Project STREAM

(Service learning **T**hrough **R**ecreation **E**ducation **A**nd **M**entoring**)**

Program Outcome Study
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Abstract

The current study evaluated the impact of Project STREAM, an environmental education, service learning and mentoring program, on the behaviors and academic performance of disconnected middle school students. Results of the pre-post control group design provided support for significant positive impact on self-confidence, ability to express feelings, interest and hobbies, use of school resources and class participation. In addition, STREAM students were significantly more likely to have improved in one or more subject. While control group students showed declines in grades on four core subjects, STREAM students showed much smaller declines in English Language Arts (ELA) and Science and showed improvement in Math and statistically significant improvement in Social Studies.

Background

Project STREAM (Service-learning Through Recreation Education and Mentoring) has been recognized as a model of collaboration in developing innovative prevention strategies. The Partnership for Ontario County, Finger Lakes Community College (FLCC), four Ontario County school districts, Big Brothers Big Sisters (BBBS), the Canandaigua Lake Watershed Council, and other organizations collaborated to provide the multi-component program aimed at reducing risk factors among disconnected middle school students.

Project STREAM began in 2001 as the *Environmental Mentoring Program* with a grant from the United Way of Ontario County. The project was based on current substance abuse prevention models that address reduction of risk factors and promotion of protective factors. Surveys of over 17,000 middle and high school students in the Fingers Lakes region identified sensation seeking, impulsiveness and rebelliousness as the most prevalent risk factors and as the most powerful predictors of substance abuse and other problems among young people. According to the federal Substance Abuse Mental Health Services Administration (SAMHSA) mentoring programs are one of the most effective model strategies for reducing these risk factors. In addition, research from Cornell University and others demonstrated the positive effects of engaging young people in activities that develop and promote a connection to and concern for the physical environment.

From 2004 through the spring of 2009, STREAM operated, in large part, with funds from the Drug Free Communities grant. However, beginning in 2009, Drug Free Communities funds could no longer be used to support direct programming such as STREAM. Over the past several years, the Finger Lakes Service Learning Institute, and the Canandaigua Lake Watershed Council have provided significant supplemental funds to provide a dedicated greenhouse, support transportation to special events and to provide plants and other supplies for an ongoing service-learning project of stream bank restoration on Sucker Brook in the city of Canandaigua. Big Brothers Big Sisters obtained funds from the U.S. Department of Education to provide recruiting, and monitoring of mentoring matches in Project STREAM. Canandaigua Rotary Club and the Canandaigua Lake Watershed Alliance donated scholarships for FLCC students in

the STREAM service-learning course. Local school districts have contributed significant in-kind services including space, transportation, equipment and staff support.

Program Description

Project STREAM provides structured environmental education sessions once each week in each school site. Middle school students are selected based on meeting the definition of "disconnected." Disconnected students are those students who are not involved in adequate social or academic activities and lack opportunities and rewards for positive activities in their community or family. STREAM groups consist of 15 to 20 disconnected youth who meet for approximately 90 minutes and engage in interactive and entertaining projects that teach lessons related to watersheds, wildlife, recycling and other environmental issues. At least six times each school year, STREAM students take field trips to environmental sites such as the Montezuma Wildlife refuge and the Audubon Nature Center. In addition, students engage in environmental service learning projects including planting trees on the banks of streams undergoing restoration. Once each year, STREAM groups from multiple schools meet for a two-day overnight camp during which they participate in a number of fun and educational environmental activities such fishing, fly-tying, water testing, nature walks or arts and crafts.

A unique aspect of STREAM is providing students with adult mentors. Some students are matched with students from area colleges who attend STREAM education sessions and work one-on-one with their match. Other STREAM students are matched with adults in the community who meet with them one-on-one for an average of three hours each week. Matches generally engage in environmental activities such as fishing, canoeing or other outdoor activities.

Study Design

The outcome study for project STREAM used a pre-post control groups design. Counselors, faculty and other staff at four participating schools were asked to nominate middle school students who met the definition of disconnected given above. All students' named were entered into a spreadsheet, assigned a random number and sorted. Beginning with the first number, students were offered voluntary participation in STREAM. Students were required to obtain written permission from a parent or guardian. Offers were made until 20 students in each school accepted and were given parent permission. Students who refused were dropped from the list while students who were not selected at random were retained as the control group.

All program and control students were assigned a project ID. School record data and Teacher Rating Forms were coded by school personnel and a data file was forwarded to the independent evaluator with no student identifying information.

The sample for the current study consists of students selected for STREAM in 2004 who either entered the program in the 2004-2005 school year and remained active through the 2006-2007 school year or were selected for the control group in 2004 and remained a student in the original school through the 2006-2007 school year.

Two sources of data were used. First, to measure student characteristics and behavior, a modified version of the Big Brothers Big Sisters Program Outcome Evaluation (POE) form (see attachment) was used. Teachers completed ratings of each student on 19 variables[1] related to confidence, competence, caring, academic performance and discipline. Teachers were asked to rate the students' status on each factor relative to all students in the same class.

To measure the impact of STREAM on academic performance final grades in each of four core subjects (Math, English Language Arts (ELA), Social Studies and Science) were extracted from school records for 2004, the year prior to enrolling in STREAM and 2007, the final year of STREAM participation.

Results

Table 1 compares the proportions of students in Project STREAM to students in the control group who improved on each factor. Sixty percent of STREAM students were rated higher on self-confidence after program participation compared to 33.9% of control group students. This difference is statistically significant (chi^2=5.56, p<.03). STREAM students improved significantly more than control on ability to express feeling (chi^2=12.4, p<.005); interest and hobbies (chi^2=2.25, p<.06); uses school resources (chi^2=10.92, p<.001) and; class participation (chi^2=5.3, p<.03). In addition, STREAM students were significantly more likely to have improved in one or more academic subject (chi^2=13.04, p<.001).

Table 2 shows changes in grades in the four core subjects. Disconnected students typically show declining academic performance as they move from 6th to 7th to 8th grade. In fact, control group students showed declining grades in all four subjects. Despite this trend, STREAM students showed improvement in Social Studies and Math. Compared to control students, STREAM student showed much smaller declines in Science and ELA. STREAM students did significantly better than controls in Social Studies (chi^2=7.78, p<.006).

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[1] Note items 13-15 were dropped from the analyses as virtually no teacher provided rating on these items.

Change in Teacher Rating
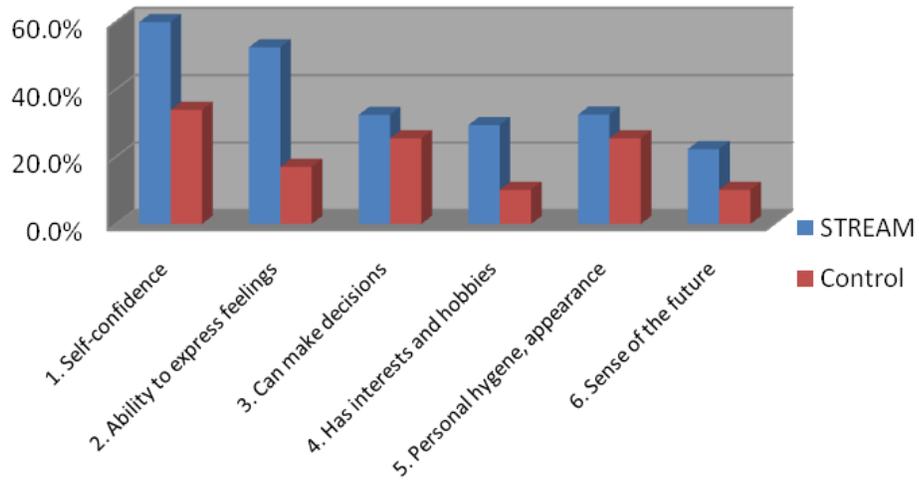
Change in Grades
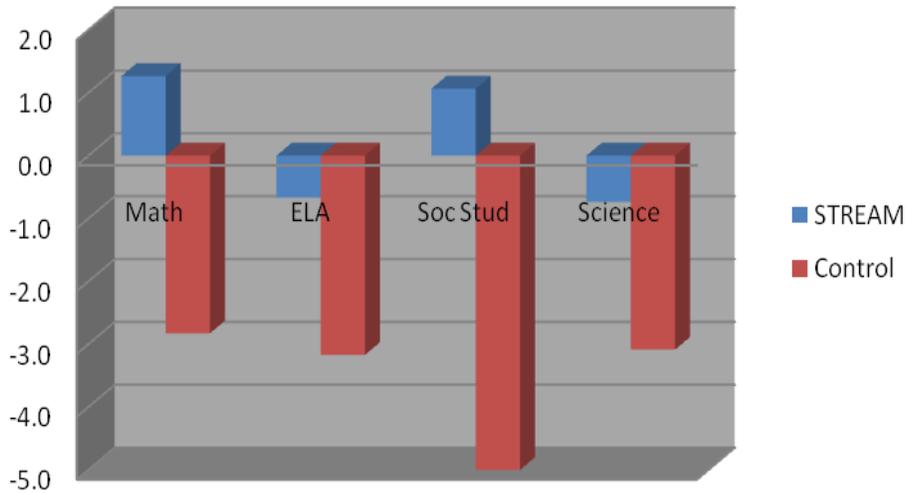
Discussion

The results of analysis of teacher ratings of student assets and behavior and final grades in four core subjects provide extensive support for the positive impact of STREAM on disconnected middle school students. STREAM students showed greater improvement in teacher ratings on all 19 factors rated. On six of these factors STREAM students showed statistically significantly greater improvement.

In terms of academic performance, Stream students did better than controls on all four core subjects. While control students' grades declined in all four subjects, STREAM students improved on Math and Social Studies and showed much smaller declines in ELA and Science. The difference in performance in Social Studies was statistically significantly better for STREAM participants.

Table 1.
Improvement in Assets and Behavior

Based on Teacher Ratings

Pre- Post STREAM CONFIDENCE	STREAM N=40	Control N=59	diff. chi^2	p
1. Self-confidence	60.0%	33.9%	5.56	**<.03**
2. Ability to express feelings	52.5%	16.9%	12.4	**<.005**
3. Can make decisions	32.4%	25.4%	0.26	ns
4. Has interests and hobbies	29.4%	10.2%	2.25	**<.06**
5. Personal hygiene, appearance	32.5%	25.4%	0.29	ns
6. Sense of the future	22.2%	10.2%	0.87	ns

COMPETENCE

7. Uses community resources	28.6%	17.2%	0.05	ns
8. Uses school resources	54.5%	15.3%	10.92	**<.001**
9. Academic performance	38.2%	23.7%	1.56	na
10. Attitude toward school	41.7%	20.7%	3.8	ns
11. School preparedness (homework)	33.3%	16.9%	2.2	ns
12. Class participation	40.0%	16.9%	5.4	**<.03**
13. Classroom behavior	20.0%	16.9%	0.01	ns

CARING

17. Shows trust towards others	27.8%	15.3%	2.04	ns
18. Resects other cultures	44.4%	25.4%	0.73	ns
19. Relationship with family	42.1%	18.6%	0.62	ns
20. Relationship with peers	22.7%	18.6%	0	ns
21. Relationship with peers	28.6%	16.9%	0.01	ns

SCHOOL PERFORMANCE

Improved in one or more grade	23.8%	0.0%	13.04	**<.001**
Fewer discipline actions.	90.2%	78.0%	1.79	ns

Table 2.

Academic Performance (Final Grade)	STREAM			Control				
	2004	**2007**	**N=40**	**2004**	**2007**	**N=42**		
Subject	**Pre**	**Post**	**Change**	**Pre**	**Post**	**Change**	**t/(chi$^{2)}$)**	**prob.**
Math	78.3	79.6	1.3	82.7	79.9	-2.8	(.355)	ns
ELA	76.3	75.7	-0.7	82.3	79.1	-3.2	(1.04)	ns
Soc Stud	77.7	78.8	1.1	82.6	77.6	-5.0	(7.78)	**<.006**
Science	78.9	78.1	-0.7	82.6	79.5	-3.1	(.435)	ns

Student Name_____ (ID_____)   Date _____

We would like you to compare this student's status **compared to the other students in this class.** It's okay to indicate, "don't know" if you have no knowledge about a given area.

	Much Better	A Little Better	About the Same	A Little Worse	Much Worse	Don't Know
CONFIDENCE						
1) Self-confidence						
2) Able to express feelings						
3) Can make decisions						
4) Has interests or hobbies						
5) Personal hygiene, appearance						
6) Sense of the future						
COMPETENCE						
7) Uses community resources						
8) Uses school resources						
9) Academic performance						
10) Attitude toward school						
11) School preparedness (homework)						
12) Class participation						
13) Classroom behavior						
14) Avoided delinquency in the last 30 days?	❏ yes	❏ no				
a. Has stolen property?			❏ yes	❏ no		
b. Has damaged property?			❏ yes	❏ no		
c. Has hit someone?			❏ yes	❏ no		
15) Avoided substance abuse in last 30 days?	❏ yes	❏ no				
a. Evidence of marijuana use?			❏ yes	❏ no		
b. Evidence of alcohol use?			❏ yes	❏ no		
16) Able to avoid sexual behavior likely to result in pregnancy?	❏ yes	❏ no				
CARING						
17) Shows trust toward you						
18) Respects other cultures						
19) Relationship with family						
20) Relationship with peers						
21) Relationship with other adults						

Has there been any improvement in the students grades, in any school subjects, since the beginning of the school year? (please circle)

a. Yes   b. No

If yes, in how **many** subjects have you have observed an improvement in grades? (please circle)

a. 1   b. 2   c. 3   d. 4 or more

How many times in the past three months has this student been a discipline problem resulting in you sending him/her to the office, the Principal, or detention or taking other serious action. _____ times.

Thank you!