

**TEACHER SELF-EFFICACY:
A LINK TO STUDENT ACHIEVEMENT IN
ENGLISH LANGUAGE AND MATHEMATICS IN
BELIZEAN PRIMARY SCHOOLS**

By

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TABLE OF CONTENTS

Chapter	Page
I: INTRODUCTION	
Background.....	2
Country Context.....	4
Belize’s Education System.....	6
Statement of the Problem.....	9
Theoretical Framework.....	10
Purpose of Study.....	14
Research Hypotheses.....	15
Significance of the Study.....	15
Assumptions and Limitations.....	17
Definition of Terms.....	18
Summary.....	20
Organization of the Study.....	20
II: LITERATURE REVIEW	
Introduction.....	22
Student Achievement.....	22
Self- Efficacy.....	24
Sources of Efficacy.....	25
Teacher Efficacy.....	26
Perceived Self Efficacy.....	28
Student Achievement and Teacher Training in Belize.....	29
Teacher Self-Efficacy in the Classroom.....	32
Self Regulation.....	34
Student Motivation.....	34
Measuring Perceived Teacher Self Efficacy.....	36

Teacher Efficacy and Student Achievement.....	38
Summary.....	40

III: METHODOLOGY

Introduction.....	42
Purpose of Study.....	42
Research Questions.....	43
Research Hypotheses.....	43
Research Methodology and Design.....	44
Population and Sample.....	45
Instrumentation.....	44
Procedures.....	49
Data Analysis.....	50
Summary.....	51

IV: RESULTS

Teacher Efficacy Construct	54
Summary.....	66

V: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary of Results.....	70
Discussion of Findings	
Teacher Self Efficacy.....	71
Relationship to Prior Research.....	72
Further Research.....	73
Conclusion	74
Recommendations.....	75
Final Thoughts.....	78

REFERENCES..... 79

APPENDICES

Appendix A: Teachers’ Sense of Efficacy Scale..... 90
Appendix B: Letter to Principals..... 92
Appendix C: Letter to Teacher/Participant..... 94
Appendix D: Personal Information Questionnaire..... 96
Appendix E: Sample of Schools, Teachers and Students..... 98
Appendix E: Approval from IRB 101

LIST OF TABLES

Table	Page
2.1 Primary School Exam 2010 National and District Means	30
3.1 Number of Primary Schools, Teachers and Students by District	46
4.1 Teacher Self-Efficacy and Average Student PSE scores in Language and Mathematics	55
4.2 Self-Efficacy Category and PSE Mathematics Scores	57
4.3 ANOVA Calculations in Math	57
4.4 Math Post Hoc (Tukey HSD)	58
4.5 Self Efficacy Category and PSE Language Scores	60
4.6 ANOVA Calculations in Language	60
4.7 Language Post Hoc (Tukey HSD)	61
4.8 Self Efficacy Category and Total PSE	63
4.9 ANOVA Calculations in Total PSE Score	63
4.10 Total PSE Post Hoc (Tukey HSD)	64

LIST OF FIGURES

Figure	Page
2.1 The Rise Model	23
2.2 PSE 2010 National and District Means	28
4.1 Math Means Plot	59
4.2 Language Means Plot	62
4.3 Total PSE Means Plot	65

CHAPTER I

INTRODUCTION

Educators have implemented educational reforms over the years that should assist greatly in accomplishing the ultimate success of students, placing emphasis on great leadership in the classrooms (Fullan, 2001; Guskey, 2005). The Industrial Revolution emphasized the need for more specialized instruction and influenced much of the educational practices of this modern era (Harris, 2005). Many researchers have highlighted the need for quality in the classroom as a result of growing public unease with the education system in the 1960s when American schools were found lacking (Wright, 2005; Harris, 2005; Guskey, 2005). As teachers realize and accept that they are the leaders in their classrooms, they must have the moral purpose to want to make a difference in the lives of students and foster knowledge building by getting students excited and involved in the learning process (Fullan, 2005). Teachers must embrace the dynamics of education as Harris (2005) explains “During the last three decades, there has been a call for teachers to be social as well as curriculum specialists and for principals to ‘return to their roots’ and be more involved with the instructional program of the school” (p. 2). Such total involvement and immersion, especially by teachers, builds effectiveness and promotes skills necessary for student achievement. Most administrators believe it is

important to hire a teacher who knows the subject matter, and other aspects of the job can be learned once employed. These teachers' effectiveness and primary roles are then judged in part, by the academic achievement of their students on standardized exams.

Background

A society without effective teachers does not bear thinking about. Teachers educate and mold the minds of the younger generation and prepare them to be contributing citizens to their specific communities and the world at large. Nelson (2007) explained, "What teachers bring into the classroom dictates the quality of the educational experiences of their students. In order to understand how to create optimal learning environments that promote interest in academics, it is essential that we study teacher variables linked to student interest"(p. 10). Agreeably, teachers perform a myriad of tasks including, but not limited to, managing the classrooms, preparing and delivering lessons, assessing the work of students, and enhancing student motivation for achievement. Perhaps one of the best documented attributes of effective teachers is a strong sense of efficacy. Researchers have repeatedly related a strong sense of teacher efficacy to a variety of positive teaching behaviors and student outcomes (Tschannen-Moran, Woolfolk-Hoy, & Hoy, 1998; Bandura, 1997; Wright, Horn, & Sanders, 1997). Teachers' sense of efficacy is the belief in their capability to make a difference in student learning, to be able to get through even to students who are difficult or unmotivated (Woolfolk-Hoy, 1990). Teacher efficacy has been linked to positive student outcomes (Chong, Klassen, Huan, Wong, & Kates, 2010; Knoblauch & Woolfolk-Hoy, 2008) and to student

motivation (Poulou, 2007; Yeo, Ang, Chong, Huan, & Quek, 2008). Teachers with a high sense of self-efficacy find innovative ways to ensure that students learn (Ginsberg & Wlodkowski, 2000; Kourilsky & Quaranta, 1987; Pollock, 2007; Schunk & Zimmerman, 1994). Efficacious teachers are not satisfied with underachievers and work diligently with students to promote student self-efficacy.

There is certainly no firm framework with which to characterize underachievement although it characterized the life stories of millions of people in the educational and broader society. It is difficult to define who underachievers and their characteristics are. Do present poor results mean lifelong underachievement, and is this phenomenon reversible during the lifetime of the individual? Although educators and researchers might well disagree with what characterizes an underachiever, most would probably agree that underachievement is the difference between what is expected or predicted and the actual level or outcomes of academic performance. Schunk & Zimmerman (1994) stated “An underachiever, therefore, is a student who performs more poorly in school than would be expected based on his or her ability” (p. 8).

Underachievers are key to understanding many of the educational problems plaguing our society. All over the world teachers are faced with the same dilemma of finding a way to motivate students and move them from academic underachievement. It is certainly not an easy task, and teachers and students must believe that success is entirely possible for them to even begin working towards such achievements. Designing learning environments in different ways to ensure meaning, inclusion and enhanced self-

concept of students in order for students to be motivated and fully participate in their academic journey was discussed by (Ginsberg & Wlodkowski, 2000; Kourilsky & Quaranta, 1987; Schunk & Zimmerman, 1994; Theobald, 2006). These researchers have outlined several learning principles and models with the single purpose in mind, student achievement. These actions should be typical in every classroom worldwide. Like countries elsewhere in the world, Belize, the country in which this study is set, places great hope in the educational system preparing the students to succeed academically and socially, contributing to the overall growth and success of the country.

Country Context

Belize, a country rich in natural resources and nestled in Central America, boasts lush tropical forests, white sandy beaches, ancient Mayan ruins, and refreshing waterfalls. Its most valuable resources by far are the people; all 333,000, [Statistical Institute of Belize (SIB)] are culturally diverse and 13.4% are children between the ages of 10-14, the age range for most standard six students.

Students' education in the country can start at age three when parents may choose to enrol them in pre-school for a period of two years. Presently, pre-school is not mandatory due to access. At age five, students must be enrolled in primary school, starting at Infant one, moving on to Infant two, Standard one (Early Childhood), Standard two, Standard three (Middle Division), Standard four, Standard five and Standard six (Upper Division). Infant one in the Belizean school system is equivalent to Grade one in

the American school; Standard six, equivalent to Grade eight. As the study was based on the education system of Belize, the term Standard six was used throughout the paper.

The Minister of Education and Youth, Honourable Patrick Faber, stated at a Press Conference in Belize City:

One hundred and eighty-nine million dollars was spent on education and we are not getting returns for money. Three out of every five primary school children don't enter high school and from the number of students who enter high school, two out of five complete their studies. Education is a basic human right and is critical to our development as a country (personal communication, October 13, 2010).

At the time of this statement, the Ministry of Education and Youth (MoEY) was implementing an educational reform in the secondary school system known as the Secondary Education Finance Reform which had these key points:

- Education Finance Reform is a fair, efficient and proven effective way to increase enrolment in Belize's high schools, which is at the lowest in the Central America and the Caribbean.
- Right now only **two of five** high school age children are enrolled in high school. The reform seeks to change that.
- Under the reform, your tax dollars will follow the student and his or her needs both socially and academically.

- Over time, the high cost of secondary school education to parents through user fees will come down, making a quality general secondary education affordable for *all* Belizean families.

The reform begins in late November with payments to schools based on a new formula that is adapted to each district while at the same time maintaining equitable funding for education, in rural and urban settings, for rich and poor (personal communication, October 13, 2010).

A strong link exists between the new secondary school financing reform and the primary education system. The MoEY is embarking on a mission to strengthen the country's education system at every level, through increased teacher training and creating access to students. Every child aged five to fourteen has the legal right to be enrolled in a primary school, and anyone who tampers with that right is in violation of the law (Education and Training Act, 2010).

Belize's Education System

Bennett (2008) explained that formal education started in the Belize settlement in 1816 with the establishment of elementary schools to educate the slave population and provide religious reform. Wages were not sufficient to attract the best English teachers so more locals were hired, starting out as pupil teachers with limited preparation for such tasks. Belize's educational system, as outlined by Bennett (2008), is as follows:

- The School Act of 1850 appointed a Board of Education comprising of five people who, among other things, was given the power to discipline, hire and fire teachers (p. 21-22).
- The Schools Amendment Act of 1855 looked at the school curriculum, hiring trained teachers from Britain and designing contracts for educators (p. 23).
- The Executive Council set out regulations in 1871 for candidates to sit the first and second class teachers' certificates examinations (p. 26).
- At the end of 1915 there were 58 government-aided primary schools in operation in Belize. These were staffed by 77 teachers, 37 of whom held the First Class Teacher's Certificate, 26 were certified as Second Class teachers and there were 12 pupil teachers. Two teachers were provisionally certified (p. 33).
- In 1932 it was noted that the teacher training was key to effectiveness as there was a generally low standard of attainment in the elementary schools and there was an absence of attractive classroom methods (p. 60).
- Two teacher training colleges were inaugurated in 1954, one Catholic and one Government, with the expectation to raise the status of the teachers in regards to classroom techniques (p. 92).
- The two training colleges were amalgamated in 1965 to form the Belize Teachers College to train first class, second class teachers and secondary school graduates, also offering the opportunity to do practice teaching but the institution was

absorbed by the University of Belize within the Faculty of Education in 2000 (p. 115-156).

- Student achievement was measured by the Primary School Leaving Certificate Examination (1940s), the Belize National Selection Examination (1983-2000) and the Primary School Examination (2000 to present) (p. 154).
- At the end of the century, these standardized tests showed that students performed poorly on the national level and rural students were more at a disadvantage than urban students, despite all the efforts at curriculum development and application (p. 154).

Studies have indicated that there are inequalities that result in the poor performance of minority students. This is reinforced by Viadero (2005), "Previous studies have shown that states with high school exit exams tend to be located in the South and to have high concentrations of poor and minority students - two groups that often score low on standardized tests" (p. 10). These are the students who are in need of quality education for a better way of life. The MoEY of Belize understands this philosophy and has undertaken steps to improve the quality of life of all its citizens through education. Primary education teacher preparation programs have been instituted in all the tertiary institutions countrywide in an effort to reduce the high rate of untrained teachers in the classrooms.

Statement of the Problem

The Government of Belize recognizes the need for quality education. In 2009 21% of its national budget was allocated to the MoEY (Government of Belize). Of this total, 52.4% was distributed to the 294 primary schools in the country (SIB). After a minimum of eight years in primary school, students sit a standardized exam that some secondary schools use as an entrance requirement. The Primary School Exam (PSE), is administered by the MoEY, and is used to measure a student's competency relative to the primary school curriculum (Ministry of Education, 2000). This exam forces schools to assess their strengths and weaknesses critically and holds them accountable for students' performance. One major factor that influences student achievement on this standardized test is teacher self-efficacy.

A major problem is that Belizean primary school students are not sufficiently motivated and perform poorly on the standardized test, the PSE. This exam tests students' achievement in specific content areas in the four subjects of English Language, Mathematics, Science and Social Studies over two days that are set approximately two months apart. A cumulative score of 50-59 (D), is considered adequate while a score of 60-69 (C) is considered satisfactory. According to the PSE Report (2009), this demonstrates that students have partially mastered the minimum expected content in standard six and are ready to move on to the next level of their education.

The Education Rules of 2000 state that all Belizean children have a right to an education. That right, though, is tampered with when the quality of education

delivered in the classroom is, at best, inadequate. What is of great concern to all stakeholders in the education system is that there can be no significant improvement when only 34.5% of the 2,948 primary school teachers in the country are trained (Ministry of Education). Teachers in the country of Belize are considered trained if they have a Bachelor's or Associates Degree in Education, a First Class or a Second Class certificate. It is the ambition of most students to be motivated by their teachers and be prompted to act in such a manner as to have great results for their efforts. Jackson (2010) stated that "As leaders we must understand various motivational dimensions in order to tap into the greatness of our people and help them become their best selves." MoEY, as the educational leaders in the country, certainly understands that the teacher is a key element in the student believing he can achieve. Research has shown that trained teachers engage in reflection, try innovations inside the classroom, and are more likely to persevere under difficult circumstances; the key to such achievement is a sound education plan for teachers to undertake (Howe, 2006; Terrell, 2002).

Theoretical Framework

Self-efficacy theory acknowledges the wide range of human capabilities and functions. Bandura (1997) explained that "Efficacy beliefs are concerned not only with the exercise of control over action but also with the self-regulation of thought processes, motivation, and affective and physiological states" (p. 36). People's beliefs about themselves are important elements in exercising control over thoughts, feelings and

actions. Self-efficacy has been defined by Bandura (1997) as a person's belief in his or her ability to organize and execute courses of action to manage certain situations. He goes on to explain that this construct allows the person to decide how to handle situations, how much energy the person will expend and for how long, and their vulnerability to the success or failure of the task. Bandura (2001) explained "Efficacy beliefs are the foundation of human agency. Unless people believe they can produce desired results and forestall detrimental ones by their actions, they have little incentive to act or to persevere in the face of difficulties" (p. 9). Even novice teachers, as explained by Onafowara (2005), who have high self-efficacy beliefs, are more confident in their dealings with students' academics and discipline. Efficacy then, pushes humans to accomplish in varied ways and influences the efforts and perseverance put into different activities. Pajares (1996) confirmed:

People with low self-efficacy may believe that things are tougher than they really are, a belief that fosters stress, depression, and a narrow vision of how best to solve a problem. High self-efficacy, on the other hand, helps create feelings of serenity in approaching difficult tasks and activities. As a result of these influences, self-efficacy beliefs are strong determinants and predictors of the level of accomplishment that individuals finally attain (p. 3).

Self-efficacy can be confused with self-esteem but according to Steffen, McKibben, Zeiss, Thompson, and Bandura (2002), "Self-efficacy is not a global entity,

but rather it varies across activity domains, tasks, demands, and situational characteristics” (p. 18). Bandura (1997) further clarifies:

The concepts of self-esteem and self-efficacy are often used interchangeably as though they represented the same phenomenon. In fact, they refer to entirely different things. Perceived self-efficacy is concerned with judgments of personal capability, whereas self-esteem is concerned with judgments of self-worth. There is no fixed relationship between beliefs about one’s capabilities and whether one likes or dislikes oneself (p. 11).

If students believe that they can achieve, and are motivated to do so by their instructors, then success is the end result. Eggen and Kauchauk (2001) explain that there is a relationship between behavior, the environment and personal factors in the learner, “Learners are motivated to work on a task to the extent that they (a) expect to succeed and (b) value achievement on the task. If both are present, learners may develop a sense of self-efficacy.” Maslow’s hierarchy of needs shows how vital it is for the lower needs of humans to be met before they can reach self-actualization. For students to climb that ladder and reach the summit represents overcoming numerous obstacles. Such students are driven to give their best. If they are motivated, they achieve academic success in primary school.

Research shows that some students who are motivated, however, do not achieve academic success. Cowell (2005) found in her study that “Ineffective teachers were found to be ineffective with all students, regardless of the students’ prior achievement level;

and, the residual effects of having such teachers adversely affected students' subsequent achievement" (p. 60). Yeh (2010) explained that students who are labelled by educators as non-achievers, need individualized instruction from their teachers, they need to be challenged at their own levels and they need to get objective assessment that will measure their progress. In Belize, the Examination Unit (2009) indicates that the PSE national mean for English was 58.0, for Math, 46.2, and overall score, 56.3%. Such scores indicate serious deficiencies in the effectiveness of the education in the country. The main task here is to motivate those students who do not feel that they can achieve academic success.

One explanation why motivated students do not achieve academic success for this is teacher self efficacy. Shidler (2009) clarified that

Teachers with a high level of instructional efficacy believe more whole-heartedly in children's ability to be successful and devote more time and effort to teaching. They teach a subject more clearly and with a more interesting delivery, and produce better outcomes (p. 455).

If a teacher believes in himself, he is more able to self reflect and change what he needs to change when the situation is dismal. Teacher self efficacy beliefs and their effect on student motivation and achievement is of major concern to the MoEY in view of the results on the standardized test. Several studies have found a significant correlation between improved teacher performance and student achievement in terms of hours coaching for instructional efficiency (Shidler, 2009). Shumacher (2009) also found in her

study that collective teacher efficacy was significantly correlated with reading achievement regardless of socio-economic status.

Purpose of the Study

The purpose of this non-experimental research study was to determine if a statistically significant difference existed in student achievement on the PSE exam in Belizean primary schools for students who have teachers with varying levels of self-efficacy (high, medium and low). Student achievement was measured using the standardized exam scores on the English Language, and Mathematics segments. Total score which included English Language, Mathematics, Science and Social Studies, was also used. Most secondary schools in Belize demand that students pass English Language and Mathematics to be promoted, and to eventually graduate, but the students are invariably accepted based on their total PSE score.

Research Questions

These research questions guided the study:

1. Is there a difference in PSE Math exam scores of standard six students

taught by teachers with high versus those with low teacher perceived self-efficacy?

2. Is there a difference in PSE English exam scores of standard six students taught by teachers with high versus those with low teacher perceived self-efficacy?
3. Is there a difference in Total PSE exam scores of standard six students taught by teachers with high versus those with low teacher perceived self-efficacy?

Research Hypotheses

- H0₁ There is no difference in PSE Math scores of standard six students taught by teachers with high perceived self-efficacy versus those taught by teachers with low perceived teacher self-efficacy.
- H0₂ There is no difference in PSE English scores of standard six students taught by teachers with high perceived self-efficacy versus those taught by teachers with low perceived teacher self-efficacy.
- H0₃ There is no difference in Total PSE scores of standard six students taught by teachers with high perceived self-efficacy versus those taught by teachers with low perceived teacher self-efficacy.

Significance of the Study

Students must be provided with a nurturing learning environment that enhances their self-concept and motivates them to achieve. Tucker et al. (2005) stated

In other words, teachers who believe that student learning can be influenced by effective teaching despite home and peer influence and who have confidence in their ability to teach persist longer in their teaching efforts, provide greater academic focus in the classroom, give different types of feedback, and ultimately improve student performance. (p. 30)

This study hopes to contribute to improving education particularly in Belize. The MoEY seeks answers to the problem of underachievement in the country. Any light shed on teacher self-efficacy to assist with providing information for developing efficacy should help with improving current instructional methods. A determination of differences in the achievement of students with teachers of varying self-efficacy levels (high, medium and low) would suggest implications to prompt future research on how teacher self-efficacy, and other related variables, impacts student achievements not only at the primary school level, but at secondary and tertiary levels as well. This study is important because it adds to the almost non-existent body of literature currently existing in Belize. There is the speculation that teachers might be the cause of the dismal results of the past ten years. Teachers generally believe that students who have no parental support cannot succeed in school despite their efforts and parents believe that it is the job of the teacher to educate the child. There is a blame game that must cease.

Eggen and Kauchauk (2001) said it best “High-efficacy teachers believe that they can increase both motivation and achievement. They accept students and their ideas, use praise rather than criticism, persevere with low achievers, and use their time effectively” (p. 436). Teachers must understand their key roles and take steps to create and sustain learning focused classrooms. They must embrace self-efficacy and undertake the mission of developing the construct. Bandura (2001) pointed out “Personal efficacy is valued not because of reverence for individualism but because a strong sense of efficacy is vital for successful functioning regardless of whether it is achieved individually or by group members working together” (p. 16). Then and only then perhaps, can the statistics reflected by the performance of our most valuable resources, our children, change for the better.

Assumptions and Limitations

Five major assumptions guided this study with the first one being that teachers’ sense of efficacy beliefs is a construct that can be measured adequately by a survey instrument. Secondly, all the teacher participants had reached a level of professionalism where they can be honest when answering both the personal questionnaire and the Teachers’ Sense of Efficacy scale. The third assumption was that the time of year the survey was completed did not affect the results. The PSE exam results are released in June and permission to conduct the study was not granted until January. This meant that the teachers sampled had moved on to another Standard 6 class. A fourth assumption was

that schools and teachers who refused to be involved in the study did not affect the results. Lastly, the researcher assumed that the PSE was an accurate measure of standard six students' academic achievements. Only the relationship between perceived teacher self-efficacy and student achievement was examined although other variables could have been identified such as gender, socio-economic status, location and school type.

Definition of Terms

For the purpose of this study, the following definitions are applicable:

Self-Efficacy:

Beliefs in one's capabilities to organize and execute a course of action required to produce a given attainment (Bandura, 1997).

Teacher self-efficacy beliefs

In the context of schools, teacher self-efficacy beliefs can be defined as a teacher's individual beliefs in his/her capabilities to perform specific teaching tasks at a specified level of quality in a specified situation. (Dellinger, Bobbett, Olivier, & Ellett, 2008)

Teacher's sense of efficacy

The teacher's judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated. (T s c h a n n e n - M o r a n , & W o o l f o l k - H o y , 2 0 0 1 , p . 7 8 3) .

Student Achievement

Measured through the PSE that was designed and administered by the Government of Belize to all Belizean students in standard six. Students must achieve a score of 50 out of 100 to earn a “Satisfactory” grade.

Teacher Efficacy

The extent to which teachers believe their individual efforts will have a positive effect on student achievement (Ross, 1994).

Primary Education

Eight years of basic education that starts at Infant I and ends at Standard 6.

First Class Certificate

A certificate which has the equivalency of a high school diploma.

Second Class Certificate

A certificate which is equivalent to three of the four years of high school.

Primary School Examination (PSE)

An examination, previously referred to as the Belize National Selection Examination (BNSE), and taken at the end of Standard 6.

Motivation

Motivation can be conceptualized as students’ energy and drive to learn, work effectively, and achieve their potential at school, and the behaviours that follow from this energy and drive (Martin, 2004).

Organization of the Study

This study of self-efficacy is reported in a total of five chapters. Chapter I contains the Introduction, the formal Statement of the Problem, the Purpose of the Study, and the Research Questions around which this study was designed. It also includes the Significance of the Study, the Assumptions and the definition of terms that are important to understand the study.

Chapter II is a review of the literature on student achievement including under achievement and its connection to minorities. Self-efficacy is defined, looking at different types, motivation and achievement and how efficacy is measured. Models of achievement are discussed, and finally, this chapter concludes with a review of the literature that connects teacher self efficacy with student achievement.

Chapter III presents the methodology of the study beginning with a review of the research question and hypotheses. The research design is presented next followed by the description of the sample selection of the study and procedures for data collection, instrumentation, demographics and statistical method.

Chapter IV explains the results of the study. The questions and hypotheses are discussed in detail as well as the post hoc calculations. Tables and figures assist with the explanation of the data.

Chapter V discusses the results and the conclusions drawn from the questions and hypotheses of the study based on the theoretical framework. Implications for future research are shared and recommendations are offered based on the findings.

Summary

Chapter I identifies the topic of this study as determining the relationship between teacher perceived self-efficacy and student motivation and student achievement. This chapter highlights the increasing attention given to self-efficacy beliefs and their effect on instructional practices and student achievement as they relate to national reform movements. The concept of perceived teacher self-efficacy, as it relates to student motivation and achievement, creates the setting for the study and for the remainder of this paper. Chapter I formally states the problem and purpose of the study and furnishes a context that explains the significance of this topic in the field of education. The research questions are stated as well as the assumptions supporting the research. Also included are the limitations and a list of the definitions of terms. Next is a description of the organization of the study that serves to end this chapter.

CHAPTER II

LITERATURE REVIEW

Introduction

In this chapter, research drawn from self-efficacy, teacher efficacy, student motivation and student achievement is reviewed. Information is organized around the following themes: student achievement, self-efficacy (sources of, teacher efficacy and perceived self-efficacy), student achievement in Belize, teacher efficacy in the classroom, self regulation, student motivation and measuring perceived teacher self-efficacy. The chapter concludes with a summary of this section that leads into Chapter 3, the methodology section of assessing teachers' perceived self-efficacy for influencing student achievement on the Language, Mathematics, and Total score of the Primary School Examination (PSE).

Student Achievement

Educators continue to search for ways to improve student achievement. One way of doing so is by enhancing the abilities of those who provide direct instruction to students. The relationship between teacher and student consists of numerous dynamics and interactions. Teachers must be prepared to address the diverse needs of their

students. Studies have shown that teachers' expectations of their students can significantly affect their academic achievement (Cowell, 2005; Montalvo, Mansfield, & Miller, 2007; Rubie-Davies, Hattie, & Hamilton, 2006).

The RISE model introduced by Hootstein (1998) explains the necessity of providing relevant information in creative ways and underlining the importance of making the students key players in their own learning. It emphasizes the constructivist view that students should be active participants in the learning process and teachers are facilitators in this process ensuring that students contribute significantly in the instructional process. This model can be used to design ways to motivate students to increase student achievement.

The Rise Model

Components	Definitions	Major Teacher Questions
Relevance	Meeting students' personal needs; emphasizing the value of learning	How is instruction valuable?
Interest	Capturing and maintaining students' attention	How is instruction stimulating?
Satisfaction	Providing reinforcement for students' successes	How can I help students feel good about their accomplishments?
Expectations	Helping students believe that they will succeed	How can I help students expect success?

Figure 2.1

Another key factor in student achievement is teacher preparedness and clarity in the classroom (Rodger, Murray, & Cummings, 2007). Students are more likely to succeed

if teachers enter the classroom armed with not only the pedagogical knowledge, but the skill to deliver the lesson and meet the needs of the varying abilities in the classroom.

Self-efficacy

Many theories have been proposed over the years about humans controlling their actions. One such theory is the social cognitive theory that assumes that people are capable of human agency, or intentional pursuit of courses of action, and that such agency operates in a process called triadic reciprocal causation. Reciprocal causation is a multi-directional model suggesting that our agency results in future behavior as a function of three interrelated forces: environmental influences, our behavior, and internal personal factors such as cognitive, affective, and biological processes (Henson, 2001). Bandura pointed out “People’s level of motivation, affective states, and actions are based more on what they believe than on what is objectively true” (p. 2). He goes on to say “Unless people believe they can produce desired effects by their actions, they have little incentive to act. Efficacy beliefs, therefore, is a major basis of action” (p. 3). Teachers with high self efficacy are more committed to their students and the profession (Chong, et al., 2010; Erdem & Demirel, 2007; Schumacher, 2009). One key to the academic success of students is teachers with a high sense of efficacy beliefs, teachers who believe in their abilities to provide the students with the necessary tools to achieve success.

Teachers with a high sense of self-efficacy are especially crucial for underachievers, students who are expected to succeed but do not. A study by Matthews and Mcbee (2007) which looked at 440 highly gifted grade 8–10 students found no predictive value in students’ academic and behavioral performance during a summer

program. Educational interventions are necessary to reverse underachievement effectively in students who can be motivated to perform at or above standards.

Sources of Self Efficacy

Teachers' beliefs about their personal efficacy are a major part of their self-knowledge. Self-efficacy beliefs are constructed from four key sources of information: enactive mastery experiences, vicarious experiences, verbal persuasion and physiological and affective states (Bandura, 1997).

Enactive mastery experiences is the most influential source of efficacy information as it provides the most authentic evidence of whether people have what it takes to succeed. People persevere in adversity when convinced that they have what it takes to succeed and recognize the degree of success achieved on specific tasks (Bandura, 1997; Block, Taliaferro, Harris, & Krause, 2010; De Montigny & Lacharité, 2005; Margolis & McCabe, 2006).

Vicarious experiences is when efficacy beliefs are measured by acceptable standards of performance. People with high personal self-efficacy persuade themselves that if others can do it, so can they. They believe that they have the capability of accomplishing tasks and engage in reflection to change behavior. Modelling is an effective instructional method in this regard (Bandura, 1997; Block, et al., 2010; De Montigny & Lacharité, 2005; Siegle & McCoach, 2007; Wang, Ertmer, & Newby, 2004).

Verbal persuasion allows for the development of necessary confidence. A sense of efficacy is easier to sustain if significant people express faith in one's capabilities, boosting self change activities and encouraging increased efforts to succeed. If credible people in the lives of students (their teachers) repeatedly assign tasks at which students

fail, then verbal messages become less persuasive and it is difficult for students to believe they can succeed (Bandura, 1997; De Montigny & Lacharité, 2005; Siegle & McCoach, 2007).

Physiological and affective states is a more dynamic source. When people believe they can fail, they elevate their level of stress so much that what they feared can happen, actually does. People might read indicators such as fatigue, aches and pains, as physical inefficacy. Heightened beliefs in being able to cope and to succeed correspond with improved performance in individuals (Bandura, 1997; Siegle & McCoach, 2007).

Teacher efficacy

Dellinger, Bobbett, Olivier & Ellett (2008) define teacher efficacy, “In the context of schools, teacher self-efficacy beliefs can be defined as a teacher’s individual beliefs in his/her capabilities to perform specific teaching tasks at a specified level of quality in a specified situation” (p. 752). The authors of the 2008 study inform us that teacher efficacy, shortened from the term teacher sense of efficacy, was first defined and measured by RAND Corporation researchers. Teachers’ beliefs in their ability to impact the performance of students taking into consideration teachers’ inputs and parental involvement was assessed (Henson, 2001; Yeo, et al., 2008). Viaderi (2005) explains that involving parents in their children’s academics, especially minorities and blacks, assist greatly in students reaching their potential.

Teacher efficacy keys in on the teacher successfully affecting student performance, the outcome of successful teaching practices and student behaviors, especially those influenced by the teacher. Though sometimes confused, there is a

difference between efficacy and outcome expectations. Dellinger et. al (2008) showed that efficacy expectations looks at the behaviors that must be successfully executed to produce outcomes and the person's belief that his/her actions can produce those outcomes. Outcome expectations, on the other hand, are based on specific behaviors undertaken in order to result in specific outcomes. Pajares (1996) stated that efficacy beliefs, in part, determine outcome expectations. If students are confident in their academic abilities, they expect to receive high grades on tests and exams. The opposite situation is also true. Students who have no confidence in their academic abilities actually expect to receive low marks on tests and exams. Even though Bandura (1997) says that both efficacy beliefs and outcome expectations assist in predicting behaviors, self-efficacy expectations are better predictors of behavior as "effacious individuals who cannot gain valued outcomes through personal accomplishments will not necessarily cease trying" (p. 21).

Schumacher (2009) studied 56 elementary schools in eastern Iowa, and collective teacher efficacy was measured by Goddard's 12 item Collective Teacher Efficacy Scale. Student achievement was measured by the mean percentage of 3rd, 4th, and 5th grade students who were deemed to be proficient on the Iowa Test of Basic Skills Reading Comprehension and Math total subtests. Socioeconomic status was determined by the percentage of students who qualified for free or reduced price lunch. Collective Teacher Efficacy was correlated significantly to student achievement in reading ($r = .436, p < .01$) and Math ($r = .547, p < .01$). This study serves to strengthen Bandura's theory that collective teachers' efficacy contributes significantly to student achievement and confirms the results of other studies.

In her study, Blazevski (2006) noted, “Research suggests that teacher characteristics such as gender, years of teaching experience, and educational background, as well as grade level to which teachers are assigned, may predict between-teacher differences in teachers’ sense of efficacy” (p. 22). Teachers’ sense of efficacy has been found to be lower for teachers at higher grade levels. Researchers have found this association when comparing efficacy of teachers in the different school levels (elementary, middle, and high school) (Marachi, Gheen & Midgley, 2000; Tshannen-Moran & Woolfolk-Hoy, 2002). These studies did not indicate that type of efficacy (general or domain specific) had any dependency on teacher efficacy and grade level as there was substantial variability in efficacy measures in these studies.

Perceived self-efficacy

“Perceived self-efficacy refers to beliefs in one’s capabilities to organize and execute the courses of action required to manage prospective situations”(p. 2) (Bandura, 1995). He explained that a sense of self-efficacy can not be adopted by imitating others’ habits and behaviours, rather, one must consciously put in place measures to regulate actions. People persevere in their quest for success and are resilient in finding solutions to obstacles. Bandura (2007) stated that perceived self-efficacy is not about the capabilities one has but about the belief that a person has about what he can do with available resources. People with high self efficacy beliefs are confident in their abilities to overcome any obstacle that might be in the way of completing tasks successfully. Teachers with high efficacy beliefs expect to succeed in their teaching tasks and find

ways to handle students well. They discover ways to influence and motivate those in the classroom in several ways as explained by OECD (2009):

Close monitoring, adequate pacing and classroom management as well as clarity of presentation, well structured lessons and informative and encouraging feedback – known as key aspects of “direct instruction” – have generally been shown to have a positive impact on student achievement (p. 88).

Student achievement and teacher training in Belize

PSE results for 2010 (Table 2.2) show the national mean for English Language being 63 and for Mathematics 52. Two districts, Stann Creek and Toledo, perform below the national means on both of these subjects. Also, Belize District performs below the national Mathematics average. Students in the southern districts of Toledo and Stann Creek are considered poor because of the socioeconomic factors affecting them. Students in poor communities typically perform poorly on standardized tests (Anonymous, 2005 & Viadero, 2005). Teachers with high sense of efficacy are necessary to motivate and inspire students to perform above expectations. The Government of Belize is seeking more value for its money. In an effort to address the roots of the problem, financing has been secured to initiate Primary Education Programs countrywide to provide teachers with Associate Degrees in areas other than Education with pedagogical training. Presently, all junior colleges in the country offer an Associates Degree in Primary Education for high school students desirous of entering the teaching profession.

Table 2.1

PSE 2010 National and DISTRICT Means												
District	Total		EP1	EP2A	EP2B	ENGTTL	SCITTL	MP1	MP2	MTH TTL	SSTTL	OVRALL
	Count		compreh	letter	comp	total	total	comput	p.solving	total	total	total
	Reg	Tested	50 pts	20 pts	30 pts	100 pts	100 pts	50 pts	50 pts	100 pts	100 pts	400 pts
Owalk	831	810	37.22	11.41	15.84	64.26	72.98	33.79	24.30	58.08	65.00	260.02
Corozal	734	721	36.85	11.22	15.91	63.67	71.33	33.76	24.07	57.76	64.57	256.83
Cayo	1705	1675	37.10	11.26	16.21	64.34	71.13	32.12	21.71	53.80	64.44	252.86
Belize	1964	1931	37.33	11.38	16.01	64.31	69.37	31.04	19.94	50.98	64.93	249.16
Toledo	568	561	34.63	10.67	15.62	60.81	67.42	29.76	19.41	49.16	61.20	238.21
Screek	865	846	34.60	11.34	15.08	60.74	66.43	29.67	19.47	49.14	60.01	235.41
National	6667	6544	36.62	11.27	15.87	63.48	69.94	31.64	21.28	52.88	63.75	249.58

Other factors that influence student achievement in Belize can be related to the following facts. MOE (2009) revealed that the 294 primary schools in the country are managed by the government and various denominations, namely: Roman Catholic, Anglican, Methodist, Seventh Day Adventist, Nazarene, Assemblies of God, Private and Others. Eighty-three of these schools were in urban areas and 211 in rural areas. A total

of 6, 770 students were enrolled in primary schools countrywide, 3312 males and 3458 females. The year 2008–2009 saw a dropout rate of 2.5% and a repetition rate of 1.3%. It must also be noted here that 84.7% of the number of students who were in Standard six in 2008 moved on to pursue their secondary education.

Researchers have shown that teacher training is a key element in the success of students as trained teachers implement more strategies and find ways to meet students' needs. Pedagogical content knowledge is necessary for quality instruction and allows for deeper knowledge of subject matter and the ability to teach it to diverse populations, affecting the outcomes of students' test scores (Gimbert, B., Bol, L. & Wallace, D. (2007); Myberb, E. (2007); Haber, J. (2003). The percentage of trained primary school teachers in the country of Belize is 42.5%, a total of 2,948 (MOE, 2009). These teachers have the required pedagogical training necessary to impart quality education in the classroom. Unfortunately, Belize like other countries, suffers from the malady of training teachers and then they do not implement new knowledge in their classrooms. As Pollock (2007) confirmed

Teachers throughout the United States and in other countries are determined to do what it takes to improve learning, improve teaching, and improve schooling, but their efforts are frequently frustrated from the start. Typically, teachers attend staff development sessions to learn a new technique or tactic. But no matter how successful the initial session, when the training ends and these teachers return to the classroom, hope once again takes over: "I hope I get the try this new technique, and I hope it brings improved results!" (p. 7).

Teacher self-efficacy in the classroom

The self-efficacy of teachers helps in designing environments for students that assist them in achieving academic success. Such efficacy affects classroom management, instructional strategies and student engagement. “Self-efficacious teachers invest more time teaching than controlling students who struggle with learning and/or behavior difficulties” (Yeo, et al., 2008, p. 194).

“Evidence indicates that teachers’ beliefs in their instructional efficacy partly determine how they structure academic activities in their classrooms and shape students’ evaluation of their intellectual capabilities” (Bandura, 1997, p. 240). Teachers with high self-efficacy believe that all students can be taught, even those who are difficult and unmotivated. It just takes more effort from the teacher and the right strategies to make it happen. Efficacious teachers devise and modify instructional strategies to meet students’ needs. Yeo, et al. (2008) contends that teachers with high sense of self-efficacy find ways to keep their students engaged and involved in the learning process.

Bandura (1995) writes:

People’s beliefs in their efficacy shape the types of anticipatory scenarios they construct and rehearse. Those who have a high sense of efficacy visualize success scenarios that provide positive guides and supports for performance. Those who doubt their efficacy visualize failure scenarios and dwell on the many things that can go wrong. It is difficult to achieve much while fighting self doubt. (p. 6)

Dellinger et. al (2008) defined teachers’ self-efficacy as “focus on successfully

performing specific teaching tasks in a teacher's current teaching situation (specific school/classroom/students)" (p. 753). As Swars (2005) pointed out, teachers' perceptions of their self-efficacy change significantly after engaging in professional development courses to improve their strategies and methods.

One important aspect of teacher efficacy is the control exerted over the classroom. Steere (1988) agreed' "An effective teacher should have a classroom management system that reinforces good behavior and weakens the undesirable behavior of the student" (p. 159). He goes on to list a series of strategies that can be used to nip disruptive behaviour in the bud quickly so that learning can take place.

OECD (2009) listed some beliefs from teachers of 23 countries as to what constitutes effective teaching practices:

- Effective/good teachers demonstrate the correct way to solve a problem.
- Instruction should be built around problems with clear, correct answers, and around ideas that most students can grasp quickly.
- How much students learn depends on how much background knowledge they have; that is why teaching facts is so necessary.
- A quiet classroom is generally needed for effective learning. (p. 93)

The report looked at the two major views teachers held regarding learning: constructivist and direct transmission view. The constructivist view looks at students as active participants in the learning process and teachers are the facilitators. Teachers who hold the direct transmission view believes that effective teachers demonstrate in the classroom and students learning depend on how much background knowledge the student has. For this reason, it is important that teachers teach facts to

provide them with such (OECD, 2009). The examination of practices, beliefs and attitudes that has been shown by previous research to be relevant to improving school effectiveness was the basis of this research.

Self regulation

Teachers and students must not only possess self regulatory skills, they must practice them consistently, especially in the face of difficulties when it is tempting to give in to failure. Pajares (1996) explains

Self regulation must be developed by an individual. In the applications of this knowledge, individuals are taught how to monitor their behavior and the cognitive and situational conditions under which they engage in it; how to create proximal goals for exercising control over their behavior in the here and now; how to draw from on an array of coping techniques rather than relying on a single technique; and how to engage motivating incentives to sustain their efforts. (p. 647)

There are many factors that propel a student to expend effort in school related activities. If students perceive that teachers believe them capable of success, the former are more determined in their pursuits. Studies have shown that streaming students is a method of labelling their efforts and committing them to a certain category of learning (Trautwein, Lüdtke, Marsh, Köller, Baumert, 2006).

Student motivation

According to Martin (2004), “Motivation can be conceptualized as students’ energy and drive to learn, work effectively, and achieve their potential at school, and the

behaviors that follow from this energy and drive” (p. 134). Most humans form beliefs about what they can and cannot do, anticipating positive and negative outcomes and setting goals for themselves to attain desired outcomes and avoid distasteful ones (Bandura, 1995). Teachers complain that it is not possible to reach a student who is not motivated to succeed. Student motivation is a construct that should be measured for teachers to design appropriate measures to vitalize such students. In a questionnaire developed by Tuan, Chin, Shieh, (2005) to measure students’ motivation towards science learning, 1,407 Taiwanese junior high school students from different grades, sex and achievements, were selected to test the instrument. It was found that students with high, moderate and low motivation showed significant differences in achievement scores. Those with active learning strategies were likely to learn more effectively and gain better scores on tests than those who did not use these strategies. Once a student is motivated to learn and to succeed, a natural complement would be a teacher who possesses the skills to ensure that it happens.

Motivated students persist more in their quest for academic success. Given the role of motivational beliefs in the learning process, researchers have asserted that supporting students’ motivation is crucial to enhance student learning and academic performance (Bandura, 2006; Blazevski, 2006). Several studies show that teachers can influence student motivation in various ways (e.g., creating optimal learning environments, creative instructional techniques, enhancing meaning, providing quick and positive feedback, and enhancing self-esteem of students) (Ginsberg & Wlodkowski, 2000; Hudley, 1997; Kourilsky & Quaranta, 1987; Theobald, 2006). Little attention is given in the literature to teachers’ perceived sense of self-efficacy for supporting student

motivation and achievement. Bandura, often referred to by many researchers as the “father of self-efficacy theory” because he first introduced the construct of self-efficacy in the 1970s, suggested that teachers’ personal efficacy to motivate students is possibly one of the major ways through which efficacy beliefs affect students’ cognitive growth and academic achievement (Bandura, 2006).

Students’ persistence in their studies, though, is not based solely on their personal academic motivation. Teachers must also take into consideration their motivation to pursue other activities (Koutsoulis & Campbell, 2001; Lens, Lacante, Vansteenkiste, & Herrera, 2005). Koutsoulis & Campbell went on to explain that parental involvement was very important as a driving force to motivating students to succeed. Research has also shown (Hudley, 1997; Montalvo, et al., 2007) that students are more motivated to achieve when they like their teacher and feel comfortable with them. It allows them to be more dedicated in their efforts to succeed.

Measuring perceived teacher self-efficacy

Henson (2001) pointed out that The RAND Corporation researchers developed two items in late 1970s, to assess if teachers believed that students’ learning and motivation were under their control. These items were based on the locus of control orientation and guided most of teacher efficacy research over the years.

- “When it comes right down to it, a teacher really can’t do much because most of a student’s motivation and performance depends on his or her home environment.”

- “If I really try hard, I can get through to even the most difficult or unmotivated students.” (p. 5)

The Teacher’s Sense of Efficacy Scale (TSES) developed by Tschannen-Moran and Woolfolk Hoy (2001) is a more recent scale to measure the self-efficacy construct. A self-efficacy scale, according to Bandura (1995), should be related closely to the task and context in question. This means that a scale used to measure self-efficacy of teachers, should measure teachers’ perceptions about their abilities in the classroom specific to the educational setting and student and teacher tasks under observation.

As Wright (2005) pointed out in her study:

Research on the reliability and validity of TSES showed that the instrument measured teacher sense of efficacy across three dimensions of teaching: (a) efficacy related to the implementation of instructional strategies, (b) efficacy for classroom management, and (c) efficacy for student achievement (p. 65).

In a study by Henson, Kogan & Vacha-Haase (2001), of four of the most frequently used tests that measure teacher self efficacy, it was found that “the total score variance was consistently related to reliability coefficients” (p. 414). The four instruments studied were the Teacher Efficacy Scale (TES), Science Teaching Efficacy Belief Instrument (STEBI), Teacher Locus of Control (TLC) and Responsibility for Student Achievements (RSA). The authors stated “with the exception of one subscale, the TES yielded the most variable reliability coefficients of all the instruments” (p. 416). This instrument then is ideal for measuring the construct at hand. Either the long or short form of the instrument is appropriate for practicing teachers (Fives & Buehl, 2009; Hoi-Yan, 2006).

Teacher efficacy and student achievement

In a study by Martin (2006) using the 40 item Student Motivation and Enjoyment Scale, 1,019 teachers were examined to glean their perception of their students' motivation and engagement and their enjoyment of, and confidence in, teaching. Learned was that "teachers' enjoyment and confidence are most correlated with the presence of adaptive dimensions in their students' academic lives" (p. 83). The test also administered to students, encompassed 10 facets of motivation. Primary school teachers reported higher student motivation than high school teachers. The study failed to match teachers' responses with their own students' responses to establish the validity of both students' and teachers' ratings.

Another study by Machado, Stern and Ray (2009) emphasized the need for skilled instruction, positive school and classroom climate and dynamic leadership to ensure the success of poverty stricken students in rural Oklahoma. The purpose of the study was to determine the relationship between student achievement and teacher attitudes in high poverty elementary schools. While it is recognized that poverty is a construct that is very powerful, a strong relationship was found between positive school climate and high academic achievement for elementary school students. These factors are essential if the goal for students is academic excellence. Students living in high poverty and who need academics to succeed in life, definitely need the best teachers. Efficacious teachers are more committed to the profession and create optimal learning environments so students can succeed (Ware & Kitsansas, 2007; Tucker et. Al., 2005;

Cowell (2005) analyzed how teacher efficacy and teachers' pre-service classroom experience affected students' academic achievement in urban early childhood settings. A survey of 66 early childhood teachers with 0-5 years of experience teaching in New York City was conducted. The scale was the Teacher Efficacy Scale (TES), a 16 item scale with a reliability coefficient of .79. Cowell found a significant relationship in phonemic awareness but no significant relationship in phonics, reading and oral expression. The results were therefore not generalizable to the population. Since efficacy judgments are individual beliefs about one's capabilities, they are subject to error as humans might over or under estimate their actual abilities. As there was not a statistically significant relationship found in two instances, more research is needed to study the efficacy beliefs of early childhood teachers and how they relate to student achievement.

Blazevski (2006) found no theoretical model in her study that links teacher efficacy directly with student achievement as there was no instrument specifically designed to measure it. Her study supports this assumption which found "teachers' efficacy for supporting student motivation predicted use of instructional strategies aligned with a performance approach goal structure, which predicted student self-efficacy, which in turn predicted student achievement" (p. 124). However, there were clear limitations to the study, such as small sample size of teachers (N =50) and missing student data along with the issue of teachers not fully completing the survey instrument issued to them.

Researchers have shown that self efficacy beliefs influence persistence, effort expended and perseverance at challenging tasks (Bandura, 2007; Chong, et al., 2010; Dellinger, et al., 2008; Henson, 2001; Schumacher, 2009; Yeo, et al., 2008). As Blazevski (2006) pointed out

She would be more likely to engage in instructional behavior designed to support student motivation in the first place, be more resilient when faced with “difficult” students, and ultimately be more successful in supporting students’ motivation than a teacher who feels less efficacious in this regard (p. 11).

Summary of the Literature Review

One of the most important factors for student success is the effective teacher in the classroom (Ginsberg & Wlodkowski, 2000; Nelson, 2007; Rodger, et al., 2007; Theobald, 2006). The definition of teacher efficacy has evolved over the years. Cowell (2005) stated “current definitions, though, center primarily on students’ outcomes, which are assumed to be based on teachers’ actions” (p. 15). Despite the myriad other factors that affect student achievement, teacher efficacy is highlighted strongly. This was underscored by Tucker, et al., (2005) “In other words, teachers who believe that student learning can be influenced by effective teaching despite home and peer influence and who have confidence in their ability to teach persist longer in their teaching efforts, provide greater academic focus in the classroom, give different types of feedback, and ultimately improve student performance” (p. 30).

Bandura’s theory is applied to explain teachers’ perceived efficacy. Individuals might believe that specific behaviors will yield specific results, but they might doubt their abilities to perform the required actions. Teachers who believe in their abilities to be effective are more likely to be just that even under the most difficult circumstances. They persist in the face of adversity and design meaningful learning environments that enhance the learning experience.

Research has shown that self efficacy has effects on student achievement (Henson, 2001; Poulou, 2007; Rubie-Davies, et al., 2006; Schumacher, 2009). Much has been contributed to this area of research, but there is still more that needs to be done. As Pajares (1996) explained:

Self-efficacy researchers have made noteworthy contributions to the understanding of self-regulatory practices and academic motivation, but the connection from theory and findings to practice has been slow. Classroom teachers and policy makers may well be impressed by the force of research findings arguing that self-efficacy beliefs are important determinants of performance and mediators of other variables, but they are apt to be more interested in useful educational implications, sensible intervention strategies, and practical ways to alter self-efficacy beliefs when they are inaccurate and debilitating to children (or teachers, or administrators) (p. 38).

CHAPTER III

METHODOLOGY

Introduction

This chapter presents the design for the study and the procedures used to conduct it, but only after the purpose is first explained and the research questions and hypotheses are identified. The design includes the methodology, the population from which the sample was drawn, and the sample selection procedures. The instruments to measure the variables are detailed, as are the procedures used to collect and analyze the data. A summary of the information concludes the chapter.

Purpose of the Study

This study attempted to determine if there were statistically significant differences in student achievement on the Primary School Exam (PSE) in Belizean primary schools for students who have teachers with varying levels of self-efficacy (high, medium and low). It is important to know if there are differences so that programs that can assist teachers to become more efficacious could be designed. Implementation of such programs could drastically impact the levels of student achievement in the country.

Research Questions

These research questions guided the study:

1. Is there a difference in PSE Math exam scores of standard six students taught by teachers with high versus those with low teacher perceived self-efficacy?
2. Is there a difference in PSE English exam scores of standard six students taught by teachers with high versus those with low teacher perceived self-efficacy?
3. Is there a difference in Total PSE exam scores of standard six students taught by teachers with high versus those with low teacher perceived self-efficacy?

Research Hypotheses

- H₀₁ There is no difference in PSE Math scores of standard six students taught by teachers with high perceived self-efficacy versus those taught by teachers with low perceived teacher self-efficacy.
- H₀₂ There is no difference in PSE English scores of standard six students taught by teachers with high perceived self-efficacy versus those taught by teachers with low perceived teacher self-efficacy.
- H₀₃ There is no difference in Total PSE scores of standard six students taught by teachers with high perceived self-efficacy versus those taught by teachers with low perceived teacher self-efficacy.

Research Methodology and Design

This quantitative, non-experimental study used to investigate the effects of perceived teacher self-efficacy on student achievement was a causal comparative one. Causal comparative designs seek to determine the cause for existing differences in the behavior of individuals or groups (Shavelson, 1996).

The study focused on the analysis of the statistically significant differences on student achievement in Mathematics and English Language. The independent variable in this study is the self-efficacy score of the teachers. To measure the perceived teacher self-efficacy score of each teacher selected from particular schools, the study used the 24 item Teachers' Sense of Efficacy Scale survey, sometimes referred to as the Ohio State Teacher Efficacy Scale (OSTES), that was developed by Megan Tschannen-Moran and Mary Anita Woolfolk Hoy in 2001. This instrument was selected because it captures the multiple teaching tasks expected as students are prepared for the PSE exam, engagement, instruction and management. This framework is a popular one to use when investigating student achievement. People's beliefs about themselves are important elements in exercising control over thoughts, feelings and actions (Bandura, 2007). The developers have an open invitation to other researchers to use the instrument for just that purpose.

Approval to conduct and administer the survey was sought from the primary school principals. Student achievement data was collected through the nationally administered standardized assessments, the PSE. English Language and Mathematics 2010 PSE scores for grade eight students were gathered and analyzed. Each of the selected schools and its grade eight teachers were invited to participate in the perceived teacher self-efficacy survey with the results being compared to the English Language and

Mathematics achievement data. The total score of the schools were factored into the results to determine if there are statistical significant differences in student achievement with teachers who have varying levels of perceived self-efficacy.

The dependent variables for this study are student achievement in English Language, Mathematics and the Total score, as measured by the PSE. Due to the current national emphasis on English Language and Mathematics, the decision was made to select these as subjects for the investigation. The connection between teacher efficacy and student achievement observed in prior studies also serves as a basis for this investigation. The independent variable is the level of perceived teacher self-efficacy as measured by the 24 item Teachers' Sense of Efficacy Scale survey.

Population and Sample

Fifty-one primary schools were selected randomly from a population of 294 such schools in Belize, Central America. The sampled schools were located in the six districts of Belize: Corozal, Orange Walk, Cayo, Belize, Stann Creek, and Toledo. Only those primary schools with at least one class of standard six students were invited to participate in the study. The standard six teacher(s) were then asked to complete the survey. Schools and teachers were located in rural and urban areas in the country, and class sizes ranged from 6 to 40 students. Twenty-eight percent, 83 are urban schools, while 72 percent, 211, are rural schools. To achieve a purposeful representation of the schools by location, and size that would reflect the overall population, Education Officers in each district were asked to assist in the random selection of the schools after the intention was made clear. The selected schools are a final representation of the total primary schools in Belize.

Table 3.1

Number of Primary Schools, Sample Schools, Teachers and Students by District

District	Total Schools	Sample Schools	Teachers	Students
Toledo	50	10	10	156
Stann Creek	35	10	10	271
Cayo	64	6	6	207
Belize	66	10	10	266
Orange Walk	37	10	10	230
Corozal	42	5	5	125
Total	294	51	51	1255

Instrumentation

This study attempted to determine any statistically significant differences in student achievement in English Language, Mathematics and Total Score at the elementary level for students with teachers who have varying levels of perceived self-efficacy. Instruments used were the Teachers' Sense of Efficacy Scale survey and the PSE English Language, Mathematics and Total Scores for grade eight students.

Megan Tschannen-Moran and Anita Woolfolk Hoy, in 2001, developed a 24 item Teachers' Sense of Efficacy Scale survey (TES) that has an alpha reliability of .94. This scale weighs the three factors of engagement, instruction and management and uses eight questions to measure each concept. Dellinger, et al., (2008) noted that:

This particular measure was designed to, and appears to, measure teacher self-efficacy beliefs instead of teacher efficacy (used as synonymous terms). This measure includes items that reflect the multidimensional nature of teaching by including specific teaching tasks within several domains of functioning that were important to a group of teachers participating in item development (p. 755).

This instrument measured the perceived teacher self-efficacy scores calculated for each standard six teacher and the mean score of all teacher responses were calculated. The questions dealing with engagement, instruction and management were not specifically categorized in the scale to identify shortfalls in these areas.

The PSE has a long history of proven reliability and validity for measuring student achievement in English Language, Mathematics, Social Studies and Science. The 2004 National Report of the PSE exam indicated reliability coefficient of .88 in Math, .89 in English, .82 in Science and .89 in Social Studies using the Kuder-Richardson Formula 21. Constructed items based on the upper division primary curriculum pass through a process of reviewing, editing and piloting to ensure content validity (PSE National Report, 2004). All standard six students in the country of Belize take this standardized test based after completing a minimum of eight years in the primary school system. The results, expressed as a percentage score, are intended to be used for two main purposes:

1. Certification of students at the completion of primary school in four content areas of the primary curriculum; and
2. Educational decision-making to inform policy, planning and practice at national, district, school and classroom levels.

The PSE is a criterion-referenced test as students' results are compared to a set standard for satisfactory achievement. Scores of 80 – 100 are (A); 70 – 79 are considered competent (B); 60 – 69 are considered satisfactory (C); 50 – 59 are considered adequate (D); and 49 and below are considered inadequate (E). The test is designed and administered by the Examinations Unit of the MoEY of Belize. For the total PSE score, an excellent score is an A (320-400) and means that the content was mastered; a competent score is a B (319-280) and also means that the content was mastered; a satisfactory score is a C (279-240) and means that content was partially mastered; an adequate score is a D (239-200) and also means that content was partially mastered; and an inadequate score is an E (199-0) and means that content was not mastered. While individual subject scores are reported as the number of points obtained out of 100, the Total PSE score is reported as the total of all four subjects, allowing a student to receive up to 400 points.

According to the 2004 PSE National Report, the exam must be constructed to reflect the objectives of the upper division primary curriculum if the results are to be valid indicators of student achievement. In this regard, teachers are key to the development of the exam and items are piloted countrywide on a representative sample of the population of Standard students. The 2004 PSE National Report goes on to say that “The reliability coefficient is evidently high enough for conclusions to be drawn that the PSE offers a reliable measure of student performance in the areas tested” (p. 3).

Procedures

The study began in the spring of 2010 with the random selection of the 51 elementary schools from all six districts in Belize. Information about the schools was collected from the six District Education Managers and the MoEY website. Primary schools without a standard six class were not included in the study. The principals of these schools were contacted by phone and e-mail and informed of the study. Participation of the standard six teachers in those schools was then solicited. All aspects of the study were then explained in a letter to both parties, including purpose, confidentiality and procedures. Teachers who agreed to participate were sent a survey to be completed at their leisure, but preferably at school. Teacher participants were urged to be totally honest and, to ensure this, the forms were not identifiable at all. The teachers were requested to sign a consent form giving permission to include the results of their survey in the study. This script was given to them by the principal (Appendix B). Teachers who did not wish to be a part of the study were excluded.

All of the schools use the standardized PSE to assess the achievement of the students at standard six. The Examinations Unit of the MoEY scores the exams and reports the grades to the Ministry and to the schools. Data for the study, the PSE scores from the 2009-2010 school year, were the most recent at the time of the study and would accurately reflect the achievement of the standard six students in the study.

Schools were coded to achieve confidentiality. Completed surveys collected from the teachers were guarded in a safe location and destroyed after a year. No school can be identified from the data.

Data Analysis

The results were analyzed to identify any statistically significant differences between the independent variable (perceived teacher self-efficacy) and the three dependent variables (English Language, Mathematics and Total achievement). Bandura's (1997) theory of self-efficacy concludes that teachers who believe that they have the ability to motivate students and affect their achievement, exert more effort doing so.

SPSS statistical software version 19.0 was used to analyze the data gathered from the TES survey and the PSE scores in English Language, Mathematics and Total Scores. No manipulation of the variables was possible because they had already occurred. The design was appropriate for studying variables that could be studied through experiments. Causal comparative studies assist in decision making, one of the primary reasons for this study. Analysis of Variance (ANOVA) was used to compare statistically the means of the variables stated in the questions guiding this study. Shavelson (1996) and Keppel and Wickens (2004) explain that this design is used to analyze data from an independent variable that produces two or more groups or subjects. ANOVA seeks to answer if observed differences are due to chance or if they reflect a true difference in the population. This question is answered by computing variability between groups and variability within groups. Statistical significance or treatment effect is proven if the variability between groups is greater than the variability within groups. Omega square was computed to determine practical significance at 0.05. The Levene test was used to test the assumptions of homogeneity of variance statistically.

Summary of Methodology

Procedures investigated the statistically significant differences between perceived teacher self-efficacy and student achievement. Grade eight teachers from primary schools purposefully selected from all six districts in Belize participated in the study. Perceived teacher self-efficacy was measured using the Teachers' Sense of Efficacy Scale survey. Student achievement was measured using the standardized national exam, the PSE.

CHAPTER IV

RESULTS

This study examines in detail, as outlined in chapter 1, how teachers can affect students' performance on the standardized Primary School Exam (PSE). This chapter restates the research questions and tests the research hypotheses. Analyses of Variance (ANOVA) was used to calculate the F-statistic to determine whether the null hypotheses were to be accepted or rejected. The program SPSS version 19 was used to achieve all calculations. To indicate where differences lay, post hoc calculations were used.

Research Questions

These research questions guided the study:

1. Is there a difference in PSE Math exam scores of standard six students taught by teachers with high versus those with low teacher perceived self-efficacy?
2. Is there a difference in PSE English exam scores of standard six students taught by teachers with high versus those with low teacher perceived self-efficacy?

3. Is there a difference in Total PSE exam scores of standard six students taught by teachers with high versus those with low teacher perceived self-efficacy?

Research Hypotheses

- H0₁ There is no difference in PSE Math scores of standard six students taught by teachers with high perceived self-efficacy versus those taught by teachers with low perceived teacher self-efficacy.
- H0₂ There is no difference in PSE English scores of standard six students taught by teachers with high perceived self-efficacy versus those taught by teachers with low perceived teacher self-efficacy.
- H0₃ There is no difference in Total PSE scores of standard six students taught by teachers with high perceived self-efficacy versus those taught by teachers with low perceived teacher self-efficacy.

The sample population for this study consisted of 60 purposively selected of the 294 primary schools in Belize. Fifty-one schools responded, representing 87% of the target population and 20% of the entire primary school population. Twenty-five were urban and 26 rural schools. The participants consisted of 24 males and 27 females for a total of 51. Other demographic data (age, gender, years of experience, and educational level) was collected for further analysis. The students' achievement and teacher efficacy are illustrated in Table 4.1.

Teacher Efficacy Construct

Teacher efficacy was measured using the Teachers' Sense of Efficacy Scale (TSES) that consisted of 24 items. This scale weighs three factors: engagement, instruction and management, using eight questions to measure each concept. A range of questions was asked that sought the ultimate answer of how much the teacher could do to assist the students. The Likert scale ranged from 1-10 with 1-2 representing Nothing, 3-4 representing Very Little, 5-6 representing Some, 7-8 representing Quite a bit, and 9-10 representing a Great Deal. Responses for each of the 24 questions were totaled and averaged to find the final rating of each teacher. The rating was then used to place teachers in one of three categories: high, medium or low self-efficacy. Scores 6 to 6.95 were classified as Low, 7 to 7.95 as Medium, and 8 and above as High self-efficacy.

High teacher self-efficacy was represented by number 3, medium self-efficacy was represented by number 2 and low self-efficacy was represented by number 1. From the sample population, 41.18% of the teachers demonstrated high self-efficacy, 43.14% medium self-efficacy, and 15.69% low self-efficacy (Table 4.2).

The table below, 4.2, shows that none of the 51 participants had an average score of A, issued when students have mastered content. Nine teachers demonstrated that their students mastered content (B), 24 partially mastered content (C), 17 partially mastered content (D), and 1 did not master content (E).

Table 4.1

Teacher Self-Efficacy and Average Student PSE Scores in Language, Math and Total

School	Teacher Self-Efficacy	Language Scores	Math Scores	Total Scores	Grade
1100	2	72	68	284	B
1200	2	69	57	271	C
1300	2	60	51	240	C
1400	2	77	78	314	B
1500	2	70	54	267	C
1600	2	68	65	272	C
1700	2	60	56	248	C
1800	3	51	51	219	D
1900	1	42	41	176	E
2000	1	62	58	254	C
2100	3	66	48	251	C
2200	2	77	65	297	B
2300	2	71	58	266	C
2400	2	63	46	240	C
2500	3	53	36	202	D
2600	3	72	57	279	C
2700	2	66	57	260	C
2800	3	79	62	295	B
2900	1	54	39	214	D
3000	2	63	46	239	D
3100	3	61	52	243	C
3200	2	56	34	207	D
3300	2	59	37	227	D
3400	1	61	55	243	C

3500	2	57	40	204	D
3600	3	62	57	237	D
3700	3	60	42	223	D
3800	3	70	63	282	B
3900	2	63	45	235	D
4000	1	60	40	225	D
4100	3	74	73	303	B
4200	3	62	64	245	C
4300	2	62	41	235	D
4400	3	69	60	277	C
4500	2	57	39	213	D
4600	3	70	52	261	C
5100	3	69	65	276	C
5200	3	72	68	280	B
5300	3	68	60	270	C
5400	1	57	47	231	D
5500	2	70	66	285	B
6100	2	58	63	252	C
6200	3	67	54	258	C
6300	1	66	51	247	C
6400	3	58	38	214	D
6500	3	65	36	228	D
6600	1	65	55	257	C
6700	2	49	36	202	D
6800	3	72	80	325	B
6900	2	67	58	252	C
7000	3	64	51	249	C

Descriptive statistics of teacher self-efficacy and student achievement

Descriptive Statistics in Mathematics

Table 4.2

Self-Efficacy Category and PSE Mathematics Scores

TS-E	N	Mean	Std. Deviation	Std. Error
3	504	54.65	22.582	1.006
2	443	53.19	22.473	1.068
1	211	49.30	20.097	1.384
Total	1158	53.12	22.173	.652

Note. TS-E = Teacher Self-Efficacy; 3=high self-efficacy; 2=medium self-efficacy; 1=low self-efficacy.

The results from Table 4.2 show that the mean Math score of the students of teachers with high self-efficacy was 54.65, of teachers with medium self-efficacy 53.19, and of teachers with low self-efficacy 49.30. The mean Math score for all 1,158 students was 53.12. A satisfactory score on the PSE exam in any category is a 50.

ANOVA Calculations for Math

Table 4.3

ANOVA Calculations in Math

	Sum of Squares	Df	Mean Square	F	Significance
Between Group	4259.755	2	2129.877	4.357	.013
Within Group	564556.273	1155	488.793		
Total	568816.028	1157			

The significance of the F-statistic is .013 in Math, a value less than 0.05. Because the score is significant statistically, [F at α .05 (2,1155) = 4.357] the null hypothesis must be rejected. ANOVA calculations indicate there are significant statistical differences in the Math scores of students with teachers who have high, medium and low self efficacy scores.

Post Hoc Analysis for Math

Table 4.4

Math Post Hoc

	(I)Efficacy Score	(J) Efficacy Score	Mean Difference (I-J)
LSD	3	1	-5.349
		2	-3.884*
	2	1	-1.465
		3	3.884*
	1	2	1.465
		3	5.349*

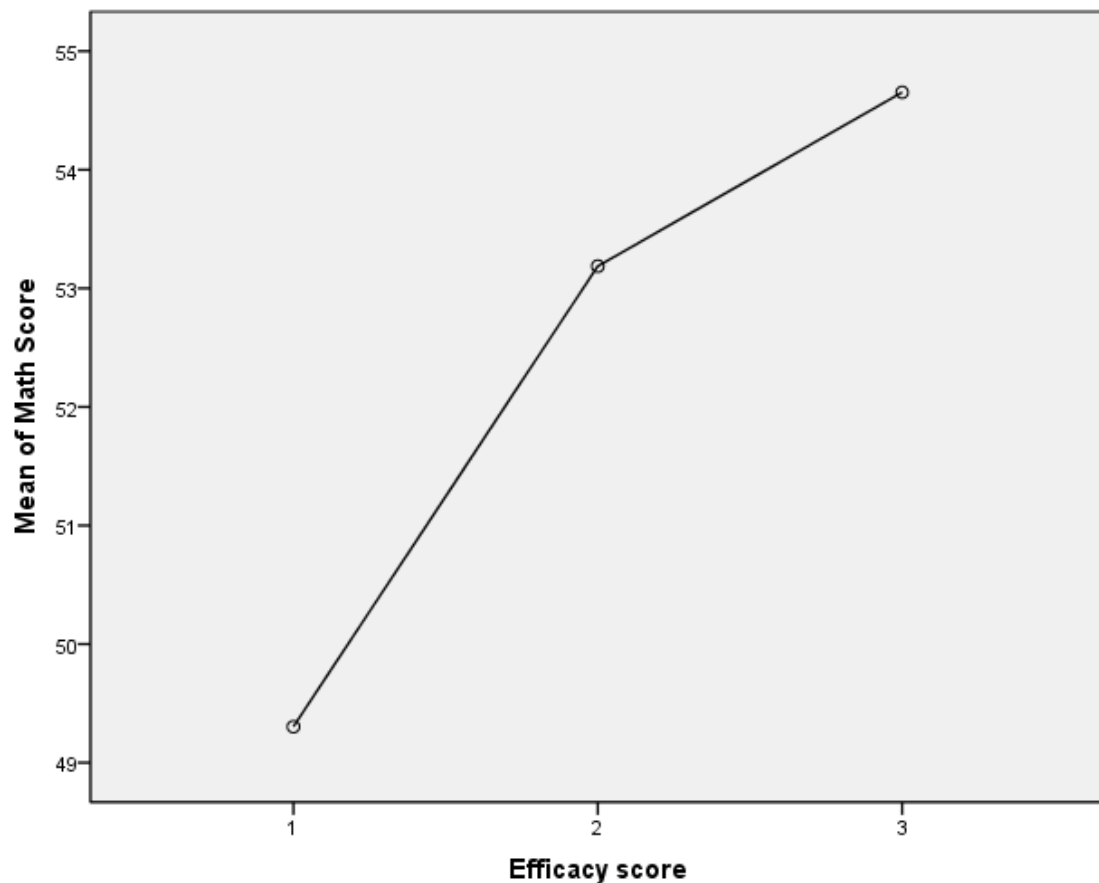
Note *Significant difference ; 3=high self-efficacy; 2=medium self-efficacy; 1=low self-efficacy.

The ANOVA results show significant statistical differences among the scores of students whose teachers had high self-efficacy and low self-efficacy and among the scores of students whose teachers had medium and low self-efficacy. These differences were indicated by the LSD (Least Significant Difference) post hoc operations.

Means Plot for Math

Figure 4.1

Math Means Plot



Note. 3=high self-efficacy; 2=medium self-efficacy; 1=low self-efficacy.

Above is a visual representation of the data previously presented in table 4.2. Even though overall, the district scores were relatively low, students of teachers with high self-efficacy scored higher on the PSE, students of teachers with medium self-efficacy scored average on the PSE and students of teachers with low self-efficacy score lower on the PSE. The null hypotheses states that there is no difference in PSE Math

scores of grade eight students by teachers with high perceived self-efficacy versus those taught by teachers with low perceived teacher self-efficacy. There is enough evidence to reject the null hypotheses.

Descriptive Statistics in Language

Table 4.5

Self-Efficacy Category and PSE Language Scores

TS-E*	N	Mean	Std. Deviation	Std. Error
3	504	65.68	15.225	.678
2	443	64.42	15.440	.734
1	211	60.12	16.013	1.102
Total	1158	64.18	15.569	.458

Note. TS-E = Teacher Self-Efficacy; 3=high self-efficacy; 2=medium self-efficacy; 1=low self-efficacy.

As indicated by Table 4.5 above, the mean score for students with teachers with high self-efficacy was 65.68, for students with teachers with medium self-efficacy 64.42 and for students with teachers with low self-efficacy 60.12. The overall mean score for students in Language was 64.18.

ANOVA Calculations for Language

Table 4.6

ANOVA Calculations in Language

	Sum of Squares	Df	Mean Square	F	Significance
Between Group	4640.940	2	2320.470	9.717	.000
Within Group	275811.513	1155	238.798		
Total	280452.453	1157			

The F statistic for Language is 9.717 and the significance level is .000, [F at α .05 (2,1155) = 9.717] allowing for the null hypothesis to be rejected. ANOVA calculations indicate differences in the scores of students in Language who had teachers with high, medium and low self-efficacy.

Post Hoc Analysis for Language

Table 4.7

Language Post Hoc

	(I)Efficacy Score	(J) Efficacy Score	Mean Difference (I-J)
Tukey HSD	3	1	-5.562*
		2	-4.301*
	2	1	-1.261
		3	4.301*
	1	2	1.261
		3	5.562*

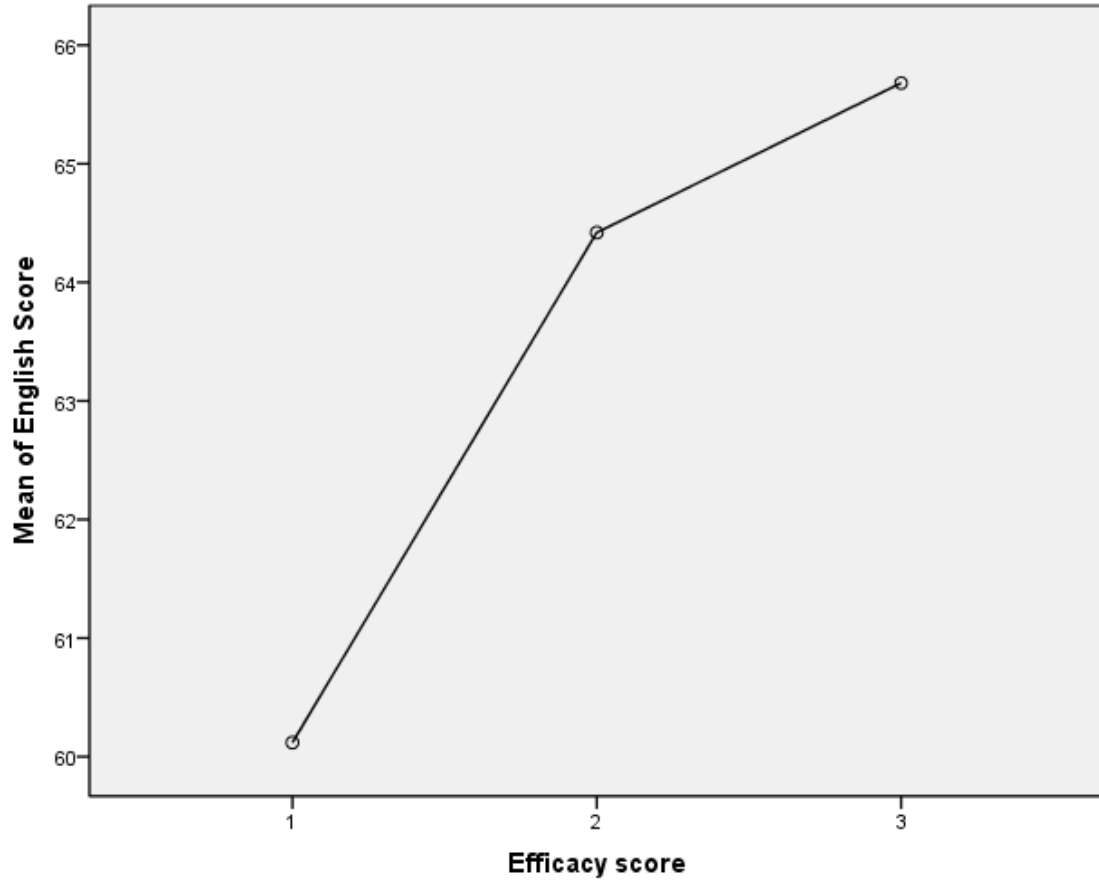
Note *Significant difference; 3=high self-efficacy; 2=medium self-efficacy; 1=low self-efficacy.

After the F-statistic indicated overall significance in the scores, post hoc calculations identified exactly where the differences lie. For Language, Table 4.7 indicates differences in the scores of students who have teachers with high and low self-efficacy, students of teachers with medium and low self-efficacy, and students of teachers with low and high and medium self-efficacy.

Means Plot

Figure 4.2

Language Means Plot



Note. 3=high self-efficacy; 2=medium self-efficacy; 1=low self-efficacy.

The visual representation of Fig. 4.2 shows differences among the scores of students who have teachers with high, medium and low self-efficacy. Therefore, for Language, differences do exist. Teachers who reported higher self-efficacy had students who scored higher in the PSE Language section.

Descriptive Statistics for Total PSE Score

Table 4.8

Self-Efficacy Category and Total PSE

TS-E*	N	Mean	Std. Deviation	Std. Error
3	506	256.89	62.433	2.776
2	444	251.98	61.680	2.927
1	211	237.46	62.049	4.272
Total	1161	251.48	62.413	1.832

Note. TS-E = Teacher Self-Efficacy; 3=high self-efficacy; 2=medium self-efficacy; 1=low self-efficacy.

The mean score for students with teachers with high self-efficacy for the total PSE score which includes the four subjects of Language, Social Studies, Math and Science, was 256.89 (64.23). For students with teachers with medium self-efficacy the mean score was 251.98 (63) and the mean score for students with teachers with low self-efficacy was 237.46 (59.37). The overall mean score for students in the PSE was 251.48 (62.88).

ANOVA Calculations for Total PSE Score

Table 4.9

ANOVA Calculations of Total PSE score

	Sum of Squares	Df	Mean Square	F	Significance
Between Group	56404.603	2	28202.301	7.319	.001
Within Group	4462293.285	1158	3853.448		
Total	4518697.888	1160			

The F statistic for Total PSE score is 7.319 and the significance level is .001, [F at $\alpha .05 (2,1158) = 7.319$] allowing for the null hypothesis to be rejected. ANOVA calculations indicate differences in the scores of students in Total PSE scores who had teachers with high, medium and low self-efficacy.

Post Hoc Analysis for Total PSE Score

Table 4.10

Total PSE Post Hoc

	(I)Efficacy Score	(J) Efficacy Score	Mean Difference (I-J)
Tukey HSD	3	1	-14.522*
		2	-19.432*
	2	1	-4.909
		3	14.522*
	1	2	4.909
		3	19.432*

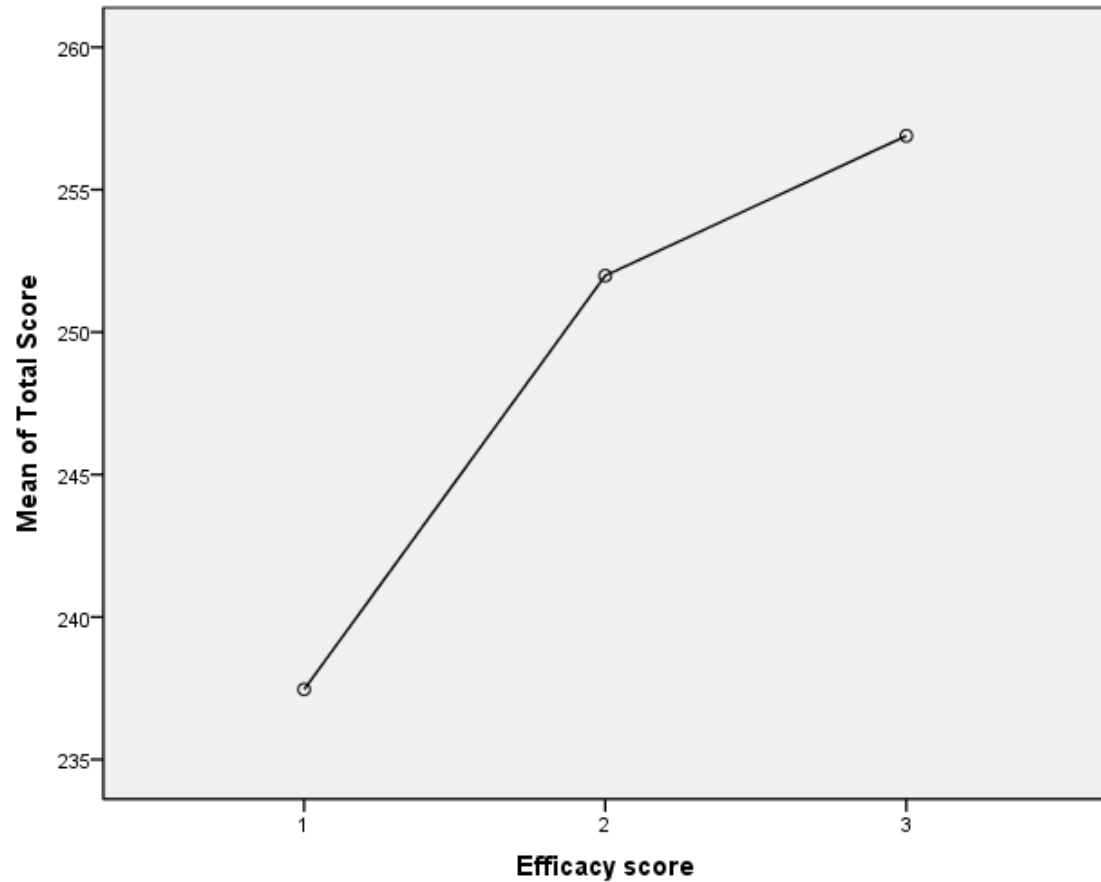
Note *Significant difference; 3=high self-efficacy; 2=medium self-efficacy; 1=low self-efficacy.

After the F-statistic indicated overall significance in the scores, post hoc calculations identified exactly where the differences lie. For Total PSE scores, Table 4.10 above, indicates differences in the scores of students of teachers with high and low self-efficacy, with medium and low self-efficacy, and with low, high and medium self-efficacy.

Mean Plot Total PSE Score

Figure 4.3

Total PSE Means Plot



Note. 3=high self-efficacy; 2=medium self-efficacy; 1=low self-efficacy.

The means plot above shows differences between the Total PSE scores of students of teachers with high and low self-efficacy, teachers with medium and low self-efficacy, and teachers with low, high and medium self-efficacy.

Summary

Results indicate that for the teachers who participated in the study, their self-efficacy beliefs affected significantly students' Math, Language and Total PSE scores. It was noted that the teachers in the study who believed they could make a difference in student achievement if they persevered (as indicated by the teacher sense of efficacy survey), generally did (as indicated by the PSE exam), and those teachers who felt they did not have the capabilities to support student success, their students generally scored lower on the exam. Post hoc calculations indicated where the differences existed between the scores of the students depending on whether their teachers had high, medium or low self-efficacy. All the null hypotheses were rejected.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This final chapter restates the research problem and reviews the major methods used in the study. The findings are discussed, results summarized and conclusions drawn based on the theoretical framework of this study, self-efficacy. The implications for further research and recommendations are shared.

What teachers bring into the classroom dictates the quality of the educational experiences of their students. The Government of Belize allocates 21% of its national budget to education believing that all students in the country, no matter gender, location, religious beliefs, etc., have a right to a quality education (MOE, 2000). A major problem is that primary school students are not sufficiently motivated and perform poorly on the Primary School Exam (PSE) exam, the instrument used to measure student achievement. The national mean for the PSE exam in 2010 was 56.3, indicating deficiencies in the educational system. One explanation why students do not achieve academic success is teacher self-efficacy. Teachers with high self-efficacy believe their students can be successful and devote more time to producing outcomes by providing greater academic focus in the classroom, being persistent in the face of difficulty and providing prompt feedback (Bandura, 2007; Henson, 2001; Poulou, 2007; Shumacher, 2009; Shidler, 2009; Tucker, et al., 2005).

The PSE exam is the yardstick used to measure the performance of primary schools in Belize. Schools are ranked in the district and in the country based on the average of the scores obtained. English Language and Mathematics were selected as the subjects to measure academic achievement of the students as these subjects are used by most secondary schools for the basis of promotion and/or graduation. Students in fourth form in secondary schools (grade twelve) must pass English Language at the Caribbean External Examination (CXC), along with five other subjects, to qualify for a government scholarship to any tertiary institution in Belize. The Total score was also used as this is the score accepted by the secondary schools upon registration. It is also the basis used to decline acceptance in some academic institutions.

The Self-efficacy theory is a preferred theoretical framework researchers use to investigate student achievement. People's beliefs about themselves are important elements in exercising control over thoughts, feelings and actions (Bandura, 2007). Self-efficacy beliefs are constructed from four key sources of information: enactive mastery experiences, vicarious experiences, verbal persuasion and physiological and affective states. Researchers have found that efficacious teachers devise and modify instructional strategies to meet students' needs, are more committed to the profession and create learning environments so students are motivated to succeed (Yeo, et al., 2008; Ware & Kitansas, 2007; Tucker et. Al., 2005; Blazevski, 2006). The researcher based the study on the theory to understand better the effect of teacher self-efficacy on student achievement.

A quantitative, non-experimental, causal comparative design was selected to determine if there were statistically significant differences in student achievement on the PSE exam for students who have teachers with high, medium or low self-efficacy in

Belizean primary schools. Student achievement was measured using the standardized exam scores on the English Language, Mathematics and Total score segments. The 2010 PSE exam results were used, and teacher self-efficacy was measured using the 24 item Teacher Efficacy Scale (TES) scale (Tchannen-Moran & Hoy, 2001) which has a reliability coefficient of .94. This instrument was selected because it captures elements of self-efficacy in teachers and measures engagement, instruction and management. Permission from the Oklahoma State University Institutional Review Board was sought and granted to conduct the study of 60 Standard 6 teachers and their students. Purposive random sampling ensured that all six districts were represented and ANOVA was used to compare the means of the variables using the SPSS version 19.0.

Research Questions

Guiding the study were these research questions:

1. Is there a difference in PSE Math exam scores of standard six students taught by teachers with high versus those with low teacher perceived self-efficacy?
2. Is there a difference in PSE English exam scores of standard six students taught by teachers with high versus those with low teacher perceived self-efficacy?
3. Is there a difference in Total PSE exam scores of standard six students taught by teachers with high versus those with low teacher perceived self-efficacy?

Research Hypotheses

- H0₁ There is no difference in PSE Math scores of standard six students taught by teachers with high perceived self-efficacy versus those taught by teachers with low perceived teacher self-efficacy.
- H0₂ There is no difference in PSE English scores of standard six students taught by teachers with high perceived self-efficacy versus those taught by teachers with low perceived teacher self-efficacy.
- H0₃ There is no difference in Total PSE scores of standard six students taught by teachers with high perceived self-efficacy versus those taught by teachers with low perceived teacher self-efficacy.

Summary of the Results

Of the fifty-one teachers who participated in this study, 41.2% believed they had high self-efficacy, 43.1% medium self-efficacy, and 15.7% low self-efficacy.

Table 4.3 showed that the mean Math score of the students of teachers with high self-efficacy was 54.7; medium self-efficacy 53.2; and low self-efficacy 49.3. The mean Math score for all 1,255 students was 53.1.

Language students of teachers with high self-efficacy had a mean score of 65.7, medium self-efficacy was 64.4 and low self-efficacy was 60.1. The overall mean score for students in Language was 64.18.

Students of teachers with high self-efficacy for the total PSE score which included the four subjects: Language, Social Studies, Math, and Science had a mean score of 256.9

(64.2). For students of teachers with medium self-efficacy, the mean score was 251.9 (63) and for students of teachers with low self-efficacy, 237.5 (59.4). The overall mean score for students in the PSE was 251.5 (62.88) (C).

Statistically significant differences were found among the scores of students who took the PSE exam in the year 2010 depending on teachers' high, medium or low self-efficacy. Rejection of the null hypothesis resulted in all three cases.

Discussion of the Findings

Teacher self-efficacy

People persevere in the face of difficulties when they are convinced they have what it takes to succeed. They engage in reflection to change behavior and can boost self change activities. Beliefs about success correspond with improved performance (Bandura, 1997; De Montigny & Lacharité, 2005; Siegle & McCoach, 2007). Numerous factors affecting student achievement in Belizean schools are very real. They range from socio economic factors to parental involvement. The results of the study show that 86.3 of the participants believe they can get students to achieve academic success on the PSE exam and will persevere despite obstacles.

Teachers with high self-efficacy beliefs have classrooms that are conducive to learning as they engage in reflection and find ways to get to even the most difficult students. They do not lack for strategies, set high expectations for students and assist them in reaching set outcomes. Pajares (1996) explained that efficacy beliefs play a part in determining outcome expectations. If teachers believe their students will succeed, they will convince these students of such by giving them the necessary tools. The study shows

that students of teachers with high perceived self-efficacy scored higher on the exam while students of teachers with low perceived self-efficacy scored lower on the exam. Bandura (1997) stated that efficacy beliefs assist in predicting behaviors. These findings indicate that students who have teachers with high self-efficacy, have a better chance of achieving academic success on the Belizean PSE exam in Language, Mathematics and Total score.

Relationship of the Current Study to Prior Research

This study joins the body of research supporting teacher efficacy contributions to student achievement. Shumacher (2009), using a similar scale, indicated that collective teacher efficacy significantly affected student achievement on the Iowa Test of Basic Skills Reading and Comprehension and Math tests, despite socioeconomic conditions. In her study, Blazevski (2006) indicated that characteristics such as gender, years of teaching experience, educational background and grade level assigned may contribute to the level of teacher self-efficacy. While these characteristics were not specifically examined in this study, they affected the way teachers viewed themselves, therefore impacting their sense of efficacy. A study by Machado, Stern, Ray (2009) also identified a strong relationship between student achievement and teacher attitudes, even in high poverty elementary schools. The teachers, believing that education was the way out of that life, created a positive school climate and designed learning environments that promoted student academic success. This study adds to the existing body of literature as it too found differences in student scores of students with teachers who had varying levels of self efficacy and will impact the country as there is little evidence of research in this

area in Belize. There is now a tool that can be used to assist in designing relevant programs that will assist teachers to develop the necessary skills to impact student achievement in Belizean schools.

Further Research

There seems to be the need for additional research to determine if teacher gender influences student achievement in Belizean schools. It is noted in most Belizean primary schools that classrooms with females as homerooms generally have more teaching and visual aids available that can enhance student learning. It would also be interesting to determine if the level of teacher's education influences student achievement. As explained in chapter 1, Belize had a teaching college dedicated solely to preparing teachers for the classrooms. Teachers were taught methodology, concepts, and other important aspects of the profession. Presently, there is a department of education at the University of Belize that offers some of the courses but not with the same intensity as the former Teachers' College.

Further research could also identify if there are differences in the PSE scores for male and female students. There seems to be the general idea by teachers that male students perform better in Math. Another research area could be to identify if differences exist in PSE scores based on ethnicity of the students. In Belize, Chinese students perform notably well in Math while Spanish speaking students score lower in Language. Further research could identify if student scores in Mathematics and Language teachers with high or low self efficacy scores correlate with the high school and junior college scores of the teachers. In Belizean primary schools, teachers shy away from subjects in

which they do not feel confident. Results from the Primary Education programs across the country shows that the major weakness for student teachers is Mathematics. Some teachers have to repeat the class numerous times.

Conclusion

Overall, research shows that self-efficacy beliefs influence persistence, effort expended and perseverance at challenging tasks (Bandura, 2007; Chong, et al., 2010; Dellinger, et al., 2008; Henson, 2001; Shumacher, 2009; Yeo, et al., 2008). All schools in Belize should have teachers with high self-efficacy beliefs. That is one way of lessening the problem of poor student achievement. Efficacious teachers will not easily succumb to the numerous obstacles that face educators in the classrooms. Such teachers will find ways to reach each and every student in the classroom, be creative in delivery, prepare for every minute of class time, and dedicate themselves to the success of the students.

Managements could incorporate the use of the TES in the interviewing process to get an idea of how prepared the applicant is to find solutions to the challenges in the teaching learning process. As a screening tool, the TES can also point out to managements which of the three areas: engagement, instruction and management, should be focused on for each individual. Strengthening shortfalls from the beginning can only elevate a teacher who previously had low self-efficacy beliefs. Once teachers know what to do, how to do it, and feel good about doing it, chances of student success are enhanced greatly.

Teachers should attend workshops centered around making them more efficacious. Concentrating workshops around high efficacy and ensuring that qualified

and competent facilitators instill specific strategies and designs, teachers previously classified as low efficacious have the opportunity to correct this with guidance and support.

Recommendations

Ministry of Education

There is no doubt that the Ministry of Education and Youth (MoEY) wants effective teachers in every one of the 294 primary schools countrywide to offer quality education to every single student. Such desire is evidenced by the vision of the Quality Child Friendly School Initiative : ensuring equitable access to and efficiently delivered quality and relevant education, at all levels, for all Belizeans, and one of its goals: to Raise the Bar: Improve Student Achievement and Quality Assurance (Ministry of Education and Youth, 2011).

There is also much evidence to show that MoEY recognizes that teachers contribute significantly to student success as Teacher Competence and Commitment is one of the seven key areas of the initiative. MoEY must find ways to motivate the most capable individuals to become teachers, then design effective programs to foster and/or maintain a high sense of self-efficacy. These programs are essential as Bandura, (1997) pointed out that if people believe that their actions will not produce desired effects, they have very little incentive to act. Teachers must appreciate the varying factors that contribute to poor student performance and still believe that they can make a difference. Workshops centered around the TES scale's three factors of self-efficacy in the classrooms (engagement, instruction and management) must be develop and sustain these

factors, especially for new and younger teachers. Such workshops should also be incorporated in the existing teacher training programs countrywide. They are probably offered at some level, but should be more pronounced, incorporating a pre and post test in the class to measure efficacy at the end of the course. Principals must also be trained in these areas so they can support the teachers and assist with constant monitoring and supervision for growth.

Management

The role of local and general managers is crucial and involves providing resources and support to the teachers. Trained teachers must be allowed creativity in delivering for the varying abilities in the classroom. Monitoring and support for these teachers is essential and contributes to high morale and high self-efficacy. Novice teachers need even more monitoring and support to ensure that classroom delivery is at an acceptable standard. Managers should follow the criteria set by MoEY for the selection of teachers which includes the most qualified person who applied for the post.

Once the most ideal person(s) has/have been selected, it then becomes necessary to be more visible in the schools so that student success becomes the aim of the school community, but providing direct and constant support to the individuals delivering the material. Bandura (1997) stated that people with high sense of efficacy provides guidance and support to students and do not despair in the face of difficulties. Managements can assist high efficacy teachers by providing necessary resources listed in plans of actions. Such involvement from these school leaders can result in sustaining the level of efficacy in individual teachers. It was pointed out by Swars (2005) that teachers who engage in

professional development courses to improve their methods undergo a significant change in their self-efficacy beliefs. In Belize, managements facilitate specific workshops in addition to those offered by MoEY and these assist greatly in elevating and sustaining high self-efficacy.

Teachers

More and more MoEY is raising the bar of quality demanded in Belize's schools. Teachers need to understand that it is a difficult but rewarding profession. Schools in Belize are measured by the performance of the students, especially on the Belize Junior Achievement Test (BJAT) and PSE exams, the only forms of standardized testing used in the primary schools. A high sense of efficacy by the teachers is a must in order to succeed in the face of so many obstacles to student performance. Self-efficacy cannot be imitated, but rather one must make a conscious effort to regulate his/her actions (Bandura, 1995). He goes on to state that it is one's beliefs about what he/she can do with available resources. Therefore, teachers with high efficacy beliefs expect to succeed in their teaching and find successful management strategies. They engage in constant reflection and implement various strategies without giving up hope.

Teachers need to embrace the critical role they play in the success of their students. The research shows that teacher efficacy contributes significantly to student success. Students must not be labeled and passed on, they must be taught and they must be taught well. Teacher Competence and Commitment is one of the seven key areas of the Quality Child Friendly School Initiative, which means it's a key point with MoEY. Teachers who are deemed not capable should not be allowed to tamper with the quality of

education being offered to Belizean students. Once in the profession, teachers are expected to persevere in the face of difficulty and adversity. Belizean students deserve nothing less.

Final thoughts

This study shows that there is evidence to support the theory that students with teachers who believe they have a high and medium sense of self- efficacy are more likely to achieve success on their standardized exams compared to students with teachers who have low self-efficacy. Teachers with high self-efficacy are more committed to their students and the profession (Chong, et al, 2010; Erdem & Demirel, 2007; Shumacher, 2009). Teachers who believe that it does not matter the type of home from which the student comes, or how much their peers can influence them, or that there is little or no parental support, persist more intensely in their teaching efforts. These teachers set realistic and achievable goals with students, ensure that the classrooms are safe learning environments, provide different types of feedback to students and ultimately improve the performance of the students (Tucker, et.al., 2005). The way out of poor living conditions for many of the students is a quality education which cannot be provided by a teacher with a low sense of self-efficacy. Teachers entering in to the profession and those already in it must commit themselves and to ensure that they are competent to undergo the challenging task of educating the students.

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APPENDICES

APPENDIX A

Teachers' Sense of Efficacy Scale

Teachers' Sense of Efficacy Scale

Teacher Beliefs

How much can you do?

Directions: This questionnaire is designed to help us gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. Please indicate your opinion about each of the statements below. Your answers are confidential.

(1-2) Nothing (2-4) Very Little (5-6) Some (7-8) Quite A Bit (9-10) A Great Deal

1. How much can you do to get through to the most difficult students? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
2. How much can you do to help your students think critically? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
3. How much can you do to control disruptive behavior in the classroom? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
4. How much can you do to motivate students who show low interest in school work? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
5. To what extent can you make your expectations clear about student behavior? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
6. How much can you do to get students to believe they can do well in school work? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
7. How well can you respond to difficult questions from your students? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
8. How well can you establish routines to keep activities running smoothly? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
9. How much can you do to help your students value learning? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
10. How much can you gauge student comprehension of what you have taught? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
11. To what extent can you craft good questions for your students? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
12. How much can you do to foster student creativity? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
13. How much can you do to get children to follow classroom rules? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
14. How much can you do to improve the understanding of a student who is failing? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
15. How much can you do to calm a student who is disruptive or noisy? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
16. How well can you set up a class management system with each group of students? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
17. How much can you do to adjust your lessons to the proper level for indiv. students? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
18. How much can you use a variety of assessment strategies? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
19. How well can you keep a few problem students from ruining an entire lesson? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
20. To what extent can you provide an alternative explanation or example when students are confused? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
21. How well can you respond to defiant students? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
22. How much can you assist families in helping their children do well in school? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
23. How well can you implement alternative strategies in your classroom? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
24. How well can you provide appropriate challenges for very capable students? (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

APPENDIX B

Letter to Principals

Dear Principal,

My name is Tanya M. Nunez and I am the District Education Manager for the Stann Creek District and a doctoral candidate at Oklahoma State University, Stillwater, Oklahoma, U.S.A. As part of my doctoral dissertation, I am currently conducting a study to examine how teachers' perceived self-efficacy affects student achievement. My faculty advisor is Dr. Mwrumba Mwvita who can be contacted at 405 744-9451. I am requesting that you allow your Std 6 teacher(s) to participate in this study.

As part of my study, I will ask the teacher(s) to do the following:

1. Complete a coded questionnaire which will give information about their background, qualifications and experience.
2. Complete the Teachers' Sense of Efficacy Scale, a survey that measures teachers' beliefs about how they influence students' learning.

Participation will require about 25 minutes of the teachers' time: five minutes to fill out the personal questionnaire and 20 minutes to complete the survey. There are no known risks associated with the teachers' participation in this research beyond those of everyday life.

The participation of the teacher(s) is strictly voluntary and they can decide not to participate. There is no financial benefit to completing this survey but it is hoped that this research will give a better understanding of teachers' self-efficacy beliefs and how it impacts student achievement

To ensure confidentiality, the results of the study will be released as summaries and individual schools will not be identified.

Thank you again for all your assistance with this study. Should be there any questions, kindly contact me at 522 2114(work) or 610 2505 (cell).

Please complete the information below giving me permission to recruit participants at your site. One copy of this document is yours to keep for your records.

Sincerely,

Tanya M. Nunez

Permission to Recruit Participants

Principal's Signature

Date

APPENDIX C

LETTER TO TEACHER PARTICIPANT/CONSENT FORM

Dear Participant,

My name is Tanya M. Nunez and I am the District Education Manager for the Stann Creek Distirct and a doctoral candidate at Oklahoma State University, Stillwater, Oklahoma, U.S.A. As part of my doctoral dissertation, I am currently conducting a study to examine how teachers' perceived self-efficacy affects student achievement. My faculty advisor is Dr. Mwvita Mwrumba who can be contacted at 405 612-7325. I am requesting that as a Std 6 teacher, you participate in this study.

If you agree, you will be asked to do the following:

1. Complete a coded questionnaire which will give information about your background, qualifications and experience.
2. Complete the Teachers' Sense of Efficacy Scale, a survey that measures teachers' beliefs about how they influence students' learning.

Participation will require about 25 minutes of your time: five minutes to fill out the personal questionnaire and 20 minutes to complete the survey. There are no known risks associated with your participation in this research beyond those of everyday life.

Your participation is strictly voluntary and you can decide not to participate. There is no financial benefit to completing this survey but it is hoped that this research will give a better understanding of teachers' self-efficacy beliefs and how it impacts student achievement

To ensure confidentiality, the results of the study will be released as summaries and individual schools or teachers will not be identified.

Thank you again for your participation in this study. Should be there any questions, kindly contact me at 522 2111 (work) or 610 2505 (cell).

Please complete the information agreeing to be a participant. One copy of this document is yours to keep for your records.

Sincerely,

Tanya M. Nunez

Agreement to Participate

Participant's Signature

Date

APPENDIX D
PERSONAL INFORMATION QUESTIONNAIRE

TEACHER PERSONAL INFORMATION

Name of School: _____

Class being taught: _____

Please indicate with an (X) the category under which you fall for each question.

1. I have been teaching for:

_____ 0 – 5 yrs _____ 6 – 10 yrs _____ 11 -15 yrs

_____ 16 – 20 yrs _____ 21 – 25 yrs _____ 26+ yrs

2. My qualification is:

_____ Diploma _____ Associate's _____ Master's

_____ Doctorate Other _____

3. I am:

_____ Male _____ Female

4. I am identified as a:

_____ Mestizo _____ Maya _____ East Indian

_____ Creole _____ Garifuna Other _____

5. The group that best describes my age is:

_____ up to 25 yrs _____ 26 – 30 yrs _____ 31 – 35 yrs

_____ 36 – 40 yrs _____ 41 – 45 yrs _____ 46 – 50 yrs

_____ 50 + yrs

APPENDIX E
SAMPLE OF SCHOOLS, TEACHERS AND STUDENTS

Schools, Teachers and Students in Study

School Code	Teachers (2010)	Number of students who sat the PSE exam
1100	1	32
1200	1	35
1300	1	28
1400	1	8
1500	1	28
1600	1	18
1700	1	13
1800	1	31
1900	1	7
2000	1	30
2100	1	28
2200	1	14
2300	1	24
2400	1	31
2500	1	26
2600	1	29
2700	1	32
2800	1	20
2900	1	30
3000	1	32
3100	1	34
3200	1	11
3300	1	19
3400	1	11
3500	1	4
3600	1	13
3700	1	9

3800	1	29
3900	1	6
4000	1	20
4100	1	28
4200	1	9
4300	1	6
4400	1	30
4500	1	19
4600	1	26
4700	1	5
4800	1	27
4900	1	30
5000	1	27
5100	1	30
5200	1	17
5300	1	26
5400	1	23
5500	1	29
6100	1	19
6200	1	14
6300	1	34
6400	1	37
6500	1	29
6600	1	28
6700	1	42
6800	1	16
6900	1	26
7000	1	26

APPENDIX E
INTERNATIONAL REVIEW BOARD APPROVAL

Oklahoma State University Institutional Review Board

Date: Wednesday, January 19, 2011
IRB Application No ED115
Proposal Title: Teacher Self-Efficacy: A Link to Student Achievement in Belizean Primary Schools in English Language and Mathematics

Reviewed and Processed as: Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 1/18/2012

Principal Investigator(s):

Tanya Mae Nunez 2715 Wagierale Area Dangriga Town, Belize, Mwarumba Mwavita 302 Willard Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

X The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

- 1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Handwritten signature of Shelia M. Kennison

Shelia Kennison, Chair Institutional Review Board

VITA

Tanya Mae Alvarez-Nunez

Candidate for the Degree of

Doctor of Education

Thesis: TEACHER SELF-EFFICACY: A LINK TO STUDENT
ACHIEVEMENT IN ENGLISH LANGUAGE AND MATHEMATICS
IN BELIZEAN PRIMARY SCHOOLS

Major Field: Higher Education

Biographical:

Date of Birth: December 14, 1973

Place of Birth: Dangriga Town, Belize

Education:

Completed the requirements for the Doctor of Education in Higher Education at Oklahoma State University, Stillwater, Oklahoma in January, 2012.

Completed the requirements for the Master of Education in Educational Leadership at University of North Florida, Florida, 2003.

Completed the requirements for the Bachelor of Arts in Business Administration at the University College of Belize, Belize, 1994

Experience:

2010-present Ministry of Education, Stann Creek District
Centre Manager

1997-2010 Stann Creek Ecumenical College
Head of Modern Languages Department
English Language Teacher
Business Lecturer, Junior College

Name: Tanya Mae Nunez

Date of Degree: May, 2012

Institution: Oklahoma State University

Location: Stillwater, Oklahoma

Title of Study: TEACHER SELF-EFFICACY: A LINK TO STUDENT
ACHIEVEMENT IN ENGLISH LANGUAGE AND MATHEMATICS
IN BELIZEAN PRIMARY SCHOOLS

Pages in Study: 101

Candidate for the Degree of Doctor of Education

Major Field: Higher Education

Scope and Method of Study:

This quantitative, non-experimental study sought to determine if a statistically significant difference existed in student achievement on the PSE exam in Belizean primary schools for students who have teachers with varying levels of self-efficacy (high, medium and low). The Teacher Efficacy Scale (TES), which captures the multiple teaching tasks expected as students prepare for the Primary School Exam (PSE): engagement, instruction and management, was used to survey 51 Belizean primary teachers. The design was causal comparative and ANOVA was used to compare the means of the variables and determine the cause for existing differences.

Findings and Conclusions:

Findings revealed that there is a statistically significant difference in student achievement on the PSE exam in Belizean primary schools for students who have teachers with varying levels of self-efficacy. This study implies that all Belizean educators should have high self-efficacy as these are the teachers who generally persevere longer in their efforts to motivate students to achieve academic success despite the numerous obstacles that threaten such as little parental involvement and poverty.

Recommendations:

Policy makers should design and implement strong programs that foster and or maintain a high sense of self-efficacy focusing on engagement, instruction and management. All stakeholders in education should assist in monitoring and supporting educators. Educators must make a conscious effort to regulate their actions as self-efficacy cannot be imitated.

This study shows that there is evidence to support the theory that students with teachers who have a high level of self-efficacy are more likely to achieve academic success. Belizean educators need to appreciate their roles in our schools and recommit themselves to taking the educational level up another notch.

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