evaluation Project, Sample Characteristics, Backgrounds of Students").

The alternative school sample consisted of 65% males, and the traditional school sample had 57% males. Racial backgrounds (see variable #4 in the first table) were similar, or insignificantly different (t-tests of comparisons of the means can be found on a subsequent table).

The grade level proportions were significantly different for two reasons. First, none of the ninth graders were selected at the alternative school for data entry because access to eighth grade baseline data was not practical. Also, the intent of the study was to examine the effects of service-learning on alternative school students, and, for measurement of effects, students had to **continue** at the alternative school beyond one year (to be in the study sample). At the traditional high school, where there was no service-learning, comparison group design was constructed through **random** selection (within at-risk student folders). Since the counselors were kept blind, they provided students at all **four grade levels**. While, random assignment provided a stronger design to rule out biases that occur in matching students, it did result in grade level differences.

The ages of students followed the grade level pattern, with slightly older students at the alternative school. The retention histories of the students (variable #6 in the table) were similar with no significant differences on the means (only seven students in the entire sample had repeated a grade; one student in the seven repeated twice).

Service-Learning Evaluation Project

Sample Characteristics

Backgrounds of Students

	Alternative H.S. N = 26	Traditional H.S. N = 35	Entire Sample N = 61
1. Gender			
Frequency			
Female	9 (34.6%)	15 (42.9%)	24 (39.3%)
Male	17 (65.4%)	20 (57.1%)	37 (60.7%)
Mean ¹	.65	.57	.61
Std. Dev.	.49	.50	.49
2. Grade Level			
Frequency			
Grade 9	0 (0%)	15 (42.9%)	15 (24.6%)
Grade 10	9 (34.6%)	13 (37.1%)	22 (36.1%)
Grade 11	13 (50.0%)	6 (17.1%)	19 (31.1%)
Grade 12	4 (15.4%)	1 (2.9%)	5 (8.2%)
Mean ¹	10.81	9.80	10.23
Std. Dev.	.69	.83	.63
3. Age			
Frequency			
14 yrs	0 (0%)	3 (8.6%)	3 (4.9%)
15 yrs	3 (11.5%)	12 (34.3%)	15 (24.6%)
16 yrs	8 (30.8%)	14 (40.0%)	22 (36.1%)
17 yrs	10 (38.5%)	5 (14.3%)	15 (24.6%)
18 yrs	5 (19.2%)	1 (2.9%)	6 (9.8%)
Mean ¹	16.65	15.69	16.10
Std. Dev.	.94	.93	1.04
4. Race			
Frequency			
Caucasian	22 (84.6%)	26 (74.3%)	48 (78.7%)
African American	3 (11.5%)	8 (22.9%)	37 (18.0%)
Native American	1 (3.8%)	1 (2.9%)	2 (3.3%)
Mean ¹²	.85	.71	.77
Std. Dev.	.37	.46	.42
5. Absences			
1998-1999 School Year			
Mean ¹ (# of Days)	20.07	40.88	32.40
Std. Dev.	16.67	28.05	26.02
6. Ever Retained in School			
Frequency			
Yes	5 (80%)	2 (5.7%)	7 (11.7%)
No	20 (20%)	33 (94.3%)	53 (88.3%)
Mean ¹ (Y=1/N=0)	.2	.05	.12
Std. Dev.	.41	.24	.32

¹ The Mean is equal to the sum of the observations divided by the number of students.

² Recode of variable equal to (1) for Caucasian and (0) for African American and Native American.

Service-Learning Evaluation Project

T-Test Comparisons Baseline Equivalence

Variables	Group vs. Group	Means	t-Value	2-Tail Sign. Level	Sign. /Non
1. Gender	Alt. H.S. vs. Trad. H.S.	.65 vs. .57	.643	.523	NON
2. Grade Level	Alt. H.S. vs. Trad. H.S.	10.81 vs. 9.80	5.01	.000	Sign.
3. Age	Alt. H.S. vs. Trad. H.S.	16.65 vs. 15.69	4.01	.000	Sign.
4. Race	Alt. H.S. vs. Trad. H.S.	.85 vs. .71	1.25	.218	NON
5. Ever Retained	Alt. H.S. vs. Trad. H.S.	.2 vs. .05	1.57	.125	NON
6. Absences Post	Alt. H.S. vs. Trad. H.S.	20.07 vs. 40.88	-3.12	.003	Sign.

The number of days absent (variable #5) was available for the alternative sample for the baseline and current years, however, data on 1998 absences at the traditional school were not available. The post time period absences of the traditional student group were about double (41 versus 20) the alternative school, and the difference in means was significant at the .001 level (t -value = -3.41). The bar graph shows these data.

Academic Outcomes

To improve the assets or resiliency of at-risk students, a comprehensive intervention program should be focused on skills to improve the students' academic performance. Of the 26 students at Tinkham, 13 participated in *Literacy Corps*. Teachers at the alternative school reported that students' reading and writing skills had improved, because in learning to tutor younger students, the older students learned phonics and word attacking skills that were of remedial assistance to them.

The first academic results variable (see "Service-Learning, Sample Characteristics, Academic Results" table) is on baseline grade point averages (GPA) and the statistical means for both samples were found to be similar (nonsignificant difference, see earlier table on baseline equivalence), with the averages representing grades of a D or D+ (1.61 for Tinkham and 1.78 for Wayne). This equivalence at baseline supports the selection design and demonstrates that the student samples were equally at-risk for academic problems.

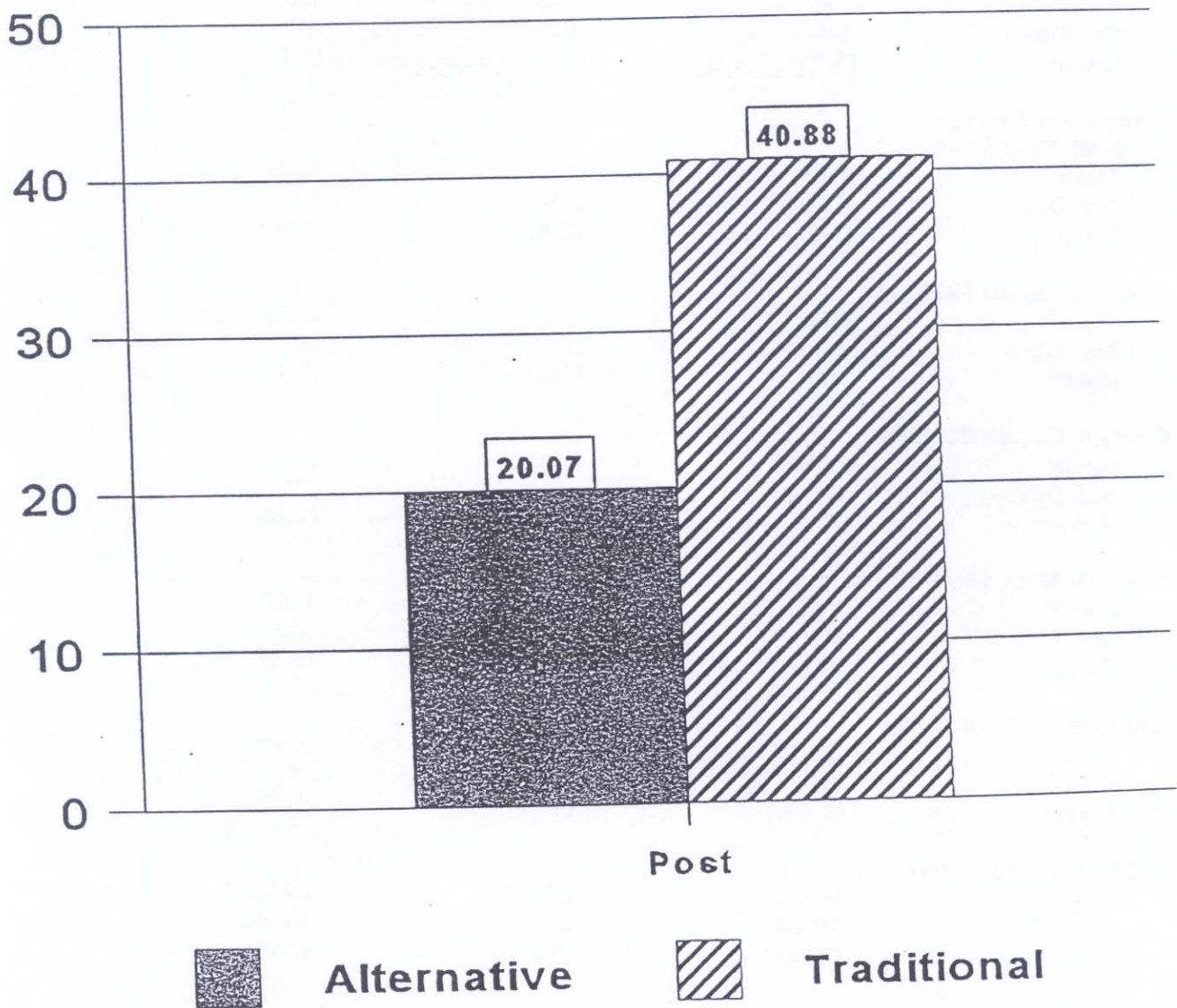
The post averages (variable #2 on the Academic Results table) are from the current year (at the end of the fifth marking period). At post, in the current year, there was divergence. The alternative school's students improved to 2.48 (nearly a C+), while the traditional high school's students maintained a low average (they decreased insignificantly from 1.78 to 1.58). The difference at post on the means of the two schools was significant at the .003 level (t -value = 3.16). The graphic shows in bar graph form the pre and post GPA scores of the two student groups, but the means will be altered as **only linked cases** are presented (each group lost a few students when GPAs were unavailable).

The alternative and traditional student samples were similar at baseline on the grade they received in English in the prior year (variable #3 on the Academic Results table), with 2.03 and 2.15 means or (low) C grades. At the end of the post period, the 1998-99 current year, experimental (alternative school) students

Service-Learning Evaluation Project

Alternative and Traditional At-Risk High School Students¹

Analysis of Students' Attendance (Days Missed 1998-1999)



¹ N for attendance data equal to 22 students for alternative setting and 32 for traditional setting.

Service-Learning Evaluation Project
Sample Characteristics
Academic Results

	Alternative H.S. N = 26	Traditional H.S. N = 35	Entire Sample N = 61
1. Grade Point Average Baseline 1997-1998			
<i>Mean</i> ¹	1.57	1.67	1.62
Std. Dev.	.98	.87	.91
Range	(3.2)	(3.5)	(3.5)
2. Grade Point Average Post 1998-1999			
<i>Mean</i> ¹	2.46	1.63	1.99
Std. Dev.	1.10	.75	1.00
Range	(3.7)	(2.8)	(3.92)
3. Grade in English 1997-98			
<i>Mean</i> ¹	2.03	2.15	2.09
Std. Dev.	.68	.52	.59
Range	(2.1)	(1.8)	(2.1)
4. Grade in English 1998-99			
<i>Mean</i> ¹	2.77	2.20	2.44
Std. Dev.	.81	.62	.75
Range	(2.6)	(2.1)	(2.6)
5. Grade in Math 1997-98			
<i>Mean</i> ¹	2.07	2.07	2.07
Std. Dev.	.61	.60	.60
Range	(2.1)	(1.8)	(2.1)
6. Grade in Math 1998-99			
<i>Mean</i> ¹	2.55	2.08	2.27
Std. Dev.	.84	.55	.71
Range	(2.6)	(1.6)	(2.6)
7. MEAP - Science Score			
<i>Mean</i> ¹	405.58	360.71	375.67
Std. Dev.	70.84	38.67	54.96
Range	(230)	(190)	(236)
8. MEAP - Writing Score			
<i>Mean</i> ¹	2.19	2.4	2.32
Std. Dev.	.60	.65	.63
Range	(2.5)	(2.0)	(2.5)

¹ The *Mean* is equal to the sum of the observations divided by the number of students.

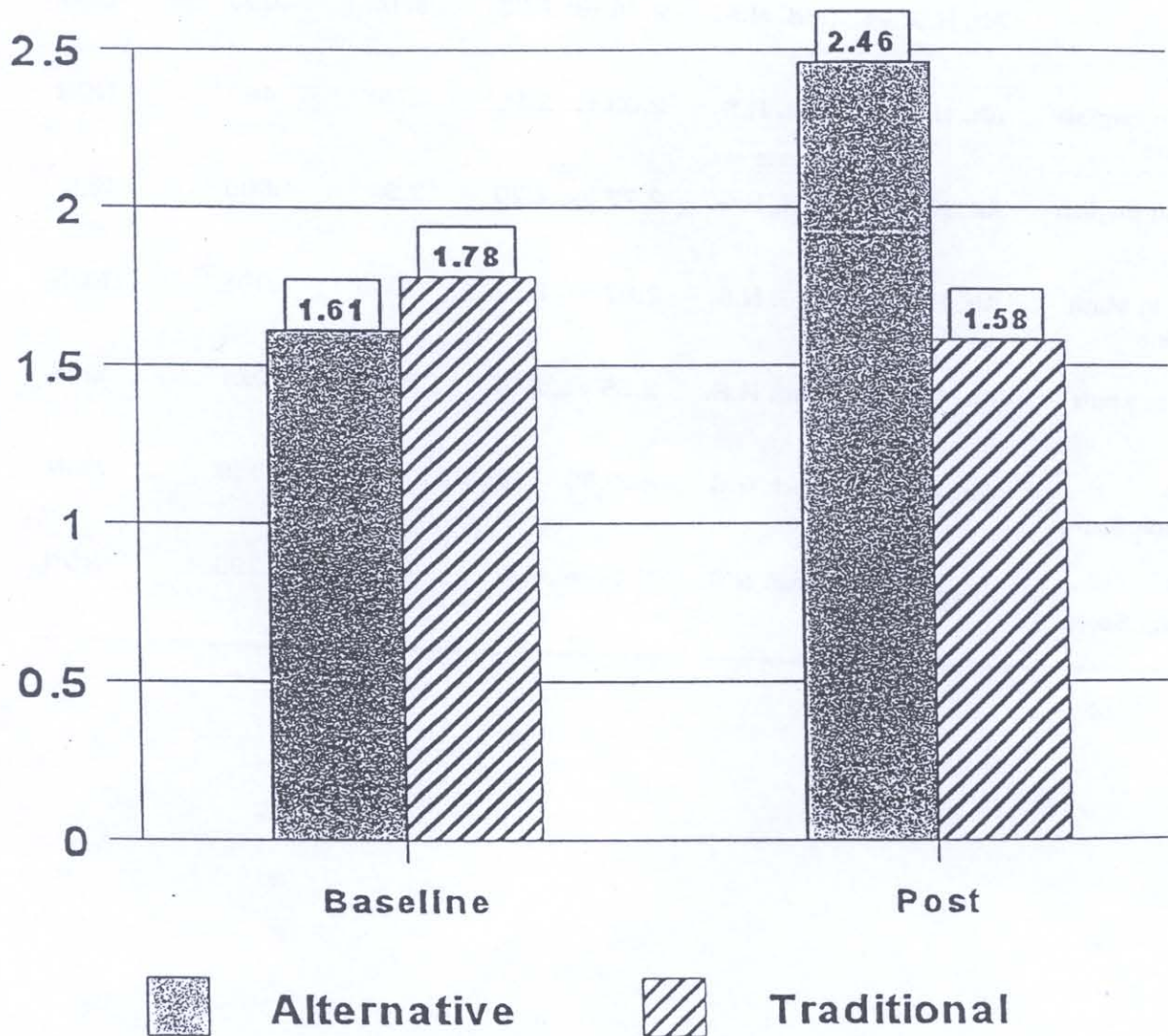
Service-Learning Evaluation Project

T-Test Comparisons Academic Comparisons

Variables	Group vs. Group	Means	t-Value	2-Tail Sign. Level	Sign. /Non
1. G.P.A. Baseline	Alt. H.S. vs. Trad. H.S.	1.57 vs. 1.67	-.417	.678	NON
2. G.P.A. Post	Alt. H.S. vs. Trad. H.S.	2.46 vs. 1.63	3.16	.003	Sign.
3. Grade in English Baseline	Alt. H.S. vs. Trad. H.S.	2.03 vs. 2.15	-.745	.460	NON
4. Grade in English Post	Alt. H.S. vs. Trad. H.S.	2.77 vs. 2.20	2.94	.005	Sign.
5. Grade in Math Baseline	Alt. H.S. vs. Trad. H.S.	2.07 vs. 2.07	-.006	.995	NON
6. Grade in Math Post	Alt. H.S. vs. Trad. H.S.	2.55 vs. 2.08	2.39	.021	Sign.
7. MEAP Science Score	Alt. H.S. vs. Trad. H.S.	405.58 vs. 360.71	2.05	.059	NON
8. MEAP Writing Score	Alt. H.S. vs. Trad. H.S.	2.19 vs. 2.4	-1.06	.298	NON

Service-Learning Evaluation Project Alternative and Traditional At-Risk High School Students¹

Analysis of Students' GPA Baseline (1997-1998) to Post (1998-1999)²



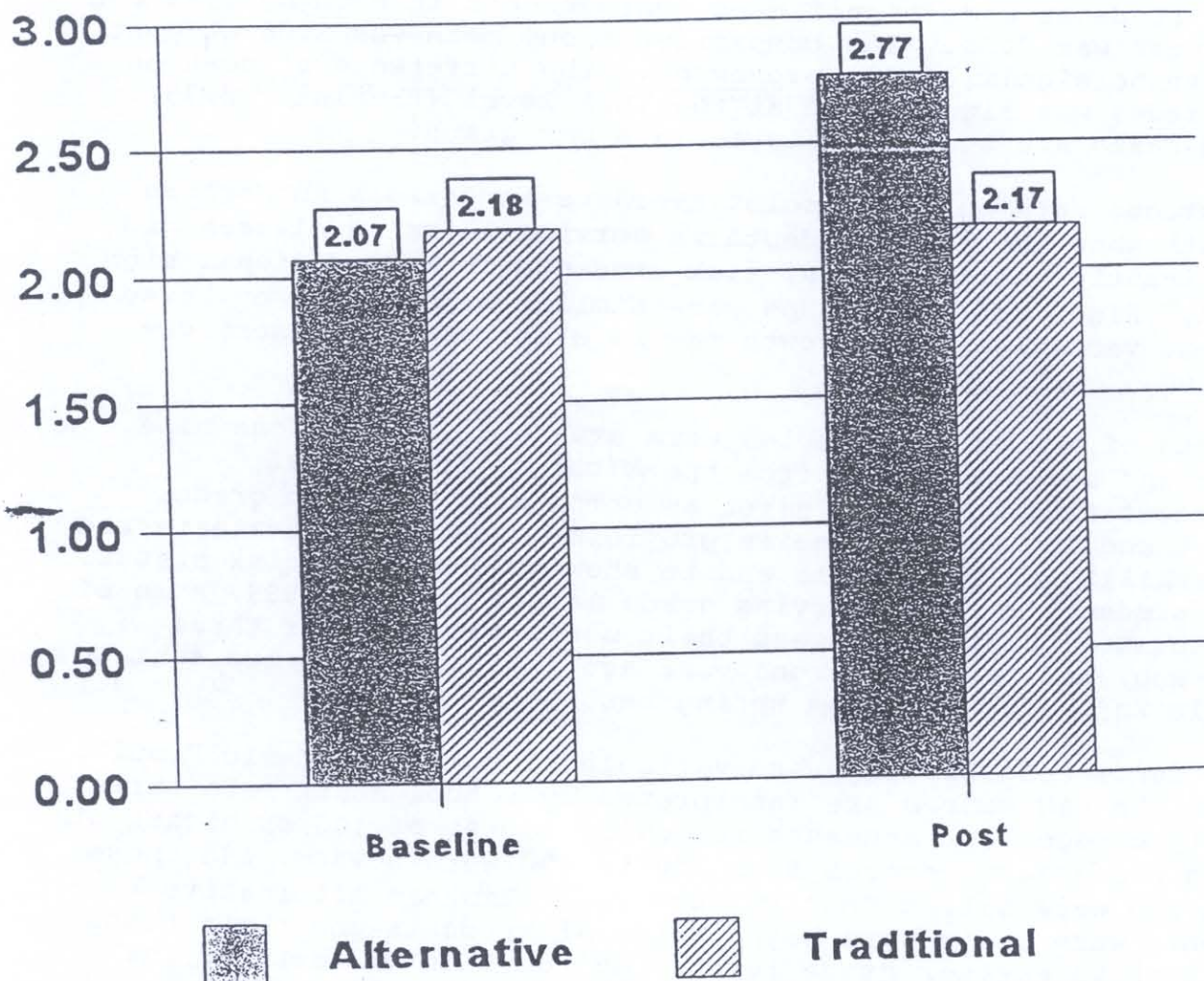
¹= N for GPA data equal to 24 students for alternative setting and 28 for traditional setting for linked data.

²=Post period collected thru May 15, 1999.

Service-Learning Evaluation Project

Alternative and Traditional At-Risk High School Students¹

Analysis of Students' English Grades Baseline (1997-1998) to Post (1998-1999)²



1= N for student's english grades equal to 23 students for alternative setting and 28 for traditional setting for linked data.

2=Post period collected thru May 15, 1999.

had increased to a C+ grade (2.77), but control (traditional high school) students had insignificantly improved to a grade of 2.20. The mean difference at post was significant at the .005 level (t-value = 2.94). A bar graph on the English grades for the two student groups presents linked cases (see previous note on how the means vary when student data were unavailable).

Math grades followed the pattern set with the English grades. The students in service-learning classrooms had a 2.07 or C grade and this was identical to students in traditional classes (variable #5 on the Academic Results table). The alternative school students made significant improvements in Math by 1999 and their mean was 2.55. The comparison group mean was 2.08 at post and with no significant improvement. The difference at post on Math grades was significant at the .021 level (t-value = 2.39). Linked cases are again displayed in a bar graph.

The outcome data on grade point averages and grades in English and math show that the students in service-learning classes did significantly better than at-risk students in a traditional high school. Since the two groups were similar at baseline on these Academic variables, the growth may be attributable to service-learning.

Two sets of academic variables were available at only one time period and these were the from the *Michigan Educational Assessment Program (MEAP)* given as competency tests in grades 4,5,7,8 and 11. The purpose in providing these is to evaluate the comparability of the sample and to show students' at-risk status. Since students were at varying grade levels in May, 1999, some of the students' tests represent their performance two or three years ago, and for others one year ago (tests results are sent to schools in the summer from spring testing).

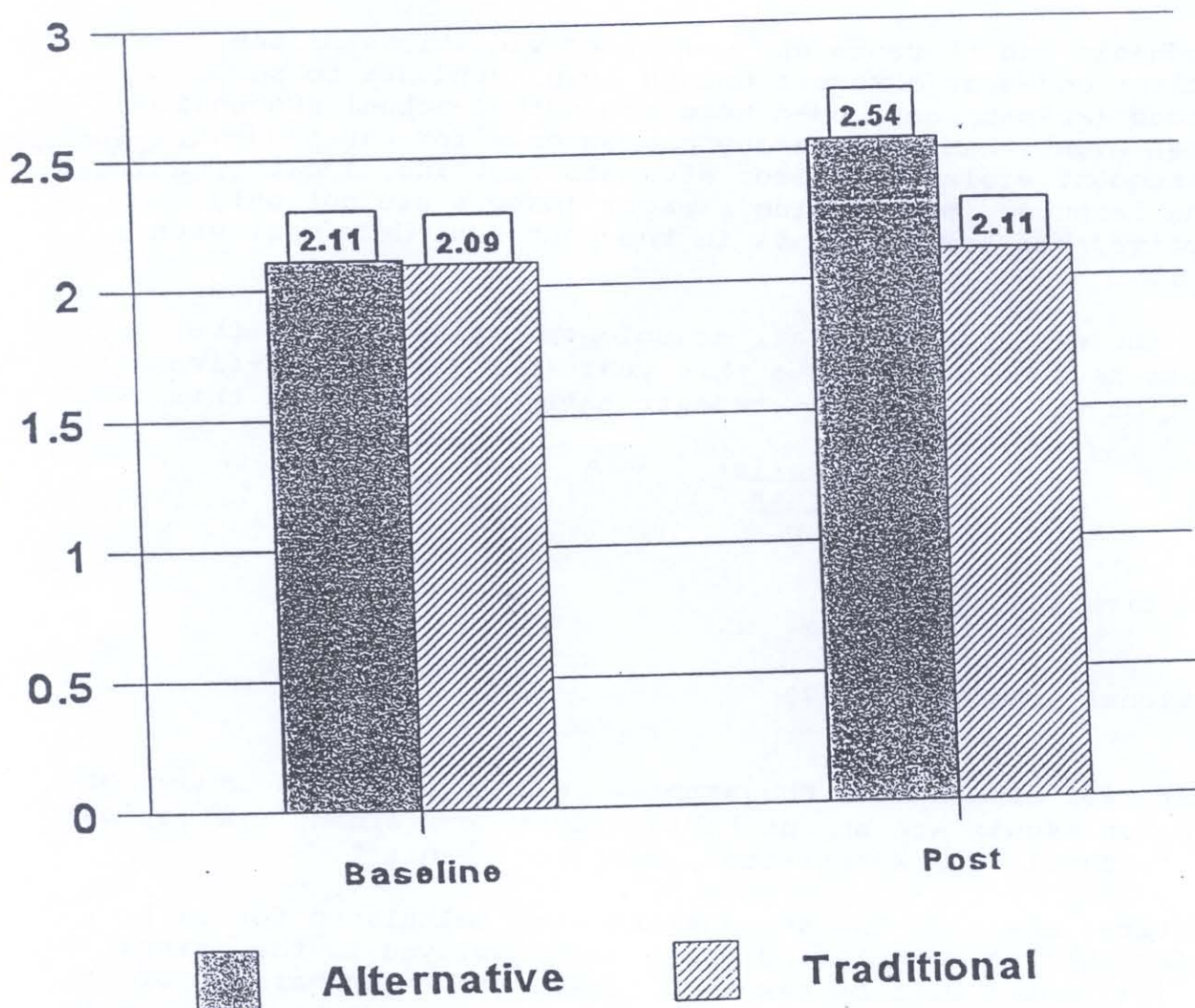
The Science test findings are variable #7 on the Academic Results table. The raw scores are interpreted by school staff into three ability categories; students achieving scores of 400 or higher or judged *proficient*, scores from 350 to 400 were *novice*, and those below 350 were called "not yet novice". Tinkham Alternative students were older than Wayne Memorial students and their tests went back to earlier grade levels. At the time of testing, the mean score, 406 was right above the level to qualify for *proficient* (although the mean is an average and half the students were novices). Science scores from the traditional high school students were judged as novice at a 361 average. Statistical testing showed a borderline significance between these two means (t = 2.05; sign. = .059).

The writing test was scored differently, with any score above a 2.5 judged *proficient*, and those scores below were *not yet*

Service-Learning Evaluation Project

Alternative and Traditional At-Risk High School Students¹

Analysis of Students' Math Grades Baseline (1997-1998) to Post (1998-1999)²



1= N for student's math grades equal to 20 students for alternative setting and 27 for traditional setting for linked data.

2=Post period collected thru May 15, 1999.

proficient. The alternative school students average was 2.19 and the traditional school students' was 2.40. Therefore, both scores would indicated the majority of students in the two samples were not yet proficient.

Behavioral Outcomes

Both schools had students who committed violations of the discipline codes at a severe enough level students to be suspended (suspensions coded here are out-of-school suspensions and most events had a three-day consequence for the student). The most frequent violations were: students fighting, smoking, using profane language, or carrying a pager (pagers are not only disruptive, but some students in the past made drug deal with pagers).

Across the entire traditional school population, 38% of the students have been suspended this year (N = 725). Sixty-five percent of the alternative students have been suspended this year.

<u>School</u>	<u>Baseline</u> <u>1998</u> <u>N</u>	<u>Post</u> <u>1999</u> <u>N</u>
Alternative school	84	86
Traditional school	78	224

The data for students in the samples in this study the number of suspension events are on the table, "Service-Learning Evaluation Project, Sample Characteristics, Behavior Results".

Statistical means of the suspensions were calculated for each year for the two schools and these are displayed in the graphic below (all means will be based on linked for the remainder of the analysis, so that baseline students are the same ones in the post set) .

At baseline, alternative students had an average of 3.5 suspensions and the traditional school students had 2.23. This difference in baseline means was not significant. Examination of the frequencies (not on the table) showed that 10 Tinkham students had no suspensions in 1997-98, but other alternative school students had 1 to 15 suspensions. Twenty-four of the Wayne Memorial students had no suspensions in the baseline year, and

Service-Learning Evaluation Project

Sample Characteristics Behavior Results

	Alternative H.S. N = 26	Traditional H.S. N = 35	Entire Sample N = 61
1. School Suspension Baseline 1997-1998			
<i>Mean¹</i>	3.5	2.23	2.75
Std. Dev.	4.35	4.87	4.67
Range	(0-15)	(0-25)	(0-25)
2. School Suspension Post 1998-1999			
<i>Mean¹</i>	3.44	6.40	5.17
Std. Dev.	3.75	5.38	4.96
Range	(0-14)	(0-18)	(0-18)

T-Test Comparisons

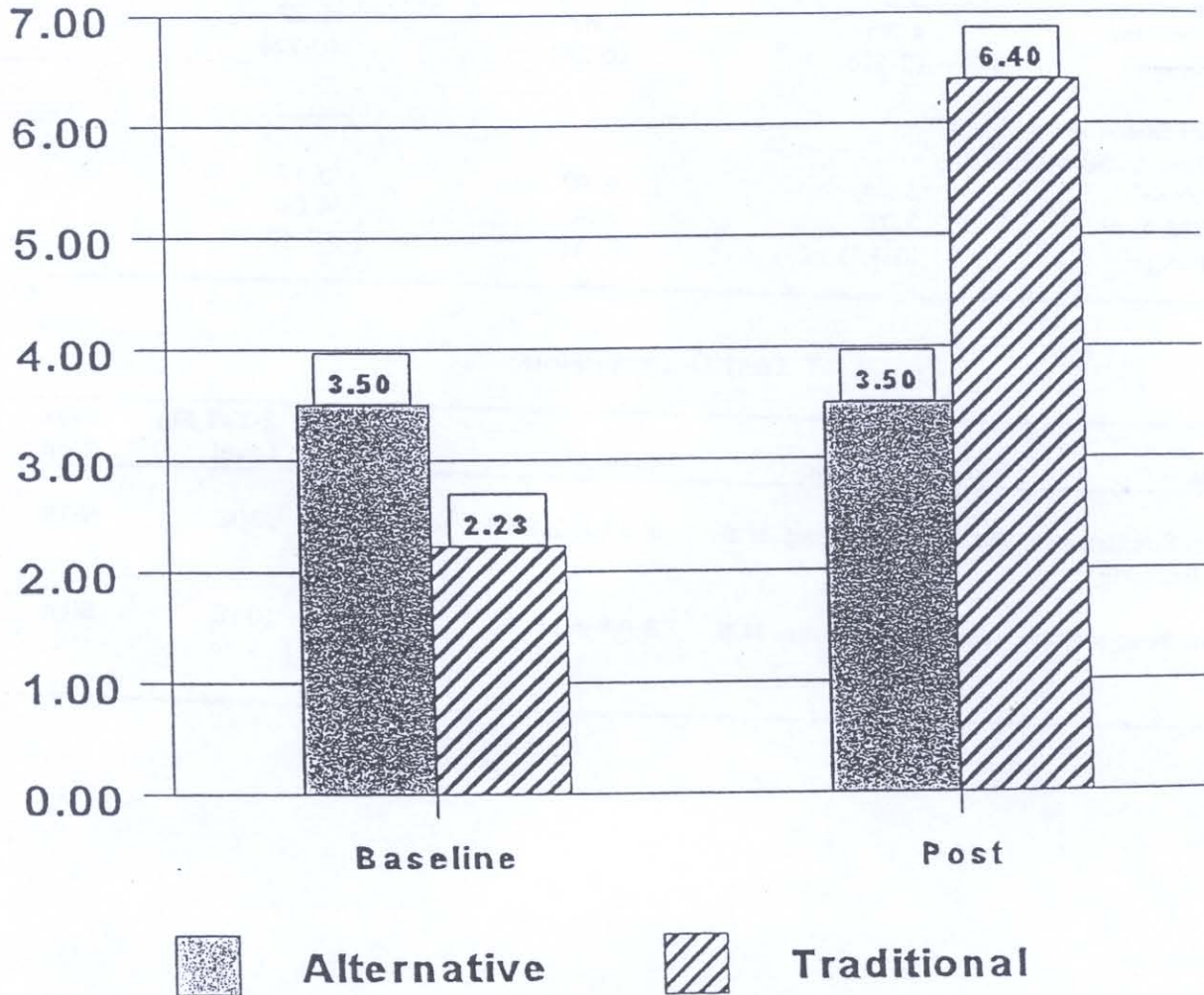
Variables	Group vs. Group	Means	t-Value	2-Tail Sign. Level	Sign. /Non
1.School Suspension Baseline	Alt. H.S. vs. Trad. H.S.	3.5 vs. 2.23	1.03	.308	NON
2.School Suspension Post	Alt. H.S. vs. Trad. H.S.	3.44 vs. 6.40	2.51	.015	Sign.

Service-Learning Evaluation Project

Alternative and Traditional At-Risk High School Students¹

Analysis of Student Suspensions

Baseline (1997-1998) to Post (1998-1999)²



1= N for suspension data equal to 24 students for alternative setting and 35 for traditional setting for linked data.

2=Post period collected thru May 15, 1999.

the range of those with suspensions was from 1 to 25. In both samples, then there were students with chronic histories of getting in trouble, and then being sent home for a period of time.

At the mid-May data collection period, the average number of suspension was nearly the same, 3.44 as baseline, indicating no growth in suspension events. In contrast the comparison group at the traditional high school had a large increase to 6.4 events on average. This growth was significant for the students without service-learning and the mean comparison to the post level showed the two group were significantly different (t-value = 2.51 and sign. = 015.)

The major behavioral outcome of the study, then, is that the students participating in service-learning had fewer suspensions than a similar group of at-risk students in a school with traditional pedagogy (see the following graphic for a display of linked cases on the suspension data). The baseline equivalence of the two sample on gender race, the academic variables, and suspensions gives credibility to these results.

Relationships Among Variables

The data from the above analyses consisted of demographic, academic, and the behavior variables. A correlational matrix was run to examine the interrelations among variables. The first matrix displays the associations between the major variables to the major academic outcome of grade point average at post (May, 1999). The two student samples were combined for this matrix.

Correlations to Post G.P.A.

Across the six variables in the first row of the matrix, three reached significance (Pearson correlations with 2-tailed significance; one asterisk indicates the .05 level, and two asterisks shows the .01 level). The number of absences students had in the 1998-99 school year was negatively related (-.523) to their grade point averages. This finding would be expected since students who are absent with higher frequencies would be less successful in school. The grades students received in math in the prior academic year were also positively related (.277) to the current year's GPA. The baseline GPA in the 1997-98 school year was related to the post measure, of GPA (.313).

The second row in the correlation matrix has three significant relationships. Students' grades in English at baseline were very related to the post GPA (.771) and the math grades at post were

Service-Learning Evaluation Project
Correlations of Post G.P.A. to Academic and Behavior Variables
(N = 61)

Absences in 1999	Age	Gender	Grades in English Baseline	Grades in Math Baseline	GPA Baseline
-.523** p = .000 (N=50)	.222 p = .100 (N=56)	.091 p = .506 (N=56)	.155 p = .272 (N=52)	.277* p = .047 (N=52)	.313* p = .024 (N=52)

Grades in English Baseline	Grades in Math Post	MEAP Science Score	MEAP Writing Score	Grade Level	Race
.771** p = .000 (N=54)	.697** p = .000 (N=50)	.311 p = .069 (N=35)	-.209 p = .201 (N=39)	.306* p = .022 (N=56)	.063 p = .646 (N=56)

Retained	Suspensions Baseline	Suspensions Post
.074 p = .593 (N=55)	-.125 p = .366 (N=54)	-.405** p = .002 (N=55)

* Correlation significant at the .05 level (2-tailed)
 ** Correlation significant at the .01 level (2-tailed)

associated with 1999 GPA. The students' grade levels were positively related to current GPAs (.306) and this shows that older students did better this year.

In the third row of the matrix, only suspensions at post were related to the 1999 GPA (-.405). This relationship was in a negative direction since students out of school for suspensions missed school work and they might also have been more at-risk.

Correlations to Suspensions at Post

The second matrix displays the interrelationships of the major variables with the behavior outcome of suspensions in the 1998-99 year. In the first row of the table there were the significant associations to post suspensions. Age was negatively related to suspensions (.284). Younger students had more violations (this finding may be caused by attrition since students at-risk students drop out before they reach upper grades). Gender was positively associated with suspensions, and this variable was coded as "0" for females and "1" for males in the correlation. This association shows that males are more likely to have suspensions. Grade point averages at baseline are negatively related to suspensions (-.314). This finding suggests that the academically poor performing students are those who are suspended.

The second row of the matrix shows four significant associations. Grades in English in 1999 are negatively related to post suspensions (-.438) as are the students' post math grades (-.338, and the MEAP test scores in science (-.398). Students in early high school grades are more likely to be suspended (-.275).

In the third row of the matrix only one finding is significant. The students' current year's grades are negatively associated with suspensions in 1999 (-.405).

Direct Effects from Service-learning Involvement

The correlational analyses showed many relationships were associated with the outcomes of suspensions and grade point averages in 1999. To examine whether service-learning involvement directly influenced suspensions or academic performance a new variable was created and two regressions were run.

The 26 students in the alternative school varied on the "dosage" or involvement level, with some students producing products (a self-published yearbook and a poetry book) and others tutoring or helping younger students (Literacy Corps and the Ropes Course). Five of the 26 students had little involvement, as they were in classes with teachers who taught with the pedagogy, but they did

Service-Learning Evaluation Project

Correlations of Post Suspensions to Academic and Behavior Variables (N = 61)

Absences in 1999	Age	Gender	Grades in English Baseline	Grades in Math Baseline	GPA Baseline
.185 p = .180 (N=54)	-.273* p = .035 (N=60)	.284* p = .028 (N=60)	-.117 p = .403 (N=53)	-.114 p = .416 (N=53)	-.314* p = .021 (N=54)
Grades in English Post	Grades in Math Post	MEAP Science Score	MEAP Writing Score	Grade Level	Race
-.438** p = .001 (N=55)	-.338* p = .016 (N=50)	-.398* p = .018 (N=35)	-.053 p = .746 (N=40)	-.275* p = .034 (N=60)	-.077 p = .556 (N=60)
Retained	Suspensions Baseline	GPA Post			
-.115 p = .386 (N=54)	.197 p = .136 (N=59)	-.405** p = .002 (N=55)			

* Correlation significant at the .05 level (2-tailed)

** Correlation significant at the .01 level (2-tailed)

not join in on team efforts. These non-participants were coded as a "0" in the regression, and they were in a group with all 35 of the traditional high school students. The 21 students who were active in giving service were coded as a "1".

The regression analysis tries to measure the relationship between independent variable and the dependent variable. The independent variable was service-learning participation. It was regressed to post GPA (the dependent variable). The result was a standardized beta weight of .488 (the beta is a linear measure of change between independent and dependent) which was significant at the .000 level. This suggests that increases in service-learning participation results in increases in students' GPA). The overall adjusted R-squared for regression model was .224, and this relationship indicates that service-learning accounts for a large degree of the dependent variable's GPA's variance.

This finding suggest that there was a powerful relationship from service learning to academic performance. An alternative hypothesis would be that students were picked to perform service-learning in some biased way (higher GPA students were allowed by teachers to do service). A test of this alternative hypothesis would be to examine the participating versus non-participating service-learning students with baseline grade point averages. The results of this regression show non-significance (t-value of 1.63 and sign. of .109). Therefore, the prior finding is supported and the contrary hypothesis is refuted.

A second regression analysis measure the relationship between independent variable, service-learning and the dependent variable, post suspensions. The result was a standardized beta weight of $-.283$ (the beta is a linear measure of change between independent and dependent) which was significant at the .029 level. This suggests that increases in service-learning participation results in a decrease in post suspensions. The overall adjusted R-squared for regression model was .064, and this relationship indicates that service-learning accounts for a modest degree of the dependent variable's, suspension's variance.

This finding suggest that there was a relationship from service learning to student aggressive behavior. An alternative hypothesis would be that students were picked to perform service-learning in some biased way (less aggressive students were allowed by teachers to do service). A test of this alternative hypothesis would be to examine the participating versus non-participating service-learning students with baseline suspensions. The results of this regression show non-significance (t-value of .703 and sign. of .485). Therefore, the prior finding is supported and the contrary hypothesis is refuted.

Both regression support the evidence for positive outcomes from service-learning and add statistical power to the findings.

Summary

- At baseline the two samples were equivalent, and the service-learning at-risk students had maintenance on suspensions at post, while the comparison group students significantly increased suspensions (t-value =2.51 and sign. = .015).
- Baseline G.P.A.s were equivalent with "D" averages, but service-learning students improved to nearly a C+ level, while comparison students has an insignificant decreases in academic performance (t-value =3.16 and sign. = .003).
- Baseline grades in English were equivalent, but at post, the at-risk students in service-learning classrooms attained a C+ average, significantly improving their grades, while comparison at-risk students had no grade improvement (t-value = 2.94 and sign.=.005).
- Baseline grades in math were equivalent, but at post, the at-risk service-learning students improved to a C+ average, while comparison group at-risk students showed no grade improvement (t-value = 2.39 and sign.= .021).
- Regressions at post showed the active service-learning students were predictive of lower suspensions (t-value = - 2.246 sign. = .029).
- Regressions at post showed the active service-learning students were predictive of higher GPAs (t-value = 4.112 sign. = .000).