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The Effect of the Love and Logic Program on Student Motivation

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Courtney V. Coffin
Dominican University of California

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Courtney V. Coffin

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This thesis, written under the direction of the candidate's thesis advisor and approved by the chair of the Master's program, has been presented to and accepted by the Faculty of Education in partial fulfillment of the requirements for the degree of Master of Science. The content and research methodologies presented in this work represent the work of the candidate alone.

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Abstract

This study evaluates the effect of implementing the classroom management program Love and Logic in small, middle and high school science classrooms. It focuses on science classrooms from seventh grade to twelfth grade in a small, rural district. The student population includes large percentages of white and Hispanic individuals, with a smaller percentage of Native American individuals as well as a large percentage, over 60%, of socioeconomically disadvantaged individuals. There were five cohorts, divided by type of science class and age, and the intervention was implemented by a multiple baseline across behaviors method. The cohorts were seventh grade life science, eighth grade physical science, freshmen (with a few older students) earth science, sophomore biology, and junior and senior chemistry. Student motivation was measured weekly by a sixteen question survey that each student in each class answered. The study found that Love and Logic does not improve motivation in middle and high school science classrooms and is unable to prevent a decline in motivation. The study concludes that Love and Logic needs to be studied more in middle and high school classrooms to find ways in which it can be implemented more effectively. The study encourages future research in professional development regarding the Love and Logic program including more time spent by teachers learning how to implement it and finding out the effects of school-wide or district-wide implementation.

Introduction

Student motivation is directly related to student achievement. This study attempts to demonstrate a positive relationship between a student discipline program, Love and Logic, and student motivation. Drawing from this researcher's experiences, it was discovered that a major obstacle teachers must overcome to attain student success is low student motivation. Many students state that they do not care if they do well in school. Discussing this phenomenon with other teachers led this researcher to the realization that low student motivation is a major obstacle for other teachers as well.

Martin and Dowson (2009) argued "the importance of high-quality interpersonal relationships in young people's capacity to function effectively, including in their academic lives" (p. 327). The Love and Logic program claims to allow teachers to build these high-quality relationships with students while maintaining discipline and respect in the class. As a corollary effect, the Love and Logic program also claims that students will learn to take responsibility for their actions. These two outcomes will lead to students having internal loci of control and higher motivation to learn. This study examines one implementation of this program for improvements in student engagement.

Background and Need

This researcher's personal need for a classroom management and discipline system arose from an experience while teaching seventh grade science. This researcher spent four hours the night before class making a lesson plan. It was going to be an amazing learning experience for the students: a giant concept map that reviewed a whole chapter. The whole class would construct the map together. The pieces were color-coded. Each student was given a number of

pieces, and like a puzzle, the students had to put them in order on the butcher paper. It was completely planned out. There were clear instructions, and steps were broken down into component steps so that students could perform them one at a time.

Something went terribly wrong, however. Six of the 18 students were in a corner talking and throwing paper balls. Three of the students were working on the concept map and the rest of the students were milling aimlessly around the concept map saying, "I don't get it" and "this is confusing." The project was salvaged by removing the students throwing paper, and regrouping the students so that each group had one person that understood the project. However, the larger obstacle remains: student motivation.

Why do today's students choose "I don't know" over "let me think about that for a moment" or "how about this"? Many believe it all comes down to locus of control and motivation. Locus of control refers to the perception of fate. People with internal loci of control believe they are in charge of their own fate. People with external loci of control believe that their fate is based on luck and their external environment (Ng, Sorensen, & Eby, 2006, p. 1057). When a person has an internal locus of control, they are intrinsically motivated (Ng, Sorensen, & Eby, 2006, p. 1060).

Motivation is "a set of interrelated beliefs and emotions that influence and direct behavior" (Wentzel, 1999; Green, Martin, & Marsh, 2007; Martin, 2007, 2008a, 2008b, in press; all as cited in Martin & Dowson, 2009, p. 328). These beliefs and emotions are influenced by society, family, teachers, friends, and brain chemistry and can be complicated. Kinzie and Sullivan (1989) discussed the importance of curiosity and challenge in establishing motivation. Sengodan and Iksan (2012) discussed the importance of motivation to academic achievement. In

a review of previous research, researchers cited above, found that there was a positive relationship between motivation and academic achievement. It should be no surprise, then, that many programs that can be purchased guarantee increased achievement using motivational strategies. Love and Logic is one such program. Love and Logic, designed through research (Love and Logic Website, n.d.), claims to challenge students to take responsibility for their actions (internal locus of control) and to appropriately explore their education. Using the research provided by Love and Logic, as well as that of this study, the program has been implemented and examined for its effectiveness in increasing student motivation.

Statement of Problem

Teachers need to know if student motivation can be improved through implementing Love and Logic. This researcher has found that high school students in her classes generally have no motivation to learn. Of course, there were those students who want A's, but there are no students in this researcher's current classes who wish to learn for the sake of learning. Therefore, this action research study was designed to implement and evaluate the results of a curriculum designed to increase student motivation. Specifically, the Love and Logic program was implemented in this researcher's classroom because of its claims to foster positive relationships in which students are accountable and teachers are in charge:

> Love and Logic is a method of working with students which was developed by educational expert Jim Fay, child psychiatrist Foster W. Cline, M.D., and Charles Fay, Ph.D. Love and logic has many tools for educators, principals and districts that promote healthy parent/teacher and teacher/student relationships and positive school wide discipline. (Love and Logic Website, n.d.)

By studying and implementing Love and Logic, this researcher will attempt to turn students' loci of control inward and increase their intrinsic motivation.

Purpose Statement

The purpose of this study is to determine whether student motivation will be improved through implementation of the Love and Logic program in a high school science class. The school district of this study recently started offering classes in this program. This researcher decided to participate in these classes and implemented the program in her classroom as she proceeded through the nine week course. Prior to implementing the program, overall student motivation was measured through anonymous surveys both before and after implementation.

Research Hypothesis

Measuring student motivation allows the researcher to test the claims of the Love and Logic program. The study hypothesizes that students who participated in the Love and Logic program would show improved motivation scores relative to those seen prior to implementation of the program.

Theoretical Rationale

The key theoretical assumptions made during this research are (a) students with external loci of control have lower intrinsic motivation to learn; (b) students with internal loci of control have higher intrinsic motivation to learn; (c) student intrinsic motivation directly relates to student achievement; and (d) student intrinsic motivation is influenced not only by internal loci of control, but by strong interpersonal relationships. This study attempts to illuminate a relationship between the Love and Logic program and student intrinsic motivation, which this

study assumes will increase student achievement in the classroom. Methodologically, it is assumed that the survey used accurately measures student motivation on a scale from highly extrinsic to highly intrinsic. Using these assumptions, both theoretical and methodological, the hypothesis was tested.

Review of the Literature

This review of literature discusses the importance of motivation on student achievement. It also describes strategies already being used in classrooms to increase achievement through improved motivation including strong interpersonal relationships.

Review of Previous Literature

Previous researchers have studied the link between motivation and achievement. There are studies that show correlations between intrinsic motivation and higher student achievement (Moen & Doyle, 1978; Sengodan & Iksan, 2012; Breen & Lindsay, 2002). Because many studies show these correlations, teachers and researchers strive to increase motivation in their students. This section describes the relationship between motivation and student achievement. Then, it moves on to describe strategies already in practice to increase motivation, including strengthening interpersonal relationship.

Relationship between motivation and student achievement. The literature on motivation is exhaustive. Researchers in business, education, psychology, biology, physiology, and other fields have quantified, qualified, and analyzed motivation. The traditional motivational theory described by Breen and Lindsay (2002) discussed motivation traits as either general (such as need to achieve) or ability related (such as intelligence). These traits relate performance to the individuals and not to the context in which the performance takes place (Breen & Lindsay, 2002). There is a second family of theories that emphasize performance context. In these theories, motivation is goal oriented (Breen & Lindsay, 2002). These theories, both traditional and modern, lead researchers to measure motivation through multiple methods.

Measurement of academic motivation has ranged from case studies to surveys, from observations to interviews. Moen and Doyle (1978) reviewed measures of academic motivation in college students. Three motivational variables these researchers studied were anxiety, need for achievement, and intrinsic motivation. The researchers argued that anxiety is a negative form of motivation, in which punitive consequences are used to get students to work. The researchers also argued that need for achievement should not be considered a subset of intrinsic motivation as previously thought. The need for achievement, they argued could be motivated by extrinsic factors such as parental pressure and surrounding culture.

Moen and Doyle (1978) also distinguished three types of motivation measures: single general motivation measures, single specific measures, and multiple measures. These three instruments were found to have a "bandwidth-fidelity" dilemma (Moen & Doyle, 1978, p. 19). This means that the instrument that measured the most motivational measures was the least precise, while the instrument that was the most precise only measured one motivational measure. The Moen and Doyle study illuminated the key questions that a motivation instrument will be able to answer.

Researchers have found a positive correlation between motivation, especially intrinsic, and academic achievement. Sengodan and Iksan (2012) found that motivation plays an important role in the selection of learning styles practiced by students. Specifically, there is a strong correlation between "effort intrinsic motivation and hard work learning style" (Sengodan & Iksan, 2012, p. 21). Effort intrinsic motivation is the internal want to put effort into a project and hard work learning style is the style of learner who is willing to work hard on a project. This means that a student with effort intrinsic motivation will try hard in a class even if it is not that

student's favorite. Several studies identify that learning styles and motivation differ based on the needs and knowledge of the student (Sengodan & Iksan, 2012).

Correlation between strong interpersonal relationships and motivation. Teachers evaluate and assess students throughout the school day. It is wrong to assume that students do not do the same to teachers. Students evaluate and assess teachers based on rapport, instructional style, communicative style, and stimulation (Haslett, 1976). Through these major dimensions, students judge not only the teacher but their relationship with the teacher. These relationships have been shown to play significant roles in students' achievement (e.g., Creasey et al., 1997; Culp, Hubbs-Tait, Culp, & Starost, 2000; Field, Diego, & Sanders, 2002; Marjoribanks, 1996; Martin, Marsh, McInerney, Green, & Dowson, 2007; Pianta, Nimetz, & Bennett, 1997; Robinson, 1995). Martin and Dowson (2009) make a strong case for interpersonal relationship arguing that relationships provide help, support, and companionship to both parties.

A healthy relationship is a key aspect of development and a critical factor in student engagement and academic motivation. Healthy interpersonal relationships develop through an educational environment in which students' needs are met. An interpersonal relationship "recognizes and actively accommodates the interconnectedness of the social, academic, and affective dimensions of the self and the need for educational programs to recognize this interconnectedness" (Weissberg, Kumpfer, & Seligman, 2003 as cited in Martin & Dowson, 2009, p. 331). A teacher who can recognize and connect with all facets of a child can develop a relationship with the child that allows both teacher and student to learn about each other. Students who experience positive interpersonal relationships develop a sense of belonging which in turn is correlated with higher success (Ang, 2005).

As students progress through school, the quality of relationships decreases slightly from preschool through early elementary school (O'Connor & McCartney, 2007). These researchers speculated that the decrease is due to a greater emphasis on instruction rather than relationships as students move up the grade level. While O'Connor and McCartney (2007) focused on younger children, there is a balance that must be reached. Teachers must nurture a relationship with students at all grade levels, but are constrained by time and content to focus on instruction. O'Connor and McCartney (2007) argued that early-education teachers are instructed in fostering quality relationships with children yet higher grade level teachers are instructed in ways of improving instruction. Not only do students achieve more when they are in high-quality interpersonal relationships, but their well being improved. The well being of students has a positive correlation with interpersonal relationships. This well being leads to a positive classroom climate that leads to achievement (Van Petegem, Aelterman, Van Keer, & Rosseel, 2008).

In his meta-analysis of learner-centered teacher-student relationships, Cornelius-White (2007) described ways to improve relationships with students, student motivation and therefore student achievement. Cornelius-White (2007) identified five aspects of learner-centered relationships that promote student motivation: teacher empathy, unconditional positive regard, genuineness, nondirectivity, and encouragement of critical thinking. These aspects give students an environment that is save and warm but that allows them to make choices and be accountable for their actions. This accountability and choice promote motivation and well being of the student (Bishop & Pflaum, 2005).

Love and Logic Program's discipline strategies. Love and Logic is based on research conducted by its creators, Charles and Jim Fay. These researchers use Brophy's (1983) model of

classroom organization and management when instructing teachers about the Love and Logic program. The Love and Logic program takes disciplinary practices from multiple sources, culminating in a assortment of programs that are research-based. The program claims that this disciplinary strategy demonstrates to students that the teacher cares about them but will not take any problems from them. The program designers claim that teachers will be able to manage their classrooms and have high-quality relationships with all students. Another study used by Love and Logic, Marshall (2005), discerned between classroom management and discipline, stating that the former "deals with how things are done." while the latter "is the responsibility of the student"(Marshall, 2005, p. 51). Marshall (2005) states three principles that should be practiced by teachers for enhanced classroom management:

1. be positive;
2. offer choices in any situation or activity; and
3. ask reflective questions (pp. 51-52).

These principles raise students to accountability which in the long run should lead to student achievement, through motivation and interpersonal relationships.

Other methods of increasing motivation. There are other methods of improving motivation. These are a few techniques that researchers have found to work in raising accountability and motivation in the classroom. Brophy (1983) identified three key components to classroom management that leads to student accountability:

1. the teacher is the authority figure and instructional leader of the classroom;
2. good classroom management implies preventing problems before they occur; and

3. good classroom management is effective and cost effective. (pp. 264-266)

Brophy (1983) also described a study comparing good classroom management to bad classroom management. This study found that teachers with good classroom management prevented problems by keeping students accountable for their actions and for their learning (Brophy, 1983). Brophy (1983) listed multiple characteristics that these teacher have including, but not limited to, "withitness", group alerting and accountability in lessons, getting off to a good start, and skills in diagnosing students' focus of attention. (pp. 266-267) All of these characteristics create an expectation that students will learn and therefore motivates students to learn.

Summary of Major Themes

There is a relationship between motivation and academic achievement. Teachers who can increase student motivation through strategies such as building strong interpersonal relationships, having consistent discipline, and using a program such as Love and Logic can manipulate student motivation to increase student academic achievement.

How Current Study Will Extend Literature

This study focuses on Love and Logic and its effect on student motivation in a specific classroom setting. Teachers or schools who wish to improve motivation and have decided to try Love and Logic may use this research to decide whether it will be a good program to implement in their setting. Also, teachers struggling with motivation may use this study to learn the benefits and costs of implementing Love in Logic in their classrooms.

Methods

The methods used in this study are described below. The sample population is ethnically diverse with a high socioeconomically disadvantaged population. The intervention was the implementation of the Love and Logic program in five classrooms. This implementation occurred in a staggered pattern over a five week period. Finally, a *t*-test was used to determine statistical significance and to find *P*-values.

Sample and Site

The school of study is a rural school in Northern California's Mendocino County. The surrounding community relies heavily on agriculture. Please see Table 1 for demographics of the school site. The most populous ethnicity is Caucasian, seconded by Hispanic. Sixty percent of the students are on free or reduced lunch (labeled socioeconomically disadvantaged). The sample for this study was 109 students ranging in age from 12 to 18 (7th grade through 12th grade). Forty-eight students were female, and 60 were male and 1 was transgendered. There were 74 Caucasian students, 1 African American student, 25 Latino students, 5 Native American students, and 4 students with two or more ethnic identifiers. All of these students participated in junior/senior high school science classes at the site described above. The students all met in the same science lab classroom at varying times in the day. Cohort 1 consisted of 22 seventh and eighth graders, Cohort 2 consisted of 29 freshmen, sophomores and juniors, Cohort 3 consisted of 21 seventh and eighth graders, Cohort 4 consisted of 19 juniors and seniors, and Cohort 5 consisted of 18 sophomores.

Table 1

Demographics of School Site by Ethnicity, Socioeconomic Status, and Gender

Category	Junior High School	High School	Total	Percent
American Indian	1	6	7	5%
Hispanic	10	23	33	25%
African American	1	0	1	0.75%
White	28	63	91	68%
Filipino	0	1	1	0.75%
2 or More Ethnic Identifiers	1	0	1	0.75%
Male	23	55	78	58%
Female	18	38	56	42%
Special Education Qualified	6	9	15	11%
Socioeconomically Disadvantaged	28	53	81	60%

The Love and Logic program was implemented in the classroom following a 9-week optional course proctored by other teachers at the site. Teachers volunteered to take the course on the program. The course was held once per week for 45 minutes. Two colleagues proctored the course, which used handouts, scripted lecture, and video clips from the authors of the program. It was not required, nor did all teachers implement the program in their classrooms. There were course handouts every week that described proper implementation. These handouts were used by the researcher to properly implement the program in each of five science classes during the "intervention" phase of the research. Table 2 summarizes the nine modules and their

content**.** The intervention occurred in each class at different weeks to establish a multiple baseline study across behaviors.

Table 2:

A Summary of the 9 Modules of the Love and Logic Program

Module	Skill	Relationship to Motivation	Teacher Activities
1	Neutralizing Student Arguing	Students learn boundaries and how to speak respectfully with adults.	1. Teachers do not think about what a student is saying. The program calls this going brain dead. 2. Teachers repeat simple Love and Logic one-liners such as "I respect you too much to argue."
2	Delayed Consequences	Students learn while anticipating a consequence.	Teachers use sentences such as, "Oh, no. This is sad. I'm going to have to do something about this! But not now...later...try not to worry about it."
3	Empathy	Students stay out of the fight or flight mode and think before acting.	When teachers deliver a consequence, they start their conversations with genuine empathy that tells a student, "I care about you, but I will not rescue you from your poor decisions."
4	The Recovery Process	Students learn they are welcome in the classroom for every minute they are not making it difficult for others to learn or for the teacher to teach.	When students are inhibiting the learning of others or the teaching of the teacher, they are sent to a different area so that the learning environment is preserved and the misbehaving child can continue to work.
5	Developing Positive Teacher/Student	Students and teachers develop strong, positive relationships based on the understanding that teachers are strict but	1. Teachers use the "one sentence intervention" before problems get out of hand. The intervention is to say: "I noticed

	Relationships	caring.	that..." for multiple weeks showing the students that you care about them and do not judge them. 2. When multiple students misbehave, teachers follow a 6 step process: a) Identify the leader. b) Find acceptable ways for these leaders to look good in front of the group. c) Spend extra time building relationships with these leaders. d) When leaders begin to misbehave, intervene quickly. e) If the leader does not comply, and other students begin to join in, fall back on the Recovery plan. f) Have brief one-on-one follow-up meetings with the leaders.
6	Setting Limits with Enforceable Statements	Students learn that there are reasonable limits that are enforceable.	Teachers never tell students what to do. Rather they tell students what the teacher will do, or will allow. Also, teachers resort to questions with tough students rather than demands.
7	Using Choices to Prevent Power Struggles.	Students are given small choices which allows them to feel appreciated and to be more willing to comply with teacher requests.	Teachers use appropriate choices such as, "Should the assignment be due next Monday, or next Tuesday?" They are used strategically so that students feel it is "fair" when a teacher does not give a choice.
8	Quick and Easy Preventative Interventions	Student misbehavior is stopped before it begins. Students learn to discipline themselves.	Teachers use interventions before consequences are needed. When students are on the verge of misbehaving or the behavior is minor and not chronic. Teachers

			may say, "Will you stop that, just for me. Thanks."
9	Guiding Students to Own and Solve Their Problems	Students learn they are capable of solving problems without resorting to fighting and back talking.	Teachers act like a consultant with students. Empathizing with them, understanding their feelings, but not rescuing them from their problems or bad choices. There are five steps to help students solve problems on their own: a) Provide a strong dose of empathy. b) Hand the problem back in a caring way. c) Ask permission to share some solutions and provide choices. d) Help the student evaluate the potential consequences of each choice. e) Allow the student to either solve or not solve the problem.

Access and Permissions

Participants were recruited face-to-face. They were asked to answer survey questions voluntarily. Also, a permission letter was sent home to parents informing them of the study, the survey and how to withdraw their students at any time.

Data Gathering Strategies

The independent variable was the correct implementation of the Love and Logic program in all science classes in the school site. The dependent variable was the measure of motivation. Motivation was measured on surveys that were handed out to students every Friday for eight

weeks. The survey used during this study attempts to measure as many motivational variables as possible. In this way, the study more fully describes the motivation of students before and after implementation of the Love and Logic Program. With the correct instrument to measure motivation, academic achievement can be predicted. The surveys contained sixteen questions with a five-point rating scale: 1 meant strongly disagree, 5 meant strongly agree. These questions were analyzed by the researcher to determine if "strongly agree" meant high motivation or low motivation. The questions in the survey were created based on a motivation survey for employees. The researcher modified the questions extensively to be readable for children and to relate to schoolwork rather than employment. The questions asked focused on motivation. Please see survey in Appendix A. The participants were naturally divided into five science classes based on grade level. Using this division, the researcher implemented a multiple baseline across behavior design. All classes had a minimum of two weeks of baseline discipline strategies with surveys. Cohort 1 began Love and Logic in week three; Cohort 2 in week four; Cohort 3 in week five; Cohort 4 in week six; and Cohort 5 in week seven. The surveys continued through week eight.

Data Analysis Approach

In questions 1, 2, 3, 4, 6, 10, and 11, a response of 5 implied a low motivation, while in the rest, a 5 implied a high motivation. Because of this, questions 1, 2, 3, 4, 6, 10, and 11 were re-numbered during data analysis so that all 5's were high motivation. For these questions, when recording a score, the numbering was reversed in order to provide consistency for the analysis**.** A *t*-test was used to determine if there was a change after intervention and *P*-values were established to determine statistical significance. Both of these tests were used for the classes separately as well as for the sample as a whole.

Ethical Standards

This study adheres to Ethical Standards in Human Subjects Research of the American Psychological Association (Publication Manual of the American Psychological Association, 2009). Additionally, the project was reviewed and approved by the Dominican University of California Institutional Review Board.

Findings

The section below details the findings of the study. Within this section, there are revisions to the sample site demography and size due to attrition. Also, *t*-test results are listed here. Graphs clarify the results by visually organizing the data into weekly averages per cohort with a line at intervention.

Description of Site, Individuals, Data

By the end of the study, there were 102 participating students. One student left the school and six students chose not to participate in the surveys. All students lost from the study were from Cohort 2. This means Cohort 1 contained 22 seventh and eighth graders, Cohort 2 contained 22 freshmen, sophomores and juniors, Cohort 3 contained 21 seventh and eighth graders, Cohort 4 contained 19 juniors and seniors, and Cohort 5 contained 18 sophomores. Also, because of the long period of time in which the surveys were given, some students were absent during the proctoring of surveys. To account for this, missing data was scored as a midpoint of 3.

To implement the Love and Logic program, nine modules were followed. The modules each focused on a specific discipline technique. The nine together are the essential skills for the program. A visitor to a Love and Logic classroom will be able to identify these nine essential skills as summarized in the modules. Table 3 summarizes the implementation as it relates to this site and sample in particular.

Table 3

Summary of Implementation of Love and Logic on Sample and Site

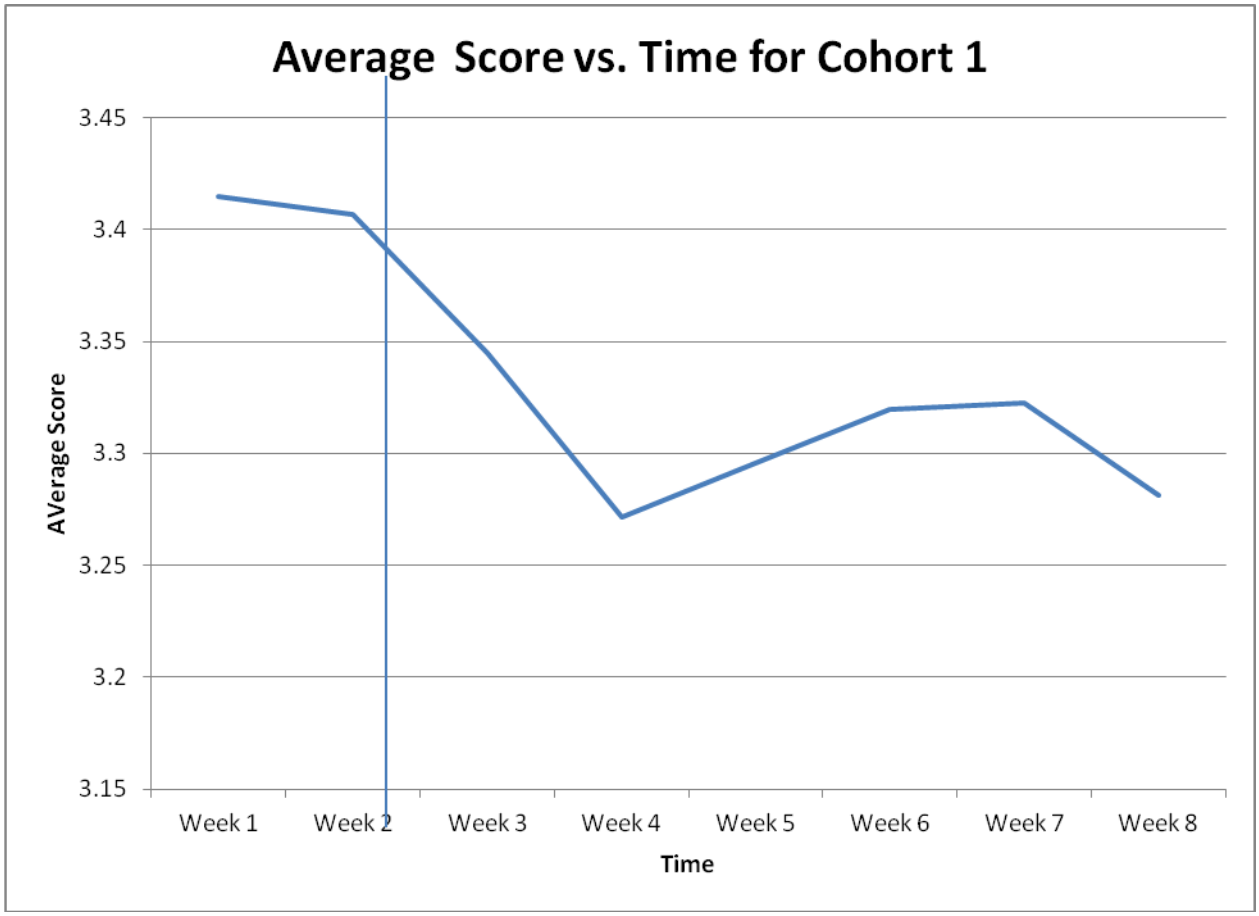
Module	**Skill**	**Intervention Strategies.**
1	Neutralizing Student Arguing	Teacher used "I respect you too much to argue" whenever a student attempted to argue.
2	Delayed Consequences	Most consequences were delayed until then end of class unless safety was an issue.
3	Empathy	Conversations with students regarding poor choices started with statements of empathy.
4	The Recovery Process	Students whose behaviors inhibited the learning or teaching process were sent out of the classroom to the principal's office. This was not called "Recovery" but they were required to work while there. They did not return to class during that period.
5	Developing Positive Teacher/Student Relationships	Teacher did use "I noticed that" statements throughout the intervention process. There were no student groups that misbehaved during the intervention.
6	Setting Limits with Enforceable Statements	Teacher re-evaluated current rules of the classroom and re-worded them so that they were enforceable statements such as "I listen to you when your voice is calm."
7	Using Choices to Prevent Power Struggles.	Teacher added more choices to the current discipline strategy. For example, students were allowed to choose between group sizes depending on the project.
8	Quick and Easy Preventative Interventions	Teacher implemented preventative interventions for small misbehaviors rather than ignoring them until they became larger issues.
9	Guiding Students to Own and Solve Their Problems	Teacher used conflict mediation techniques. These techniques were used both during conflicts between students and during conflict between student and teacher.

The mean scores for each Cohort, before and after intervention, were just slightly over the midpoint of 3. Please refer to Table 4 for a listing of mean scores, *t*-test results, and *P*-values

for each Cohort as well as overall. It can be seen in Table 4, that Cohort 1 and Cohort 2 both had statistically significant negative changes after the intervention. Cohort 3 and Cohort 5 both had negative changes after the intervention but were not statistically significant. Cohort 4 was the only Cohort with a positive change after intervention but the change was not statistically significant. Overall the intervention had a negative effect that was statistically significant. Please see Graphs 1-5 for weekly averages per class. The vertical line on each graph represents implementation of the intervention. Please see Graph 6 for overall averages by week. There are no lines for intervention.

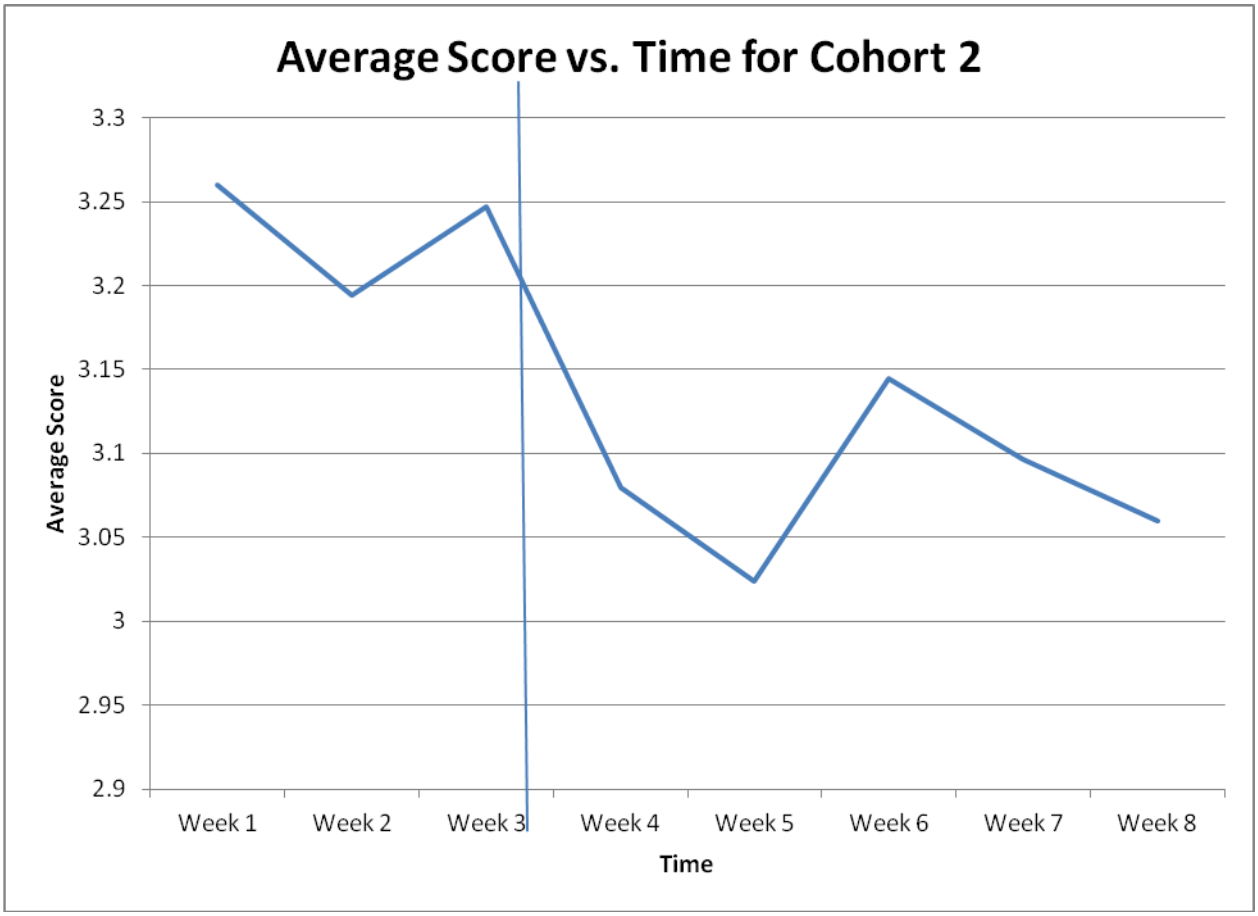
Graph 1

Average Weekly Score vs. Time for Cohort 1



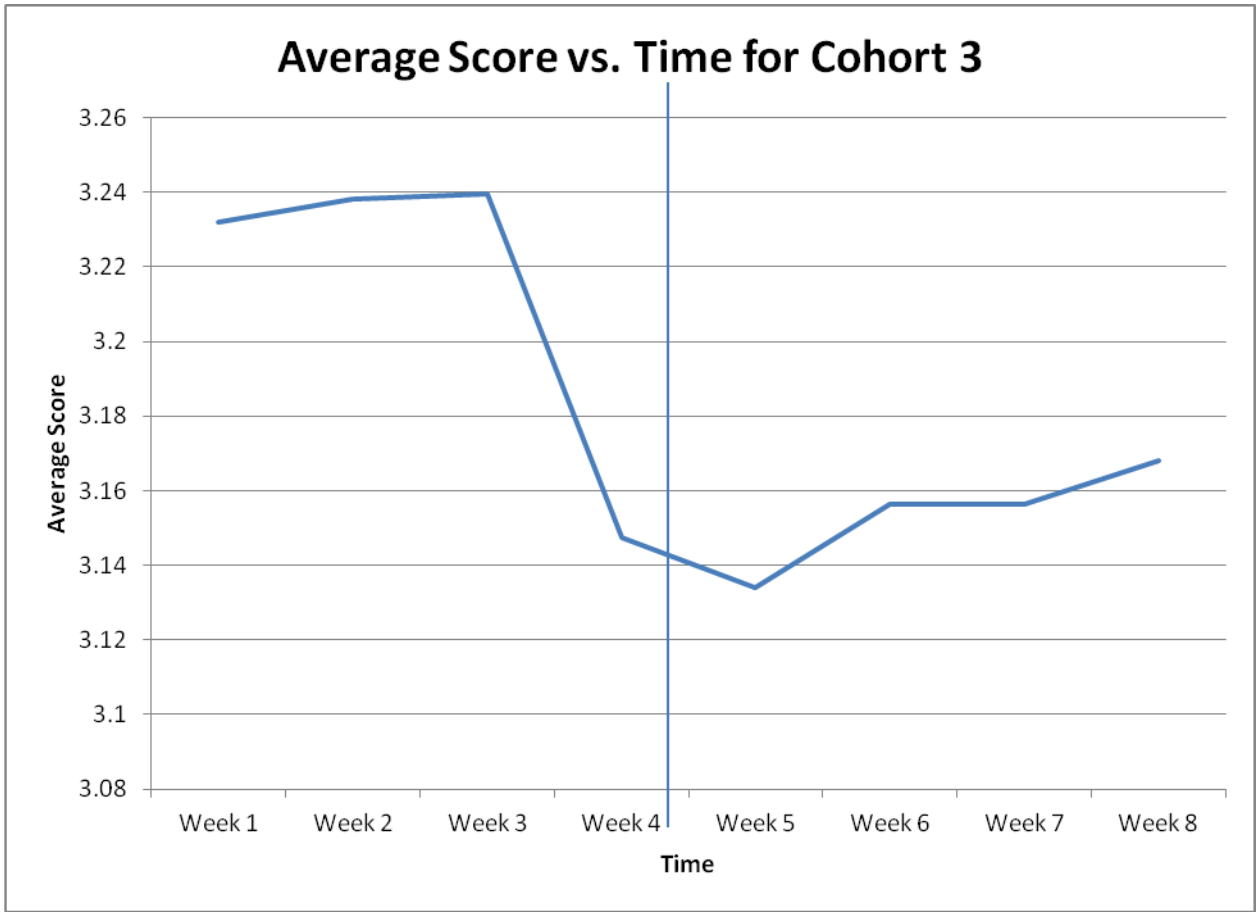
Graph 2

Average Weekly Score vs. Time for Cohort 2



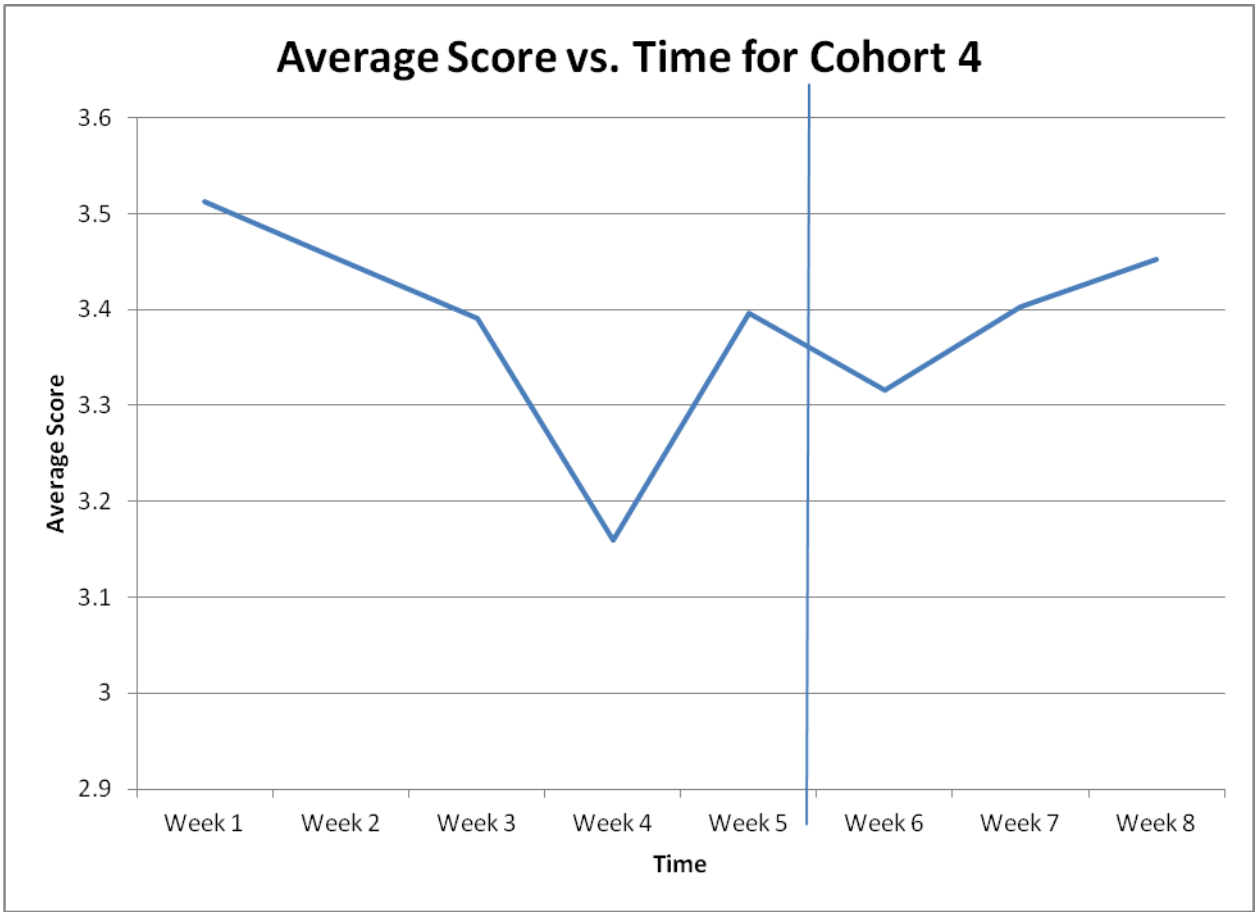
Graph 3

Average Weekly Score vs. Time for Cohort 3



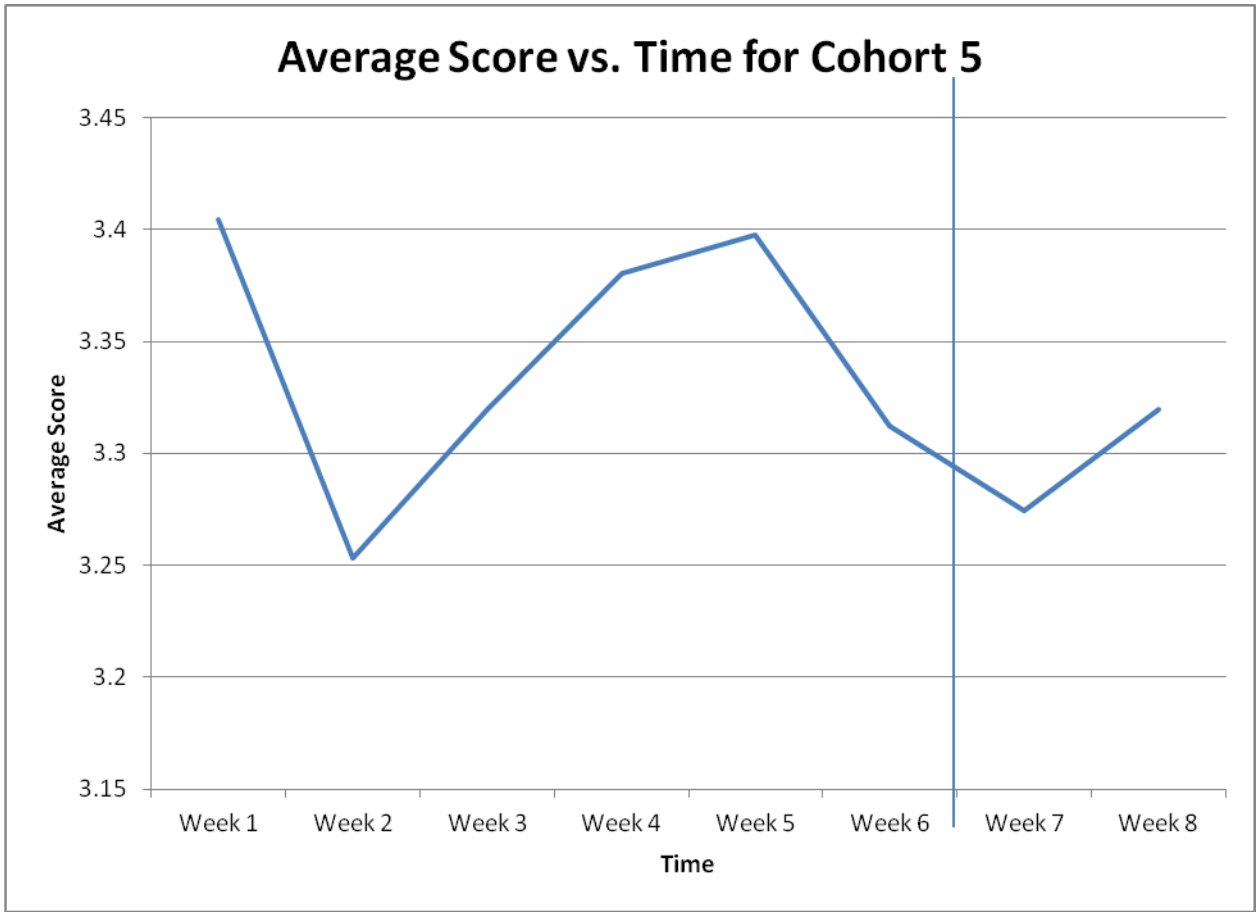
Graph 4

Average Weekly Score vs. Time for Cohort 4



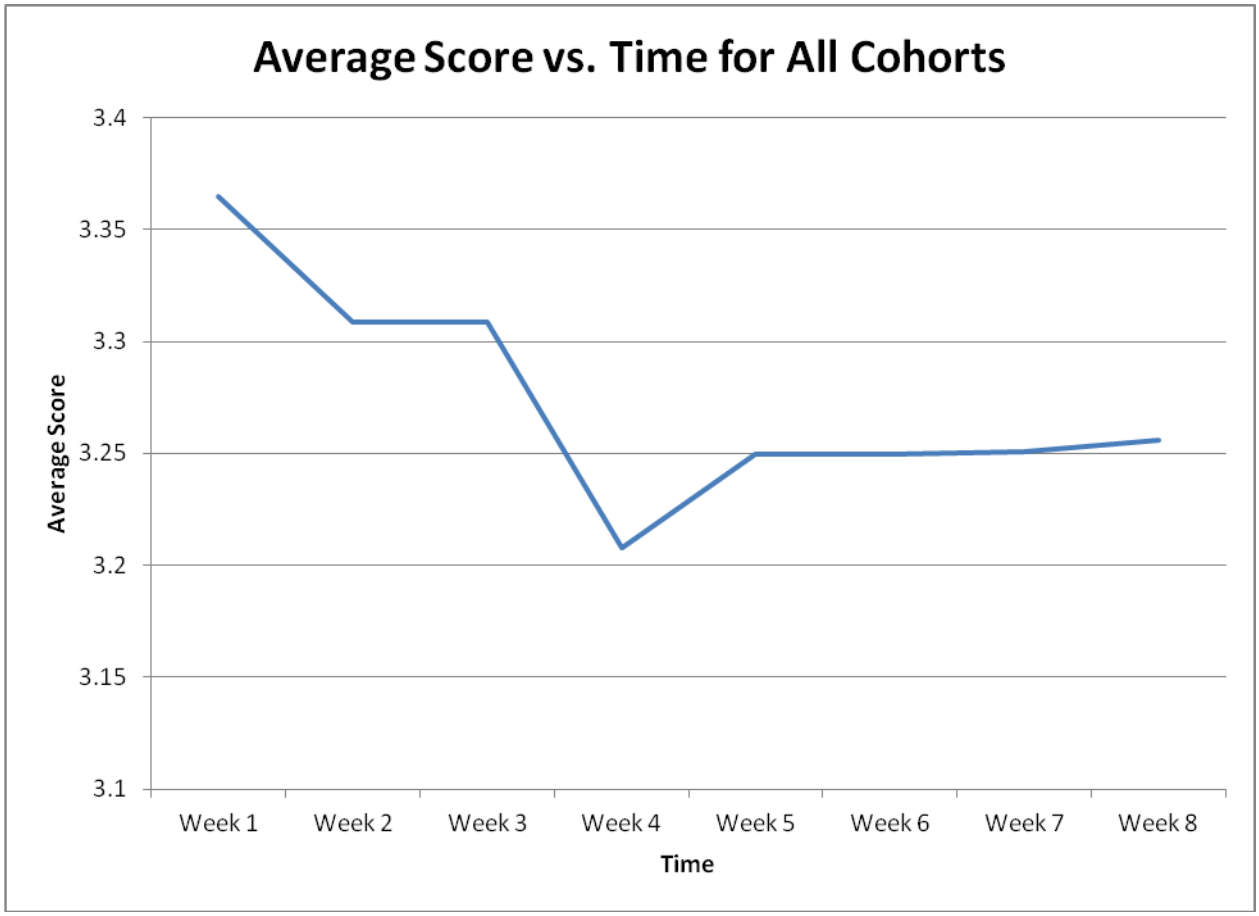
Graph 5

Average Weekly Score vs. Time for Cohort 5



Graph 6

Average Weekly Score vs. Time for Overall Cohorts



Analysis of Themes

The hypothesis tested by this research project was that students who participated in the Love and Logic program would show improved motivation scores relative to those seen prior to implementation of the program. This, however, was not the case. As can be seen in Table 4, there was a statistically significant decrease in motivation for two cohorts as well as for the cohorts overall. There were three cohorts that did not have statistically significant results. A decrease in motivation cannot strictly be attributed to the implementation of Love and Logic.

There are other factors that could contribute to this decrease which will be discussed in the discussion section below.

Previous authors have shown a correlation between motivation and academic achievement (Breen & Lindsay, 2002; Green et al., 2007; Kinzie & Sullivan, 1989; Martin, 2007; Martin, 2008a). With multiple classes showing a decrease in motivation after implementation of Love and Logic, and only one showing a statistically insignificant increase after implementation, one can hypothesize that this program is not beneficial in a high school or junior high school science classroom. Although causation can not be proven with this research, the correlation between implemenation of Love and Logic and a decrease in motivation should raise awareness that the program may not increase achievement as advertised.

Table 4

*Mean, t-*test *Results, and P-*values *for Five Cohorts and Overall.*

Cohort	**Mean (X)**	***t-Test Results***	**P-value**
Cohort 1	3.33	-2.1	0.036
Cohort 2	3.14	-4.13	<0.0001
Cohort 3	3.18	-1.5	0.133
Cohort 4	3.39	0.18	0.857
Cohort 5	3.33	-0.91	0.36
Overall	3.27	-4.69	<0.0001

Discussion

This section discusses the major results of the study. The results are compared with those found in other similar studies that document motivation in the classroom. The major limitations of the study are discussed in this section as well. The implications of studying motivation and the Love and Logic program to future research are discussed as well. Finally, the significance of this study is described.

Summary of Major Results

This study found that the Love and Logic program did not have a positive effect on student motivation. The student motivation, where measured statistically significantly, was found to have decreased after intervention. In four out of five cohorts, a decline in student motivation was measured, although only two were statistically significant. The fifth cohort did show an increase in motivation but it was not significantly significant. Overall, there was a statistically significant decline in student motivation after intervention.

Comparison of Findings with Existing Studies

Previous studies have found that increased motivation, especially intrinsic motivation, lead to increased academic productivity. To get increased motivation, studies and programs have lauded the effects of strong interpersonal relationships with students. As mentioned earlier, studies, such as Martin and Dowson (2009), explained that strong interpersonal relationships provide support, assistance and consistency for students. The Love and Logic program claims to show teachers how to build these strong, interpersonal relationships that increase student motivation and there for student academic success.

Implementation of Love and Logic in high school classrooms did not produce the results expected from the research provided by the program. Love and Logic takes discipline and classroom management strategies from multiple sources and research. Using strategies from Marshall (2005), Love and Logic instructs teachers to manage their classrooms using three principles: be positive, offer choices in any situation or activity, and ask reflective questions. Implementation of these principles, according to Marshall (2005) should lead better classroom management which, in turn, puts the responsibility of discipline on the student. It is difficult to assess whether students accepted responsibility for discipline, but there was a decrease in motivation in most classes after implementation of Love and Logic. At the very least, this implies that Love and Logic cannot prevent a decrease in motivation from confounding variables, such as time of school year, age of students, type of class taught, or even relationship with the instructor.

Three key components of classroom management were listed in Love and Logic as the foundation for the program. Brophy (1983) found that these three key components of classroom leads to student accountability. The teacher in the current study did follow these components:

1. the teacher is the authority figure and instructional leader of the classroom;
2. good classroom management implies preventing problems before they occur; and
3. good classroom management is effective and cost effective. (pp. 264-266)

Brophy (1983) also found that good classroom management is preventative, rather than punitive. These components were implemented as thoroughly as possible by following the Love and Logic Program.

Limitations of the Study

The current study focused on cohorts of students that are older than those on which Love and Logic focuses. Perhaps older students, those in middle and high school, feel pandered to, or talked down to causing the program to have a negative effect on student motivation. To the instructor's best ability the program was implemented in five different science classes in one school. However, the teacher had 9 hours of training on this program, and it could be argued that implementation was not as complete as possible. Also, there were no two cohorts that had the same age range or the same subject matter, so it is difficult to say if content or student age had more of an effect on motivation that the program. Finally, this study was performed during the fourth quarter of the school year. Students may have experienced declined motivation due to completion of STAR testing, or due to the impending summer break. It does show that Love and Logic did not prevent a decline in student motivation contrary to its claim.

Implications of Future Research

It is important for future research to focus on Love and Logic in middle school and high school classrooms. Love and Logic claims to work in any classroom, but does not give many examples or strategies for classrooms over fifth grade. It is imperative to study this program with multiple classrooms at the same grade level and content at higher levels to establish more consistent results. Also, future research should focus on number of hours that the teacher is instructed in implementation of the program. Teachers who have significantly more time learning this program will be more adept at implementing it and will, therefore, have better results. Finally, future researchers should study the effects of school-wide, or even district-wide implementation of Love and Logic. It is reasonable to assume that there would be increased

motivation overall if there was consistent implementation of Love and Logic throughout a school or district.

Overall Significance of the Study

This study is significant for teachers in small, middle and high school settings who are interested in implementing Love and Logic in their classroom. It is important for teachers in these settings to know that implementing Love and Logic based solely on a 9 hour class will not increase student motivation on its own. Teachers looking to increase motivation will need to implement more than Love and Logic or at least need to spend more time learning about the strategies and techniques of the program before implementing.

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Appendix A

Survey

Name:_____
Date:_____
Class:_____

Please answer the following questions as honestly as possible.
1 = strongly disagree, 2 = disagree, 3 = unsure, 4 = agree, 5 = strongly agree

1. I only like to do things that are fun.
   1.....2.....3.....4.....5

2. I often put off work so that I can do something that is more fun.
   1.....2.....3.....4.....5

3. When choosing a task, I usually chosse the one that sounds like the most fun.
   1.....2.....3.....4.....5

4. When choosing a task, I usually choose the one that sounds the easiest.
   1.....2.....3.....4.....5

5. When choosing a task, I usually choose the one that will be the most meaningful to me.
   1.....2.....3.....4.....5

6. When working on a project, I put in only enough effort to get a passing grade.
   1.....2.....3.....4.....5

7. When working on a project, I like ot put the most effort in because I know I will get more out of it.
   1.....2.....3.....4.....5

8. I would work harder if I knew that my work would lead to more benefits.
   1.....2.....3.....4.....5

9. People should always keep their eyes and ears open for better learning opportunities.
   1.....2.....3.....4.....5

10. I often make decisions based on what other people will think.
    1.....2.....3.....4.....5

11. I work harder on projects when I know I will be publicly recognized.
    1.....2.....3.....4.....5

12. Decisions I make reflect the high standard I set for myself.
    1.....2.....3.....4.....5

13. It is important to me that a teacher allows me to use my skills and talent.
    1.....2.....3.....4.....5

14. I try to make sure that my decisions are consistent with my personal standards of behavior.
    1.....2.....3.....4.....5

15. I like to do things that give me a sense of personal achievement.
    1.....2.....3.....4.....5

16. I will work hard for a teacher if I believe in their mission.
    1.....2.....3.....4.....5