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The Effect of Voluntary Service on Adolescent Attitudes Toward Learning

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SERVICE VOLUNTEERING AND LEARNING

In a nationwide poll commissioned by the American Association of University Women¹ the data indicated that all students' enthusiasm for math and science is greatest in the elementary years, and drops precipitously as they get older. By high school, 52 percent of boys think they would enjoy being a scientist, but only 29 percent of girls think they would. Because of these trends we designed a study to provide information on motivating youth in science learning.

The purpose of the study was to examine the effect of voluntary service leadership on a student's motivation to learn. Science was chosen as the topic to be taught using adolescent minorities and females as teachers. The students selected for the project would be teaching science to younger children.

SOCIAL RELATIONS AND LEARNING

Simpson and Galbo² propose that the interaction comprising the student/teacher relationship is the primary instrument for school learning. They propose that the interaction is more than simply a factor in enhancing learning. They propose that interaction is central to the learning process. Simpson and Galbo's hypothesis is that human interaction is a critical factor in the cognitive development and subsequent academic achievement of children.

This interaction is defined as all manner of behavior in which individuals and groups act upon each other. Furthermore, Krappmann³ indicated that children's capacities develop best when the active contribution they make is accepted and the reactions between partners are reciprocal.

THE MODEL

The study we developed in 1991 involved fourteen 7th grade students as instructors in science. The questions the study was designed to address were: 1) will serving as a volunteer instructor enhance the adolescents' motivation to learn and affect their attitude toward science? and 2) what effect, if any, do the social interchanges among the students, the science teachers, and other adults have on the students' achievement in science?

PARTICIPANTS IN THE STUDY

Adolescent participants

Students from Pittsburg School District's English as a Second Language Bilingual middle school were selected for this study. At the middle school, 15% of the student body was limited English speaking or non English speaking. Their student population of 821 was 30% Caucasian, 28% Hispanic, 28% Black and 6% Filipino, 7% Asian, and 1% American Indian. About 31% of the students from the middle school were from single parent families.

Twenty-one adolescents entering 7th grade were originally invited to participate in the project. These teens were identified by the school counselor and included an ethnically diverse group of 11 females and 10 males with a wide spread of grade point averages. Each student was mailed a personalized letter informing the student of his/her nomination to the program by the middle school counselor. Each student was invited to a meeting to learn more about the project before making a decision to participate further. Additionally, all nominated students were telephoned and encouraged to attend.

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Of the 21 adolescents invited, six moved and three declined the invitation. The twelve remaining adolescents included 6 females (2 Latino, 2 White, 1 Asian and 1 African-American) and 6 males (2 Latino and 4 African-American). An additional two Latino females requested and received permission for inclusion after the project had started bringing the total to fourteen. Grade point averages for the adolescents ranged from a .85 to 3.76 with a median of 2.42.

Adult Participants

Staff from the middle school included a first year and 6th year science teachers, (male), a third year science teacher and a school counselor (female). The study was designed by staff from the University of California Cooperative Extension and included a female 4-H Youth Development Advisor and a female 4-H Youth Development Specialist.

Of these adults, the first year science teacher and the two University of California faculty had the most interaction with the adolescents. The first year science teacher accepted responsibility for developing and coaching the adolescents in the science lessons to be presented to 5th graders. He also coached the adolescents in teaching strategies and styles. The 4-H Youth Development faculty worked with the adolescents on team building, teaching methods, and working with younger children. Each of these opportunities was designed to build the youth's leadership skills and confidence to prepare them to teach fifth grade students' science.

PREPARATION FOR TEACHING ROLES

A series of workshops were held to prepare youth to be volunteer science instructors of younger children. The first training opportunity for the middle school participants was a one day workshop in August 1990. The students were invited to the School District office to learn about the project, the science lessons they might teach, what their commitment would be if they decided to volunteer, and to enjoy pizza and soft drinks.

Six youth were able to attend the first workshop. The science lessons, to which the youth were exposed as ones they

might teach, were presented by exuberant high school youth, from another county, who had been trained to teach a specific science curricula. At the end of the day, the middle school participants were asked if they wished to make a one-year commitment to be an instructor. Even though the extent of the commitment was tentative at that time, all attending youth signed on.

In October, the middle school youth were invited to attend a one-day science education workshop for adult and teen volunteers. Twelve students and one of their parents traveled to Laney Community College in Oakland and spent the day learning science activities. These youth then presented science "mysteries" to elementary school parents in October. These science learning activities were done to alert parents that these same adolescents would be teaching science to their 5th grade students at that elementary school. The 5th grade parents were exposed to some of the concepts their children would be learning through the various interactive science lessons the adolescents presented.

During this time, the time commitments of the youth were defined. They included staying after school for 1 and 1/2 hours each week for the training sessions and missing school three 1/2 days over a period of a month and a half. This would require them to do makeup assignments and work closely with the teachers of the classes they would miss. Again 100% of the youth committed themselves to the project.

In January, regular training of these adolescents to prepare them for teaching 5th grade science lessons began with a half day workshop at the school. This was scheduled on a day when school ended at noon. The youth could have had the afternoon free, but chose to be at the workshop. The objectives of the first half day workshop were to 1) begin to develop a team out of the adolescents involved, 2) clarify the roles and the expectations of the youth and the adults involved, 3) begin to provide the youth with information and build skills in teaching methods, 4) provide opportunity for interaction and answering of questions related to the study.

The first workshop included activities in topic areas such as communication, conflict resolution, how to work with children, and how to make an oral presentation. The remaining sessions with the adolescents occurred after school one afternoon a week and included team building, cross age tutoring methods, and science curricula.

Following the general educational methods trainings, the science teacher devised three science lessons for the adolescents to teach to the 5th grade students. The three lessons were in the topic areas of taxonomy, physiology, and physics. At the after school meetings the adolescents either practiced the science lesson they would be teaching the following week or discussed and evaluated the lesson they had just taught to the 5th grade students.

ADULT AND ADOLESCENT INTERACTION

Based on the hypothesis of Simpson and Galbo, the project was designed to have adults become partners with adolescents. Adults participated in all the team building games as participants, not leaders. When not modeling the lessons, they participated as did the youth. When the teens led an activity, the adults followed and did not offer help unless asked or until time to critique. The students responded positively to participating with adults on an equal basis.

Adolescents seemed to enjoy team "rituals" led by the science teacher. Prior to each teaching session he led them all in a *repeat after me chant*. He would call out such things as, "As a teen instructor, I promise to not give the kids the answers." The teens would repeat this in segments. In addition to humorously making a point about their teaching, it seemed to dispel the nervousness felt by some of the adolescents.

EVALUATION

We received some unsolicited feedback from the school counselor, the parents of the teenagers and some science teachers. In a single case the parent of one adolescent reported a profound change in her son. Prior to attending our training he was unmotivated, a behavior problem in

school, and not communicating with his mother. Following his selection and involvement in our program he talked excitedly for two hours straight at home. His school counselor said he used to be in the principal's office once a week for behavior problems and in the first five weeks of school he had only been referred once. The young man recently moved here from El Salvador and this program seemed to give him a connection he needed.

All the teens were capable of teaching a lesson and acting as a mature role-model regardless of their past academic achievement. They willingly came to afterschool trainings and meetings even though nothing more than graham crackers and soft drinks were provided as compensation. Other adolescents not included asked to be involved.

The adolescents enjoyed the praise offered by the fifth-grade teachers in whose classes they conducted their science lessons. It was an opportunity for the adolescents to interact positively with teachers and to be judged solely on current performance without past academic achievement being a consideration.

The adolescents also seemed to really enjoy the opportunity to work with the junior high science teacher in a non-graded, informal situation.

EXPLORING WAYS TO EVALUATE THE IMPACT OF THE PROJECT

An assessment tool to evaluate participants' behavior and/or academic change was used on a pilot-basis for this project. While data was not collected prior to beginning the program, teachers, parents, and the students were asked to report their perceptions of student behavior changes from fall to end of winter quarter. In the future, assessments will be requested before, during and following the program by the teachers, parents, and students.

The evaluation tool was based on a classroom behavior checklist used by the school psychologist to evaluate students' classroom behavior. The pilot assessment tool included many of the same positive and negative behaviors and asked teachers, parents and students to indicate if the students engaged in the behavior often,

sometimes, or never during the fall. They could also check *don't know*. Examples of the behaviors considered positive were: homework done on time; follows directions; and is attentive in class. Examples of negative behaviors were: disrupts class; is absent; and has missing homework.

The fall and winter responses were compared for each student. If a student engaged in a negative behavior less often than before, it was counted as an improvement. Similarly, if a negative behavior increased in frequency, it was counted as a regression. Conversely, if a positive behavior took place more often, it was an improvement and if less often it was a regression.

At least one teacher provided an assessment for 13 of the 14 students; and two for five of the students or a total of 18 teacher responses. Four parent evaluations and four student evaluations were received. There were three students for whom evaluations from parent, student, and at least one teacher were received.

RESULTS OF THE PILOT ASSESSMENT TOOL

According to reporting teachers, there were no changes for most students in most behaviors. That is, a student who did not disturb others in the fall, did not disturb others in the winter. Most students who had to be encouraged to do homework in the fall, had to be encouraged to do homework at the end of winter.

However, there were some changes reported more often than others. Two positive behaviors, *asks appropriate questions related to topic* and *participates in class activities* were reported as improvements six times. *Displays high levels of effort* was reported improved five times. There were six incidences of improved grades.

The most frequently reported regressions were *has missing homework* (five times); *not following directions* (five times); and *displays attention getting behaviors* (five times). There were five incidences of poorer grades. Often students who seemed to regress were reported by teachers to be in transition or having family problems. One student left the country for several months and had a difficult time catching up. Another was reported by

teachers as going through a time of increased socializing with friends to the detriment of school work. In both cases, the teachers reported the students seemed to be coming out of it.

Three of the four parents reported improvements in students' ability to follow directions. Three of the four students reported they were more attentive in class.

Two parents reported they felt the program helped boost their child's confidence and self-image. One of these students has only been in the country two years. Her mother reported improvements in all behavior areas, and attributed her daughter's improvements to the self-confidence she gained from this program. Ironically, this student was reported by a teacher as having regressed in all areas. This teacher went on to say she loved having this student in her worst class of the day as this student was very quiet. Is it possible this student is getting the message she is valued for being quiet? If so, is that why she behaves that way in this class and what would she do if she knew this teacher reported she had regressed in class participation and asking questions?

After looking at the results, we questioned whether some behaviors we initially thought as negative could perhaps be positive. For example, although we initially believed following directions to be a positive behavior, five students regressed, that is they were reported as not following directions as often in the winter as they had in the fall by the teachers. During the training these students received as science instructors, experimentation and discovery were highly rewarded. Although they learned the importance of giving and having directions followed when they were teaching 5th graders, they also encouraged discovery and experimentation. We need to collect more data on what the regression from following directions entailed to determine if this is a negative or positive result.

WHAT THE YOUTH SAID

At the completion of the pilot project the adolescents were asked other questions at their final meeting which was a time to celebrate their work and to receive certificates for their involvement. Of the

fourteen involved in the study, ten were present.

Why had they volunteered to be a teen instructor for this project? Five of the youth said they wanted to work with younger children, four liked the idea of visiting other schools and getting out of their own school, two wanted to learn more about science and one was curious and one said, "I was forced by my parents."

What did they like most about the project, what did they dislike and what would they like to see changed? Eight of the youth liked meeting other kids and 6 liked going to teach at an elementary school. Again, two liked getting out of school and one reported learning how to talk and one liked learning new experiments.

The youth were more diverse in what they disliked. Three said they disliked the fact that we did not meet more often and that the project ended too soon. Three disliked meeting after school, two said they disliked the boring speeches and games and two disliked having partners assigned. One was concerned about missing school and then catching up and one said, "I disliked it when others disrupted the sessions."

The changes the youth recommended for the project included going to more elementary schools (4), making this an elective time project (2), having funnier games (1) and meeting at night or on weekends (1). Three youth said change nothing, just do it. And one youth reported, "I would change my attitude because I get impatient with children."

Since the effect of service volunteering on the motivation to learn science was one of the questions addressed in our study, we asked the youth if they felt any differently about science as a result of their involvement in this project. Five youth said yes, one maybe and four youth

reported no change. When we asked the youth if they would participate again next year they all reported yes, they would volunteer.

IMPLICATIONS FOR FURTHER STUDY

More extensive refinement and testing of assessment tools needs to be conducted. Of particular interest will be measurements of the impact of different social interactions on the students' academic performance and/or effort in school. Base data for all student participants needs to be collected from all teachers, parents, and the students themselves prior to beginning the program. To ascertain the meaning behind responses to individual behaviors, interviews with parents, teachers, and students need to be conducted. This provides the information to refine the measurement instrument for use with larger groups in assessing the impact of a program such as this.

SUMMARY

Although indications point to some positive results of this pilot project in improving student motivation to learn, especially in science, there is not enough information to clearly identify the variables having the greatest effect. It is the opinion of the authors that the social interaction of the adults involved with the adolescents in roles of partners and coaches had a substantial affect on the student's attitudes toward science.

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