The Relationships Between Student Diligence, Student Support Systems, Other Related Variables and Student Academic Outcomes in High Schools in Grenada

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THE RELATIONSHIPS BETWEEN STUDENT DILIGENCE, STUDENT SUPPORT SYSTEMS, OTHER RELATED VARIABLES AND STUDENT ACADEMIC OUTCOMES IN HIGH SCHOOLS IN GRENADA

A Dissertation

Presented in Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

by

Christon Arthur

July 2000
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ABSTRACT

THE RELATIONSHIPS BETWEEN STUDENT DILIGENCE, STUDENT SUPPORT SYSTEMS, OTHER RELATED VARIABLES AND STUDENT ACADEMIC OUTCOMES IN HIGH SCHOOLS IN GRENADA

by

Christon Arthur

Chair: Hinsdale Bernard
ABSTRACT OF GRADUATE STUDENT RESEARCH

Dissertation

Andrews University

School of Education

Title: THE RELATIONSHIP BETWEEN STUDENT DILIGENCE, STUDENT SUPPORT SYSTEMS, OTHER RELATED FACTORS AND STUDENT ACADEMIC OUTCOMES IN HIGH SCHOOLS IN GRENADA

Name of researcher: Christon Arthur

Name and degree of faculty chair: Hinsdale Bernard, Ph.D.

Date completed: July 2000

Problem

The Ministry of Education on the Caribbean Island of Grenada has been seeking to find ways to improve students' academic performance. The Ministry's emphasis has been on finding ways to make students more responsible for their education and at the same time trying to examine the level of educator support and parental support students receive. This emphasis on the level of educator and parental support that students receive was due in part to the findings of Hinds et al. (1999) that students in the Eastern Caribbean rate the support from parents and educators as being very important to their
This study examined the impact of student diligence on student academic performance in Grenada’s high schools. On a secondary level, the study examined impact of student support systems on student diligence and investigated demographic differences in diligence.

Method

Four hundred and forty-eight students, 348 parents, and 34 educators participated in the study. Of these, 310 students were matched to their parents. Factor analysis was done to ensure that the instrument was robust enough to be used in the Grenadian culture. Correlational and multiple linear regression analyses were used to examine the relationship between diligence and academic performance, and parental diligence support and student diligence. Analysis of variance (ANOVA) was used to determine demographic differences in diligence among students.

Results

Factor analysis led to the revision of the Diligence Inventory that was used in Grenada. Diligence was operationalized through four dimensions and 33 items. The four scales were: Motivation, Concentration and Assimilation, Conformity and Responsibility, and Discipline.

The major findings indicate that there is a significant but modest correlation between diligence and academic performance ($r = .248$). However, the correlation between diligence and academic performance for females ($r = .258$), 15-year-olds ($r = .268$),
.427), and students of 'other' descent ($r = .300$) are stronger than that of general population. Also, there is a significant relationship between parental support and student diligence ($r = .279$). Educators ($M = 140.05$, $SD = 12.22$) are more supportive of their students' diligence than are parents ($M = 133.79$, $SD = 19.92$, $p < .001$).

The study found that females tended to be more diligent than males ($p < .05$), and that younger students were more diligent ($p < .01$) and tend to have significantly higher academic performance levels than older students ($p < .001$).

**Conclusion**

This study has implications for educating students in Grenada and other Caribbean countries with similar cultures. It may help educators become more sensitized to the differences students bring to the classroom, and may help the different Ministries of Education in their intervention measures to improve students' academic performance.
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CHAPTER I

INTRODUCTION

Background to the Problem

Education systems usually interest themselves in the academic outcomes of their students. The education system in Grenada is no exception. A telephone conversation with the Chief Education Officer in Grenada’s Ministry of Education on June 15, 1999, has revealed that the Ministry of Education is seeking to find ways to improve students’ academic outcomes. In a letter dated June 23, 1999, the Chief Education Officer further indicated that the Ministry wanted to assess the commitment of educators, students and other stakeholders in the education process (appendix A).

The education system in Grenada has undergone tremendous changes. Prior to 1974, Grenada was a British colony. Its education system was governed by British administrators. The curriculum was British in its outlook. On completion of high school, students were required to write the General Certificate Examination (GCE), an external standardized examination that was administered by British universities.

On February 7, 1974, Grenada gained political independence from the British government. The impact of that independence on the education system was limited to its general administration. The education system was administered by local Grenadians.
However, the curriculum was still British in its structure and content. Students were still required to write the same British-administered standardized examination (GCE) that was in place prior to 1974.

On March 13, 1979, a Revolutionary Government came into office in Grenada, and the education system again underwent changes. The curriculum emphasized Caribbean/Grenadian content, and students sat for the Caribbean Examination Council (CXC), a Caribbean-administered standardized examination, to mark the completion of high school.

October 1983 saw the demise of the Revolutionary Government, and the democratic system of government was restored. During the early 1990s, the Government of Grenada through the Ministry of Education introduced the teacher-performance appraisal system. Students' academic performance was one of the main areas on which teachers were appraised. This study aimed at providing a platform on which students, parents, educators, and even the general community could build to help improve student outcomes. It could help provide tangible ways in which the students themselves, parents, and educators could positively impact student performance.

The successive governments have all emphasized the importance of education and student academic success for national development. However, the examination results indicate that the overall student performances on the different standardized examinations are not outstanding even though there has been a steady improvement over the years (Table 1).

The steady improvement in external examination results as shown in Table 1 is
Table 1

High school Students' Performance on External Standardized Examinations: 1970 - 1999

<table>
<thead>
<tr>
<th>Year</th>
<th>% of Student Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990 - 1999</td>
<td>57.77</td>
</tr>
<tr>
<td>1984 - 1989</td>
<td>35.97</td>
</tr>
<tr>
<td>1979 - 1983</td>
<td>30.08</td>
</tr>
<tr>
<td>1974 - 1978</td>
<td>26.18</td>
</tr>
<tr>
<td>1970 - 1973</td>
<td>22.50</td>
</tr>
</tbody>
</table>

Note, Data from Statistics Department, Ministry of Education, Grenada.

an encouraging feature of the Grenada education system. It may be due to the fact that there have been improvements in teacher qualification over the years. Teacher qualification has been making steady improvements from O-level qualifications in the 1970's to A-level qualifications in the 1980s. At present, there is an emphasis on hiring more teachers with degree qualifications.

Also, there has been a change in the external examination from the General Certificate Examination (GCE) to Caribbean Examination Council (CXC) Examination. There is a perception among some educators that the Caribbean Examination Council (CXC) Examination is less of an academic challenge to students.

Finally, the government has since the early 1990s introduced the teacher performance appraisal system. Student academic performance is the underlying reason for the appraisal, thus more emphasis is being placed on students’ academic
performance.

There is widespread concern throughout the Eastern Caribbean countries, which includes Grenada, that students are becoming increasingly disaffected and disengaged from school. The belief among educators is that schools and teachers do not have the capabilities to prevent or overcome these problems (Hinds, Richardson, Ernest, Kishchuk, & Sproule, 1999).

Recent studies in education, which have been done primarily in the United States of America, have been emphasizing the need for students to assume greater responsibility for their educational development, and for parents and educators to work together to enhance students’ educational development (Bernard, Drake, Paces, & Raynor, 1996; Drake, Bernard, Gray, & Meixner, 1996; Goldberg, 1999; U.S. Department of Education, 1994). Borrowing a concept from the African proverb that “it takes a village to raise a child,” these studies have been reemphasizing that it takes a community to educate a student—a community of parents and educators. Such a community should work collaboratively for the success of students in their educational pursuits.

However, students need to take responsibility for regulating their learning. This is possible as students expend the requisite effort and maximize the use of their abilities for the achievement of their educational goals. Bernard (1991) has coined the term ‘diligence’ to reflect the effort expended by students in accomplishing their educational goals and for their wholistic development.

Studies by Bennett (1994); Bernard (1991); Bernard, Thayer and Streeter, (1993); Bernard and Thayer (1993), have indicated that students who display high levels of
diligence, which refers to a student's quality and quantity of effort toward achieving physical, mental, social, and spiritual ideals, show enhanced academic performance. More importantly, several studies have found that parental and educator diligence-support tended to enhance student diligence (Bernard et al., 1996; Drake et al., 1996; Rich, 1988; U.S. Department of Education, 1994).

The major contribution of these studies is that one can explain students' academic performance on the basis of both ability and effort (diligence). Therefore, one can encourage students to assume greater responsibility for their achievement and heighten their performance by increasing their level of diligence. One can encourage parents and educators to increase their level of diligence-support to their children/students. This prospect, that students who are diligent and receive diligence-support from parents and educators experience heightened performance, is one that puts the academic success of students in the hands of the key players of education.

However, most of these studies were done in the United States of America. The findings of these studies would become more generalizable and applicable to other cultures if further studies are done in different contexts. Also, no study has been done by matching students and parents to determine a more direct relationship between parental diligence-support and student diligence and, by extension, student academic achievement, using the Diligence Inventory.

Bernard et al. (1996) concluded that more studies were needed in order to understand more fully the impact that parental and educator diligence-support have on student diligence and by extension student academic outcomes. That study was
exploratory and provided useful insights into the level of parental and teacher support needed for student diligence and the importance of this kind of support to students' educational development. However, because of the small sample sizes for parents and teachers, the findings were inconclusive and not generalizable.

Student diligence is positively correlated with students' academic outcomes (Bennett, 1994; Bernard, 1991; Bernard & Thayer, 1993; Bernard, Thayer, & Streeter, 1993; Jasinevicius. Bernard, & Schuttenberg, 1998). If it can be determined that educator diligence-support and parental diligence-support enhance student diligence, then student diligence-support would have tremendous implications for educating children.

This study was done, in part, to help create a better understanding of the relationships between parental diligence-support, educator diligence-support and student diligence and to further substantiate the relationship between student diligence and student academic performance. Much larger sample sizes were used to help ensure that the findings would be more conclusive and more generalizable.

Furthermore, no study has been done to measure the level and significance of parental diligence-support and educator diligence-support for students in Grenada or in other Eastern Caribbean countries. Is there a need for more parental and educator diligence-support in the Grenada education system? This is an exploratory study to seek to measure the value of student diligence, parental diligence-support, and educator diligence-support on student academic outcomes.
Statement of the Problem

Given that the model that explains student diligence and their academic performance may behave differently in Grenada than it did in the United States of America, this study sought to (1) validate the diligence construct for use in the Grenada setting, and (2) determine the relationship that existed between student diligence and student academic performance among high school students in Grenada. Also, this study examined the relationships that existed between educator diligence-support, parental diligence-support, other related variables and diligence among high school students in Grenada.

Research Questions

1. What is the relationship between diligence and academic performance among high school students in Grenada?

2. To what extent are student support systems related to student diligence in the high-school system in Grenada?

3. How do students’ diligence and student-support systems relate to selected variables in the high-school system in Grenada?

4. How is student diligence related to expectations for success in the high-school system in Grenada?

Research Hypotheses

The corresponding research hypotheses as well as some sub-hypotheses are listed as follows:
Hypothesis 1. There is a significant relationship between student diligence and student academic performance.

Hypothesis 2. There is a significant relationship between diligence and academic performance for male students and female students.

Hypothesis 3. There is a significant relationship between diligence and academic performance for students of different ethnic backgrounds.

Hypothesis 4. There is a significant relationship between student diligence and academic performance for the different age groups.

Hypothesis 5. There is a significant relationship between Form (Grade Level) and academic performance.

Hypothesis 6. There is a significant relationship between student diligence and gender.

Hypothesis 7. There is a significant relationship between student diligence and Form.

Hypothesis 8. There is a significant relationship between student diligence and age.

Hypothesis 9. There is a significant relationship between student diligence and the type of high school they attend.

Hypothesis 10. There is a significant relationship between students’ diligence and their expectation to succeed.

Hypothesis 11. There is a significant relationship between students’ diligence and their perception of others’ expectation of their success.

Hypothesis 12. There is a significant difference in the level of diligence-support of
Hypothesis 13. There is a significant relationship between parental diligence-support and student diligence.

Hypothesis 14. There is a significant relationship between the type of high school students attend and the level of educator diligence-support.

Hypothesis 15. There is a significant relationship between educators' level of diligence-support and their teaching experience.

Hypothesis 16. There is a significant relationship between educators' level of diligence-support and their gender.

Hypothesis 17. There is a significant relationship between educators' level of diligence-support and their education level.

Hypothesis 18. There is a significant relationship between the type of high school students attend and level of parental diligence-support they receive.

Hypothesis 19. There is a significant relationship between parental diligence-support and gender.

Hypothesis 20. There is a significant relationship between parental diligence-support and their education level.

Hypothesis 21. There is a significant relationship between the level of parental diligence-support and their income level.

Hypothesis 22. There is a significant relationship between the level of parental diligence-support and their assessment of their children's school work.
Significance of Study

Improving student achievement is a priority for educators, parents, and students themselves. Schools, school districts, Ministries of Education in Grenada and other countries of the Eastern, Southern and Northern Caribbean regions can use the results of this study to engage in comprehensive training and staff development programs for educators, as well as intervention measures for parents and students with a view to improving student academic performance. Improving students’ academic outcomes may be the route that developing countries could take to break the vicious cycle of poverty and to claim prosperity. According to Castetter (1992) the human resource is the most valuable resource. Therefore, educating this valuable resource is the most viable way to improve it and thereby enhance national development.

This study may have tremendous significance in that it advocates a collaborative approach to education in Grenada, in particular, and other Caribbean countries in general. There have been many voices calling for students to expend more effort in their work (Bernard, 1991; Bernard & Thayer, 1993; Bernard et al., 1993; Glasser, 1986, 1990; Hunter & Barker, 1987) and for educators and parents to provide support to their students/children in this regard (Bernard et al., 1996; Drake et al., 1996; Rich, 1988).

This study could help provide a basis for home-school collaboration. It could help provide the capacity to prevent or overcome the problem of being disaffected and disengaged from school, which according to Hinds et al. (1999), threaten Eastern Caribbean students. As schools become more supportive, students may become more engaged.
A telephone conversation with the Chief Education Officer in Grenada's Ministry of Education on June 15, 1999, has revealed that the Ministry of Education is seeking to find what roles educators and parents can play in enhancing student outcomes. This study could help provide a basis for advocating educator and parental diligence-support not only in Grenada but in other Caribbean countries.

The U.S. Department of Education (1994) recommends building partnerships for learning. Its slogan is "strong families, strong schools." This concept of a collaborative effort to education is a driving force in much educational thought and practice. It is the goal of this research to help strengthen the claims that a partnership of support among educators and parents could impact positively on students outcomes, and help create a research base for parental support and involvement in education.

**Conceptual Framework**

Education is a human partnership. In this complex scenario of educating students, it takes more than a good school or a good home. It takes both. It takes a collaborative effort between these two major institutions, since family environment is strongly related to student achievement. No school is an island. Education has to be a home/school team effort. To educate children, therefore, teachers have to work with parents. No matter how good they are, teachers cannot do the job of educating alone (Braxton, 1999; Deslanders & Royer, 1999; Redding, 1991; Rich, 1988, 1991a, 1991b, 1993, 1998; Robinson & Fine, 1994). The job of educating students requires that parents, teachers, and students work as a team.
The Coleman et al. (1966) proposed that the family environment was more strongly related to student achievement than any other factor. The concept of diligence-support, as it is outlined in this study, is one that would encourage parents to be supportive of their overall educational development. Creating a home environment that is supportive of and conducive for learning is built into the concept of parental diligence-support.

Hinds et al. (1999) found that students rated parental support as the most important factor that influenced their attitudes towards school. The more strongly students’ felt that their parents supported, encouraged and followed their progress in school, the more positive was their attitude towards school. Such students liked school more, felt better about themselves in relation to school, had stronger beliefs that school would be valuable to them, had fewer behavioral problems, and performed better academically. Diligence-support carries with it tremendous positive implications for student academic success.

Diligence-support allows for students to acquire the basic supporting structures from home that would enable them to learn. It would help ensure that students arrive at school ready to learn. It helps ensure that students acquire the necessary skills at home to foster learning. The more skills a child acquires at home the more prepared that child is for school, the more prepared that child is to learn, and more likely to succeed. Success in school is home made (Drake et al., 1996; Goldberg, 1999; Rich, 1988).

Diligence-support helps create an equal playing field for students’ educational success. What a family does for its children’s educational success is more important than
its income or financial status (Bernard et al., 1996; Epstein, 1991; Henderson & Berla, 1994; Keith & Keith, 1993; Lintos, 1992; Stevenson & Baker, 1987; U. S. Department of Education, 1994). It implies that not only the affluent few but the average family can provide the requisite support for student success and thereby break the vicious cycle of poverty and lack of education.

Educator diligence-support plays a pivotal role in shaping students' attitudes towards their academic pursuits. When educators provide students with the requisite support that can address their changing needs, students tend to have positive feelings about school and their own competencies, and are less likely to exhibit disruptive or problem behavior (Dowd, 1997; Hinds et al., 1999; Korinek, Walter-Thomas, McLaughlin, & Williams, 1999; Stainbeck & Stainbeck, 1994).

In addition, Hinds et al. (1999) found that teacher interest and support shown to students was the most important predictor of liking school and of the level of effort that students make in the classroom. Teacher support is the only significant predictor, other than the students' age and gender, of student academic performance. The teacher was the only modifiable determinant of students' academic performance.

It is very clear that teachers have great influence and tremendous potential for shaping students' attitudes toward school. The extent to which teachers provide support for their students' academic success may well determine the success of students in school.

Richman, Rosenreid, & Bowen (1998) further state that students who receive social support, the perception held by students that parents and educators are behaving in
ways to enhance their well-being, spend more time studying on school nights, had less behavior problems, had greater self-efficacy, had better school attendance, and had better grades.

Not only should parents and teachers work collaboratively for the success of students, but students themselves have a responsibility for their educational development. Of all the factors associated with success, the only one completely under the control of the students is their effort or diligence level (Bernard, 1991; Hunter & Barker, 1987).

Bernard (1991) developed a diligence construct for explaining and predicting competence among high school students, since diligence appeared to be a useful phenomenon for explaining student competence. He defined diligence as "an expression or reflection of effort expended toward balanced or holistic development" (p. 142), and operationalized it through five dimensions: (1) Motivation, (2) Concentration and Assimilation, (3) Conformity and Responsibility, (4) Discipline, and (5) Devotedness and Spirituality.

Bernard's (1991) of diligence in education was predicated upon two main factors, namely, an operational definition of education, and views on the nature of human beings. Education, according to him, implies the harmonious development of the mental or psychological, spiritual, physical and social dimensions and is depicted in Figure 1.

Each side of the rectangle depicts a dimension of growth and/or development. The goal of education should be to try to attain and maintain growth through diligence. A diligent student may be regarded as one who strives toward the balanced development of the four dimensions.
Because effort is the only factor associated with success that is completely under
the control of students, and the diligence construct seeks to explain and predict
competence among high school students based on their level of diligence or effort, I
deem the diligence construct as being the most appropriate construct for use in this study.
In addition, the scales through which the construct was operationalized—motivation,
concentration and assimilation, conformity and responsibility, discipline, and
devotedness and spirituality—seem to be comprehensive in nature.

![Mental Spiritual](image)

Figure 1. Bernard’s ideal model for educational development.

The implication of the conceptual framework in this study is that students who
experience a good support system would have positive attitudes and expend more
effort/diligence towards their school work, and consequently, would experience
academic success (see Figure 2). A student with a relatively low or average ability level
but with a high level of diligence can achieve academic success as well, because all the
Figure 2. Model for explaining student academic performance.
studies on diligence, Bernard (1991); Bernard et al. (1996); Bernard et al. (1993); Bernard and Thayer (1993); Bernard, Rak, and Antonini (1995); and Drake et al. (1996) showed that there is no correlation between ability and diligence (effort). Diligence is evenly distributed among students irrespective of their ability.

The diligence-support that is provided to students by parents and educators helps students define themselves academically. Diligence, which is one of the more important factors which determines a student's success, is within the students' control and thus their academic success is within their control.

**Definition of Terms**

The discussion thus far has focused on educators and parental diligence-support for students. The phrase *student support system* refers to the support provided to students by educators and parents with regard to students' overall development. *Diligence-support* refers to the support children/students receive from parents and teachers that may help in the development of their diligence.

Students also have a responsibility for their overall development including academic achievement. *Diligence*, therefore, is an expression or reflection of the effort expended toward a balanced or holistic development by the students in their mental, physical, social, and spiritual dimensions of life (Bernard, 1991).

*Student academic outcomes performance* are the standardized test scores, measured in percentages, which students achieve from doing their end-of-term exams. It is awarded to students in years 3 - 5 in high school by teachers, based on their
performance on given examinations.

*High schools* are schools which have forms I - V (Grades 8 - 12) and are administered and supervised by the Ministry of Education.

*State-aided denominational high schools* are high schools which have church affiliations but are financed, governed, and supervised by the government of Grenada through the Ministry of Education.

*State-financed high schools* are high schools which are financed, governed, and supervised by the government of Grenada through the Ministry of Education. They are similar to the state-aided denominational high schools but are without church affiliations.

*A-Levels* are the advanced level certificates, awarded by the university of Cambridge in England, that one receives for successfully passing given subjects. It is a certificate that requires 2 years beyond high school and suggests that one has advanced knowledge in a given subject matter.

*Other related variables* refer to selected demographic variables, students expectations for success, and the type of high school students attend.

**Importance of Education**

Given the importance of education to Grenada’s sustainable development, one has to ensure that students are taking full advantage of the educational opportunities given to them. The government of Grenada is providing a tuition-free education for all high school students—both state-aided and state-financed. Education currently receives the second largest allocation of the national budget, as revealed by the 1999 Estimates of
Revenue and Expenditure.

The Ministry of Education has to be accountable to the government and people of Grenada, thus ensuring that the investment that the nation is making toward education is worthwhile. Students’ academic outcomes are critical both for the development of the nation as well as for the stability and equality of the education system.

In addition, the Ministry of Education has addressed the structure of the public high schools with a primary objective of making it more supportive to students. Paid Vice Principals have been appointed in every public high school, a break from past practices, when they did not receive financial remuneration for their services.

Also, Heads of Departments have been appointed to assist in the governance of the public high schools. The main emphasis was to allow educators at the local school level to work collaboratively and thereby impact on the students’ performance. The number of departments in each school is determined by the size of the school. Small schools have three departments such as the Modern Languages Department, the Science Department, and the Arts and General Studies Department, while large schools may have as many as five departments: Modern Languages, Mathematics, Science, Humanities, and Arts and General Studies.

It is possible that the appointment of Vice Principals and Heads of Departments, for coordinating the work of teachers has significantly positively impacted students’ outcomes. The Ministry of Education in Grenada realizes the importance of creating support systems and has addressed that issue to a certain degree. But the focus of this study is on all of the key players in education. Education may become more meaningful.
when the key players in education—educators, parents, and students work together. This study, therefore, focused on the impact that student diligence, parental diligence-support and educator’s diligence-support have on student academic outcomes as measured by end-of-term examination scores.

**General Methodology**

The focus of this study was to identify the relationships between student diligence, parental diligence-support, educators’ diligence-support, and students’ academic outcomes. Since I was attempting to determine possible relationships between these independent variables and students’ academic outcomes, a correlational study was conducted (Gay, 1996). In this study I did not manipulate any variables. Of the main variables, students’ academic outcomes were measured by the percentage examination scores from the terminal examinations that the students sat at least 3 months before the study was done, and the level of diligence was already resident in individuals who were being studied among the different groups. Some comparisons were made among the different groups in the study, along the same variables.

Approximately 900 students were selected in the targeted sample by using all the students in intact Science classes from each of Forms III, IV, and V in the various schools. The Diligence Inventory: High school Form was administered to the students. Entire classes of students, which are representative of students in each of Forms III, IV and V, were selected for the administration of the Diligence Inventory. Students’ current examination scores were collected and correlated with their diligence scores.
As a means of establishing the validity of the instrument, teachers were asked to subjectively rate their assessment of the students' diligence. After the students had completed the Diligence Inventory, teachers were asked to provide a subjective diligence rating of the students who were in their classes using a scale of 1, 2, and 3 to represent low, average, and high diligence, respectively. This information was used for establishing construct validity by the method of Known Group Difference (Mueller, 1986) by comparing the teachers' ratings to the actual diligence score of the students. Factor analysis was also done to help ensure that the instrument was robust enough for use in the high school setting in Grenada.

The parents who participated in the study were matched to their children who were in the study. Parents whose children were not in the schools or forms selected in the study were not used in the study. The Diligence Inventory: Parent/Guardian Form was administered to parents to measure their level of diligence-support given to their children.

All of the high school educators who teach Forms III, IV, and V were targeted to be a part of the study. The Diligence Inventory: Educator Form was administered to educators to measure their level of support to students in general. As a control measure, the statistical technique of homogeneity of variance was used to equate groups homogeneously.

**Statistical Techniques**

The descriptive statistics used were the means and standard deviations of each
subgroup in the sample. The means indicated the average diligence level of each group, and the standard deviation indicated the spread of the scores. The means for each group ranged from 33 to 165 because the revised instrument used in this study contained 33 items rated on a scale of 1 to 5.

Pearson product-moment correlation coefficient measured the magnitude of the relationships between student diligence and academic performance. 

$t$-tests and Analysis of Variance (ANOVA) were used to determine if there were any significant differences in the level of diligence among the groups of students, and the level of diligence-support shown by the parents’ group and the educators’ group. Multiple Linear Regression enabled the researcher to explain the variance in students’ academic performance, and student diligence.

**Limitations and Delimitations**

This study was conducted in the high schools in Grenada which are under the direct supervision of the Ministry of Education. There are 18 such high schools in Grenada. Sixteen of these high schools are on the mainland and 2 are on the sister island of Carriacou. The 18 high schools have one central administrative body—the Ministry of Education. The administrative arm, which is directly related to the governance and supervision of schools, is administered by the Chief Education Officer and several education officers.

This study was limited to the 16 high schools on the mainland of Grenada. These 16 high schools are of two types: 11 are state-aided denominational high schools, and the
remaining 5 high schools are state-financed. All 5 of the state-financed high schools were included in the study, and 7 of the state-aided denominational high schools were matched to the state-financed high schools, based on size, location (rural or urban), and gender ratio.

The students were delimited to Forms III, IV, and V (the equivalent of Grades 10-12 in the United States of America's system of education). The parents who were selected as subjects in the study were matched to their children. Therefore only parents with children who attended schools that were in study were part of the study.

Teachers who were included in the study were delimited to those who teach students in Forms III, IV, and V. All of these teachers were used in the study.

Student academic performance as measured by teachers' end of term examination percentage scores was the dependent variable in the current study. The possibility that the examinations given by the different teachers at the different schools were of varying degrees of difficulty, and were given under differing examination conditions is a limitation of this study. The examination scores may not have been equitably determined.

The examination percentage scores from English Language, Math and the Sciences were collected. However, only English Language and Math scores were common to all students. Therefore, student academic performance was limited to the average of English Language and Math percentage scores.

The proposed sample for the current study was 900 students. As it turned out, the actual sample was 458 students. It was difficult to determine the response rate because the schools did not report on the actual number of students who were surveyed.
Assumptions of the Study

Given that there is a national curriculum for the high school system in Grenada, I have assumed that the interpretation and application of curriculums are consistent across schools.

In the Historical Background of this study, I attempted to make a comparison of the external standardized examination results in Grenada from the 1970s to the 1990s. The comparison was made with the assumption that the examinations over the years have been comparable in terms of difficulty and examination conditions.

Comparisons were made of outcomes among students who scored high, average, or low on the Diligence Inventory: High school Form; and among the students from the two types of public high schools. I have assumed that the students in all of the different groups have a similar range of native abilities because the elitist nature of the school system ensures that high school students are the 'cream of the crop'.

Organization of the Study

This study is organized into five chapters. Chapter 1 presented the background to the problem, the purpose of the study and the significance of the study. A historical background of the education system in Grenada, with respect to student outcomes, was given. The research questions and research hypotheses were stated. The conceptual framework which guided this study was discussed followed by the limitations and delimitations of the study, the general methodology, and the general assumptions of the study.
Chapter 2 is a review of the literature intended to highlight the impact of parental diligence-support, educator diligence-support, and student diligence/effort on student outcomes.

Chapter 3 presents the methodology of the study. The procedures for data collection, descriptions of the population and sample, and statistical techniques used in analyzing the data are documented.

Chapter 4 presents the results of the data analysis as they relate to the research questions and hypotheses of the study. The hypotheses were tested and a regression model was developed to predict or explain student outcomes from parental diligence-support, educator diligence-support and student diligence.

Chapter 5 is devoted to a summarization of the study. It draws relevant conclusions, presents a discussion of the findings, and discusses their implications. Recommendations for further research are provided.

An appendix of all supporting documents and letters follows.
CHAPTER 2

REVIEW OF RELATED LITERATURE

Introduction

The review of literature for this dissertation is presented with the expressed intention of providing a basis for student diligence and student diligence-support in education. This basis will be provided in two ways: (1) research findings which reveal that there is a relationship between students' diligence and students' academic performance and (2) research findings which show that parental diligence-support and educator diligence-support positively impact students' diligence and by extension their academic outcomes.

Diligence Operationalized

Diligence, as it is operationalized in this study, refers to a student's effort toward achieving physical, mental, social, and spiritual ideals. It deals with the quality and quantity of effort that a student would expend and that can explain and predict students' academic performance (Bernard, 1991). As used in this study, diligence is not merely the effort students expend in their school work in order to succeed. It concerns itself with a holistic view of the student by examining the physical, social, spiritual, and the mental attitudes of the student as they relate to the student's educational development.
Basis for Advocating Diligence in This Study

"People have always striven to control the events that affect their lives" (Bandura, 1997, p. 1). Since students’ academic performance affects their educational life, then they would want to have control over their academic performance. Research has uncovered differences in the educational development of students who put an emphasis on their natural ability and those whose emphasis is on expending more effort or diligence in their work.

These studies—Bernard, 1991; Bernard et al., 1993; Bernard and Thayer, 1993; Hess, 1986; Rich, 1988; Stevenson, Stigler, and Lee, 1986—all found that students who placed more emphasis on effort than on natural ability alone had improved academic performances. Students’ effort/diligence, an aspect of their lives over which students have control, has been shown to be a major predictor of students’ academic performance and educational development.

Students’ academic performances is linked to their actions. How they behave and their attitude to their school work and to life in general would largely determine their life experiences (Bandura, 1997; Hinds et al., 1999). Because these students believe that they can produce desired academic outcomes by their actions, they have a great incentive to be diligent. Efficacy belief, therefore, is a major basis for exerting effort. Self-efficacy refers to the belief in one’s capabilities to perform a given task (Bandura, 1997).

Children need to learn more about endurance and to be taught more about the importance of effort. They are made to exert effort. They function better when they are exerting themselves. Children need to learn that effort is the path one takes to achieve
mastery, and that mastery is one of the greatest sources of pleasure (Rich, 1988). The family and the school should be encouraged to provide a supportive environment for students to expend more effort.

A 1966 landmark report by the sociologist James Coleman and his colleagues, which found that family environment was more strongly related to student achievement than any other factor, including school quality, catalyzed most of the calls for more family support in their children's education. However, according to Rich (1988) and Goldberg (1999), many years later many families still do not provide the school-supportive activities at home that would help students improve their educational achievement—supportive activities which would impart to students the values, attitudes, and behaviors that determine success in and out of school.

The value of parental and educator belief and support of students to expend more effort in their work is that effort can be controlled. It teaches children that, in the long run, hard work pays off inspite of obstacles. Parents and educators can provide encouragement and support for children to exert more effort and help them realize that more effort means better results (Bernard et al., 1996; Drake et al., 1996; Hinds et al., 1999; Rich, 1988).

**Student Diligence and Academic Outcomes**

Students have a responsibility for their educational success. It is not good enough for students to be held responsible for their work, they should be responsible. This distinction suggests that students who are held responsible will do work only when
someone compels them to do so, while those who are being responsible will do the work without constant reminders or prodding (Bacon, 1993, 1991; Morris, 1961).

Recent initiatives in the United States of America's education system have been reemphasizing the need for students to assume greater responsibility for their educational development (Bernard, 1991; Bernard et al., 1996; Ericson & Ellett, 1990). Educators, during the decades of the 1980s and 1990s, were expressing considerable concern that the majority of high school students were not investing enough time and effort on their school work and, as a consequence, recommended that students should expend quality effort in order to achieve high-quality work (Anderson & Prawat, 1983; Bacon, 1991, 1993; Bandura & Schunk, 1981; Csikszentmihalyi, 1990; Deci, 1980; Deci & Ryan, 1985; Glasser, 1986, 1990; Newmann, 1989; Rogers, 1983; Weiner, 1980).

Outcomes arise from actions. How one behaves largely determines the outcomes one experiences. In this regard, the outcomes students anticipate depend largely on their judgment of how well they will be able to perform in given situations. They visualize their academic outcomes based on their perception of how well they think they can do. And based on that perception that they have of themselves, they exercise the requisite effort or diligence that would impact their performance. In short, one's belief that their diligence/effort would make a difference in their academic performance depends not on the number of skills one has but on one's belief that their effort would make a difference in their academic performance (Bandura, 1986, 1997; Rich, 1988).

Effort as a predictor of academic performance has great relevance because performance attainments and belief in ones’ capabilities are correlated to how hard one
works at a given pursuit (Bandura, 1997). In other words, the amount of effort one exerts
to achieve a given pursuit is correlated to one's performance attainments and to one's
belief in one's capabilities.

Nicholls and Miller (1984) reported that effort has different implications for
children and adults. They claim that, for young children, high effort suggests the
acquisition of more ability, whereas for adults high effort to achieve things implies low
ability. However, other researchers have found that there is no correlation between
diligence and ability (Bennett, 1994; Bernard, 1991; Bernard et al., 1993; Bernard &
Thayer, 1993; Bernard et al., 1996). Regardless of the relationship between effort and
ability, many failures reflect an inability to regulate one's motivation rather than a
deficiency of knowledge or basic skills (Bandura & Cervone, 1986). This assumption
implies that students who improve their motivation (a sub-scale of diligence) may
eliminate their failures.

Over the years there have been studies that dealt with student diligence as it
relates to their educational development. One of the earliest was a study conducted by
Eisner (1937) to determine whether the degree of intelligence and industry possessed by
each of the pupils in a class could be ascertained. Industry was defined as the diligent
application to a task or conscientious unflagging effort. Although no attempt was made
to measure the performance level of the students or to determine any correlation between
industry and intelligence, this study at least created an interest for further studies in
student diligence.

Covington, Spratt, and Omelich (1980) took their study one step further by trying
to determine whether students with a history of steady diligent effort were evaluated
differently by teachers than students who are characterized by erratic bursts of energy
and periods of indifference to study. The results indicated that effort stability or diligence
made little contribution to how students felt about their failure, but that the level of
diligence demonstrated by students influenced teachers’ judgments about their academic
potentials.

Hatano and Inagaki (1982) matched 64 reflective and 58 impulsive fifth-graders
who were classified by the Kagan’s Matching Familiar Figures Test (MFFT). They were
presented with four fictitious models in a questionnaire, Reflective, Fast-Accurate,
Impulsive, and Slow-Inaccurate, in that order, and were asked to rate the four fictitious
models on brightness and diligence on a scale of 1 - 5. The results revealed that reflective
and impulsive students differed significantly in two of the eight ratings. The reflective
students considered Fast-Accurate to be brighter and Slow-Inaccurate to be more diligent
than the impulsive children. The models with fewer errors than with more errors on the
MFFT were rated brighter and more diligent by both reflective and impulsive students.

One of the most notable studies on student diligence was done by Bernard (1991).
The diligence phenomenon was conceptualized as a response to the need to
operationalize students’ responsibility for their education. His study operationalized the
diligence construct which reflects or expresses a student’s effort toward achieving
physical, mental, social, and spiritual ideals. The idea was to develop an instrument that
could reflect students’ quality and quantity of effort and, in conjunction with native
ability, explain and predict students’ outcomes.
The studies by Bernard (1991), Bernard et al. (1993), and Bernard and Thayer (1993) found that there is a zero-order correlation between ability (as measured by ACT) and competence (as measured by GPA): $r = .53, p < .001, N = 151$. But a significant correlation was found between diligence and competence ($r = .32, p < .001, N = 151$). And although it seems logical to expect a significant correlation between ability and diligence, no significant correlation was found ($r = .06, N = 140$). Therefore, all students, irrespective of their ability level, can improve on their academic performance by becoming more diligent.

They found that younger students tended to be more diligent than their older counterparts. Females were generally more diligent than males in their junior and senior years. Socioeconomic levels did not seem to be related to diligence. These findings, especially diligence and socioeconomic levels, have tremendous implications for breaking the vicious cycle of poverty and academic failure. Students from economic disadvantaged homes can break that cycle by becoming more diligent and thereby improving their academic performance.

When students are told to put more effort into their work, do they know how to become more diligent? Would the inclusion of formal diligence instruction in the curriculum have any impact on student diligence? A pilot study by Bernard et al. (1995) was done to determine if diligence instruction could significantly improve the level of diligence among students with below-average diligence. While the results were inconclusive, it suggested that diligence instruction did not seem to make any significant difference on the diligence scores.
In addition, that study suggests that since the mean gain scores of both the experimental group and control group on the post-test (28.83 and 26.83 respectively) were similar. The researchers concluded that the items of the Diligence Inventory may be instructional, and that students could modify their diligence levels based on mere exposure to the instrument.

Educators can enhance students' diligence and self-efficacy by providing feedback that credits academic performance to students' diligence rather than to personal capabilities. However, educators have to be professionals and correctly diagnose their students. To keep telling students, seriously lacking the requisite basic skills, that they should work harder without providing them with the necessary skill-building techniques and the means to translate effort to success would eventually be demoralizing. Under such conditions, diligence and self-efficacy are best promoted by correctly ascribing failure to lack of knowledge and cognitive skills. These skills should are acquirable through mastery learning (Bandura, 1997).

**Parental Diligence-Support**

The conceptual framework which allows for parental involvement in education is one which views learning organizations as a whole, rather than fragmented parts. It is a framework that encourages interrelationships (Senge, 1990). An education system also has to have interrelationships. It is becoming very evident that efforts to improve students' outcomes should involve all the key players in the education system: educators, parents (community), and the students themselves. The home and school should
reinforce, not duplicate, one another in the quest of educating children. It is a cultural truism that one's experience in one institution within a society—the home, prepares one for experiences in another—school (Hess, 1986). Children who are good at managing their own learning activities have parents who cultivate such capabilities by modeling, guiding, and rewarding self-directedness (Martinez-Pons, 1996).

Several studies, most of which were done in the United States of America, would help to set the stage for parental diligence-support. In a recent study, Braxton (1999) found that there was a distinct and intimate relationship among Asian American culture, family, and student achievement at the high school level. The study found that Asian American parents expected their children to display certain cultural values such as hard work (diligence) and maintaining high standards, stressed the importance of studying, and created a home environment conducive to study. Asian Americans consistently receive better grades than other students (Braxton, 1999; Hess, 1986; Rich, 1988).

Hinds et al. (1999) in a landmark study which was done in the Eastern Caribbean Countries, asked students to rate the factors which most strongly influence their attitudes toward school. Parental support was rated the highest. The more strongly students feel their parents support, follow, and encourage their progress in school, the more positive their attitudes toward school. Students who had strong academic support and encouragement from their parents liked school more, felt better about themselves in relation to school, had stronger beliefs that schooling would be valuable to them in their future lives, had fewer behavioral problems, and performed better academically.

Bernard and others (1996) did a study to focus on the relationship between
students' diligence and the extent to which the diligence-support provided by parents and educators promoted diligence in students. The purpose of that study was to compare the average diligence of students with the level of diligence-support generally provided by teachers and parents.

It was found that there was no significant difference between mothers and fathers in the diligence-support provided their children. There was no significant relationship between the diligence-support provided by parents and their marital status, educational background, age, or ethnic background. However, there was a significant relationship between socioeconomic level of parents and the support provided their children. The least support came from parents in the $41,000 - $50,499 bracket followed by the $100,000 and over bracket. The most support came from parents in the $31,000 - $40,999 bracket. In the United States of America, the $31,000 - $40,999 bracket represented the lower-middle-income bracket, the $41,000 - $50,000 bracket represented the middle-income bracket, and the $100,000 and over bracket represented the upper-income bracket.

The study found a significant relationship between diligence and academic performance. While there was no significant relationship between diligence and socioeconomic status, there was a significant relationship between diligence and gender. Girls seemed to be more diligent than boys.

A study done by Stanford University (Hess, 1986) found that Asian American students consistently received better grades than other students. The study measured the quantity of hours high school students spent on homework. Asian Americans spent
almost 12 hours, White Americans almost 8 hours, and Black Americans almost 7 hours per week on homework. Asian Americans also scored higher on other measures of effort, which included paying attention to the teacher and school attendance. They found that Asians believe that hard work makes a difference, and Asians provided the necessary support and encouragement to their children. The support and encouragement impacted positively on the students’ own effort and educational development.

In another study, American and Japanese students and their parents were asked to explain their own/children’s achievement in mathematics. American parents and children indicated overwhelmingly that ability and schooling explained the achievement, while the Japanese parents and students indicated that effort made the difference in achievement. On average, Japanese students performed better than American students on mathematics examinations (Stevenson et al., 1986).

All of these studies provide a basis for parental diligence-support in their children’s education. The home environment sets the stage for children to not only learn but to want to learn. It should instill in students the desire to work hard and provide the time that is necessary for hard work to be done. There is no doubt that home and school partnerships are of vital importance for schools, children, and families (Epstein, 1991).

What should be the role of parents in the education of students? Among other things, parents should provide a supportive home environment where the skills necessary for success can be acquired. Goldberg (1999) and Rich (1988), who works with the U.S. Department of Education on ways in which parents can be a part of any student outcomes improvement initiative, recommend that students need the basic supporting structures
from home and school to be able to focus on learning.

Instead of putting children first, one should put parents and teachers first, teaching them skills to become proper role models who can support students. There are skills children need to learn outside of school (home) if they are going to do well in school. These skills are:

1. *Confidence*—feeling able to perform
2. *Motivation*—wanting to perform
3. *Effort*—being willing to work hard
4. *Responsibility*—doing what is right
5. *Initiative*—moving into action
6. *Perseverance*—completing what is started
7. *Caring*—showing concern for others
8. *Teamwork*—working with others
9. *Common Sense*—using good judgement
10. *Problem Solving*—putting what is known and what can be done into action
11. *Focus*—concentrating on the task at hand (Goldberg, 1999; Rich, 1988).

Bernard (1991) focused on the level of diligence that students expended in their quest to achieve. The skills that he identified as being important to diligence are:

1. *Motivation*—the drive to begin a certain course of action with an intended result in mind
2. *Conformity and Responsibility*—the degree of maturity in relating to one’s own concerns and those of significant others
3. **Concentration and Assimilation**—the act of focusing attention on a problem, task, or impending situation through a process by which all new experience is modified and combined with previous knowledge.

4. **Devotedness and Spirituality**—practices that lead to good morals and self-esteem.

5. **Discipline**—the training of the will.

Careful examination of the skills presented by both Rich (1988) and Bernard (1991) would reveal their similarities. The more of these skills that a child learns at home, the more prepared that child is for school, the more prepared that child is to learn, the more prepared that child is to succeed. The level of parental support that children receive at home may determine how much of these skills they would possess by the time they are ready for school and, by extension, how well they perform at school.

The implication is that for students to succeed in their educational pursuit, there must be close collaboration between the home and the school (Goldberg, 1999; U.S. Department of Education, 1994). Education, which should trigger a transformation in student behavior and learning, should include parents, educators, and students.

The actions of the key persons involved in education—parents, educators, and students—should integrate and fuse the parts of the education system into a whole, and continually remind themselves that the whole can exceed the sum of its parts (Hoy & Miskel, 1996; Senge, 1990). As Bernard et al. (1996) stated:

A quality alliance between parents and educators in their support of students encompasses four critical functions: information exchange, joint problem-solving, school-based support, and home-based connections—the
linkage which enables educators to work with parents/guardians in ways that will help them be effective in assisting their children at home. Of these four areas, the home-based connection is most pertinent. (p. 10)

These linkages enable collaboration among the key players in education.

The landmark 1983 report, "A Nation at Risk," alerted the American public of the vital role that families can play in the education of their children. However, the initiatives that resulted from that report placed little emphasis on parental involvement in education. Yet, parental involvement in their children’s education is crucial to the child's educational success (Bernard et al., 1996; Goldberg, 1999; U.S. Department of Education, 1994). According to Barton and Coley (1992):

Three factors over which parents exercise authority—student absenteeism, variety of reading materials in the home, and excessive television watching—explain nearly 90% of the differences in eighth-grade mathematics test scores across 37 states and the District of Columbia on the National Assessment of Educational Progress (NEAP). Thus, controllable home factors account for almost all the differences in average student achievement across states. (p. 3)

Studies of individual families show that what the family does is more important than its income or education. This is true inspite of the family’s income, education, or ethnic background (Colman et al., 1967; de Kanter, Ginsberg, & Milne, 1986; Epstein, 1991; Henderson & Berla, 1994; Keith et al., 1993; Lintos, 1992; Stevenson & Baker, 1987; U.S. Department of Education, 1994). The most important characteristic of a family, as it relates to students’ academic success, is family support.

One of the objectives of The National Education Goals, as set out in the Goals 2000: Educate American Act, is that every school should promote partnerships that would increase parental involvement and participation in promoting the social,
emotional, and academic growth of children (U.S. Department of Education, 1994). An effective educational program occurs when parents, other citizens, and educators share common goals, are seen as equals, and support the students’ education. Success in school is homemade (Bernard et al., 1996).

While no study has been done to measure the extent of parental involvement in education in Grenada, parents are usually invited to the school only when their children have disciplinary problems. Visits to schools, for many parents, are not eagerly anticipated. When parents sense that they are invited to school only when there are problems, or when the school needs to raise funds and that their participation means little else to educators, they may have a distorted opinion of their role.

If parents feel excluded from schools, sense that are of little value, and feel helpless in assisting and supporting their children, they are likely to transmit these attitudes to their children. According to Haynes (1993) and Comer (1980) whenever the home and school cultures and behaviors are worlds apart, children usually embrace the familiar home culture and reject the unfamiliar school culture, including its academic components and goals.

However, a partnership approach to education enables educators and parents to develop a sense of ownership and pride in the schools’ efforts to enhance the success of their children. To improve the partnership between school and home, schools should take the initiative and implement partnership building activities (Chavkin, 1989; Drake et al., 1996).

Every good parent would want his/her child to succeed at school. Comer (1988).
another strong advocate of a systems approach to education, identifies three basic things that parents want from schools: (1) they want to know what is going on in the school and how their children are doing; (2) they want to know how the system works and how they can be part of it; and (3) they want to know what they can do with their children at home to help their children succeed in school. Parental involvement in their children’s education is no longer an option, it is a necessity.

Parents are the first and most influential teachers that children have. Students spend more time at home than they do in school (Drake et al., 1996). It is therefore expedient that schools reach out to parents, and let parents know how they can help their children at home.

The cooperation between schools and the families of the students attending them is a vital aspect of the educational process. Parents and teachers share a dual responsibility for shaping the minds, transmitting values, and teaching skills to children (Hess & Holloway, 1984). Moreover, there is evidence that children base their academic aspirations on the standards that their parents set for them. This evidence has significant implications for parental guidance in the educational development of their children (Bandura, 1997). By selecting and creating a supportive environment, parents can contribute to the direction that their children’s lives would take.

The Carnegie Foundation’s 1988 special report “An Imperiled Generation: Saving Urban Schools,” concluded that “schools have an obligation to view parents as co-teachers of their children, not just as adults who sign report cards and show up for open house” (p. 42).
Educator Diligence-Support

Outside of the family, the school is the most influential institution in the lives of students. Educators' diligence-support, therefore, could play a pivotal role in shaping students' attitudes toward their academic pursuits. The ideal is for educators to provide students with the requisite support that can respond to their changing needs (Dowd, 1997; Korinek et al., 1999; Stainbeck & Stainbeck, 1994).

The task of creating classroom environments conducive to learning rest with the teacher. Evidence indicates that teachers' belief in their instructional efficacy partly determines how they structure academic activities in the classroom and conduct students' evaluation. Gibson and Dembo (1984) measured teachers' belief in their ability to motivate and educate difficult students and to counteract adverse home community influences on students' academic development. Teachers with a high sense of instructional efficacy operate on the belief that difficult students are teachable through extra effort, support, and appropriate techniques that can enlist family support.

In contrast, teachers who have a low sense of instructional efficacy believe that there is little they can do if students are unmotivated, and that the influence teachers can exert on students' intellectual development is severely limited by unsupportive or appositional influences from the home and the neighborhood environment.

Thus, teachers who believe strongly in their ability to promote learning, create mastery experiences for their students. However, teachers beset by self-doubts about their instructional efficacy construct classroom environments that are likely to undermine
students' judgments of their abilities and their cognitive development (Bandura, 1997; Cohn & Rossmiller, 1987; Gibson & Dembo, 1984).

Hinds et al. (1999), in a survey of the attitude of students in the Eastern Caribbean to their education, found that the role of teachers in determining students' attitudes to school is very important. The study found that when teachers are supportive of their students' education and take an interest in their progress, students have positive feelings about school, their own competencies, and are less likely to exhibit disruptive or problem behavior.

According to that study, teacher interest and support given to students is the most important predictor of liking for school and of the level of effort that students make in the classroom. Among the variables measured, it was also the only significant predictor, other than students' age and gender, of students' academic performance. In other words, the teacher was the only modifiable determinant of students' academic performance.

This study provides support for educator diligence-support of students' educational development. It is clear that teachers have great influence and tremendous potential for shaping students' attitude toward school and, by extension, their academic performance. The extent to which teachers provide support for their students' academic success may well determine their success in school.

Richman et al. (1998) did a study to explore the impact of social support on high school students. The researchers asserted that social support is communicated by support providers when they behave in ways that are perceived by the students as enhancing their well-being. According to them, social support may take eight distinguishable forms,
which are:

1. *Listening Support*—the perception that another is listening without giving advice or being judgmental

2. *Emotional Support*—the perception that another is providing comfort and caring and indicating that he/she is on the student's side

3. *Emotional Challenge*—the perception that another is challenging the student to evaluate his/her attitudes, values, and feelings

4. *Reality Conformation Support*—the perception that another is helping to confirm the student's perspective of the world

5. *Task Appreciation Support*—the perception that another is acknowledging the student's effort and is expressing appreciation for the work he/she does

6. *Task Challenge Support*—the perception that another is challenging the student's way of thinking about a task or an activity in order to stretch, motivate and lead the student to greater creativity, excitement, and involvement

7. *Tangible Assistance Support*—the perception that another is providing the student with either financial assistance, products, and/or gifts

8. *Personal Assistance Support*—the perception that another is providing services or help, such as running an errand or driving the student somewhere.

The study found that different types of social support are associated with different desirable school outcomes and that parents and adult caretakers (educators) are major sources of social support for high school students. Students who received social support spent more time studying on school nights, had less behavior problems, had greater self-
efficacy, had better school attendance, and had better grades.

In general, that study indicated that social support is related to positive school outcomes. It underscores the importance of parents’ and teachers’ support in students’ lives, and provides an argument for school systems to work with parents and teachers in a continual effort to provide support that enhances school outcomes.

Bernard and others (1996) did a study to determine if there was a relationship between students’ diligence, and, by extension, students’ performance, and educator diligence-support provided to students. They identified five scales or areas where educators could provide diligence-support. The scales were:

1. Motivation Support—provided to students to get them started along a certain course of action with an intended result in mind
2. Concentration and Assimilation Support—provided to students to help them focus their attention on a problem, task or impending situation
3. Conformity and Responsibility Support—provided to students to help them maintain harmony and demonstrate maturity with respect to dealing self and others
4. Discipline Support—provided to students to help them train their will
5. Devotedness and Spirituality Support—provided to students to help them build good morals and self-esteem.

The study found no significant relationship between the diligence-support provided by teachers and their gender, marital status, educational background, socioeconomic status, grade level taught, and years of teaching experience. However, ethnic background was a significant factor. African American teachers appeared to
provide more diligence-support than White teachers.

There was a significant relationship between teachers' ages and their student diligence-support. Teachers between the ages of 26 and 30, and 50 and above seemed to provide the least diligence-support to their students. While parents seemed to provide more diligence-support than educators, both parents and educators tended to demonstrate more concern for their children/students' academic success than did the children/students themselves.

In conclusion, the supports that educators provide to students make a great difference in their academic lives. However, students, parents, and educators should work together to form an integrated whole to enhance the education process. Implicit in this approach to education is the realization that, for students to succeed in their educational pursuit, there must be close collaboration among educators, parents, and students (Bernard et al., 1996; Riley, 1994).

Parents and educators are to provide the necessary support to students so that students can maximize their potentials. Parents and educators share the responsibility of cultivating the minds, transmitting the values, and teaching the skills necessary for life, and students are to be responsible for their actions. This joint responsibility can best be accomplished through a working alliance between parents, educators, and students. It is becoming very evident that the effort to improve students' outcome should be a collaborative approach.
Benefits of Diligence and Diligence-Support

The benefits of student diligence, parental diligence-support, and educator diligence-support of students are consistent in the research literature to date. First, since student diligence is positively correlated with student performance, then one of the more obvious benefits of student diligence is improved academic performance. More diligence translates into better results (Bernard, 1991; Bernard et al., 1993; Bernard & Thayer, 1993; Hess, 1986; Rich, 1988; Stevenson et al., 1986). Diligence allows students to have control over the events that affect their lives.

Student diligence teaches endurance and the importance of effort. People are made for effort, and function best when they exert themselves. Children need to learn that effort is the path that one takes to achieve mastery and that mastery is one of the greatest sources of pleasure (Rich, 1988). Diligence allows students to appreciate effort and to achieve mastery over the long haul.

Coleman et al. (1966) revealed that the family environment was more strongly related to student achievement than any other factor. The concept of diligence-support, as it is outlined in this study, is one that would encourage parents to be supportive of their overall educational development. Creating a home environment that is supportive of and conducive for learning is built into the concept of parental diligence-support.

Hinds et al. (1999) found that students rated parental support as the most important factor that influenced their attitudes towards school. The more strongly students' felt that their parents supported, encouraged, and followed their progress in school, the more positive was their attitude towards school. Such students liked school

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more, felt better about themselves in relation to school, had stronger beliefs that school
would be valuable to them, had fewer behavioral problems, and performed better
academically. Diligence-support carries with it positive implications for student
academic success.

Diligence-support allows for students to acquire the basic supporting structures
from home that would enable them to learn. It would help ensure that students arrive at
school ready to learn. It helps ensure that students acquire the necessary skills at home to
foster learning. The more skills a child acquires at home, the more prepared that child is
for school, the more prepared that child is to learn, and the more prepared that child is to
succeed. Success in school is home-made (Drake et al., 1996; Goldberg, 1999; Rich,
1988).

Diligence-support helps create a level ‘playing field’ for students’ educational
success. What a family does for its children’s educational success is more important than
its income or financial status (Bernard et al., 1996; Epstein, 1991; Henderson & Berla,
1994; Keith et al., 1993; Lintos, 1992; Stevenson & Baker, 1987; U.S. Department of
Education, 1994). It implies that not only the affluent few but the average family can
provide the requisite support for student success and thereby break the vicious cycle of
poverty and lack of education.

Educator diligence-support plays a pivotal role in shaping students’ attitudes
towards their academic pursuits. When educators provide students with the requisite
support that can respond to their changing needs, students tend to have positive feelings
about school and their own competencies, and are less likely to exhibit disruptive or
problem behavior (Dowd, 1997; Hinds et al., 1999; Korinek et al., 1999; Stainbeck & Stainbeck, 1994).

In addition, Hinds and others (1999) found that teacher interest and support shown to students was the most important predictor of liking school, and of the level of effort that students make in the classroom. Teacher support is the only significant predictor, other than the students’ age and gender, of student academic performance. The teacher was the only modifiable determinant of students’ academic performance.

It is very clear that teachers have great influence and potential for shaping students’ attitudes toward school. The extent to which teachers provide support for their students’ academic success may well determine the success of students in school.

Richman et al. (1998) further state that students who receive social support (the perception held by students that parents and educators are behaving in ways to enhance their well-being) spend more time studying on school nights, had fewer behavior problems, had greater self-efficacy, had better school attendance, and had better grades.

One of the major functions of the Parent Teacher Association in Grenada is fund raising. However, the contributions of parents are waning. Research has shown that parents who are involved with students’ education will be more inclined to support the schools and their programs (Davies, 1988; Henderson & Berla, 1994). Parental diligence-support could help ensure greater support by parents for the school and its programs.

In addition, when parents are involved in their children’s education, life in the community improves. People who have a greater stake in a community stay longer in that community, and the school and the community relations are thus improved (Davies,
Also, effective parental involvement improves student cognitive performance, it improves student behavior and attitude toward school, it improves school climate, it improves school-community relations, it improves parental attitudes, reduces school failures and dropout, improves school attendance, and improves students' diligence (Christenson & Cleary, 1990; Henderson, 1987; Kagan, 1984; Robinson & Fine, 1994).

Parents show an increased understanding of the functions of schools and improve their communication with children and educators, in general, concerning school work in particular. Parents also participate more with learning activities at home.

Teachers are recognized by parents as having better interpersonal and teaching skills, are given higher teacher evaluation scores by principals, and indicate a greater satisfaction with their jobs.

Schools are rated as being more effective and present more successful school programs (Christenson & Cleary, 1990; Robinson & Fine, 1994).

Family involvement in education is one of the best long-term investments a family can make for its children. The difference in lifetime earning between a student in the United States of America who did not graduate from high school and one who did is over $200,000. The difference for a student who received a bachelor's degree or more and who has not is almost $1 million (U.S. Census Bureau, 1994).

The findings on the relationship between parental support and student achievement suggest that parental support has strong effects on student achievement independent of family background. In other words, parents from any socioeconomic
background can have a positive impact on their children's educational development if they become active participants in their children's education (Keith et al., 1993; Robinson & Fine, 1994).

In conclusion, the support that parents and educators provide to students make a great difference in their academic life. However, students, parents and educators should work together to form an integrated whole to enhance the education process. Implicit in this approach to education is the realization that for students to succeed in their educational pursuit, there must be close collaboration among educators, parents and students (Bernard et al., 1996; Riley, 1994).

Parents and educators are to provide the necessary support to students, so that students can maximize their potential. Parents and educators share the responsibility of cultivating the mind, transmitting the values, and teaching the skills necessary for life, and students are to be responsible for their actions. This joint responsibility can best be accomplished through a working alliance between parents, educators, and students. It is becoming very evident that the effort to improve students’ outcome should be a collaborative approach.

**Summary of the Chapter**

This chapter presented a review of the literature with the expressed intention of providing a basis for student diligence and student diligence-support in education. This basis was provided in two ways: (1) research findings which revealed that there is a relationship between students’ diligence and students’ academic performance were
discussed, and (2) research findings which showed that parental diligence-support and
educator diligence-support positively impact student's diligence and by extension their
academic outcomes were examined.

The discussion climaxed with the benefits of a workable collaboration among the
key players in education: students, parents and educators.
CHAPTER 3

METHODOLOGY

Introduction

The focus of this study was to identify the relationship between student diligence, parental diligence-support, educator diligence-support, other related variables, and students' academic performance. The setting for this study is the school districts on the Caribbean island of Grenada. The school districts are comprised of state-aided denominational schools and state-financed schools. In the context of this study, state-aided denominational high schools and state-financed high schools were considered.

This chapter presents a description of the instrument that was used, a description of the population and sample, a description of the research design and procedure, and a summary of the statistical analysis that was used in the study.

The Instrument to Be Used

Permission was granted from Dr. Hinsdale Bernard for the use of the Diligence Inventory: High school Form (DI-HS), Diligence Inventory: Educator Form (DI-EF), and the Diligence Inventory: Parent/Guardian Form (DI-PG). These instruments were used to measure students' diligence, educators' diligence-support, and parental diligence-support respectively.
The original Diligence Inventory (DI) is a 55-item Likert scale instrument, originally developed by Bernard (1991) to measure an individual's diligence level. The inventory has five sub-scales: Motivation, Conformity and Responsibility, Concentration and Assimilation, Devotedness and Spiritually, and Discipline. These sub-scales represent the dimensions of diligence and measures of one's diligence or diligence-support.

The original Diligence Inventory: High school Form (DI-HS) was developed on a sample of 237 high school juniors and seniors. It was judged for content validity by a panel of 12 experienced teachers and administrators. Factor Analysis and Item Analysis were used to establish the underlying factors (scales) of diligence and to provide reliability estimates of the instrument and scales. In addition, the method of Known Group Differences was used to further establish construct validity. The instrument was able to discriminate between students of low, average, and high diligence as evaluated by teachers (Bernard, 1991; Bernard et al., 1996).

Reliability coefficients of the instruments range from .90 - .92, and reliability coefficients of the five sub-scales range from .56 - .91. The test-retest reliability for the DI-HS as a whole is .66 and the scale range is .55 - .96.

The original instruments were scored using a Likert scale, ranging from Never/Rarely = 1 to Almost Always = 5 for positive items, and from Never/Rarely = 5 to Almost Always = 1 for negative items, from minimum to maximum diligence. The scale range is 55 - 275.

The instrument also asks for general information such as gender, family
income, ethnic background etc., and instructs subjects to write in the number of the response which most closely indicates or represents how the subject feels about each item.

Student academic performance was measured by the student percentage scores, from the end-of-term teacher examination. Examination scores were obtained for English Language, Mathematics, and the Sciences. However, only English Language and Mathematics scores were common to the students. Academic performance therefore, was measured by the average percentage scores for English Language and Mathematics.

Population

The participants of this study were students, parents, and educators in the education system in Grenada. An attempt was made to select schools from both the state-aided denominational high schools and the state-financed high schools. There are 11 state-aided denominational high schools and 5 state-financed-high schools in the education system in Grenada. Six of the high schools are in the south of the island, 4 schools are on the west coast, 2 schools are on the north of the island, and 4 schools are on the east coast. The 16 schools were placed in three enrollment categories: size A (350 - 400)), size B (400 - 500), and size C (600 and over). An attempt was made to match the schools according to type, location, and size.

As a result, the 12 high schools selected were placed in categories by type, location, and size. Five schools were state-financed high schools and 7 schools were state-aided-denominational high schools. Four schools were located in the south of the
island, 3 schools were located on the west coast, 2 schools were located on the north of the island and 3 schools were located on the east coast. In terms of size, 3 schools were in the size A category, 4 schools were in the size B category and 5 schools were in the size C category.

The targeted participants in this study were approximately 900 students, approximately 900 parents, and all the teachers who teach students in Forms III, IV, and V. The students were selected from Forms III, IV, and V (equivalent to Grades 10, 11 and 12 in the U. S. system) (see Table 2). The parents were matched to the students who participated in the study. The educators were all of the teachers who taught these students regardless of the subjects they taught.

Of the 900 students in the study, approximately 50% were anticipated to come from state-aided denominational high schools and the other 50% came from the state-financed high schools. To help ensure that the groups were homogeneous, the students in the sample were those who were studying a combination of English Language, Mathematics, and a Science subject (Chemistry, Biology, Physics, Agricultural Science or Integrated Science). Intact classes of students from each Forms III, IV, and V which met this criteria were selected.

The parents in the study were matched to the students in the study. An identification number was assigned to each student and was placed on his/her instrument. The parent of each child was then assigned the child’s number and it was placed on the parent’s instrument. All of the teachers who taught students in Forms III, IV, and V, regardless of the subjects they teach, were included in the study.
Table 2

*Breakdown of Anticipated Sample to Be Included in the Study*

<table>
<thead>
<tr>
<th>Forms</th>
<th>State-Aided High schools</th>
<th>State-Financed High schools</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Classes</td>
<td>Sample</td>
</tr>
<tr>
<td>Form III</td>
<td>School 1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>School 2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>School 3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>School 4</td>
<td>2</td>
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<tr>
<td></td>
<td>School 5</td>
<td>2</td>
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<tr>
<td></td>
<td>School 6</td>
<td>3</td>
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<tr>
<td></td>
<td>School 7</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Form IV</td>
<td>School 1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>School 2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>School 3</td>
<td>3</td>
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<td>School 4</td>
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<td>School 5</td>
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<td></td>
<td>School 6</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>School 7</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Form V</td>
<td>School 1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>School 2</td>
<td>2</td>
</tr>
<tr>
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<td>School 3</td>
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<td>School 5</td>
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<td>School 6</td>
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</tr>
<tr>
<td></td>
<td>School 7</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Proposed sample size. No of Schools = 12; No of Classes = 36; No of Students = 900.
Sample

As it turned out, 10 schools agreed to participate in the study. Eight of the 10 schools that agreed to be in the study actually returned responses. Of the 8 schools, 6 schools were state-aided denominational high schools and 2 schools were state-financed; 2 schools were from the south of the island, 2 schools were on the west coast, 2 schools were from the north of the island, and 2 schools were from the east coast. Four of the schools were in the size C category, 2 of them were in the size B category and 2 schools were in the size A category.

The actual sample consisted of 458 students, 358 parents, and 34 educators. These numbers represent a 51% and 40% respectively, of the proposed sample size for students and parents. Of these, 310 students were matched to their parents.

The sample totals which follow fluctuate because of missing data on some variables. Missing data are not included in the calculations. In the student sample, there were 316 (69%) females and 141 (31%) males; 316 (73%) reported themselves as being of African descent and 128 (27%) as being of other descent; 179 (39%) of them were in Form III, 165 (36%) were in Form IV, and 112 (25%) were in Form V. Eighty-one students (18%) were from state-financed high schools and 374 (82%) of them were from state-aided-denominational high schools.

The students in the study had many common characteristics. Students from both the state-aided denominational high schools and the state-financed high schools had to write the common entrance examination in order to qualify for entry into high school.
The first 1,000 students with the highest examination score usually qualify for entry into high school. These students were taught by teachers of similar qualification and expertise because the Ministry of Education, the administrative body overseeing the school system, helps ensure that schools are equitable.

**Study Design**

Since this study attempted to determine the possible relationships between student diligence, parental diligence-support, educator diligence-support, other related variables, and students' academic performance, a correlational study, using the survey method, was done in order to describe in quantitative terms the degree of the relationships (Gay, 1996). Therefore, student diligence scores, parental diligence scores, educator diligence-support scores, the related variables scores, and student academic performance scores were obtained and their relationships were examined.

Academic performance was measured by the examination scores which the students obtained one quarter before the study was done. The examination scores used in this study were taken from the schools' records. Also, the diligence scores that were used were already resident in the subjects and were not manipulated. Diligence was measured in its natural state in the subjects.

The related variables in this study were essentially demographic characteristics, students' expectation for success, and the type of school students attended. The type of school students attended and their demographic characteristics were essentially fixed. Their expectation for success were measured in their natural state without manipulation.
Procedures

This study centered around instrument validation, estimating the relationships between the variables—the relationship between parental diligence-support and student diligence, educator diligence-support and student diligence, and student diligence and student outcomes—and investigating the differences in diligence.

An endorsement was sought from the Ministry of Education, in Grenada, for conducting the study in the high schools. Letters were then sent to the principals of the high schools explaining the study and requesting permission to conduct the study in their schools. Permission was granted from Andrews University Human Subjects Review Board (HSRB) to conduct this study.

Each of the schools included in the study was instructed to select an entire class of students who were studying English Language, Mathematics, and Science subjects, for each of Forms III, IV, and V. Letters were then sent to parents of the students in the forms, explaining the research and requesting permission for their children's inclusion in the study.

Upon selection of the class, each student was assigned an identification number and prepared Students Performance Measures Sheets (SPMS) for obtaining students' examination scores from their files. Students' percentage scores for the term were recorded.

Each student's identification numbers was placed on the Diligence Inventory: High school Form, before testing, to facilitate matching of his/her diligence score with
his/her examination score. After the students completed the Diligence Inventory: High school Form, the Form teacher was asked to provide a subjective diligence rating of the students in his/her Form, using a scale of 1, 2, and 3 to represent low, average, and high diligence respectively. This information was used to establish construct validity by the method of Known Group Differences as applied in the original study (Bernard, 1991).

Each student then placed the completed form in an addressed envelope and sealed and returned it to the school's secretary from whom they were later collected.

Each student who completed a Diligence Inventory: High school Form was given a Diligence Inventory: Parent/Guardian Form to take home to his/her parent or guardian. The Diligence Inventory: Parent/Guardian Form had the identical identification number as the student's, to facilitate matching the parent/guardian to the student.

The parent/guardian then completed the form, placed it in an addressed envelope and sealed and gave it to the student to return to the school's secretary the following day. The envelopes were then collected from the school's secretary.

The educators who were a part of this study were all of the teachers of Forms III, IV and V regardless of the subject they taught. The Diligence Inventory: Educator Form was distributed to the educators who were asked to return the completed form in a sealed envelope to the school's secretary.

In an attempt to have an acceptable response rate, communication from the Ministry of Education endorsing the study was sent to all of the schools in the study. In addition, a cover letter explaining the significance of the study accompanied each questionnaire sent to the parents. Since identification numbers were on the
questionnaires of both parents and students, follow-up activities were done among parents who did not return the questionnaire in order to improve the response rate.

The null hypotheses to be tested in this study are listed as follows:

Hypothesis 1. There is no relationship between student diligence and student academic performance.

Hypothesis 2. There is no relationship between diligence and academic performance for male students and female students.

Hypothesis 3. There is no relationship between diligence and academic performance for students of different ethnic backgrounds.

Hypothesis 4. There is no relationship between student diligence and academic performance for the different age groups.

Hypothesis 5. There is no relationship between Form (Grade level) and academic performance.

Hypothesis 6. There is no relationship between student diligence and gender.

Hypothesis 7. There is no relationship between student diligence and Form.

Hypothesis 8. There is no relationship between student diligence and age.

Hypothesis 9. There is no relationship between student diligence and the type of high school they attend.

Hypothesis 10. There is no relationship between students’ diligence and their expectation to succeed.

Hypothesis 11. There is no relationship between students’ diligence and their perception of others’ expectation of their success.
Hypothesis 12. There is no difference in the level of diligence-support of parents and educators.

Hypothesis 13. There is no relationship between parental diligence-support and student diligence.

Hypothesis 14. There is no relationship between the type of high school students attend and the level of educator diligence-support.

Hypothesis 15. There is no relationship between educators' level of diligence-support and their teaching experience.

Hypothesis 16. There is no relationship between educators' level of diligence-support and their gender.

Hypothesis 17. There is no relationship between educators' level of diligence-support and their education level.

Hypothesis 18. There is no relationship between the type of high school students attend and level of parental diligence-support they receive.

Hypothesis 19. There is no relationship between parental diligence-support and gender.

Hypothesis 20. There is no relationship between parental diligence-support and their education level.

Hypothesis 21. There is no relationship between the level of parental diligence-support and their income level.

Hypothesis 22. There is no relationship between the level of parental diligence-support and their assessment of their children's school work.
Analyzing the Data

The services of the Center for Statistical Services on the campus of Andrews University were solicited for the purpose of scoring the items. Descriptive statistics were used to calculate the means and standard deviations of each subgroup in the sample. The means would indicate the average diligence level of each group, and the standard deviation would indicate how close the scores are to the mean.

Factor analysis was done on the student data for the purpose of validating the instrument used for data collection. The original instrument was developed from a sample in the Midwestern United States of America. It was necessary to ensure that the instrument was robust enough to be used on the Caribbean island of Grenada.

Pearson product-moment correlation coefficient was calculated to examine the strength of the correlations between the student diligence and academic performance.

t-tests and Analysis of Variance (ANOVA) were used to test mean differences in the level of diligence among the different groups and subgroups in the study. A t-test was also used to calculate the difference between the level of support shown by the parents’ group and the educators’ group.

Multiple Linear Regression was used to enable the researcher to explain the variance in students’ academic performance. Multiple Linear Regression was also used to enable the researcher to explain the variance in student diligence.

The dependent variable in this study was student academic performance. It was measured by student percentage scores on the teacher-prepared terminal examinations. The mean of the percentage scores for English Language and Mathematics was used.
Student diligence and diligence-support were measured from the scores of the various versions of the Diligence Inventory.

The revised Inventory used in this study comprised of four sub-scales namely Motivation, Concentration and Assimilation, Discipline, and Conformity and Responsibility. Parental assessment of their child’s school-work was measured on a 5-point rating scale, from excellent to failing. Students’ expectation for their success and their perception of others expectation for their success was measured on a dichotomous rating scale—yes, no.

Summary of the Chapter

In this chapter, the population, samples, and sampling design were discussed. The sizes of the students’ sample (N = 458), parents’ sample (N = 358) and educators’ samples (N = 34) were adequate for testing the significance of the null hypotheses.

In addition, the validity and reliability of the original instruments used and the statistical techniques for data analyses were outlined.
CHAPTER 4

RESULTS

This chapter presents the results of data analyses generated in this study. The first phase of the study design was the factor analytical study of the diligence inventory with an intent to validate the instrument used for data collection. The second phase of the study design was to examine the relationship between student diligence and academic performance as measured by students' examination percentage scores. Demographic and other related differences in student diligence and the impact of student support systems on student diligence were also investigated.

Description of the Population and Sample

The 16 high schools on the island of Grenada were placed in two broad categories. Five of the schools were state-financed high schools, and 11 were state-aided denominational high schools, making a total of 16 high schools. Six of the high schools were in the south of the island, 4 were on the west coast, 2 were in the north, and 4 were on the east coast. An attempt was made to match the high schools in the sample according to location, type, and size.

As a result, of the 12 high schools selected, 5 schools were state-financed, 7 schools were state-aided denominational. Four schools were located in the south of the
island, 3 schools were on the west coast, 2 schools were in the north of the island, and 3 schools were in the east of the island. An attempt was made to select an entire class of science students from each of Forms III, IV, and V in the selected schools to be representative of the students who were in those three Forms in 16 high schools.

The sample consisted of 458 students, 358 parents, and 34 educators. Of these, 310 students were matched to their parents. The two types of schools, state-financed and state-aided denominational, were represented in the sample. There were two state-financed high schools and six state-aided denominational high schools in the study.

The sample totals for the descriptions that follow fluctuate because of missing data on some variables. The missing data were excluded from the calculations. In the student sample there were 316 (69%) females and 141 (31%) males; 316 (73%) reported themselves as being of African descent and 118 (27%) considered themselves as being of other descent; 179 (39%) of them were in Form III, 165 (36%) were in Form IV, and 112 (25%) were in Form V. Eighty-one students (18%) were from state-financed high schools, and 374 (82%) of them were from state-aided denominational high schools.

Tables 3 through 10 present a detailed breakdown of the sample by students, parents, and educators.

**Factor Analysis**

Data were collected from 458 high school students, 358 parents/guardians, and 34 teachers on the Caribbean island of Grenada. Factor analysis was done on the student data for the purpose of validating the instrument used for data collection. I wanted to
Table 3

*Composition of Student Sample by Form and Age Groups*

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Form III</th>
<th>Form IV</th>
<th>Form V</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 and under</td>
<td>71 (40%)</td>
<td>12 (7%)</td>
<td>1 (1%)</td>
<td>84 (19%)</td>
</tr>
<tr>
<td>15 years</td>
<td>43 (24%)</td>
<td>49 (30%)</td>
<td>9 (8%)</td>
<td>101 (22%)</td>
</tr>
<tr>
<td>16 years</td>
<td>40 (22%)</td>
<td>45 (27%)</td>
<td>31 (28%)</td>
<td>116 (26%)</td>
</tr>
<tr>
<td>17 and older</td>
<td>25 (14%)</td>
<td>58 (35%)</td>
<td>69 (63%)</td>
<td>152 (34%)</td>
</tr>
<tr>
<td>Sample Totals</td>
<td>179 (40%)</td>
<td>164 (36%)</td>
<td>110 (24%)</td>
<td>453 (100%)</td>
</tr>
</tbody>
</table>

Table 4

*Composition of Student Sample by Form and Gender*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Form III</th>
<th>Form IV</th>
<th>Form V</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>120 (26%)</td>
<td>110 (24%)</td>
<td>85 (19%)</td>
<td>315 (69%)</td>
</tr>
<tr>
<td>Male</td>
<td>59 (13%)</td>
<td>54 (12%)</td>
<td>27 (6%)</td>
<td>140 (31%)</td>
</tr>
<tr>
<td>Sample Total</td>
<td>179 (39%)</td>
<td>164 (36%)</td>
<td>112 (25%)</td>
<td>455 (100%)</td>
</tr>
</tbody>
</table>
Table 5

*Composition of Student Sample by Form and Ethnicity*

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Form III</th>
<th>Form IV</th>
<th>Form V</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>123 (72%)</td>
<td>115 (75%)</td>
<td>76 (70%)</td>
<td>314 (73%)</td>
</tr>
<tr>
<td>Other</td>
<td>48 (28%)</td>
<td>38 (25%)</td>
<td>32 (24%)</td>
<td>118 (27%)</td>
</tr>
<tr>
<td>Sample Total</td>
<td>171 (40%)</td>
<td>153 (35%)</td>
<td>108 (25%)</td>
<td>432 (100%)</td>
</tr>
</tbody>
</table>

Table 6

*Composition of Parent Sample by Gender*

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>292</td>
<td>(83%)</td>
</tr>
<tr>
<td>Male</td>
<td>61</td>
<td>(17%)</td>
</tr>
<tr>
<td>Total</td>
<td>353</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

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Table 7

Composition of Parent Sample by Gender and Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-30</td>
<td>15 (68%)</td>
<td>7 (32%)</td>
<td>22 (6%)</td>
</tr>
<tr>
<td>31-40</td>
<td>128 (90%)</td>
<td>14 (10%)</td>
<td>142 (41%)</td>
</tr>
<tr>
<td>41-50</td>
<td>93 (74%)</td>
<td>32 (25%)</td>
<td>125 (36%)</td>
</tr>
<tr>
<td>51+</td>
<td>49 (86%)</td>
<td>8 (14%)</td>
<td>57 (17%)</td>
</tr>
<tr>
<td>Sample Total</td>
<td>285 (82%)</td>
<td>61 (18%)</td>
<td>346 (100%)</td>
</tr>
</tbody>
</table>

Table 8

Composition of Educator Sample by Gender and Education Level

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-Level Subjects</td>
<td>16 (76%)</td>
<td>5 (24%)</td>
<td>21 (64%)</td>
</tr>
<tr>
<td>Degree</td>
<td>7 (64%)</td>
<td>5 (36%)</td>
<td>12 (36%)</td>
</tr>
<tr>
<td>Sample Total</td>
<td>23 (70%)</td>
<td>10 (30%)</td>
<td>33 (100%)</td>
</tr>
</tbody>
</table>
Table 9

*Composition of Educator Sample by Type of School and Education Level*

<table>
<thead>
<tr>
<th>Education Level</th>
<th>State-aided</th>
<th>State-financed</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-Level Subjects</td>
<td>11 (69%)</td>
<td>10 (59%)</td>
<td>21 (64%)</td>
</tr>
<tr>
<td>Degree</td>
<td>5 (31%)</td>
<td>7 (41%)</td>
<td>12 (36%)</td>
</tr>
<tr>
<td>Sample Total</td>
<td>16 (49%)</td>
<td>17 (51%)</td>
<td>33 (100%)</td>
</tr>
</tbody>
</table>

Table 10

*Composition of Educator Sample by Gender and Age*

<table>
<thead>
<tr>
<th>Age</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 and less</td>
<td>13 (81%)</td>
<td>3 (19%)</td>
<td>16 (46%)</td>
</tr>
<tr>
<td>26-40</td>
<td>6 (67%)</td>
<td>3 (33%)</td>
<td>9 (27%)</td>
</tr>
<tr>
<td>41 and over</td>
<td>5 (57%)</td>
<td>4 (43%)</td>
<td>9 (27%)</td>
</tr>
<tr>
<td>Sample Total</td>
<td>24 (71%)</td>
<td>10 (29%)</td>
<td>34 (100%)</td>
</tr>
</tbody>
</table>

ensure that the instrument, which was developed from a sample in the Midwestern United States of America, was robust enough to be used on the Caribbean Island of Grenada. The students were the main subjects in the study and the items on the student inventory (DI-HS) dictated what the items on the parent/guardian inventory (DI-PG) and
items on the educator inventory (DI-ED) would be. The items on the latter two inventories corresponded to the items on the student instrument.

In this study, to determine the number of factors in the diligence instrument, how the items load on the various factors, and the magnitude of the loadings, a number of steps were followed. The extraction method of Principal Component Analysis using Varimax with Kaiser normalization rotation was performed. According to the Kaiser criterion, only factors with eigenvalues equal to or greater than 1 should be retained (Kaiser, 1958).

In step 1, item analyses were done to determine which items were contributing to the overall reliability of the instrument in the Grenada context. Items that yielded less than .30 item-total correlations were removed. This yielded a total scale reliability coefficient of .8915. The items were evaluated by the numeric value of their Item-Total Correlation. An item had to have a correlation of at least .30 to be considered a good contributor to the instrument (Childs, 1979; Kaiser, 1958; Thorndike, 1976). As a result of applying this criterion, Items 4, 6, 8, 10, 12, 13, 14, 16, 18, 22, 24, 28, 30, 34, 35, 37, 41, 42, 45, 47, 51, and 52 on the original instrument were dropped due to their low value (less than .30).

In step 2, factors were extracted. According to the Kaiser criterion, a factor should be retained if it has an eigenvalue equal to or greater than 1 (Kaiser, 1958). There were nine factors with eigenvalues greater than 1. However, only four factors had more than two items and seemed to be coherent. Childs (1979) recommended that a factor should not have fewer than three items.
In step 3, I rotated the four factors. All 33 items in the revised instrument loaded on one of the four factors. The factors which emerged are listed in Table 11. The number and nature of factors that emerged were different from those on the original instrument, which was a five-factor model (Bennett, 1994; Bernard, 1991; Bernard et al., 1993; Bernard & Schuttenberg, 1995; Bernard et al., 1996; Stul, 1999). However, the items in the four factors seemed to be consistent with the items in four of the factors on the original instrument.

In this study, a factor loading had to be at least .30 for it to be considered an important contributor to a factor (Childs, 1979; Thorndike, 1976). Tables 11-15 display the results of the factor analyses that were done for this study. The results are compared to the findings from the other studies (Bennett, 1994; Bernard, 1991; Bernard et al., 1995; Stul, 1999).

The results of factor analysis performed in this study, such as factor loadings, communalities, factors' item-total correlation coefficients, and Cronbach Alpha coefficients had variations of differences compared to the results of the aforementioned studies on diligence.

These differences may be attributed to sample differences. The studies by Bernard (1991) and Bernard and others (1993, 1996) used samples drawn from high school students in the Midwestern states of the United States; Bennett (1994) and Bernard and Schuttenberg (1995) used a sample drawn from college students in the Midwestern states of the United States; and Stul's (1999) sample comprised industrial workers from Central Russia. Also, the differences may be due to the possibility that
### Table 11

**Rotated Factor Loadings of the Item on Four Factors in Diligence**

<table>
<thead>
<tr>
<th></th>
<th>FACTOR 1</th>
<th>FACTOR 2</th>
<th>FACTOR 3</th>
<th>FACTOR 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.587</td>
<td>0.223</td>
<td>0.490</td>
<td>0.566</td>
</tr>
<tr>
<td>2</td>
<td>0.582</td>
<td>0.358</td>
<td>0.549</td>
<td>0.566</td>
</tr>
<tr>
<td>3</td>
<td>0.366</td>
<td>0.432</td>
<td>0.453</td>
<td>0.426</td>
</tr>
<tr>
<td>4</td>
<td>0.543</td>
<td>0.254</td>
<td>0.381</td>
<td>0.432</td>
</tr>
<tr>
<td>5</td>
<td>0.239</td>
<td>0.321</td>
<td>0.333</td>
<td>0.373</td>
</tr>
<tr>
<td>6</td>
<td>0.500</td>
<td>0.444</td>
<td>0.500</td>
<td>0.484</td>
</tr>
<tr>
<td>7</td>
<td>0.444</td>
<td>0.364</td>
<td>0.366</td>
<td>0.477</td>
</tr>
<tr>
<td>8</td>
<td>0.432</td>
<td>0.333</td>
<td>0.333</td>
<td>0.382</td>
</tr>
<tr>
<td>9</td>
<td>0.353</td>
<td>0.477</td>
<td>0.477</td>
<td>0.477</td>
</tr>
</tbody>
</table>
there is more than one source of variance in a factor.

Also, the sample in this study represents an elite population of students. To be able to enter high school, students in Grenada have to successfully write the annual Common Entrance Examinations. This qualifying examination is given to students who are between the ages of 11 and 14, and the first 1,000 students are awarded places in the high school.

Factor I of the current study, Motivation, had nine items. The factor loadings ranged from .426 to .687 (Table 12). This factor was consistent with the results of Bernard (1991); Bennett (1994); Bernard et al. (1995); and Stul (1999) where Factor 1 was also Motivation. Motivation seems to set the stage for goal achievement. For example item 55, “I work very hard to get good grades,” sets the stage for motivation among high school students in Grenada. Getting good grades seems to be the most important principle which drives their motivation.

In addition, three of the nine items which loaded on Factor 1 in this study (#1, 23, 43), also loaded on Factor 1 in the three aforementioned studies. In addition, seven of the nine items which loaded on Factor 1 in this study (#1, 17, 19, 23, 43, 49, 55) also loaded on Factor 1 in the original Diligence Inventory (Bernard, 1991).

Factor II in the current study was named Concentration and Assimilation, as in the original study. Concentration and assimilation seemed to be the common themes of the 12 items on that scale. Factor II of the original diligence study, Concentration and Assimilation (Bernard, 1991), had eight items (#9, 11, 14, 15, 21, 27, 29, 34) as compared to items #2, 5, 7, 9, 11, 15, 21, 25, 27, 29, 39, 46 in this study.
Table 12

*Factor Loadings and Item-Total Correlations for the Items in the DI-HS for the Current Study, Factor 1: Motivation*

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Factor Loading</th>
<th>Item-Total Correlation</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q55*</td>
<td>687</td>
<td>.6056</td>
<td>I work very hard to get good grades.</td>
</tr>
<tr>
<td>Q23*</td>
<td>582</td>
<td>.5357</td>
<td>I strive to do all my assignments to the best of my ability.</td>
</tr>
<tr>
<td>Q49*</td>
<td>581</td>
<td>.5687</td>
<td>I try to do outstanding work in all my classes.</td>
</tr>
<tr>
<td>Q26</td>
<td>566</td>
<td>.4521</td>
<td>I like my assignments to look neat and tidy.</td>
</tr>
<tr>
<td>Q1*</td>
<td>549</td>
<td>.4139</td>
<td>I want to do the best I can in school.</td>
</tr>
<tr>
<td>Q19*</td>
<td>512</td>
<td>.4662</td>
<td>I like to take up academic challenges.</td>
</tr>
<tr>
<td>Q43*</td>
<td>.453</td>
<td>.5210</td>
<td>I try to turn in my homework assignments on time.</td>
</tr>
<tr>
<td>Q54</td>
<td>.421</td>
<td>.3439</td>
<td>I like to have quiet moments to plan how to succeed in school.</td>
</tr>
<tr>
<td>Q17*</td>
<td>.426</td>
<td>.5390</td>
<td>I make sure that my assignments are done correctly.</td>
</tr>
</tbody>
</table>

Note, Factor 1 Alpha = .797; * Common items on Factor 1, Motivation, of original Diligence Inventory by Bernard, 1991.
The factor loadings in this study ranged from .326 to .556 (see Table 13). Six of the items which loaded on Factor II in this study (#9, 11, 15, 21, 27, 29) were also loaded on Factor II, Concentration and Assimilation, on the original Diligence Inventory (Bernard, 1991) and on the Diligence Inventory - Higher Education Form (Bernard & Schuttenberg, 1995). Six of the items (#9, 15, 21, 25, 27, 29) also loaded on the Concentration and Assimilation Factor of Bennett's (1994) study.

Factor III in this study had five items which dealt with being disciplined, during the learning process. For example, item 40 with a factor loading of .608, "I find it difficult to complete my assignments," sets the stage for this factor. The factor retained the name Discipline as in the original study. The factor loadings ranged from .555 to .694 (Table 14). Four of the items on this factor (#33, 40, 48, 53) loaded on the Organization factor in Bennett's (1994) study. One item (#31) also loaded on the Discipline factor on the original diligence inventory (Bernard, 1991).

Factor IV was named Conformity and Responsibility as in the original study. It had seven items with factor loadings ranging from .345 to .651 (Table 15). The common theme of this factor is obedience to authority figures. Four of the items (#3, 20, 44, 50) were also loaded on the Conformity and Responsibility factor of the original Diligence Inventory (Bernard, 1991; Bernard & Schuttenberg, 1995).

The revised Grenadian version of the Diligence Inventory: High school Form (DI: HS) contained 33 items. Items number 4, 6, 8, 10, 12, 13, 14, 16, 18, 22, 24, 28, 30, 34, 35, 37, 41, 42, 45, 47, 51, and 52 were omitted from the revised instrument because of Item-Total Correlations less than .30.
Table 13

*Factor Loadings and Item-Total Correlations for the Items in the DI-HS for the Current Study. Factor 2: Concentration and Assimilation*

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Factor Loading</th>
<th>Item-Total Correlation</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q9*</td>
<td>.556</td>
<td>9.556</td>
<td>I stop periodically while reading and review the information.</td>
</tr>
<tr>
<td>Q27*</td>
<td>.555</td>
<td>.4612</td>
<td>I try to see the relationships between what I’m studying and what I already know.</td>
</tr>
<tr>
<td>Q15*</td>
<td>.531</td>
<td>.3966</td>
<td>When I am studying a topic, I try to make all the ideas fit logically.</td>
</tr>
<tr>
<td>Q11*</td>
<td>.492</td>
<td>.4320</td>
<td>I proofread assignments before turning them in.</td>
</tr>
<tr>
<td>Q5</td>
<td>.489</td>
<td>.5117</td>
<td>I take care to complete all my assignments.</td>
</tr>
<tr>
<td>Q21*</td>
<td>.474</td>
<td>.4379</td>
<td>When preparing for an exam, I create questions that I think might be included and study them.</td>
</tr>
<tr>
<td>Q39</td>
<td>.453</td>
<td>.2830</td>
<td>If I return from school later than normal I would offer an explanation to my parents/guardians.</td>
</tr>
<tr>
<td>Q29*</td>
<td>.420</td>
<td>.3247</td>
<td>I do not turn in my assignments until I’m sure it is correct.</td>
</tr>
<tr>
<td>Q25</td>
<td>.417</td>
<td>.4734</td>
<td>I set high standards for myself in school.</td>
</tr>
<tr>
<td>Q46</td>
<td>.393</td>
<td>.4483</td>
<td>Even when I am tired I try to complete my assignments.</td>
</tr>
<tr>
<td>Q7</td>
<td>.353</td>
<td>.3143</td>
<td>I am able to do my assignments without prompting.</td>
</tr>
<tr>
<td>Q2</td>
<td>.326</td>
<td>.4069</td>
<td>I make constructive use of my leisure time.</td>
</tr>
</tbody>
</table>

*Note.* Factor 2, Alpha = .763; * Common items on Factor 2, Concentration and Assimilation, on Original Inventory by Bernard, 1991.
Table 14

*Factor Loadings and Item-Total Correlations for the Items in the DI-HS for the Current Study, Factor 3: Discipline*

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Factor Loading</th>
<th>Item-Total Correlation</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q40+</td>
<td>.694</td>
<td>.4902</td>
<td>I find it difficult to complete all my assignments.</td>
</tr>
<tr>
<td>Q53+</td>
<td>.614</td>
<td>.4227</td>
<td>I have difficulty in settling down to my studies at home.</td>
</tr>
<tr>
<td>Q48+</td>
<td>.622</td>
<td>.4899</td>
<td>I find it difficult to sustain attention to my school work.</td>
</tr>
<tr>
<td>Q33+</td>
<td>.555</td>
<td>.3681</td>
<td>I find myself not prepared for tests as I would like.</td>
</tr>
<tr>
<td>Q31*+</td>
<td>.573</td>
<td>.3709</td>
<td>I get upset over the amount of school work I have to do.</td>
</tr>
</tbody>
</table>

Note, Factor 3, Alpha = .674; * common items on Factor 4, Discipline, of Original Inventory by Bernard 1991, + common items on Factor 2, Organization, in Bennett’s (1994) study. All the items in this scale were reverse scored.
Table 15

*Factor Loadings and Item-Total Correlations for the Items in the DI-HS for the Current Study, Factor 4: Conformity and Responsibility*

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Factor Loading</th>
<th>Item-Total Correlation</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q44*</td>
<td>.602</td>
<td>.4782</td>
<td>I like to obey my teachers promptly.</td>
</tr>
<tr>
<td>Q50*</td>
<td>.651</td>
<td>.3730</td>
<td>I obey my parents/guardians promptly.</td>
</tr>
<tr>
<td>Q36</td>
<td>.484</td>
<td>.3011</td>
<td>Personally, I like to take a little time out to meditate and pray.</td>
</tr>
<tr>
<td>Q20*</td>
<td>.477</td>
<td>.5057</td>
<td>I do my homework before I spend time with friends.</td>
</tr>
<tr>
<td>Q32</td>
<td>.382</td>
<td>.4026</td>
<td>My friends see me as very organized for school.</td>
</tr>
<tr>
<td>Q3*</td>
<td>.359</td>
<td>.3881</td>
<td>I listen to everything the teacher says in class.</td>
</tr>
<tr>
<td>Q38</td>
<td>.345</td>
<td>.3839</td>
<td>I do my assignments as soon as I get them.</td>
</tr>
</tbody>
</table>

Considering that the revised instrument contained 33 items and that the range of options for each item in the instrument was 1 - 5, the range for the total diligence score is from 33 to 165. Table 16 displays the mean and standard deviation for the 458 students.

Table 16

*Mean and Standard Deviation for the Total Diligence Score*

<table>
<thead>
<tr>
<th>Valid N</th>
<th>Alpha</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>458</td>
<td>.892</td>
<td>126.16</td>
<td>16.71</td>
</tr>
</tbody>
</table>

In order to identify the strengths of the inter-correlations among the diligence sub-scales, a correlation matrix was done (see Table 17). The correlation coefficients among the sub-scales ranged from .28 to .65 and, while they were significant, they may be regarded as being low to moderate (Jurs, 1998). Because the correlations are significant, one may conclude that the sub-scales are not independent from each other. They may be redundant in regard to what they are measuring.

However, the significant correlations among the sub-scales may be sample specific. Also, the Diligence Inventory is still in its early stages of development. With more validation the sub-scales may become more robust.
Table 17

Correlation Matrix of the Diligence Sub-Scales

<table>
<thead>
<tr>
<th>Source</th>
<th>Motivation</th>
<th>Concentration</th>
<th>Discipline</th>
<th>Conformity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>1.00</td>
<td>.65*</td>
<td>.34*</td>
<td>.58*</td>
</tr>
<tr>
<td>Concentration</td>
<td>.65*</td>
<td>1.00</td>
<td>.28*</td>
<td>.62*</td>
</tr>
<tr>
<td>Discipline</td>
<td>.34*</td>
<td>.28*</td>
<td>1.00</td>
<td>.31*</td>
</tr>
<tr>
<td>Conformity</td>
<td>.58*</td>
<td>.62*</td>
<td>.31*</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* Significant at $p < .01$ level

Reliability

Item analysis was performed on the 33-item DI-HS inventory. Reliability is an estimate of the internal consistency of the instrument. For an instrument to be internally consistent, there should be a correlation of scores on the same test given to the same group at a later time (Horst, 1966). Since a test-retest reliability procedure was not feasible in this study, Cronback’s alpha reliability coefficient by Kuder and Richardson (1937) was used to estimate the internal consistency of the instrument. An acceptable range of reliability coefficient is from .70 to .90.

The value obtained in this study, based on the 33-item DI-HS, was a standardized item alpha of .89. This value compared favorably with that obtained on the original instrument (Bernard, 1991) of .90. The recommended range for the sub-scales of an instrument is from .46 to .93 (Marcoulides & Hershberger, 1997). The four sub-scales obtained in this study ranged from .62 to .80. The range obtained on the original
instrument was .56 to .91.

The Motivation scale in the current study contained 9 items and had an alpha coefficient of .80. The Motivation scale on the original study contained 19 items with an alpha coefficient of .89. The Concentration and Assimilation scale in the current study had 12 items and an alpha coefficient of .78, while the alpha coefficient in the original DI-HS, which contained 8 items, was .75. The alpha coefficient of the Discipline scale, which had 5 items in this study, was .67, whereas the Discipline scale in the original DI-HS inventory, which had 8 items, was .56. Conformity and Responsibility, the fourth scale in the current study, had 7 items and an alpha coefficient of .69, as compared to 12 items and an alpha coefficient of .73 on the third scale of the original instrument.

The differences found in the composition of the five scales in each of the two studies could be attributed to differences in the ordering of the priorities by the two different samples. The sample for the current study was comprised of high-school students on the Caribbean island of Grenada, while the sample from the original study consisted of high school students from Midwestern United States.

Validity Issues

The reliability of an instrument may be determined through a quantitative index such as the alpha coefficient that ranges from 0, or no reliability, to 1.0 or perfect reliability. Construct validity, on the other hand, cannot be determined by any comparable numerical scale (Erwin, 1991). Evidence of construct validity may be established by comparing the scores accumulated by repeated use of the instrument over
a period of time.

In this study, a combination of factor analysis and item analysis was used so that the scores measured by the instrument can be compared. Also, teachers were asked to subjectively rate their students' diligence as high, average, or low. The actual diligence scores of the students were compared with the teachers' subjective rating by the method of Known-Group Differences (Mueller, 1986) as in the original study.

The students who were rated as having low diligence had a diligence score of 122.50. Those who were rated as having average diligence scored 123.92, while those who were rated as having high diligence had a score of 131.92. There was a significant difference in the scores of the students who were rated as having high diligence, average diligence and low diligence at \( p < .05 \) level (see Table 18).

Students who were rated as having high diligence were significantly different from those who were rated as having average/low diligence in regard to their actual diligence (see Table 19). This compared favorably with the original study.

Table 18

*One Way ANOVA of Student Diligence and Diligence Rating*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>( F )</th>
<th>( P )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1.703</td>
<td>2</td>
<td>.852</td>
<td>3.462</td>
<td>.034*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>33.459</td>
<td>136</td>
<td>.246</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at \( p < .05 \) level.
Table 19

*Student-Newman Keuls of Student Diligence and Diligence Rating*

<table>
<thead>
<tr>
<th>DI rating</th>
<th>Mean</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>122.50</td>
<td>−</td>
<td>−</td>
<td>*</td>
</tr>
<tr>
<td>2</td>
<td>123.92</td>
<td>−</td>
<td>−</td>
<td>*</td>
</tr>
<tr>
<td>3</td>
<td>131.92</td>
<td>*</td>
<td>*</td>
<td>−</td>
</tr>
</tbody>
</table>

Because there was a significant differences in the actual diligence scores of the students with high diligence from the other two groups of students, the validity of the instrument could be affirmed. In other words, the instrument was able to correctly assign students as having low/average, and high diligence to correspond to the teachers' estimations of the students.

**Testing the Null Hypotheses**

The primary purpose of this study was to examine the relationship between student diligence and student academic performance. The secondary purposes were to examine the relationship between student support systems and student diligence; to determine how student diligence and student diligence-support compared with demographic characteristics. The following null hypotheses were tested:

**Hypothesis 1**: There is no relationship between students' diligence and their academic performance.
The correlation between total students’ diligence and their academic performance is .248, and is significant at the .01 level. The null hypothesis is rejected. There is a significant correlation between students’ total diligence \((M = 126.66, SD = 16.64)\) and academic performance \((M = 58.36, SD = 14.84, N = 236)\) (see Table 20).

Table 20

*Correlation Between Diligence, Diligence Sub-scales, and Academic Performance*

<table>
<thead>
<tr>
<th>Variables</th>
<th>(N)</th>
<th>Mean</th>
<th>SD</th>
<th>(r)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>236</td>
<td>38.41</td>
<td>5.54</td>
<td>.260*</td>
</tr>
<tr>
<td>Concentration &amp; Assimilation</td>
<td>236</td>
<td>45.31</td>
<td>7.20</td>
<td>.177*</td>
</tr>
<tr>
<td>Discipline</td>
<td>236</td>
<td>16.27</td>
<td>3.83</td>
<td>.259*</td>
</tr>
<tr>
<td>Conformity &amp; Responsibility</td>
<td>236</td>
<td>26.65</td>
<td>4.44</td>
<td>.111</td>
</tr>
<tr>
<td>Total Diligence</td>
<td>236</td>
<td>126.66</td>
<td>16.64</td>
<td>.248*</td>
</tr>
</tbody>
</table>

* Significant at the \(p < .01\) level.

The square of the correlation is a direct measurement of the proportion of variance in academic performance that can be explained by student diligence. Since the correlation between student diligence and academic performance is .248, then the variance in academic performance that can be explained student diligence is .06 or 6%.

However, the correlation between motivation and academic performance \((r = .260)\) and between discipline and performance \((r = .259)\) are slightly stronger than the
overall correlation. Student motivation and student discipline, respectively, explain 7% of the variance in students’ academic performance. Conformity and Responsibility is the only scale not significantly correlated to performance.

**Hypothesis 2:** There is no relationship between diligence and academic performance for male students and female students.

The correlation between the male students’ diligence score and their academic performance is .226, and is significant at the < .01 level. The null hypothesis is rejected. There is a statistically significant relationship between male students’ level of diligence and their academic performance. For male students the correlation is .226 (see Table 21).

The square of the correlation is a direct measurement of the proportion of variance in academic performance that can be explained by student diligence. Since the correlation between male students’ diligence and academic performance is .226, then the variance in male students academic performance that can be explained their level of diligence is .05 or 5%. The correlation between motivation and performance \( (r = .269) \) and discipline and performance \( (r = .249) \) are stronger than the correlation between overall diligence and academic performance. Student discipline and student motivation can explain 7% and 6% respectively, of the variance in male students’ academic performance. Conformity and responsibility is not significantly correlated to the performance of boys.
Table 21

**Correlation Between Male Student Diligence, Diligence Sub-scales, and Academic Performance**

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Academic Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>219</td>
<td>39.02</td>
<td>5.15</td>
<td>.269**</td>
</tr>
<tr>
<td>Concentration &amp; Assimilation</td>
<td>219</td>
<td>46.16</td>
<td>6.49</td>
<td>.160*</td>
</tr>
<tr>
<td>Discipline</td>
<td>219</td>
<td>16.19</td>
<td>3.82</td>
<td>.249**</td>
</tr>
<tr>
<td>Conformity &amp; Responsibility</td>
<td>219</td>
<td>27.17</td>
<td>4.38</td>
<td>.041</td>
</tr>
<tr>
<td>Total Diligence</td>
<td>219</td>
<td>128.56</td>
<td>15.35</td>
<td>.226**</td>
</tr>
</tbody>
</table>

* Significant at the p < .05 level.
** Significant at the p < .01 level.

The correlation between female student diligence and academic performance is .258 and is significant at the p < .05 level (see Table 22). In other words, 7% of the variance in female students' academic performance can be explained by diligence.

The correlation between student Discipline and academic performance (r = .287) is stronger than the correlation between overall diligence and academic performance for girls. It can explain 8% of the variance in their performance. Concentration and Assimilation, and Conformity and Responsibility are not significantly correlated to the academic performance of girls.
Table 22

*Correlation Between Female Student Diligence, Diligence Sub-scales, and Academic Performance*

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>110</td>
<td>37.19</td>
<td>6.13</td>
<td>.226*</td>
</tr>
<tr>
<td>Concentration &amp; Assimilation</td>
<td>110</td>
<td>43.49</td>
<td>8.23</td>
<td>.167</td>
</tr>
<tr>
<td>Discipline</td>
<td>110</td>
<td>16.45</td>
<td>3.86</td>
<td>.287*</td>
</tr>
<tr>
<td>Conformity &amp; Responsibility</td>
<td>110</td>
<td>25.50</td>
<td>4.41</td>
<td>.212</td>
</tr>
<tr>
<td>Total Diligence</td>
<td>110</td>
<td>122.89</td>
<td>18.52</td>
<td>.258*</td>
</tr>
</tbody>
</table>

* Significant at the p < .05 level.

**Hypothesis 3:** There is no relationship between diligence and academic performance for students of different ethnic backgrounds.

The correlation between the diligence level of students of African descent and their academic performance is .239, and is significant at p < .05 (N = 244). The null hypothesis is rejected. There is a statistically significant relationship between students of African descent level of diligence and their academic performance (see Table 23). Approximately 6% of the variance in their performance can be explained by their diligence.
Student motivation ($r = .265$) and student discipline ($r = .287$) are more strongly correlated to academic performance, for students of African descent, than the correlation between overall diligence and academic performance. Student motivation and student discipline can explain 7% and 8% respectively, of the variance in their academic performance.

Table 23

**Correlation Between Diligence, Diligence Sub-scales, and Academic Performance for Students of African Descent**

<table>
<thead>
<tr>
<th>Variables</th>
<th>$N$</th>
<th>Mean</th>
<th>$SD$</th>
<th>$r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>244</td>
<td>38.63</td>
<td>4.64</td>
<td>.265*</td>
</tr>
<tr>
<td>Concentration &amp; Assimilation</td>
<td>244</td>
<td>45.09</td>
<td>7.58</td>
<td>.141</td>
</tr>
<tr>
<td>Discipline</td>
<td>244</td>
<td>16.04</td>
<td>3.77</td>
<td>.287*</td>
</tr>
<tr>
<td>Conformity &amp; Responsibility</td>
<td>244</td>
<td>26.73</td>
<td>4.40</td>
<td>.110</td>
</tr>
<tr>
<td>Total Diligence</td>
<td>244</td>
<td>126.51</td>
<td>17.00</td>
<td>.239*</td>
</tr>
</tbody>
</table>

* Significant at the $p < .05$ level.

Concentration and Assimilation and Conformity and Responsibility are not significantly correlated to the academic performance of students of African descent.

The correlation between the diligence level of the 'other' students and their academic performance is .300 and is significant at an alpha of < .05 (see
Table 24. Nine percent of the variance in their academic performance is explained by their diligence.

Concentration and Assimilation ($r = .318$) is more strongly correlated to the academic performance of the students of Other descent than is the correlation between their overall diligence ($r = .300$) and their academic performance. Concentration and Assimilation explains 10% of the variance in the academic performance of the students of other descent.

Table 24

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Academic Performance</th>
<th>$r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>76</td>
<td>38.01</td>
<td>5.68</td>
<td></td>
<td>.286*</td>
</tr>
<tr>
<td>Concentration &amp; Assimilation</td>
<td>76</td>
<td>43.65</td>
<td>6.00</td>
<td></td>
<td>.318*</td>
</tr>
<tr>
<td>Discipline</td>
<td>76</td>
<td>17.08</td>
<td>3.03</td>
<td></td>
<td>.185</td>
</tr>
<tr>
<td>Conformity &amp; Responsibility</td>
<td>76</td>
<td>26.53</td>
<td>4.51</td>
<td></td>
<td>.135</td>
</tr>
<tr>
<td>Total Diligence</td>
<td>76</td>
<td>127.81</td>
<td>15.78</td>
<td></td>
<td>.300*</td>
</tr>
</tbody>
</table>

* Significant at the $p < .05$ level.

Hypothesis 4: There is no relationship between student diligence and academic
performance for the different age groups.

The correlation between student diligence and academic performance for the fifteen-year-old age group is .427, significant at $p < .01$ level ($N = 79$). The null hypothesis is rejected. There is a statistically significant relationship between student diligence and academic performance by age. By squaring the correlation, 18% of the variance in academic performance for the fifteen year old's can be explained by their diligence.

Student Motivation ($r = .427$), Concentration and Assimilation ($r = .331$), Discipline ($r = .318$), and Conformity and Responsibility ($r = .330$) explain 18%, 11%, 10%, and 11% respectively, of the variance in 15-year-olds' academic performance.

However, there is no significant correlation between diligence and academic performance for the other age groups (see Tables 25 and 26).

Table 25

<table>
<thead>
<tr>
<th>Age</th>
<th>$N$</th>
<th>Mean</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>-14</td>
<td>49</td>
<td>65.08</td>
<td>14.33</td>
</tr>
<tr>
<td>15</td>
<td>57</td>
<td>65.76</td>
<td>15.16</td>
</tr>
<tr>
<td>16</td>
<td>61</td>
<td>55.11</td>
<td>12.05</td>
</tr>
<tr>
<td>17+</td>
<td>67</td>
<td>50.51</td>
<td>12.22</td>
</tr>
</tbody>
</table>

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Table 26

Correlation Between Diligence, Diligence Sub-scales and Academic Performance by Age

<table>
<thead>
<tr>
<th>Variable</th>
<th>Academic Performance by Age Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-14</td>
</tr>
<tr>
<td>Motivation</td>
<td>.208</td>
</tr>
<tr>
<td>Concentration &amp; Assimilation</td>
<td>.212</td>
</tr>
<tr>
<td>Discipline</td>
<td>-.008</td>
</tr>
<tr>
<td>Conformity &amp; Responsibility</td>
<td>.044</td>
</tr>
<tr>
<td>Total Diligence</td>
<td>.155</td>
</tr>
</tbody>
</table>

* Significant at p < .05 level.
** Significant at p < .01 level.

**Hypothesis 5**: There is no relationship between Form (Grade Level) and academic performance.

The relationship between Form and academic performance is significant at the $p < .001$ level. The null hypothesis is rejected. There is a significant relationship between Form and academic performance (see Table 27). Student-Newman Keuls Post Hoc Tests (Table 28) reveal that students in Form V ($M = 52.36, SD 15.87$) perform at a significantly lower level academically than students in Form IV ($M = 57.07, SD 13.86$) and Form III ($M = 60.66, SD 15.14$).
Table 27

*One Way ANOVA of Student Performance by Form*

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>3640.489</td>
<td>2</td>
<td>1820.224</td>
<td>8.20</td>
<td>.000*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>74612.684</td>
<td>336</td>
<td>222.062</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at the $p < .001$ level.

Table 28

*Student-Newman Keuls of Means and Form*

<table>
<thead>
<tr>
<th>Form</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>III</th>
<th>IV</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>III</td>
<td>131</td>
<td>60.66</td>
<td>15.14</td>
<td>-</td>
<td>-</td>
<td>*</td>
</tr>
<tr>
<td>IV</td>
<td>148</td>
<td>57.07</td>
<td>13.86</td>
<td>-</td>
<td>-</td>
<td>*</td>
</tr>
<tr>
<td>V</td>
<td>58</td>
<td>52.36</td>
<td>15.87</td>
<td>*</td>
<td>*</td>
<td>-</td>
</tr>
</tbody>
</table>

Hypothesis 6: There is no relationship between students' diligence and gender.

Table 29 presents a t-test of total diligence and diligence sub-scales by gender.

The relationship between student diligence and gender is significant at $p < .01$ level. The null hypothesis is rejected. There is a statistically significant difference between the total diligence score of males and females. Girls ($M = 128.37, SD = 15.31$) tend to be more diligent than boys ($M = 122.89, SD = 18.52, p < .01$). Also, girls ($M = 39.09, SD = 5.15$) are more motivated than boys ($M = 37.19, SD = 6.14, p < .01$), girls ($M = 46.16, SD = 6.53$) concentrate on and assimilate academic information better than boys ($M = 43.60, SD = 6.31$).
and girls ($M = 27.17, SD = 4.38$) tend to conform and be more responsible than boys ($M = 25.61, SD = 4.41, p < .01$). There is no difference in the level of discipline between girls ($M = 16.45, SD = 3.03$) and boys ($M = 16.19, SD = 3.86, p > .05$).

Table 29

<table>
<thead>
<tr>
<th>Variable</th>
<th>$N$</th>
<th>$M$</th>
<th>$SD$</th>
<th>$t$</th>
<th>df</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI</td>
<td>M</td>
<td>110</td>
<td>122.89</td>
<td>18.52</td>
<td>2.95</td>
<td>327</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>219</td>
<td>128.56</td>
<td>15.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MO</td>
<td>M</td>
<td>110</td>
<td>37.19</td>
<td>6.14</td>
<td>2.83</td>
<td>327</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>219</td>
<td>39.09</td>
<td>5.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CA</td>
<td>M</td>
<td>110</td>
<td>43.60</td>
<td>8.23</td>
<td>3.09</td>
<td>327</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>219</td>
<td>46.16</td>
<td>6.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DS</td>
<td>M</td>
<td>110</td>
<td>16.19</td>
<td>3.86</td>
<td>-.592</td>
<td>327</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>219</td>
<td>16.45</td>
<td>3.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CR</td>
<td>M</td>
<td>110</td>
<td>25.61</td>
<td>4.41</td>
<td>3.038</td>
<td>327</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>219</td>
<td>27.17</td>
<td>4.38</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. * Significant at the < .01 level.

$DI$ refers to Total Diligence, $MO$ refers to Motivation, $CA$ refers to Concentration and Assimilation, $DS$ refers to Discipline, and $CR$ refers to Conformity and Responsibility.

**Hypothesis 7:** There is no relationship between students' diligence and Form.

The relationship between student diligence and Form is not statistically significant at the .05 level. The null hypothesis is retained. There is no statistically
significant relationship between students' diligence and grade level. The students who are in Form III ($M = 127.28, SD = 17.17$), Form IV ($M = 127.75, SD = 15.94$) and Form V ($M = 122.15, SD = 16.21$) are not significantly different from each other in regard to overall diligence $F(2, 326) = 2.55, p > .05$ (see Tables 30 and 31).

As expected, there is no significant relationship between the student Motivation and Form $F(2, 326) = 1.52, p > .05$, student Concentration and Assimilation and Form $F(2, 326) = 2.31, p > .05$, student Discipline and Form $F(2, 326) = 1.67, p > .05$, and student Conformity and Responsibility and Form $F(2, 326) = 1.50, p > .05$. (See Table 32 to 39).

Table 30

<table>
<thead>
<tr>
<th>Sources</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>$F$</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1.274</td>
<td>2</td>
<td>637</td>
<td>2.55</td>
<td>.080</td>
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<tr>
<td>Within Groups</td>
<td>81.580</td>
<td>326</td>
<td>.252</td>
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</tbody>
</table>

Table 31

<table>
<thead>
<tr>
<th>Form</th>
<th>$N$</th>
<th>$M$</th>
<th>$SD$</th>
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</thead>
<tbody>
<tr>
<td>III</td>
<td>136</td>
<td>127.28</td>
<td>17.17</td>
</tr>
<tr>
<td>IV</td>
<td>135</td>
<td>127.75</td>
<td>15.94</td>
</tr>
<tr>
<td>V</td>
<td>58</td>
<td>122.15</td>
<td>16.21</td>
</tr>
</tbody>
</table>
Table 32

*ANOVA Table of Motivation by Form*

<table>
<thead>
<tr>
<th>Sources</th>
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<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1.146</td>
<td>2</td>
<td>.573</td>
<td>1.52</td>
<td>.221</td>
</tr>
<tr>
<td>Within Groups</td>
<td>123.181</td>
<td>326</td>
<td>.378</td>
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</tbody>
</table>

Table 33

*Means and Standard Deviation of Motivation by Form*

<table>
<thead>
<tr>
<th>Form</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>III</td>
<td>136</td>
<td>38.48</td>
<td>5.71</td>
</tr>
<tr>
<td>IV</td>
<td>135</td>
<td>38.77</td>
<td>5.54</td>
</tr>
<tr>
<td>V</td>
<td>58</td>
<td>38.39</td>
<td>5.05</td>
</tr>
</tbody>
</table>

Table 34

*ANOVA Table of Concentration and Assimilation by Form*

<table>
<thead>
<tr>
<th>Sources</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1.649</td>
<td>2</td>
<td>.824</td>
<td>2.31</td>
<td>.101</td>
</tr>
<tr>
<td>Within Groups</td>
<td>116.325</td>
<td>326</td>
<td>.357</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 35

*Means and Standard Deviation of Concentration and Assimilation by Form*

<table>
<thead>
<tr>
<th>Form</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>III</td>
<td>136</td>
<td>45.45</td>
<td>7.50</td>
</tr>
<tr>
<td>IV</td>
<td>135</td>
<td>46.12</td>
<td>7.19</td>
</tr>
<tr>
<td>V</td>
<td>58</td>
<td>43.13</td>
<td>6.25</td>
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</tbody>
</table>

Table 36

*ANOVA Table of Discipline by Form*

<table>
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<th>Sources</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1.944</td>
<td>2</td>
<td>.972</td>
<td>1.67</td>
<td>.190</td>
</tr>
<tr>
<td>Within Groups</td>
<td>189.898</td>
<td>326</td>
<td>.583</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 37

*Means and Standard Deviation of Discipline by Form*

<table>
<thead>
<tr>
<th>Form</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>III</td>
<td>136</td>
<td>16.63</td>
<td>4.08</td>
</tr>
<tr>
<td>IV</td>
<td>135</td>
<td>16.15</td>
<td>3.65</td>
</tr>
<tr>
<td>V</td>
<td>58</td>
<td>15.56</td>
<td>3.54</td>
</tr>
</tbody>
</table>
Table 38

**ANOVA Table of Conformity and Responsibility by Form**

<table>
<thead>
<tr>
<th>Sources</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1.194</td>
<td>2</td>
<td>.597</td>
<td>1.50</td>
<td>.224</td>
</tr>
<tr>
<td>Within Groups</td>
<td>129.537</td>
<td>326</td>
<td>.397</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 39

**Means and Standard Deviation of Conformity and Responsibility by Form**

<table>
<thead>
<tr>
<th>Form</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>III</td>
<td>136</td>
<td>26.72</td>
<td>4.26</td>
</tr>
<tr>
<td>IV</td>
<td>135</td>
<td>26.91</td>
<td>4.15</td>
</tr>
<tr>
<td>V</td>
<td>58</td>
<td>25.73</td>
<td>4.85</td>
</tr>
</tbody>
</table>

**Hypothesis 8:** There is no relationship between student diligence and age.

Tables 40 and 41 display the results of one way ANOVA and Student-Newman-Keuls test on student diligence by age level. The relationship between student diligence and age is significant at the $p < .01$ level (see Table 40). The null hypothesis is rejected. There is a statistically significant relationship between student diligence and age level.

Student-Newman-Keuls (see Table 41) shows that students who are 14 years of age and younger ($M = 136.62, SD = 15.42$) are more diligent than those who are 16 years of age ($M = 123.81, SD = 17.11$) and those who 17 years and older ($M = 124.65, SD = 15.54$) $p < .05$. Students who are 15-years-old ($M = 128.68, SD = 17.63$) are not different...
in their diligence level from the 14 years and younger age group ($M = 136.62, SD = 15.42$), the 16-year-olds ($M = 123.81, SD = 17.11$) and the 17 and older age group ($M = 124.65, SD = 15.54$).

Table 40

One Way ANOVA of Student Diligence by Age level

<table>
<thead>
<tr>
<th>Sources</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>3.262</td>
<td>3</td>
<td>1.087</td>
<td>4.39</td>
<td>.005*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>80.045</td>
<td>323</td>
<td>.248</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at < .01 level.

Table 41

Student-Newman-Keuls of Diligence on Age Level

<table>
<thead>
<tr>
<th>Age</th>
<th>$M$</th>
<th>$SD$</th>
<th>16</th>
<th>17+</th>
<th>15</th>
<th>-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>123.81</td>
<td>17.11</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>*</td>
</tr>
<tr>
<td>17+</td>
<td>124.65</td>
<td>15.54</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>*</td>
</tr>
<tr>
<td>15</td>
<td>128.68</td>
<td>17.63</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>-14</td>
<td>136.62</td>
<td>15.42</td>
<td>*</td>
<td>*</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

* Significant at the < .05 level.

Also, students who are 14 years and younger ($M = 47.91, SD = 5.84$) concentrate on and assimilate more academic information than the 15-year-old’s ($M = 45.67, SD = 7.00$), the 16-year-olds’ ($M = 44.31, SD = 7.84$), and the 17 years and older age group ($M = 44.51, SD = 7.26, p < .05$). The 14 years and younger ($M = 17.88,$
$SD = 3.81$) and 15-year-olds ($M = 17.20, SD = 4.13$) students are more disciplined than the 16 year old's ($M = 15.32, SD = 3.64$) and 17 and over age group ($M = 15.55, SD = 3.40, p < .05$) (see Tables 42 and 43).

However, the 14-year-old and younger ($M = 39.74, SD = 4.79$), the 15-year-olds ($M = 38.98, SD = 5.91$), the 16-year-olds ($M = 38.05, SD = 5.82$), and the 17 and older age group ($M = 37.69, SD = 5.35, p > .05$) do not differ in regard to their motivation or their conformity and responsibility (14 years and younger, $M = 27.04, SD 4.77$; 15-year-olds, $M = 26.79, SD = 4.33$; 16-year-olds $M = 26.11, SD = 4.68$; and 17 years and older, $M = 26.86, SD = 4.13, p > .05$).

Table 42

*Student-Newman-Keuls of Concentration & Assimilation by Age Level*

<table>
<thead>
<tr>
<th>Age</th>
<th>Mean</th>
<th>SD</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17+</th>
</tr>
</thead>
<tbody>
<tr>
<td>-14</td>
<td>47.97</td>
<td>5.80</td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>15</td>
<td>45.67</td>
<td>7.00</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>44.31</td>
<td>7.84</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17+</td>
<td>44.51</td>
<td>7.26</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at < .05 level.
Table 43

Student-Newman-Keuls of Discipline by Age Level

<table>
<thead>
<tr>
<th>Age</th>
<th>Mean</th>
<th>SD</th>
<th>-14</th>
<th>15</th>
<th>16</th>
<th>17+</th>
</tr>
</thead>
<tbody>
<tr>
<td>-14</td>
<td>17.88</td>
<td>3.81</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>17.20</td>
<td>4.13</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>15.32</td>
<td>3.64</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17+</td>
<td>15.55</td>
<td>3.40</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

* Significant at < .05 level.

Given that students who are 14 years old and younger are more diligent than those that are 16 years old and older (see Table 41), one might have expected that students in Form III, where most of the younger are expected to be found, would have been more diligent than Forms IV and V. However, the relationship between student diligence and Form was not significant at the .05 level. A cross-tabulation was done (see Table 46) to determine the spread of the student ages across Forms with a view to explaining that phenomenon.

The data from Table 44 indicate that 60%, 92%, and 99% of the students who are in Forms III, IV and V respectively are over 14 years old. That high percentage of older students in each Form may have skewed the results making it difficult for there to be significance between student diligence and Form.

**Hypothesis 9:** There is no relationship between students’ diligence and the type of high school they attend.

The relationship between student diligence and type of school is not significant at the .05 level (see Table 45). The null hypothesis is retained. There is no significant
relationship between student diligence and type of high school. The students of state-financed high schools ($M = 127.64, SD 16.22$) are not different from those of state-aided high schools ($M = 126.32, SD 16.80, p > .05$) in regard to their diligence. In addition, there is no significant relationship between student Motivation, student levels of Concentration and Assimilation, student Discipline, student Conformity and Responsibility and type of school students attend (see Tables 46, 47, 48, and 49).

Table 45

$T$-test Comparing Student Diligence by Type of School

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>$M$</th>
<th>SD</th>
<th>$t$</th>
<th>df</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>State-financed</td>
<td>83</td>
<td>127.64</td>
<td>16.22</td>
<td>.624</td>
<td>328</td>
<td>.533</td>
</tr>
<tr>
<td>State-aided</td>
<td>247</td>
<td>126.32</td>
<td>16.80</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

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Table 46

T-test Comparing Student Motivation by Type of School

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>State-financed</td>
<td>83</td>
<td>39.20</td>
<td>5.00</td>
<td>1.50</td>
<td>328</td>
<td>.134</td>
</tr>
<tr>
<td>State-aided</td>
<td>247</td>
<td>38.14</td>
<td>5.72</td>
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</tr>
</tbody>
</table>

Table 47

T-test Comparing Student Concentration & Assimilation by Type of School

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>State-financed</td>
<td>83</td>
<td>44.87</td>
<td>7.34</td>
<td>-.63</td>
<td>328</td>
<td>.527</td>
</tr>
<tr>
<td>State-aided</td>
<td>247</td>
<td>46.54</td>
<td>7.15</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 48

T-test Comparing Student Discipline by Type of School

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>State-aided</td>
<td>247</td>
<td>17.22</td>
<td>3.83</td>
<td>.41</td>
<td>328</td>
<td>.684</td>
</tr>
<tr>
<td>State-financed</td>
<td>83</td>
<td>16.41</td>
<td>3.85</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Because there was no significant difference in students' diligence in the two types of schools, analysis of variance (ANOVA) was done to determine whether there were differences in students' diligence among the individual schools. Table 50 shows that there were no significant differences among the individual schools in regard to student diligence $F(7, 302) = 1.51, p > .05$.

In addition, Tables 51, 52, 53 and 54 indicate that there were no significant differences in student Motivation $F(7, 302) = 1.53, p > .05$, student Concentration and Assimilation $F(7, 302) = .678, p > .05$, student Discipline $F(7, 302) = 1.85, p > .05$, and student Conformity and Responsibility $F(7, 302) = 1.50, p > .05$ among the schools. The high schools in Grenada seem to be rather homogeneous in regard to student diligence.

Table 50

ANOVA Table of Student Diligence by Schools

<table>
<thead>
<tr>
<th>Sources</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2.72</td>
<td>7</td>
<td>.389</td>
<td>1.51</td>
<td>.164</td>
</tr>
<tr>
<td>Within Groups</td>
<td>77.81</td>
<td>302</td>
<td>.258</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Table 51

ANOVA Table of Student Motivation by Schools

<table>
<thead>
<tr>
<th>Sources</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>4.27</td>
<td>7</td>
<td>.609</td>
<td>1.53</td>
<td>.140</td>
</tr>
<tr>
<td>Within Groups</td>
<td>116.27</td>
<td>302</td>
<td>.385</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 52

ANOVA Table of Student Concentration and Assimilation by Schools

<table>
<thead>
<tr>
<th>Sources</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1.73</td>
<td>7</td>
<td>.248</td>
<td>.678</td>
<td>.691</td>
</tr>
<tr>
<td>Within Groups</td>
<td>110.28</td>
<td>302</td>
<td>.365</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 53

ANOVA Table of Student Discipline by Schools

<table>
<thead>
<tr>
<th>Sources</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>7.69</td>
<td>7</td>
<td>1.100</td>
<td>1.85</td>
<td>.078</td>
</tr>
<tr>
<td>Within Groups</td>
<td>179.62</td>
<td>302</td>
<td>.595</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 54

*ANOVA Table of Student Conformity and Responsibility by Schools*

<table>
<thead>
<tr>
<th>Sources</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>4.99</td>
<td>7</td>
<td>.712</td>
<td>1.50</td>
<td>.097</td>
</tr>
<tr>
<td>Within Groups</td>
<td>122.922</td>
<td>302</td>
<td>.407</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Hypothesis 10:** There is no relationship between students’ diligence and their expectation to succeed.

This hypothesis was not tested because of insufficient data. The small *N* of 2 for students with low expectation for success made it impossible to test this hypothesis. Levene’s test for equality of variance could not be assumed.

**Hypothesis 11:** There is no relationship between student diligence and their perception of others expectation for their success.

There is a statistically significant relationship between student diligence and their perception of the expectation of others for their success (see Table 55). The null hypothesis is rejected. Students who perceive that others expect them to succeed are more diligent (*M* = 128.29, *SD* 15.70) than those who perceive others as not expecting them to succeed (*M* = 112.49, *SD* 19.36, *p* < .001).

In addition, these students tend to be more Motivated (*M* = 38.53, *SD* 4.91 versus *M* = 33.08, *SD* 7.80, *p* < .01), have greater Concentration and Assimilation in regard to academic information (*M* = 45.96, *SD* 6.71 versus *M* = 39.01, *SD* 9.12, *p* < .001), be more Disciplined (*M* = 16.16, *SD* 3.82 versus *M* = 14.68, *SD* 3.81, *p* < .05),
exhibit greater Conformity and Responsibility ($M = 26.99$, $SD = 4.34$, versus $M = 23.48$, $SD = 4.48$, $p < .001$).

Table 55

*-$t$-test of Student Diligence by Others’ Expectation to Succeed*

<table>
<thead>
<tr>
<th>Source</th>
<th>$N$</th>
<th>Mean</th>
<th>$SD$</th>
<th>$DF$</th>
<th>$t$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diligence</td>
<td>Y</td>
<td>292</td>
<td>128.29</td>
<td>15.70</td>
<td>321</td>
<td>5.20</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>31</td>
<td>112.49</td>
<td>19.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivation</td>
<td>Y</td>
<td>292</td>
<td>38.53</td>
<td>4.91</td>
<td>321</td>
<td>3.51</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>31</td>
<td>33.08</td>
<td>7.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conc &amp; Ass.</td>
<td>Y</td>
<td>292</td>
<td>45.96</td>
<td>6.71</td>
<td>321</td>
<td>5.28</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>31</td>
<td>39.01</td>
<td>9.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discipline</td>
<td>Y</td>
<td>292</td>
<td>16.16</td>
<td>3.82</td>
<td>321</td>
<td>2.46</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>31</td>
<td>14.68</td>
<td>3.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conf. &amp; Res.</td>
<td>Y</td>
<td>292</td>
<td>26.99</td>
<td>4.34</td>
<td>321</td>
<td>4.29</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>31</td>
<td>23.48</td>
<td>4.28</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at the $< .01$ level.
** Significant at the $< .001$ level.
*** Significant at the $< .05$ level.

Hypothesis 12: There is no difference in the level diligence-support of educators and parents.

A $t$-test was done (Table 56) to compare the means of parental diligence-support and educator diligence-support. Educators ($M = 140.05$, $SD = 12.22$) provide significantly more diligence-support to their students than do parents ($M = 133.79$, $SD = 19.92$, $p < .001$).
The null hypothesis is rejected. Grenadian educators are more supportive of their students than do parents. There is a significant difference in the level of diligence-support of educators and parents.

Table 56

*T-test Comparing Educator and Parental Diligence-Support*

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td>358</td>
<td>133.79</td>
<td>19.92</td>
<td>66.80</td>
<td>33</td>
<td>.000*</td>
</tr>
<tr>
<td>Educators</td>
<td>34</td>
<td>140.05</td>
<td>12.22</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at the < .001 level.

**Hypothesis 13:** There is no relationship between parental diligence-support and student diligence.

The correlation between parental diligence-support and student diligence is .279, *p < .001*. The null hypothesis is rejected. There is a significant relationship between parental diligence-support and student diligence.

The square of the correlation is a direct measurement of the proportion of variance in academic performance that can be explained by student diligence. Since the correlation between parental diligence-support and student diligence is .279, then variance in student diligence that can be explained by parental diligence-support is .08 or 8%.

**Hypothesis 14:** There is no relationship between the type of high school students attend and the level of educator diligence-support.
A t-test was used to examine educators' diligence-support by type of school. The relationship between educator diligence-support and type of school is not significant at the .05 level (see Table 57). The null hypothesis is retained. There is no significant relationship between educator diligence-support and the type of school where they work. The educators who teach in state-aided high schools ($M = 136.97$, $SD = 14.03$) are not significantly different from those who teach at the state-financed high schools ($M = 142.79$, $SD = 9.98$) in regard to diligence-support.

Table 57

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>State-aided</td>
<td>16</td>
<td>136.97</td>
<td>14.03</td>
<td>-1.406</td>
<td>32</td>
<td>.169</td>
</tr>
<tr>
<td>State-financed</td>
<td>18</td>
<td>142.79</td>
<td>9.98</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Hypothesis 15:** There is no relationship between educators' level of diligence-support and teaching experience.

The relationship between educators' level of diligence-support and teaching experience is not significant at the .05 level of significance. The null hypothesis is retained. There is no significant relationship between the educators' level of diligence-support and teaching experience. Educators who have been teaching for up to 5 years ($M = 137.29$, $SD = 14.10$) are not significantly different from those who have been teaching...
for six years or more ($M = 143.55$, $SD = 8.55$) in regard to their diligence-support (see Table 58).

Table 58

*T-test of Educator Diligence-Support by Teaching Experience*

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>$M$</th>
<th>$SD$</th>
<th>$t$</th>
<th>$df$</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 5 Years</td>
<td>19</td>
<td>137.29</td>
<td>14.10</td>
<td>-1.60</td>
<td>30.24</td>
<td>.120</td>
</tr>
<tr>
<td>6 years &amp; Over</td>
<td>15</td>
<td>143.55</td>
<td>8.55</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Hypothesis 16:** There is no relationship between educators' level of diligence-support and gender.

The relationship between educator diligence-support and gender is not significant at the .05 level of significance. The null hypothesis is retained. There is no significant relationship between educators' diligence-support and gender. Male educators ($M = 137.40$, $SD = 16.64$) are not significantly different from female educators ($M = 141.15$, $SD = 10.09$) in regard to their diligence-support (see Table 59).

Table 59

*T-test of Educator Diligence-Support by Gender*

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>$M$</th>
<th>$SD$</th>
<th>$t$</th>
<th>$df$</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>24</td>
<td>137.40</td>
<td>16.64</td>
<td>0.664</td>
<td>11.86</td>
<td>.519</td>
</tr>
<tr>
<td>Female</td>
<td>10</td>
<td>141.15</td>
<td>10.09</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Hypothesis 17: There is no relationship between the educators' diligence-support and education level.

Table 60 presents $t$-tests for the diligence-support among educators according to their level of education. The relationship between educators' level of diligence-support and their educational level is significant at the $p < .01$ level of significance. The null hypothesis is rejected. There is a statistically significant relationship between educators' diligence-support and education level.

Educators who have received college degrees ($M = 147.17, SD = 7.18$) provide more diligence-support than those educators with A-levels qualification ($M = 135.82, SD = 12.98$).

Table 60

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-Level</td>
<td>21</td>
<td>135.82</td>
<td>12.98</td>
<td>-3.23</td>
<td>30.99</td>
<td>.003*</td>
</tr>
<tr>
<td>Degree</td>
<td>12</td>
<td>147.17</td>
<td>7.18</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at $p < .01$ level.

Hypothesis 18: There is no relationship between the type of high school students attend and the level of parental diligence-support they receive.

The relationship between parental diligence-support and type of school their children attend is not significant $p > .05$ level (see Table 61). The null hypothesis is
retained. There is no significant relationship between the type of public high school students attend and the level of parental diligence-support they receive.

Table 61

*T-test Comparing Parental Diligence-Support by Type of School*

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>State-aided</td>
<td>275</td>
<td>134.71</td>
<td>20.18</td>
<td>-1.60</td>
<td>356</td>
<td>.112</td>
</tr>
<tr>
<td>State-financed</td>
<td>83</td>
<td>130.74</td>
<td>18.86</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Hypothesis 19:** There is no relationship between parental diligence-support and gender.

At the *p* < .05 level of significance, there is no statistically significant relationship between parental diligence-support and gender (Table 62). Therefore, the null hypothesis is retained. There is no statistically significant relationship between overall parental diligence-support and gender. Fathers (*M* = 129.80, *SD* = 21.47) are equally supportive of their children’s academic success as are mothers (*M* = 134.65, *SD* = 19.40).

Table 62

*T-test of Parental Diligence Scores by Gender*

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>292</td>
<td>129.80</td>
<td>21.47</td>
<td>1.75</td>
<td>351</td>
<td>.082</td>
</tr>
<tr>
<td>Female</td>
<td>61</td>
<td>134.65</td>
<td>19.40</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Hypothesis 20: There is no relationship between the level of parental diligence-support and their education level.

Table 63 and 64 display the results of one-way ANOVA means and standard deviation for parental diligence-support by education level. The results from the one-way ANOVA show that the relationship between parental diligence-support and education level is significant at \( p < .05 \) level of significance. The null hypothesis is rejected. There is a significant relationship between parental diligence-support and education level.

Table 63

One Way ANOVA Table of Parental Diligence Scores by Education Level

<table>
<thead>
<tr>
<th>Sources</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>( F )</th>
<th>( P )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>3.475</td>
<td>2</td>
<td>1.738</td>
<td>4.55</td>
<td>.011*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>121.181</td>
<td>317</td>
<td>.382</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at \( p < .05 \) level.

Parents with degrees \((M = 137.02, SD = 17.07)\) and who completed high school \((M = 137.10, SD = 19.74)\) provide significantly more diligence support than those with elementary education \((M = 130.18, SD = 20.07)\).

Hypothesis 21: There is no relationship between the parental diligence-support and income.

The relationship between parental diligence-support and income is not significant at the .05 level of significance \((p = .100)\). The null hypothesis is retained. There is no
Table 64

Means and Standard Deviation of Parental Diligence-Support by Education Level

<table>
<thead>
<tr>
<th>Education Level</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary</td>
<td>148</td>
<td>130.18</td>
<td>20.07</td>
</tr>
<tr>
<td>High School</td>
<td>111</td>
<td>137.10</td>
<td>19.74</td>
</tr>
<tr>
<td>Degree</td>
<td>61</td>
<td>137.02</td>
<td>17.07</td>
</tr>
</tbody>
</table>

statistically significant relationship between parental diligence-support and income (see Table 65). The lower-income parents that earn up to $9,600 per annum ($M = 131.43, SD), the middle-income parents who earn between $9,612 and $21,000 per annum ($M = 134.35, SD 18.14), and the upper-income parents who earn over $21,000 ($M = 137.28, SD 16.42) are not significantly different from each other in regard to their diligence-support (see Tables 65 and 66).

Table 65

ANOVA Table of Parental Diligence-Support by Income

<table>
<thead>
<tr>
<th>Sources</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1.76</td>
<td>2</td>
<td>.879</td>
<td>2.32</td>
<td>.100</td>
</tr>
<tr>
<td>Within Groups</td>
<td>115.27</td>
<td>304</td>
<td>.379</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hypothesis 22: There is no relationship between the level of parental diligence-support and their assessment of their children's school work.
Table 66

Means and Standard Deviation of Parental Diligence-Support By Income

<table>
<thead>
<tr>
<th>Income</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>$9,600&lt;</td>
<td>149</td>
<td>131.43</td>
<td>21.15</td>
</tr>
<tr>
<td>$9,612 - 21,000</td>
<td>71</td>
<td>134.35</td>
<td>18.14</td>
</tr>
<tr>
<td>$21,000&gt;</td>
<td>87</td>
<td>137.28</td>
<td>16.42</td>
</tr>
</tbody>
</table>

There is a statistically significant negative correlation \((r = -.249)\) between parental diligence-support and their assessment of their children’s school work \((p < .01)\). The null hypothesis is rejected. There is a significant relationship between parental diligence-support \((M = 133.79, SD = 19.92)\) and their assessment of their children’s school-work \((M = 2.33, SD = .84)\). The higher parents rate their children’s school work the lower their level of diligence-support.

Summary of Null Hypotheses Testing

The study tested 22 null hypotheses. For the purpose of a better display of the results of the null hypothesis testing, the rejected null hypotheses are clustered together and listed first followed by the retained null hypotheses.

The following null hypotheses were rejected and are stated in the research form:

**Hypothesis 1:** There is a significant relationship between student diligence and student academic performance.
Hypothesis 2: There is a significant relationship between diligence and academic performance for male students and female students.

Hypothesis 3: There is a significant relationship between diligence and academic performance for students of different ethnic background.

Hypothesis 4: There is a significant relationship between student diligence and academic performance for the different age groups.

Hypothesis 5: There is a significant relationship between Form (Grade Level) and academic performance.

Hypothesis 6: There is a significant relationship between student diligence and gender.

Hypothesis 8: There is significant relationship between student diligence and age.

Hypothesis 11: There is a significant relationship between students’ diligence and their perception of others’ expectation of their success.

Hypothesis 12: There is a significant difference in the level of diligence-support of parents and educators.

Hypothesis 13: There is a significant relationship between parental diligence-support and student diligence.

Hypothesis 17: There is a significant relationship between educators’ level of diligence-support and their education level.

Hypothesis 20: There is a significant relationship between parental diligence-support and their education level.

Hypothesis 22: There is a significant relationship between the level of parental
diligence-support and their assessment of their children's school work.

The following null hypotheses were retained:

**Hypothesis 7**: There is no relationship between students' diligence and Form.

**Hypothesis 9**: There is no relationship between students' diligence and the type of high school they attend.

**Hypothesis 10**: There is no relationship between students' diligence and their expectation to succeed.

**Hypothesis 14**: There is no relationship between the type of high school students attend and the level of educator diligence-support.

**Hypothesis 15**: There is no relationship between educators' level of diligence-support and teaching experience.

**Hypothesis 16**: There is no relationship between educator diligence-support and gender.

**Hypothesis 18**: There is no relationship between the type of high school students attend and the level of parental diligence-support they receive.

**Hypothesis 19**: There is no relationship between the parental diligence-support and gender.

**Hypothesis 21**: There is no relationship between parental diligence-support and income.

**Explaining Performance From Diligence Sub-Scales and Other Related Variables**

Given that there is relatively low correlation between student diligence and
academic performance ($r = .284$), and that the 15-year-old group is the only age group whose diligence significantly correlated to their performance ($r = .427$), the researcher wanted to explain the variance in student performance of that age group from the diligence sub-scales and from other related variables. The diligence sub-scales are Motivation, Concentration and Assimilation, Discipline and Conformity and Responsibility. The related characteristics are the gender, ethnic background, Form (year in high school), income, expectation to succeed, perceptions of the expectation of others, and Form teacher subjective rating of the student's diligence.

The stepwise method was used. Two models resulted (Table 67).

Table 67

<table>
<thead>
<tr>
<th>Model</th>
<th>$R$</th>
<th>$R$ Square</th>
<th>R Square Change</th>
<th>$F$</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.427</td>
<td>.183</td>
<td>.183</td>
<td>8.49</td>
<td>.006*</td>
</tr>
<tr>
<td>2</td>
<td>.531</td>
<td>.282</td>
<td>.099</td>
<td>7.25</td>
<td>.002*</td>
</tr>
</tbody>
</table>

* Significant at $p < .01$ level

A student's level of motivation is the most significant predictor of student academic performance for the 15-year-olds'. Twenty-eight percent of the variance in academic performance can be explained by a linear combination of student motivation and teacher subjective rating of student diligence.

The standardized coefficient of a combination of motivation (.359) and Form
teacher subjective rating of student diligence (.322) leads to the conclusion that a 15-year-old student who is highly motivated and receives a high score on the teacher subjective rating of his/her diligence is more likely to be diligent (see Table 68). This finding is somewhat consistent with the results found Jasinevicius et al. (1998) student motivation is a predictor of academic performance.

Table 68

Regression Model for Explaining Student Academic Performance

<table>
<thead>
<tr>
<th>Models</th>
<th>Variable</th>
<th>( B )</th>
<th>Beta</th>
<th>( t )</th>
<th>( p' )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Constant</td>
<td>23.00</td>
<td>.427</td>
<td>1.56</td>
<td>.128</td>
</tr>
<tr>
<td></td>
<td>Motivation</td>
<td>9.88</td>
<td>.95</td>
<td>2.91</td>
<td>.006</td>
</tr>
<tr>
<td>2</td>
<td>Constant</td>
<td>13.83</td>
<td>.359</td>
<td>2.52</td>
<td>.016</td>
</tr>
<tr>
<td></td>
<td>Motivation</td>
<td>8.30</td>
<td>.322</td>
<td>2.26</td>
<td>.030</td>
</tr>
<tr>
<td></td>
<td>Dilrate</td>
<td>7.41</td>
<td>.322</td>
<td>2.26</td>
<td>.030</td>
</tr>
</tbody>
</table>

Explaining Student Diligence From Parental Diligence-support and Other Variables

Given that 8% of the variance in student diligence can be explained by parental diligence-support working independently, a multiple regression, using the stepwise method, was performed in order to further explain the variance in student diligence. The diligence sub-scales, student demographics, parents demographics, parent and student expectations and Form teacher subjective ratings of student diligence were the variables used. Four models emerged (Table 69).
Table 69

*Model for Explaining Student Diligence*

<table>
<thead>
<tr>
<th>Model</th>
<th>$R$</th>
<th>R Square</th>
<th>R Square Change</th>
<th>$F$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.342</td>
<td>.117</td>
<td>.117</td>
<td>32.48</td>
<td>.000*</td>
</tr>
<tr>
<td>2</td>
<td>.420</td>
<td>.176</td>
<td>.059</td>
<td>26.03</td>
<td>.000*</td>
</tr>
<tr>
<td>3</td>
<td>.466</td>
<td>.218</td>
<td>.041</td>
<td>22.50</td>
<td>.000*</td>
</tr>
<tr>
<td>4</td>
<td>.499</td>
<td>.249</td>
<td>.031</td>
<td>20.23</td>
<td>.000*</td>
</tr>
</tbody>
</table>

* Significant at $p < .001$ level

Parent assessment of child's school-work is the most significant predictor of student diligence. A linear combination of parental assessment of their child's school work, student perception of others expectation for their success, parental diligence-support, and students expectation for their success explained 25% of the variance in student diligence. The standardized coefficient of a combination of parental assessment of their children school work ($-0.150$), students' perception of the expectation of others for their success ($-0.400$), parental diligence support ($0.180$), and students' expectation for their success ($-1.13$) is displayed in Table 70. Parental support is the only variable that is positively related to student diligence. This finding is somewhat consistent with the results found by Bernard and others (1996) and Hinds and others (1999).

However, the negative relationship between student diligence and expectations for success goes against conventional wisdom (Graen, 1963; Miller & Grush, 1988; Vroom, 1964) and may be sample specific.
Table 70

Regression Model for Explaining Student Diligence

<table>
<thead>
<tr>
<th>Models</th>
<th>Variables</th>
<th>B</th>
<th>Beta</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
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Summary of the Chapter

Chapter 4 described the results of data analysis. Factor analysis of the Diligence Inventory-High school Form indicated that the instrument has a four-factor scale structure when applied to students in Grenada. To reflect the composition of the items that comprised the scales, the factors were named Motivation, Concentration and Assimilation, Discipline, and Conformity and Responsibility. However, the underlying definition of diligence as developed by Bernard (1991) remained intact even though the sub-scales by which diligence is measured are slightly different. The Devotedness and
Spirituality scale in the original inventory was eliminated. The chapter also presented the results of hypotheses testing. Nine of the 22 null hypotheses were retained. The 13 rejected null hypotheses are discussed further in chapter 5. Two regression models for explaining student performance from student diligence and demographic characteristics and for explaining student diligence from parental diligence-support and demographic characteristics were formulated.
CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter is divided into three major sections. The Summary section describes
the problem, research methods, and research hypotheses in light of the results of data
analysis. The Conclusion section provides an interpretation of the significant research
findings and their implications for the high school system in Grenada. The Suggested
Further Research section discusses the ideas for further research.

Summary of Study

This study was conducted in 8 of the 16 high schools on the Caribbean island of
Grenada. The schools were placed in two broad categories. Six schools were state-aided
denominational and two schools were state-financed. Two schools were from the south
of the island, 2 were from the west coast, 2 were from the north and 2 were from the east
coast. Four schools had a size of 600 and more students, 2 schools between 400 and 500
students, and 2 schools had between 350 and 400 students.

The sample consisted of 458 students, 358, parents and 34 educators. Three
hundred and 10 students were matched to their parents. The student sample comprised of
69% females, 31% males, 73% African descent, 23% 'other', 39% third-formers, 36%
fourth-formers, 25% fifth-formers, 18% state-financed school goers, and 82% state-aided
The primary purpose of this study was to examine the relationship between student diligence and academic performance at the high school setting in Grenada. There were also two secondary purposes to this study. They were (1) to examine the relationship between the student support systems and student diligence; (2) to determine if student diligence is related to demographic characteristics.

This study, therefore, investigated the relationship between pertinent non-cognitive variables that could explain students' academic performance. The relationship between cognitive measures and student academic performance is well established and recognized in the literature (Ewell, 1985; Goslin, 1966; Juola, 1963; Pace, 1979; Sedlacek & Adams-Gaston, 1992; Wagner & Steinberg, 1986).

However, non-cognitive constructs solely relevant to academic performance have been becoming more appropriate for explaining academic performance. Yet all of these constructs have been studied primarily in the United States of America (Bennett, 1994; Bernard, 1991; Bernard et al., 1993; Bernard & Thayer, 1993; Overwalle, 1989). With this background in mind, the current study sought to investigate diligence, a newly established non-cognitive variable, as it relates to Grenadian students. Student diligence and demographic characteristics were applied to a regression model for the explanation of academic performance.

The study also investigated the relationship between student support systems, in the form of diligence-support, and student diligence. Three hundred and 10 students were matched to their parents with a view to examining the relationships that exist between
diligence-support and student diligence. Parental diligence-support and demographic characteristics were applied to a regression equation for explaining student diligence.

Also, the study attempted to validate the Diligence Inventory: High school Form (DI-HS) instrument. The intention was to validate the instrument in a foreign culture, the Grenadian culture, that was different from the American culture in which the instrument was originally developed. The purpose of the instrument validation was to ensure that the instrument was robust enough to support its application in a foreign culture.

The main purpose of the study was communicated to the Chief Education Officer in the Ministry of Education, Grenada. The study was endorsed and I was persuaded to include the student diligence-support system as part of the study. Student support system was an important issue for the Ministry of Education.

The purpose of the study was then communicated to the 12 principals of the different high schools in Grenada. Eleven of the principals expressed interest and a willingness to participate in the study. However, 8 of the schools actually completed the instruments and made students' examination scores available.

The study was undertaken first in response to a need, as conveyed by the Chief Education Officer, in the education system in Grenada to understand the role of parental and educator support to the education process; and second in response to calls during the 1980s and 1990s for students to be more responsible for their education (Anderson & Prawat, 1983; Bacon, 1991, 1993; Bernard, 1991; Bernard et al., 1996; Ericson & Ellett, 1990; Glasser, 1986, 1990); and for parents and educators to provide academic support to their students (Bernard et al., 1996; Comer, 1980, 1986, 1988; Comer, Haynes, Joyner &
Assessing the level and significance of parental and educator support for students' academic development was an important issue for the Ministry of Education in Grenada. The results of the current study would provide the Ministry of Education in Grenada and education systems of similar cultures with guidelines for encouraging the use of non-cognitive constructs to improve student academic performance.

A review of literature on diligence revealed that it explains about 10% of the variance in student academic performance (Bennett, 1994; Bernard, 1991; Bernard et al., 1993; Bernard & Thayer, 1993). But there are problems related to the use of non-cognitive variables in explaining student academic performance. It would be rather unusual to measure non-cognitive variables through direct questions or through mathematical calculations as one would cognitive variables, for example, American College Test (ACT) or Scholastic Aptitude Test (SAT). These variables are measured based on one's self-perception, which may or may not be objective.

Another problem related to these non-cognitive variables and which had direct relevance to this study was that the original variables were defined, constructed, and validated in the Midwestern region of the United States of America. Using those variables in a different culture raised the issue of validity and reliability. Since the development of the original DI-HS (Bernard, 1991), many studies (Bennett, 1994; Bernard et al., 1993; Bernard et al., 1995; Bernard & Thayer, 1993; Jasinevicius et al., 1998; Stul, 1999) have been done to validate various forms of the instrument. For the purpose of this study, to ensure that the instrument was robust enough to be used in
Grenada, item analysis and factor analysis were done. Also, minor editing was done to the instrument to make the items more culturally relevant.

The advantage of using the diligence construct is in its potential for improving student academic performance and teaching them to be responsible. Students are to be responsible, not just held responsible. Students have a responsibility for their educational success. This distinction suggests that students who are held responsible will do work only when someone compels them to do so, while those who are being responsible will do the work without constant reminders or prodding (Bacon, 1991, 1993; Morris, 1961). The diligence construct has great potential in this regard in that it encourages responsibility.

Factor analysis of the instrument was done using 458 students. Four factors emerged. The content of the scales changed, and the factors that emerged were named similarly as in the original instrument: Motivation, Concentration and Assimilation, Discipline, and Conformity and Responsibility. The scale, Devotedness and Spirituality, which was on the original instrument, did not emerge in this instrument. The names were assigned to each scale based on an analysis of the content of the items that comprised the scale. Although the four sub-scales retained identical names as those in the original instrument, the contents exhibited varying degrees of differences. However, these differences were not significant enough to warrant a change in the operational definition of the sub-scales.

One of the primary reasons for the development of the DI-HS instrument was to use it to explain/predict academic performance. In this study, there are four dimensions
of diligence. Three dimensions correlate significantly with academic performance (Table 71).

### Table 71

<table>
<thead>
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<th>Source</th>
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<tr>
<td>Motivation</td>
<td>.260*</td>
</tr>
<tr>
<td>Concentration &amp; Assimilation</td>
<td>.177*</td>
</tr>
<tr>
<td>Discipline</td>
<td>.259*</td>
</tr>
<tr>
<td>Conformity &amp; Responsibility</td>
<td>.111</td>
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</tbody>
</table>

* Significant at $p < .01$ level.

Although it could be claimed that three of the sub-scales contributed significantly to the predictive power of the instrument, it may be noted that the correlation is low to moderate. The correlation between student diligence (total score) and student academic performance was .248, $p < .01$ level of significance. However, when the student sample was dis-aggregated the correlation between male-students' diligence and academic performance was .226, female students diligence and academic performance was .258, students of African descent diligence and academic performance was .239, other students' diligence and academic performance was .300, and the diligence of 15 year old students and academic performance was .427.
In other words, diligence has the potential to make an independent contribution to academic performance. While it explains a modest 6% of the variance in students' academic performance, it can account for 9% of the variance in academic performance among students who are not of African descent, 7% of the variance in academic performance among females, and 18% of the variance in academic performance among fifteen year old's. These results suggest that the correlation between diligence and academic performance was skewed to the lower end of the spectrum because of the unfavorable correlations of the other sub groups.

In the current study, two variables were found to have a statistically significant relationship with the students' academic performance. They were: (1) Student motivation, and (2) Form teachers subjective rating of student diligence.

When the diligence level for 15-year-old students, student demographic characteristics, and other related factors were applied to a regression model, their motivation and the Form teachers' subjective rating of students diligence explained 28% of the variance in their performance.

The regression coefficients for student motivation and teachers' subjective ratings of student diligence were positive. A high motivation score or a high subjective score would have a greater impact on student academic performance than low scores.

It is worthy of note that the motivation of the 15-year-old students is the one variable that is under the students' direct control in the prediction of academic performance. It explains 18% of the variance in their academic performance. It therefore suggests, that as a student improves his/her level of motivation, he/she would experience...
improved academic performance. This result has implications for encouraging student motivation. If these students are made to realize that being more motivated can translate to better academic performance, then motivation/diligence becomes more attractive.

Four variables were found to have a statistically significant relationship with students' diligence. These variables were: (1) Parental diligence-support, (2) Parent assessment of their children's school work, (3) students' perception of others expectation of their success, and (4) students' expectations for their success.

The correlation between parental diligence and student diligence was .279. it is a modest correlation that explains 8% of the variance in student diligence. However, when parental diligence-support and other related factors were applied to a regression model, parental diligence-support, parental assessment of their children's school-work, students expectation for their success, and students' perception of others expectation for their success accounted for 25% of the variance in student diligence.

Providing diligence-support for student motivation should be encouraged. The correlation between parental diligence-support and student motivation ($r = .279, p<.001$) suggests that as parents provide more diligence-support students would become more motivated and as a result experience improved academic performance. The results of this study have the potential to place student academic performance under the direct control of the students and their parents. And since students want to have control over the events that affect their lives (Bandura, 1997), and their academic performance is an event which affects their lives, then giving students control over their academic performance is expected to be a welcome phenomenon.
In terms of demographic characteristics, girls ($M = 128.89$, $SD = 18.52$) tended to be more diligent than boys ($M = 122.89$, $SD = 15.31$), 14-year-old students ($M = 136.62$, $SD = 15.42$) were more diligent than 16-year-olds' ($M = 123.81$, $SD = 17.11$) and 17-year-olds' ($M = 124.65$, $SD = 15.54$).

Factor analysis was the starting point for the data analysis. Testing of the null hypotheses, the formulation of the regression model for explaining student diligence from parental diligence-support and demographic characteristics, and the formulation of the regression model for explaining student academic performance from student diligence and demographic characteristics followed. The following findings relate the testing of the 22 null hypotheses leading to the following conclusions:

**Hypothesis 1**: There is a significant relationship between student diligence and student academic performance.

**Hypothesis 2**: There is a significant relationship between diligence and academic performance for male students and female students.

**Hypothesis 3**: There is a significant relationship between diligence and academic performance for students of different ethnic background.

**Hypothesis 4**: There is a significant relationship between student diligence and academic performance for the different age groups.

**Hypothesis 5**: There is a significant relationship between Form (Grade Level) and academic performance.

**Hypothesis 6**: There is a significant relationship between student diligence and gender.

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Hypothesis 8: There is significant relationship between student diligence and age.

Hypothesis 11: There is a significant relationship between students' diligence and their perception of others' expectation of their success.

Hypothesis 12: There is a significant difference in the level of diligence-support of parents and educators.

Hypothesis 13: There is a significant relationship between parental diligence-support and student diligence.

Hypothesis 17: There is a significant relationship between educators' level of diligence-support and their education level.

Hypothesis 20: There is a significant relationship between parental diligence-support and their education level.

Hypothesis 22: There is a significant relationship between the level of parental diligence-support and their assessment of their children's school work.

The following null hypotheses were retained:

Hypothesis 7: There is no relationship between students' diligence and Form.

Hypothesis 9: There is no relationship between students' diligence and the type of high school they attend.

Hypothesis 10: There is no relationship between students' diligence and their expectation to succeed.

Hypothesis 14: There is no relationship between the type of high school students attend and the level of educator diligence-support.

Hypothesis 15: There is no relationship between educators' level of diligence-
support and teaching experience.

**Hypothesis 16:** There is no relationship between educator diligence-support and gender.

**Hypothesis 18:** There is no relationship between the type of high school students attend and the level of parental diligence-support they receive.

**Hypothesis 19:** There is no relationship between the parental diligence-support and gender.

**Hypothesis 21:** There is no relationship between parental diligence-support and income.

Hypotheses 1, 6, 8, 11, 13, and 20 are concerned with understanding student diligence. Therefore, they are discussed together. They provide implications for the examination process in the education system in Grenada. Hypothesis 1 revealed that there is a significant correlation between student diligence and academic performance ($r = .248, p < .001$). Also, in the regression model, motivation explains 18% in the variance in the academic performance for 15 year old’s. As these students’ motivation/diligence increase, their performance would also increase.

Just as importantly, there is a significant relationship between parental diligence-support and student diligence ($r = .279, p < .001$). An increase in parental diligence-support would lead to an increase in student diligence, which may translate to an increase in academic performance.

There is a statistically significant relationship between student diligence and gender, age, perception of others expectation for success, and parental diligence-support.
When these variables are considered independently. When parental assessment of their children schoolwork, students' perception of others expectation for their success, parental diligence support, and student expectation for success are considered in combination, they explain 25% of the variance in student diligence.

Girls tend to be more diligent than boys. Students who are 14 years of age or less are more diligent than those who are 16 years of age or older. Students who perceive that others expect them to succeed are more diligent than those who perceive that others do not expect them to succeed. Twenty-five percent of the variance in student diligence can be explained by parental diligence-support, parental assessment of their children's school-work, students expectation for their success, and students' perception of others' expectation for their success.

These findings compare very favorably with the findings of previous studies (Bennett, 1994; Bernard, 1991; Bernard et al., 1996; Bernard et al., 1993; Bernard & Thayer, 1993; Jasinevicius et al., 1998).

The literature on self-efficacy (Bandura, 1997, 1986) and expectation theory (Graen, 1963; Miller & Grush, 1988; Vroom, 1964) supports these findings. Expectation theory is based on the belief that a given level of activity (diligence) will result in a specified level of goal accomplishment. Therefore, because students perceive that others expect them to succeed, it becomes logical for them to be diligent. The question, “If I work hard, will I be successful?” (Hoy & Miskel, 1996, p. 108), receives a resounding yes for an answer. It is very important for significant others to hold high expectations of their children/students.
Self-efficacy, on the other hand, is a person's judgment about his/her capabilities to organize and execute a course of action that is required to attain a certain level of performance (Bandura, 1986, 1991). Similarly, students who perceive that others expect them to succeed would most likely demonstrate self-efficacy and would be more diligent, and by extension, experience enhanced academic performance.

One major area of concern, however, was that this study has found that there is a statistically significant relationship between parental diligence-support and their education level. Parents who completed only elementary education, provided significantly less diligence-support than those who have completed high school or college. It is possible that because of limited educational life, the parents who attended only elementary school, found it difficult to provide diligence support. Maybe they just don't know how to provide support to their children.

This result is different from that found by Bernard and others (1996). They found that there was no significant relationship between parental diligence-support and educational level.

These results convey grave implication for the education system in Grenada since the majority of parents with high school children ($N = 148$) completed only elementary school. That seems to suggest that the majority of parents with high school students are not providing diligence-support to their children. Given the importance of parental diligence-support, this finding raises grave concerns.

This study, along with many others (Bernard, 1991; Bernard et al., 1993; Bernard et al., 1996; Bernard & Thayer, 1993; Hess, 1986; Rich, 1988; Stevenson et al., 1986),
indicates that there is a statistically significant relationship between parental diligence-support and student diligence. Students who receive high parental diligence-support are more diligent and by extension experience improved academic performance.

Hinds and others (1999) found that students rated parental diligence-support as the most important factor that influenced their attitudes toward school. The more strongly they felt that their parents support, follow, and encourage their progress in school, the more positive was their attitude toward school, the better they felt about themselves, the stronger were their beliefs that school would be valuable to them, the better they performed academically, and the fewer were their behavioral problems.

In addition, parental diligence-support allows the student to acquire the basic supporting structures at home to be able to learn. The more skills a child acquires at home, the more prepared he/she is to learn, the more prepared he/she is to succeed. Success in school is home made (Bernard et al., 1996; Drake et al., 1996; Rich, 1988; Goldberg, 1999).

With such great evidence of the value of parental diligence-support, intervention measures are needed to improve parental diligence-support especially for the parents who have completed only elementary education.

Hypotheses 1, 2, 3, 4, and 5 are considered together because they are concerned with student diligence and academic performance. There is a significant relationship between student diligence and academic performance ($r = .248, p < .001$). Student diligence acting independently, can explain 6% of the variance in student performance.

Hypothesis 5 reveals that there is a significant relationship between Form and
academic performance. Students in Form III ($M = 60.66$, $SD = 15.14$) and Form IV ($M = 57.07$, $SD = 13.86$) have significantly higher academic performance than those in Form V ($M = 52.36$, $SD = 15.87$).

The correlation between the diligence of 15-year-old students and academic performance is $r = .427$, $p < .01$. In other words, 18% of the variance in their performance is explained by diligence. Twenty-eight percent of the variance in their academic performance can be explained by their motivation level and the Form teacher's subjective rating of their diligence.

This finding are consistent with those of Bernard (1991); Bernard and Thayer (1993); Bernard et al. (1993); and Bennett (1994) which also found a significant correlation between diligence and academic performance.

Since younger students are more diligent than older ones, there is a significant correlation between diligence and academic performance for 15-year-olds, most of whom are in Form IV; and the students in Forms III and IV (the younger students) have significantly better academic performance than those in Form V, it might be in the best interest of the students, therefore, to write their standardized external examinations during Form IV, when they are most ready. The variables which are linked to student academic performance seem to resonate with students who are in Form IV.

In addition, the 15-year-old students have the highest academic performance of all the age groups ($Mean = 65.76$), they are more diligent than the 16 and over age groups, and there is a moderate correlation ($r = .427$) between their diligence and academic performance. It seems that at 15 years, a student is most ready for external
examinations. The implication is that the Ministry of Education may need to consider having 15-year-olds', most of whom are in Form IV, write the external Caribbean Examination Council (CXC) Examinations while they are in Form IV.

These findings have serious implications for the education systems in Grenada and other Caribbean countries. The normal practice is for students to write their external standardized examinations during their fifth year in high school, but this study has shown that these students are less diligent and are performing poorly, academically. Ninety-one percent of the Form V students are 16 years and older. That's the age group with the least diligence and academic performance.

Because hypotheses 12 and 17 are related, they would be discussed together. Grenadian educators ($M = 140.05$, $SD = 12.22$) provide significantly more support of their students’ diligence than do parents ($M = 133.79$, $SD = 19.92$, $p < .001$). Not only do educators provided more diligence-support than do parents, they are more concerned about students’ diligence than are students themselves ($M = 126.66$, $SD = 16.64$). This finding is consistent with the findings from previous research (Bernard et al., 1996).

This finding has significance because research (Hinds et al., 1999; Korinek et al., 1999; Stainbeck & Stainbeck, 1994) has shown educator support plays a pivotal role in shaping students’ attitudes toward their academic pursuits. The results from previous research indicate that students tend to exert more effort in their school work, have positive attitudes about school and their own competencies, have better grades, and are less likely to exhibit disruptive or problem behavior when educators are supportive (Dowd, 1997; Hinds et al., 1999; Korinek et al., 1999; Richman et al., 1998; Stainbeck &
Stainbeck, 1994). This study did not examine the direct relationship of educator diligence-support on students. This may be an area for further research using a quasi-experimental approach.

However, this study found that there is a statistically significant relationship between the educators' diligence-support and education level. This finding is not consistent with the findings of Bernard and others (1996). The area of concern that this finding presents is that teachers who possess A-level subject passes ($M = 135.82, SD = 12.98, N = 21$) are significantly less supportive of their students' diligence than do teachers with degrees ($M = 147.17, SD = 7.18, N = 12$).

The fact that teachers with A-level subject passes have no professional training in education could account for their lack of support. Such teachers are hired directly from Form VI without any formal professional training. The implication is that all teachers, especially those with A-level subject passes need to be provided with professional educational training. The teachers with college degrees may not have been professionally trained, but may have provided more diligence-support because of their longer exposure to higher education and because they may have taken general education courses in college.

Given the importance of educator diligence-support to student educational development, professional training may be needed for all teachers, especially for those with A-level subject passes. The Ministry of Education has been planning for some time now to provide professional training for teachers, this study would help to show the urgency of that need since about two-thirds of all teachers teach only with A-level
subject passes.

The null hypotheses which were retained are worthy of mention. The current study found that the type of school that students attended was not significantly related to student diligence, educator diligence-support, or parental diligence-support. This finding is understandable given the context of the school system in Grenada. All of the high schools in the study, both state-aided denominational and state-financed, are administered by the Ministry of Education. All of the students who go on to high schools had to successfully write a qualifying exam—the Common Entrance, to be eligible for high school. That examination could only be written by students between the ages of 11 and 13. It seems logical, therefore, that students who are in high school are similar in many characteristics, since they are randomly assigned to high schools. Diligence is one such characteristic in which they may be similar.

Also, the educators in the high school system are all employed by the Ministry of Education and share common characteristics. They have similar qualifications, experience, and drive, and provide similar diligence-support regardless of the type of school. This result suggests that teachers are consistent in their behavior across schools.

Similarly, parental diligence-support is consistent across schools. The random assignment of students to high schools means that the parents’ association with particular schools is also randomized. That phenomenon may explain the consistency of parental behavior across schools. The implication of this finding is that the intervention measures to improve student diligence and diligence-support should apply to all schools.

The non-significant relationship among educator diligence-support, their teaching
experience and their gender found in this study is consistent with the findings found by Bernard and others (1996). This finding has implications for the kinds of intervention measures that may be used to improve educator diligence. Diligence-support intervention measures should not be dictated by gender or teaching experience.

There is no distinction in the level of support provided by mothers and fathers in relation to their income. This finding is consistent with those of Bernard and others (1996). It is not unusual for both parents to place high value on education. Also, parents, regardless of their economic standing, provide similar levels of diligence support to their children.

**Conclusions**

The current study used modified versions of the Diligence Inventory High school Form (DI-HS), the Diligence Inventory Educator Form (DI-ED) and the Diligence Inventory Parent/Guardian Form (DI-PG) to examine the relationship between student diligence and student academic performance and to determine the impact of diligence-support on student diligence. In the Grenadian culture, diligence was evaluated through the measurement of four scales. They were: Motivation, Concentration and Assimilation, Discipline, and Conformity and Responsibility.

1. The main purpose of this study was to examine the relationship between student diligence and academic performance. The study revealed that there is a significant correlation between student diligence and academic performance. Student diligence explained anywhere from 6% (for all students) to 18% (for 15-year-olds') of...
the variance in academic performance. These results could help inform teachers of the many differences that students bring into the classroom.

2. The current study formulated a regression model for explaining academic performance from student diligence and demographic characteristics. Student motivation and Form teachers' subjective rating of student diligence explained 28% of the variance in academic performance. On a syndrom a 15-year-old student who has high motivation, and has a high diligence rating from his/her teacher, is more likely to have a high academic performance. Motivation, the only variable that the student can control, has a direct relationship to academic performance. This finding has implications for the education system in Grenada. Increased parental diligence-support results in increased student motivation, which then translates to improved academic performance. Both parents and students, therefore, have control over the academic performance of students.

3. The research studied the relationship between parental diligence-support and student diligence. There is a significant correlation between parental diligence-support and student diligence. When parental diligence-support is high, student diligence tends to be high. Parental diligence-support explained 8% of the variance in student diligence.

4. A regression model was formulated to explain student diligence from parental diligence-support and demographic characteristics. Parental diligence-support, parental assessment of their children's school-work, and the student's perception of others expectation of their success explained 25% of the variance in student diligence.

On a syndrom a student who receives high parental support, perceives that others have low expectation for his/her success, has low expectations for his/her success, his/her
parent rates the student’s schoolwork unfavorably, is more likely to be diligent. This finding that the higher the assessment of students’ school-work by parents the lower their diligence-support is very instructive. Parents may be encouraged to provide more diligence-support for their children’s educational success, regardless of their assessment of their children’s school-work. However, the negative relationship between students’ diligence and their expectation for success may be a sample specific phenomenon that requires further study.

5. The mean scores for educator diligence-support was significantly than that of parents. Educators tended to be more concerned about students’ educational success than students’ themselves. However, both educator and parental diligence-support are significantly related to their education. The lower their level of education tended to be, the lesser was their diligence-support. This finding has implications for education because educator support is known to be related to student success in schools. The Ministry of Education in Grenada should be concerned that teachers with A-Level subject passes provide significantly less diligence-support than those with degrees because about two-thirds of its teachers have only A-Level qualifications.

6. This study has implications for the Ministry of Education and the school system in Grenada in providing intervention measures for student support and success. The information on the significant relationships between student academic performance and diligence-support and other demographic characteristics may inform the authorities about teacher training issues, parent/teacher collaboration issues, and the differences that students bring to the classroom.
Suggested Further Research

The following suggestions for further research on this subject are recommended.

1. The study should be replicated at the elementary level, high school level and at the college level. Educators should be matched to their students so that a more direct relationship between educator diligence-support and student academic life may be examined.

2. There is a need for training teachers and parents to be more supportive of their students/children's educational development. A study should be done to determine if diligence-support could be improved through training.

3. The relationship between diligence and ability should be further examined in the Grenada/Caribbean context.

4. A longitudinal study should be done to track students over many years to examine how the relationships between student diligence and student diligence-support impact on student educational development over time.

5. Diligence has been found to be a good predictor of students' academic performance. A major focus of colleges and universities is the recruitment and retention of college students. A study should be done to examine the diligence construct's predictive value of high school bound or college bound students. A secondary focus should be the predictive ability of diligence on college attrition.

6. In the current study, it was found that there is no significant relationship between student diligence and academic performance; and student diligence-support and
student diligence by type of schools. Further studies should be done to examine if these findings would differ by type of schools where denominational schools are more directly administered by their respective denominations.

7. Given the significant relationship between student diligence and academic performance, further studies should be done to determine if the teaching of diligence to students would positively impact their diligence level in the Grenada context.

8. When applied to a regression model, students expectation for success has a negative relationship with diligence. More research is needed for examining the relationship between expectations for success, when in combination with other variables, and student diligence.
Appendix A

Correspondence
December 1, 1999

Dear Mr. Pierre:

Season greetings and best wishes to you. May 2000 be a rewarding and successful year for you and the Ministry of Education.

This is a follow-up to our previous discussions concerning my research interests. Taking your advice and the needs of our schools into consideration, my area of emphasis is to examine the impact of parental support, educator support and student diligence on students’ academic outcomes. Would students show improved academic performance if they are diligent and receive support from home and from school?

Improving students’ performance is a concern for all educators. The findings from this study can be used to engage educators in training and staff development programs, as well as provide intervention measures for parents and students, with a view to improving students’ performance.

I am therefore requesting permission for use of your high schools in my research. It would be very helpful if your office can communicate endorsement for this study to the schools before I approach the principals.

I intend to conduct the study in the months of January and February 2000. One class of students from each of forms III, IV and V would be asked to respond to a 55 item questionnaire. This process will take about 15 to 20 minutes. The Michaelmas Term’s examination scores for the students in the study would be obtained from the schools. The parents and teachers who teach the students would also be asked to respond to a 55 item questionnaire.

I would welcome a response from you on this very important matter of seeking to find ways of improving our students’ academic performance.

Thank you for your kind considerations.

Respectfully,

Christon Arthur

cc: Hinsdale Bernard, PhD
    Academic Advisor

Berrien Springs, Michigan 49104/(616)471-7771
Dear Ms. Britton:

Season greetings and best wishes to you and your staff. May 2000 be a rewarding and successful year for you and your school.

I am an Organization of American States (OAS) fellow at Andrews University, in the United States of America. I am currently at the research stage of my fellowship. My area of emphasis is to examine the impact of parental support, educator support and student diligence on students' academic outcomes. Would students show improved academic performance if they are diligent and receive support from home and from school?

Improving students' performance is a concern for all educators. The findings from this study can be used to engage educators in training and staff development programs, as well as provide intervention measures for parents and students, with a view to improving students' performance.

I would like to conduct the study in the months of January and February 2000. One class of students from each of forms III, IV and V would be requested to respond to a 55 item questionnaire. This process should take about 15 to 20 minutes. The Michaelmas Term's examination scores for each student in the study would be requested from your school. The parents and teachers who teach the students would also be asked to respond to a 55 item questionnaire.

I am therefore requesting permission for use of your school in my research. Preliminary discussions with the Chief Education Officer has revealed that this is a study that would be welcomed by the Ministry of Education.

I would welcome a response from you on this very important matter of seeking to find ways of improving our students' academic performance.

Thank you for your kind considerations.

Respectfully,

(Signature)

Christon Arthur

cc: Hinsdale Bernard, PhD
    Academic Advisor

Berrien Springs, Michigan 49104/(616)471-7771

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December 3, 1999

Dear Bro George:

Season Greetings and best wishes to you and your staff. May the year 2000 be a rewarding and successful year for and your school.

I am an Organization of American States (OAS) fellow at Andrews University, in the United States of America. I am currently at the research stage of my fellowship. My research interest is to examine the relationship between parental support, educator support, student diligence, other related variables, and students' academic outcomes. Would students show improved academic performance if they are diligent and receive support from home and from school?

Improving students' performance is a concern for all educators. The findings from this study may be used to engage educators in training and staff development programs, as well as provide intervention measures for parents and students, with a view to improving students' academic performance.

I would like to conduct the study in the months of January and February 2000. One class of students from each of Forms III, IV, and V would be requested to respond to a 55-item questionnaire. This process should take about 15 to 20 minutes. The Michaelmas term's examination scores for each student in the study would be requested from your school. The parents and teachers who teach the students would also be asked to respond to a 55-item questionnaire.

I am therefore requesting permission for use of your school in my research. Preliminary discussions with the Chief Education Officer have revealed that this is a study that would be welcomed by the Ministry of Education.

I would welcome a response from you on this very important matter of seeking to find ways to improve our students' academic performance.

Thanks for your kind considerations.

Respectfully,

Christon Arthur

cc: Hinsdale Bernard, PhD
    Academic Advisor

Berrien Springs, Michigan 49104/(616)471-7771
Dear Mr. Alexander:

Season Greetings and best wishes to you and your staff. May the year 2000 be a rewarding and successful year for and your school.

I am an Organization of American States (OAS) fellow at Andrews University, in the United States of America. I am currently at the research stage of my fellowship. My research interest is to examine the relationship between parental support, educator support, student diligence, other related variables, and students’ academic outcomes. Would students show improved academic performance if they are diligent and receive support from home and from school?

Improving students’ performance is a concern for all educators. The findings from this study may be used to engage educators in training and staff development programs, as well as provide intervention measures for parents and students, with a view to improving students’ academic performance.

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I am therefore requesting permission for use of your school in my research. Preliminary discussions with the Chief Education Officer have revealed that this is a study that would be welcomed by the Ministry of Education.

I would welcome a response from you on this very important matter of seeking to find ways to improve our students’ academic performance.

Thanks for your kind considerations.

Respectfully,

Christon Arthur

cc: Hinsdale Bernard, PhD
    Academic Advisor
December 3, 1999

Dear Ms. Alexander:

Season Greetings and best wishes to you and your staff. May the year 2000 be a rewarding and successful year for and your school.

I am an Organization of American States (OAS) fellow at Andrews University, in the United States of America. I am currently at the research stage of my fellowship. My research interest is to examine the relationship between parental support, educator support, student diligence, other related variables, and students’ academic outcomes. Would students show improved academic performance if they are diligent and receive support from home and from school?

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I would welcome a response from you on this very important matter of seeking to find ways to improve our students’ academic performance.

Thanks for your kind considerations.

Respectfully,

Christon Arthur

cc: Hinsdale Bernard, PhD
   Academic Advisor
December 3, 1999

Dear Ms. Wall:

Season Greetings and best wishes to you and your staff. May the year 2000 be a rewarding and successful year for and your school.

I am an Organization of American States (OAS) fellow at Andrews University, in the United States of America. I am currently at the research stage of my fellowship. My research interest is to examine the relationship between parental support, educator support, student diligence, other related variables, and students' academic outcomes. Would students show improved academic performance if they are diligent and receive support from home and from school?

Improving students' performance is a concern for all educators. The findings from this study may be used to engage educators in training and staff development programs, as well as provide intervention measures for parents and students, with a view to improving students' academic performance.

I would like to conduct the study in the months of January and February 2000. One class of students from each of Forms III, IV, and V would be requested to respond to a 55-item questionnaire. This process should take about 15 to 20 minutes. The Michaelmas term's examination scores for each student in the study would be requested from your school. The parents and teachers who teach the students would also be asked to respond to a 55-item questionnaire.

I am therefore requesting permission for use of your school in my research. Preliminary discussions with the Chief Education Officer have revealed that this is a study that would be welcomed by the Ministry of Education.

I would welcome a response from you on this very important matter of seeking to find ways to improve our students' academic performance.

Thanks for your kind considerations.

Respectfully,

Christon Arthur

cc: Hinsdale Bernard, PhD
    Academic Advisor
December 3, 1999

Dear Sis. Gabrielle:

Season Greetings and best wishes to you and your staff. May the year 2000 be a rewarding and successful year for you and your school.

I am an Organization of American States (OAS) fellow at Andrews University, in the United States of America. I am currently at the research stage of my fellowship. My research interest is to examine the relationship between parental support, educator support, student diligence, other related variables, and students' academic outcomes. Would students show improved academic performance if they are diligent and receive support from home and from school?

Improving students' performance is a concern for all educators. The findings from this study may be used to engage educators in training and staff development programs, as well as provide intervention measures for parents and students, with a view to improving students' academic performance.

I would like to conduct the study in the months of January and February 2000. One class of students from each of Forms III, IV, and V would be requested to respond to a 55-item questionnaire. This process should take about 15 to 20 minutes. The Michaelmas term's examination scores for each student in the study would be requested from your school. The parents and teachers who teach the students would also be asked to respond to a 55-item questionnaire.

I am therefore requesting permission for use of your school in my research. Preliminary discussions with the Chief Education Officer have revealed that this is a study that would be welcomed by the Ministry of Education.

I would welcome a response from you on this very important matter of seeking to find ways to improve our students' academic performance.

Thanks for your kind considerations.

Respectfully,

Christon Arthur

cc: Hinsdale Bernard, PhD
    Academic Advisor
Dear Madam:

Season Greetings and best wishes to you and your staff. May the year 2000 be a rewarding and successful year for and your school.

I am an Organization of American States (OAS) fellow at Andrews University, in the United States of America. I am currently at the research stage of my fellowship. My research interest is to examine the relationship between parental support, educator support, student diligence, other related variables, and students' academic outcomes. Would students show improved academic performance if they are diligent and receive support from home and from school?

Improving students’ performance is a concern for all educators. The findings from this study may be used to engage educators in training and staff development programs, as well as provide intervention measures for parents and students, with a view to improving students' academic performance.

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I would welcome a response from you on this very important matter of seeking to find ways to improve our students’ academic performance.

Thanks for your kind considerations.

Respectfully,

Christon Arthur

cc: Hinsdale Bernard, PhD
    Academic Advisor

Berrien Springs, Michigan 49104/(616)471-7771

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December 3, 1999

Dear Sir:

Season Greetings and best wishes to you and your staff. May the year 2000 be a rewarding and successful year for you and your school.

I am an Organization of American States (OAS) fellow at Andrews University, in the United States of America. I am currently at the research stage of my fellowship. My research interest is to examine the relationship between parental support, educator support, student diligence, other related variables, and students' academic outcomes. Would students show improved academic performance if they are diligent and receive support from home and from school?

Improving students' performance is a concern for all educators. The findings from this study may be used to engage educators in training and staff development programs, as well as provide intervention measures for parents and students, with a view to improving students' academic performance.

I would like to conduct the study in the months of January and February 2000. One class of students from each of Forms III, IV, and V would be requested to respond to a 55-item questionnaire. This process should take about 15 to 20 minutes. The Michaelmas term's examination scores for each student in the study would be requested from your school. The parents and teachers who teach the students would also be asked to respond to a 55-item questionnaire.

I am therefore requesting permission for use of your school in my research. Preliminary discussions with the Chief Education Officer have revealed that this is a study that would be welcomed by the Ministry of Education.

I would welcome a response from you on this very important matter of seeking to find ways to improve our students' academic performance.

Thanks for your kind considerations.

Respectfully,

Christon Arthur

cc: Hinsdale Bernard, PhD
Academic Advisor
February 23, 2000

Dear Form Teacher;

Thank you for taking the time to read this letter to the students before they respond to the questionnaire.

We are asking you to complete a questionnaire about your lifestyle and dedication to school work (diligence). We are trying to determine how diligence relates to academic performance among high school students in Grenada.

We are kindly asking you to carefully complete this questionnaire. It should take about 20 to 30 minutes of your time. Simply follow the instructions on the questionnaire itself. Please do not write your name on the questionnaire. To ensure your privacy, your individual answers would not be revealed to anyone. We will treat your responses with strict confidence. There is no risk involved in completing this questionnaire.

After completing the questionnaire, please return it to your teacher. Your teacher will then give them to the school's secretary. Please do not fold them.

Thank you very much for your participation.

Sincerely,

Christon Arthur
Dear Ms Arthur:

I am very grateful for what you are doing for me. Thank you so much for making my research possible. I will try to explain what I want you to do for me. That is all we need to do.

#1. On the sheet with the marks, give each student a different 3 digit ID number.

#2. I want you to put a 5 digit ID number on the students’ questionnaires. The first 2 numbers will be their school number. I will give you the school numbers, and you will give every student the same 3 digit number you have on the sheet with the marks. The school numbers are:

1. GBSS 09
2. Convent St. Georges 19
3. Boca Secondary 29
4. Wesley College 39
5. Happy Hill Secondary 49
7. St. Marks Secondary 69
8. McDonald College 79
9. Mt Rose SDA 89
10. SAASS 99
11. Grenville Sec. 08
12. St. David’s 18

So for example all the students from SAASS ID number will begin with 99 and then your 3 numbers, and so on for every school. Write the ID number in pencil on the top right hand corner of the questionnaire. Write it on the instruction side of the questionnaire. Decide with the schools how they want the student questionnaires to be handled. I want the class to do it together as a group. But the school can decide if they want you to lead out or the teacher. What I want to make sure happen is that the student gets the questionnaire with his number on it, and takes home the correct one to the parent. That is very important. There is a letter that the person who is leading out has to read to the students before they do the questionnaire.

#3. Put the same ID number that the student has on his/her questionnaire on the parent questionnaire that you will give the student to take to his/her parent. When the students have done the questionnaire, give them the Parent/ Guardian questionnaire to take home. Put the questionnaire and the letter that goes with it in an envelope which my sister will give, and write "Parent of______________" (Student Name) on it. The student will then take that questionnaire home to the parent/guardian.

#3. Give a "Teacher Questionnaire" and the letter that goes with it to every teacher who teaches form III, IV or V in the school. When you get the teachers’ questionnaire back, put them in a different pile and label it by schools.

#4. Give the Form Master of the forms in the study a sheet for them to indicate the amount of effort they think each student is putting in their work.

Now that is all that is left. I know it’s a lot of work. Thank you so much for your help.

Sincerely,

Mr. Arthur
February 23, 2000

Dear Teacher;

I am a Grenadian teacher studying in the United States of America. I am doing a research endorsed by the Ministry of Education, on the impact of student diligence on academic performance. I wish to also investigate the level of support teachers provide for student’s development of diligence.

We know that you want the best for your students. We are also sure that you will agree that the level of student success in life may be directly related to their diligence and the diligence support that they receive. Your participation in this study would help determine the impact that teacher diligence support has on student’s academic outcomes in our high schools. Finding ways to improve students’ academic performance is important to you and the Ministry of education. Responding to this questionnaire would help in this regard.

We are kindly asking you, as a teacher of either form III, IV or V, to carefully complete this questionnaire. It should take about 20 to 30 minutes of your time. Simply follow the instructions on the questionnaire itself. Please do not write your name on the questionnaire. Your privacy is ensured. There is no risk involved in completing this questionnaire.

After completing the questionnaire, please place it in the envelope provided and return to the secretary at your school. We will be very grateful if you will take a little of your time to respond to this very important matter.

Thank you for taking the time to respond to this questionnaire. Completing and returning this questionnaire would be regarded as voluntary consent on your part.

Thank you for your much valued support.

Sincerely,

Christon Arthur
February 23, 2000

Dear Parent/Guardian:

I am a Grenadian teacher studying in the United States of America. I am doing a research endorsed by the Ministry of Education, on the impact of student diligence on academic performance. I also wish to investigate the level of support parents provide for student development of diligence.

We know that you want the best for your child/children. We are also sure that you will agree that the level of student success in life may be directly related to their diligence and the diligence support they receive. Your participation in this study would help determine the impact that parents/guardians diligence support has on student’s academic outcomes in our high schools. Finding ways to improve your child’s academic performance is important to you and the Ministry of education. Responding to this questionnaire would help in this regard.

We are kindly asking any one parent in the home to carefully complete this questionnaire. It should take about 20 to 30 minutes of your time. Simply follow the instructions on the questionnaire itself. Please do not write your name on the questionnaire. To ensure your privacy, your individual answer would not be revealed to anyone. We will treat your responses with strict confidence.

After completing the questionnaire, please place it in the envelope provided and give it to your child to return to the school tomorrow. We will be very grateful if you will take a little of your time to respond to this very important matter.

Thank you for taking the time to respond to this questionnaire. Completing and returning this questionnaire would be regarded as voluntary consent on your part.

Thank you for your much valued support.

Sincerely,

Christon Arthur
Dear Parent/Guardian:

I am writing to seek consent for your son/daughter to participate in a very important study. A teacher who is studying in the United States of America is doing a study in harmony with the Ministry of Education on the impact that student diligence, parental diligence support, and teacher diligence support have on students' academic outcomes.

We know that you want the best for your children. The findings from this study may be used to engage teachers in training and staff development programs, as well as provide measures to you and your children with a view to improving their academic performance. There have been growing calls for students to put more effort in their schoolwork. This study would help to establish a link between students' diligence and their academic performance.

There are no hazards or risks associated with completing the questionnaire which should take about 15 to 20 minutes. The statements in the questionnaire center around your children's study habits and associated practices, to which they are to answer: (1) Never/Rarely (2) Occasionally (3) Sometimes (4) Usually (5) Almost Always.

Specific instructions will be given for students to not write their names on the questionnaire. Also, even if you give your consent, your son/daughter will have the option to withdraw the study.

Please complete and return the attached consent form to the school by _________. Thank you for your cooperation. If you have further questions please feel free to call the school.

Sincerely,

[Signature]

Christon Arthur

CONSENT FORM
Please fill in the blanks and cross what does not apply in each case.

I ______________________________ do/do not agree for my son/daughter __________________ to take part in this study. I understand that my son's/daughter's identity will be kept confidential.

Signature_________________________________________ Date________________________

Relationship to student________________________________________.
23\textsuperscript{rd} June, 1999

Mr. Christon Arthur  
500 Garland Avenue  
Apt. C 8  
Berrien Springs MI, 49103  
U.S.A.

Dear Mr. Arthur:

Your letter of June 1, 1999 refers.

In this connection, a research in the area you indicated should be of interest to the Ministry of Education. As you have indicated, the Ministry of Education is embarking on reform in all areas of the Education System.

The commitment of Principals, teachers, students and other stakeholders is integral to the success of any reform in education.

Best wishes.

Sincerely,

Michael Pierre  
\textbf{CHIEF EDUCATION OFFICER}
January 10, 2000

Mr. Christon Arthur
A/A 8c-500 Garland Avenue
Berrien Springs
Michigan 49103

Dear Mr. Arthur:

I acknowledge receipt of your letter dated December 21, 1999 requesting permission to use this school in order to conduct your research assignment. It is my pleasure to inform you that permission is granted and also convey best wishes to you in your pursuit to improve your qualification.

Sincerely,

James J. Alexander, B. Sc.
Principal.
Dear Brother Christon,

Congratulations on your new program and best wishes for a successful 2000 Year.

I will be very happy to have you use S.J.C.S.S. as part of your study leading up to your fellowship. I should in fact thank you for selecting our Alma Mater.

By God's grace, I hope to see you soon.

Yours very truly,

[Signature]

Brother George Wilson, PRINCIPAL.
March 7, 2000

Christon Arthur
500 Garland Ave.
Apt. C -8
Berrien Springs MI 49103

Dear Christon:

RE: APPLICATION FOR APPROVAL OF RESEARCH INVOLVING HUMAN SUBJECTS

HSRB Protocol #: 99-00 : 375
Application Type : Original
Dept: Teach/Learn/Admin - 0114
Review Category: Exempt
Action Taken: Approved
Protocol Title: The Relationship Among Student Diligence, Student Support Systems, and Other Related Factors on Student Academic Outcomes in Public High Schools in Grenada.

On behalf of the Human Subjects Review Board (HSRB) I want to advise you that your proposal has been reviewed and approved. You have been given clearance to proceed with your research plans.

All changes made to the study design and/or consent form after initiation of the project require prior approval from the HSRB before such changes are implemented. Feel free to contact our office if you have any questions.

The duration of the present approval is for one year. If your research is going to take more than one year, you must apply for an extension of your approval in order to be authorized to continue with this project.

Some proposal and research designs may be of such a nature that participation in the project may involve certain risks to human subjects. If your project is one of this nature and in the implementation of your project an incidence occurs which results in a research-related adverse reaction and/or physical injury, such an occurrence must be reported immediately in writing to the Human Subjects Review Board. Any project-related physical injury must also be reported immediately to the University physician, Dr. Loren Hamel, by calling (616) 473-2222.

We wish you success as you implement the research project as outlined in the approved protocol.

Sincerely,

Linda Thorman, Ed.D.
Human Subjects Review Board

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Appendix B

Instruments
INSTRUCTIONS:

Diligence is defined as steady, earnest, and energetic application and effort towards a goal. The purpose of this Diligence Inventory is to study student's diligence toward academic and related endeavors in high school. There are 55 statements related to diligence. Please read each statement and use a #2 pencil to fill in the response which is most characteristic of you using the following scale:

1 = NEVER/RARELY (0 to 15 percent of the time)
2 = OCCASIONALLY (16 to 35 percent of the time)
3 = SOMETIMES (36 to 65 percent of the time)
4 = USUALLY (66 to 85 percent of the time)
5 = ALMOST ALWAYS (86 to 100 percent of the time)

There are no right or wrong answers. Please be accurate with your estimates and follow your first impressions. Your responses will be treated with strict confidence. Before you begin to answer the inventory please provide the general information.
Diligence Inventory – High School Form

1. Sex: Female Male

2. Ethnic Background: African descent Indian descent Other

3. Form: 3 4 5

4. Age: 11 13 15 17 19

5. Family Monthly Income:
- $800 or less
- $801-$1,750
- $1,751-$2,600
- $2,601-$3,300
- $3,301-$4,300
- $4,301-$5,300
- $5,301-$6,300
- $6,301-$8,300
- $8,301 or more

6. Generally, I think I will succeed in life. Yes No

7. People generally think I will succeed in life. Yes No

Response Scale: 1 = Never/Rarely 2 = Occasionally 3 = Sometimes 4 = Usually 5 = Almost Always

1. I want to do the best I can in school.
2. I make good use of my spare time.
3. I listen to everything the teacher says in class.
4. I wish I didn't have to do chores at home.
5. I take care to complete all my assignments.
6. I feel I'm not getting enough rest.
7. I am able to do my assignments without being told.
8. I have problems with taking good class notes.
9. I stop periodically while reading assignments and review the information.
10. I take more advice from my friends than from my parents/guardians.
11. I read over assignments before turning them in.
12. I take time to admire the things of nature.
13. I do not find time to do extra school work.
14. I review my notes before the next class.
15. When I am studying a topic, I try to make all the ideas make sense.
16. I like to participate in extracurricular activities for my school.
17. I make sure that all my assignments are done correctly.
18. I think I don't get enough exercise.
19. I look forward to academic challenges.
20. I do homework before I spend time with friends.
21. When preparing for an exam, I create questions that I think might be included and study them.
22. I don't think it is necessary to inform my parents/guardians about my whereabouts.
23. I strive to do my assignments to the best of my ability.
24. I have irregular eating habits.
25. I set high standards for myself in school.
26. I like my assignments to look neat and tidy.
27. I try to see the relationship between what I'm studying and what I already know.
28. Some teachers think I give them a hard time.
29. I do not turn in an assignment until I'm sure that it is correct.
30. I forget to drink adequate water and other fluids.
31. I get upset over the amount of school work I have to do.
32. My friends see me as very organized for school.
33. I find myself not prepared for tests as I would like.
34. I seek feedback from my teachers concerning the progress I am making in school.
35. I start projects well, but I have problems with completing them.
36. Personally, I like to take a little time out to meditate or pray.
37. I don't like my parents/guardians to interfere in my school work.
38. I do my assignments as soon as I get them.
39. If I return from school later than normal I would offer an explanation to my parents/guardians.
40. I find it difficult to complete all my assignments.
41. I enjoy attending religious services (e.g., church).
42. When a subject is too difficult I settle for a passing grade.
43. I try to turn in my homework assignments on time.
44. I like to obey my teachers promptly.
45. I try to keep my weight under control.
46. Even when I'm tired, I try to complete my assignments.
47. I try to keep within my budget.
48. I find it difficult to sustain attention to my school work.
49. I try to do outstanding work in all my classes.
50. I obey my parents/guardians promptly.
51. I tend to fall asleep when I'm studying.
52. I help to support myself through school.
53. I have difficulty in settling down to my studies at home.
54. I like to have quiet moments to plan how to succeed in school.
55. I work very hard to get good grades.
1. Sax: Female Male
2. Marital Status: Single Divorced Married Widowed
3. Ethnic Background: African descent Indian decent Other
4. Age: 21 26-30 41-50 21-25 31-40 51+
5. Number of children under your care: 1 3 5 7 9 or more
6. Person who completed this form: Mother Guardian (Female) Father Guardian (Male)
7. Highest Educational Level Completed: Elementary school High School College Doctoral
8. Family Monthly Income: $500 or less $2,601-$3,300 $6,301-$8,300 $8,301 or more
9. How would you rate your child's school work? A = Excellent C = Average E = Failing B = Above average D = Below average

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<tbody>
<tr>
<td>1.</td>
<td>I do the best I can to help my children succeed in school.</td>
<td>2.</td>
<td>I encourage my children to make good use of their spare time.</td>
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<td>4.</td>
<td>I provide things for my children to do on a regular basis.</td>
<td>5.</td>
<td>I make sure that my children take the time to complete all homework assignments.</td>
<td>6.</td>
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<td>7.</td>
<td>I try to motivate my children to do all their class assignments.</td>
<td>8.</td>
<td>I talk to my children about the importance of taking good class notes.</td>
<td>9.</td>
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<td>10.</td>
<td>My children take more advice from me than from their friends.</td>
<td>11.</td>
<td>I encourage my children to read over their assignments before turning them in to their teachers.</td>
<td>12.</td>
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<td>13.</td>
<td>I encourage my children to do more than the teacher expects.</td>
<td>14.</td>
<td>I encourage my children to review their notes before the next class.</td>
<td>15.</td>
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<td>16.</td>
<td>I encourage my children to participate in extracurricular activities in school.</td>
<td>17.</td>
<td>I make sure that all my children's homework assignments are done correctly.</td>
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<td>19.</td>
<td>I advise my children to take on challenging academic projects.</td>
<td>20.</td>
<td>I insist that my children do all homework assignments before they spend time with family or friends.</td>
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<td>22.</td>
<td>It is important that my children inform me or an adult about their whereabouts outside of school.</td>
<td>23.</td>
<td>I encourage my children to do all assignments to the best of their ability.</td>
<td>24.</td>
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<td>25.</td>
<td>I set high standards for my children at home and school.</td>
<td>26.</td>
<td>I insist that my children's homework assignments look neat and tidy.</td>
<td>27.</td>
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<td>29.</td>
<td>I see to it that my children check their assignments carefully before turning them in.</td>
<td>30.</td>
<td>I remind my children to drink enough water and other fluids.</td>
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<td>31.</td>
<td>I am concerned when my children are given school work that takes too much of their time.</td>
<td>32.</td>
<td>I help my children to be prepared and organized for school.</td>
<td>33.</td>
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<td>34.</td>
<td>I encourage my children to seek feedback from their teachers concerning the progress that they are making in school.</td>
<td>35.</td>
<td>I see to it that my children complete projects that they start.</td>
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<td>36.</td>
<td>I encourage my children to take a little time out to meditate or pray.</td>
<td>37.</td>
<td>I keep abreast with the kind of school work my children are given to do.</td>
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<td>38.</td>
<td>I encourage my children to do all their homework assignments in a timely manner.</td>
<td>39.</td>
<td>If my children return from school later than normal, I require that they offer an explanation.</td>
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<td>40.</td>
<td>I give my children the necessary support so that they could complete their assignments without interruption.</td>
<td>41.</td>
<td>I encourage my children to attend religious services (e.g., church).</td>
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<td>42.</td>
<td>Even when a subject is very difficult I encourage my children to aim higher than just a passing grade.</td>
<td>43.</td>
<td>I insist that my children turn in all homework assignments on time.</td>
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<td>44.</td>
<td>I insist that my children do what teachers tell them to do promptly.</td>
<td>45.</td>
<td>I encourage my children to keep their weight under control.</td>
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<tr>
<td>46.</td>
<td>Even when my children are tired I encourage them to complete all their assignments.</td>
<td>47.</td>
<td>I teach my children how to budget their allowances.</td>
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<tr>
<td>48.</td>
<td>I stress to my children the importance of sticking to their school work.</td>
<td>49.</td>
<td>I encourage my children to do outstanding work in all their classes.</td>
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<td>50.</td>
<td>I encourage my children to promptly carry out instructions of teachers and adults.</td>
<td>51.</td>
<td>I show my children how to avoid falling asleep when they are studying.</td>
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<td>52.</td>
<td>I encourage my children to work for some of the things that they would like to have.</td>
<td>53.</td>
<td>I make sure that my home environment is comfortable for my children to study.</td>
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<td>54.</td>
<td>I encourage my children to have quiet moments to plan how to do well in school.</td>
<td>55.</td>
<td>I help my children work very hard to get good grades.</td>
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</table>
1. I have high expectations for all my students in school.
2. I encourage students to make constructive use of their leisure time.
3. I provide clear instructions for my students and expect that they are carried out.
4. I emphasize to my students the importance of doing their chores.
5. When necessary, I remind students of their duty to complete all their homework assignments.
6. I stress to my students the value of getting enough rest.
7. I provide appropriate motivation for students to complete all their assignments.
8. I show my students how to take effective class notes.
9. I encourage my students to read so that they understand the information.
10. My students seek more advice and general guidance from their friends than from me.
11. I insist that my students read over their assignments carefully before turning them in to me.
12. I seek opportunities to encourage my students to reflect on things of nature in their learning experiences.
13. I provide optional extra credit assignments for my students.
14. I advise students to review their notes or reading assignments before coming to my next class.
15. I present school material to students in a logical manner.
16. I don't encourage students to participate in extracurricular activities in school.
17. I encourage students to take time to do their assignments correctly.
18. I encourage my students to get regular exercise.
19. I provide challenging academic projects for my students.
20. I stress to students the importance of doing their academic assignments before socializing with family or friends.
21. I advise my students to do practice questions when preparing for their exams.
22. It is important that my students inform me or any supervisor about their whereabouts if they have to miss class.
23. I create the atmosphere in class for students to do their academic work to the best of their ability.
24. I encourage students to have regular eating habits.
25. I set high standards for my students.
26. I insist that my students' homework assignments look neat and tidy.
27. I encourage my students to make connections between what they are studying and what they already know.
28. My students give me a hard time in class.

29. I ensure that my students check their assignments carefully before turning them in.
30. I remind my students to drink enough water and other fluids regularly.
31. My students complain that I give them too much school work.
32. I help my students to organize themselves well for school.
33. I show students how to get prepared for their tests.
34. I give my students periodic feedback on the progress they are making in school.
35. I urge my students to persevere with projects that they start.
36. I encourage my students to set aside private time for self-reflection and meditation.
37. I encourage parents/guardians to assist their children with their school work.
38. I advise my students to do their homework assignments as soon as they get them.
39. If my students have to return from school later than normal, I see to it that they offer an explanation to their parents/guardians.
40. I provide my students with appropriate incentives so that they could complete their assignments energetically.
41. It doesn't matter to me whether my students attend religious services (e.g., church, synagogue).
42. Even when a subject is very difficult I encourage my students to aim higher than just a passing grade.
43. I insist that my students turn in their homework assignments on time.
44. I demand prompt obedience from my students.
45. I encourage my students to keep their weight under control.
46. Even when students are tired I encourage them to complete all their assignments.
47. I teach students to budget their resources wisely.
48. I stress to my students the importance of persistence to their school work.
49. I encourage my students to aim for their best in all their classes.
50. I insist that my students carry out my instructions and those of other teachers and superiors promptly.
51. I give my students tips on how to avoid falling asleep when they are studying.
52. I encourage my students to do odd jobs at home and in their neighborhood in order to supplement their allowances.
53. I make sure that the classroom environment is comfortable for my students to study.
54. I provide quiet moments for my students to think about their future goals concerning their education.
55. I encourage my students to maximize their potentials in order to get the best grades.
Revised Diligence Instrument that was used in Grenada

1. Sex:  O Male  O Female
2. Ethnic Background:  O African descent  O Indian descent  O Other
3. Form:  O 3  O 4  O 5
4. Age:  O 11  O 12  O 13  O 14  O 15  O 16  O 17  O 18  O 19  O 20
5. Family Income:  (Monthly)  O $800 or less  O $801-$1,750  O $1,751-$2,600  O $2,601-$3,300  O $3,301-$4,300

6. Generally, I think I will succeed in life.  O Yes  O No
7. People generally think I will succeed in life.  O Yes  O No

Response Scale: 1 = Never/Rarely  2 = Occasionally  3 = Sometimes  4 = Usually  5 = Almost Always

1. I work very hard to get good grades.
2. I strive to do all my assignments to the best of my ability.
3. I try to do outstanding work in all my classes.
4. I like my assignments to look neat and tidy.
5. I want to do the best I can in school.
6. I like to take up academic challenges.
7. I try to turn in my homework assignments on time.
8. I like to have quiet moments to plan how to succeed in school.
9. I make sure my assignments are done correctly.
10. I stop periodically while reading and review the information.
11. I try to see the relationships between what I’m studying and what I already know.
12. When I am studying a topic, I try to make all the ideas fit logically.
13. I proofread assignments before turning them in.
14. I take care to complete all my assignments.
15. When preparing for an exam, I create questions that I think might be included and study them.
16. If I return from school later than normal I would offer an explanation to my parents/guardians.
17. I do not turn in my assignments until I’m sure it is correct.
18. I set high standards for myself in school.
19. Even when I am tired I try to complete my assignments.
20. I am able to do my assignments without prompting.
21. I make constructive use of my leisure time.
22. I find it difficult to complete my assignments.
23. I have difficulty in settling down to my studies at home.
24. I find it difficult to sustain attention to my school work.
25. I find myself not prepared for tests as I would like.
26. I get upset over the amount of school work I have to do.
27. I like to obey my teachers promptly.
28. I obey my parents/guardians promptly.
29. Personally, I like to take a little time out to meditate and pray.
30. I do my homework before I spend time with friends.
31. My friends see me as very organized for school.
32. I listen to everything the teacher says in class.
33. I do my assignments as soon as I get them.
Appendix C

Student Performance Measures Sheet

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Appendix D

Subjective Diligence Rating Sheet
Subjective Rating of Student Diligence (overall effort and attitude toward school work)
Name of School___________________________________ Form______

Check the one which applies for each student

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*Educational Leadership, 45,* 50-52.


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VITA

Name: Christon George Arthur

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Andrews University, Berrien Springs, Michigan

Degrees Awarded:

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Master of Arts, Andrews University, 1996
Educational Specialist, Andrews University, 1998

Professional Experience:

1999 - Present: Director, Office of Scholarly Research, Andrews University.


