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**A CRITICAL UNDERSTANDING OF THE ROLE OF SOCIAL FACTORS IN
INFLUENCING MATHEMATICS PROFICIENCY
AND MOTIVATION**

A DISSERTATION
Presented to
the College of Graduate Studies
and Teacher Education Research
Philippine Normal University
Manila

In Partial Fulfillment
of the Requirements for the Degree
DOCTOR OF PHILOSOPHY
in Mathematics Education

ALBERTO DOLOR YAZON

September 2016

APPROVAL SHEET

This dissertation titled “A CRITICAL UNDERSTANDING OF THE ROLE OF SOCIAL FACTORS IN INFLUENCING MATHEMATICS PROFICIENCY AND MOTIVATION” prepared and submitted by ALBERTO D. YAZON, in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Mathematics Education, has been examined and recommended for approval and acceptance.

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to

God, the Almighty,

for the constant source of “energy”

Inay Elen, Tatay Emo, and Ate Benben

who drive me to attain “greater heights”

and “harmony” in life...

this dissertation is FOR you...

A.D.Y.

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ABSTRACT

Name of Researcher : **Alberto Dolor Yazon**

Title of Research : **A Critical Understanding of the Role of Social Factors in Influencing Mathematics Proficiency and Motivation**

Key Concepts : **Mathematics proficiency, motivation, familial influence, peer influence, community environment, classroom cultural climate, school climate**

Degree: : **Doctor of Philosophy**

Specialization : **Mathematics Education**

Adviser : **Rene R. Belecina, Ph. D.**

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This study determined whether the social constructs, namely familial influence, peer influence, community environment, classroom cultural climate, and school climate predict mathematics proficiency and motivation. It also examined whether motivation mediate the relationship between mathematics proficiency and each of the identified social constructs. The role of the social factors that influence mathematics proficiency and motivation was described. Data were gathered from 1249 eighth grade students through self – report questionnaires and a developed mathematics proficiency test.

Results showed that majority of the eighth grade students belong to nuclear family, with parents having almost equal distribution of authoritative (high responsiveness and high control), authoritarian (high responsiveness but low control), permissive (low responsiveness but high control), and uninvolved (low responsiveness and low control) styles; and average level of parental involvement in their education. Further, they have above thirteen friends

and are engaging with positive peer activities; are living in rural area with low level of involvement in community activities; have reported high regard for gender equity, collaboration, deference and congruence; and highly experienced that they are socially, emotionally, mentally, and morally safe. Furthermore, the eighth grade students are highly motivated whose mathematics scores were moderately right-tailed and platykurtic.

Ten perspectives of regression analyses were investigated using regression and covariance analyses. In each perspective, regression analysis was performed on the specific subscales of each construct, employing parsimony principle through backward elimination method when necessary. Familial background, peer background, classroom cultural climate, and school climate significantly predict mathematics proficiency and motivation. The specific dimensions such as family structure, parent's responsiveness, activity with peers, involvement in community, competition, congruence, physical environment, social environment, learning (cognitive) environment, and moral environment were found the most significant predictors of motivation. Meanwhile, the specific dimensions such as parent's responsiveness, parent's control, parental involvement, activity with peers, type of community, involvement in community, gender equity, collaboration, competition, physical environment, and social environment were found the most significant predictors of mathematics proficiency. Moreover, motivation partially mediated the relationship between mathematics proficiency and familial influence, peer influence, classroom cultural climate, and school climate.

The structural equation modeling (SEM) technique was used to combine regression models in one analysis. Through SEM, the Social Constructs influencing Mathematics

Proficiency and Motivation (SCMPM) Model emerged. The model was tested and was found empirically valid and generally acceptable. It describes that the person's level of motivation is socially channelized by the influence of family, classroom cultural climate, and school climate; and that the person's level of proficiency in mathematics is channelized by peer influence.

CHAPTER I

THE PROBLEM AND ITS BACKGROUND

Introduction

Mathematics education at the basic education provide opportunities for individuals to develop skills and attitudes needed for effective participation in everyday living and prepare them for further education and the world of work so that they make worthwhile contributions to the society at large (Pascua, 1993). Regardless of sex, culture, socio-economic status, religion or educational background, all people have, one way or another, needed to apply some form of mathematical knowledge in dealing with their day-to-day activities. One cannot deny the practical uses of mathematics in, for example, making wise purchases, measuring distances, finding locations, estimating expenses and anticipating future problems to find solutions early enough, to name a few (Ogena and Tan, 2006).

More than just a set of isolated facts and concepts, mathematics provides us with “ways of knowing”, thinking and understanding (Bernardo, 1998). Doing mathematics requires logical thought and trains students to think both critically and creatively. In school, students usually encounter specific problems that apply to the topic at hand, in addition, the thought process that goes into understanding the problem, differentiating what is essential from what is not, being able to make connections among the given information to generate a solution and verifying its accuracy is surely something that students can apply even in non-mathematical settings. Mathematics provides students with the essential skills in reasoning, decision-making and problem solving to help them make sense of many aspects of our rapidly changing world (FAPE,

1988). Further, it promotes self-reflection and develops one's ability to face life's problems (Manuel, 1979). In short, mathematics is a means of empowerment and understanding that everyone is entitled to.

Furthermore, mathematics provides us with a powerful means of communication – an objective language that allows us to express quantifiable relationships concisely (Ogena and Tan, 2006). Through mathematics, we can formulate representations to model and interpret both physical and social phenomena. Mathematics is the unifying and integral thread that runs through the sciences (NRC, 1986), facilitating the connection of ideas in an increasingly information and knowledge - driven society (Ogena and Tan, 2006).

Since a country's economic progress relies heavily on its progress in science and engineering, this demands a strong foundation in mathematics (Pascua, 1993 and Ogena and Tan, 2006). Mathematics is seen as “an essential tool for intelligent participation in a technological society” (FAPE, 1988). As the level of mathematics needed in the workplace continues to increase, its study is indispensable in order to develop a “scientifically and technologically literate citizenry” (UP NISMED, 2001). In many countries, mathematics courses are seen to be “gatekeeper” courses that determine one's future success and acceptance into colleges and universities (Gates and Vistro-Yu, 2003; The College Board, 2000, 1990). In the Philippines, knowledge of mathematics is a valuable tool for social development and global competitiveness in our changing world. As we develop the mathematical proficiency and literacy of individual Filipino students, they, in turn, contribute to the skills, values and collective intellectual resources of the Philippines, increasing our nation's funds of knowledge.

In spite all these importance accorded to Mathematics in society, Filipino students still lag behind in mathematics expertise with the rest of the world as shown by their dismal scores in national and international assessments. According to the World Economic Forum's (WEF) Global Competitiveness Report for 2011 – 2012, Philippines ranked 115th out of 142 countries in the perceived quality of mathematics education. Further, comparative international evaluations such as Trends in International Mathematics and Science Study (TIMSS) revealed that Filipino students placed 42nd in mathematics among 45 countries. Furthermore, DepEd data showed that the average National Achievement Test score of public high school students for School Year 2011 to 2012 was significantly lower at 48.9% compared to the elementary students' 66.79%. This trend has been apparent for the past five years. It signifies that Filipino learners' mathematics achievement did not reach even the national's target of at least 75%. These findings provoked an interest to the development of further research that seeks to characterize and understand different variables which influence student achievement in mathematics. This will help to make possible strategies for future action in schools, families, and communities, in order to bring about an improvement in the failure rate in mathematics.

While mathematics competence appears to be an important factor for national progress and global competitiveness, motivation is deemed necessary to succeed in school and in acquiring lifelong learning. Research has shown that motivation is one of the most important factors influencing how much learners will learn, how successful they will be at school and how much they will accomplish throughout their lives (Eggen & Kauchak, 2007). Eccles & Wigfield (2002) note that children attach more value to activities at which they excel over time, suggesting they will increasingly be more motivated to learn in subjects in which they experience success.

In a longitudinal study of children's motivation and achievement in math, motivation for learning math was found to be almost uniquely predicted by prior math motivation (Gottfried, 1990). The literature across the globe have long recognized the importance of motivation for supporting student learning however, factors influencing Filipino student's motivation to learn mathematics have not yet been documented. It is in this light that researcher also intends to determine the role of social factors in influencing Filipino students' desire to learn mathematics.

The complexity of factors that can influence students' mathematics achievement and motivation to learn is demonstrated by Singh, Granville, and Dika (2002) when they reveal that high achievement in mathematics is a function of many interrelated variables related to students, families, and schools. Fraser and Kahle (2007) have also highlighted that learning environments at home, at school, and within the peer group accounted for a significant amount of variance in student attitudes, and furthermore, that class ethos had a significant impact on the scores achieved by students for these attitudes.

A traditional social-cognitive perspective highlights personal and social-contextual factors as salient components that lead to motivation and achievement (e.g., Bandura, 1997). Personal factors are within-student characteristics, involving psychological, cognitive, and behavioral variables. Social-contextual factors involve the variables that originate from outside of the student. There is no black-and-white distinction between personal and social-contextual factors. In fact, these two groups of factors are so intertwined that it is sometimes hard to discern their origin (i.e., inside or outside of the student). For instance, students' engagement with

schoolwork can originate from the student's own motivation but may also be heavily influenced by the social context.

A human ecological systems framework describes human development through the interrelationships of multiple environments and their effects on the developing individual (Bronfenbrenner, 1979). Utilizing this perspective, we can identify several factors which may impact an adolescent's math proficiency and motivation.

Family, as the first social factor and source of informal education for a child, has been found vital in shaping student's mathematics achievement and motivation. Researchers have identified family variables that could possibly explain how the family influences certain aspects of the child's functioning. These family variables include but not limited to family structure (Dimaculangan, 2015; Pong, 1997), parenting styles (Pratt, Green, Macvicar, & Bountrogianni, 1992), and parental involvement and support in school-related matters (Desforges & Abouchar, 2003). Children who do not live in intact families tend to be less proficient in mathematics (Pong & Thompson, 2003). Authoritative parenting style was positively related to better children's mathematics achievement (Pratt, et.al., 1992). The level of parental involvement in education has been proven effective in improving students' academic achievement (Drissen, Smit & Sleegers, 2005). Studies have found a positive correlation amongst the level of parental involvement and the level of academic achievement demonstrated by their children (Jeynes, 2005); the higher the level of attainment, the more parents get involved (Desforges & Abouchar, 2003).

Considering the omnipresence of peers in people's lives, it is likely that they influence who they are and what they become. When adolescents shift their attention from parents to peers, the latter become a core influence for their development (Harter, 2012). Peers are also a great source of motivation for one another. Lifelong friendships are formed at school and peers have been known to stand up for one another sometimes even more than siblings. They assist one another with school work and also become mentors to one another in their personal lives. Students, who work in groups, sharing their knowledge and skills, obtain better results than those who work alone. Further, it has been recognized that a child's peers can have an impact on achievement, but the extent of that effect has been an open question (Johnson, 2000). Hence, including peer influence as another social factor in this study will fill in this gap.

The third social factor which has been found to be effective in moderating students' math achievement is the community environment where the learners are situated. There is disparity in mathematics achievement and level of motivation between urban and rural students. Del Castillo (2009) claimed that students from urban areas have higher mathematics achievement than those from rural areas. The level of extracurricular activities has often been associated with improved student learning, where studies have found students' participation in extracurricular activities to be effective in improving students' academic achievements (Dumais, 2006). This study explores whether the type of community and students' participation in extracurricular activities math would affect math achievement.

Another social factor that could possibly reinforce the students' motivation and cause him to achieve at even higher level is the classroom cultural climate. When students feel connected

and supported in the classroom, they will be intrinsically motivated to join in the classroom activities. Motivation can therefore be enhanced when students have opportunities to build social relationships in the context of the classroom (Anderman & Anderman, 2010). Further, the climate that the teacher creates in the classroom for the students through goal-setting, appropriate challenges, and empathy for the students is one major factor contributing to student achievement. The classroom cultural climate of Filipino learners in terms of gender equity, collaboration, competition, congruence, teacher imitation, classmate imitation, and teacher authority (Darmanegar, 2006) has not been documented. This study will elucidate how these dimensions influence mathematics proficiency and motivation.

The school climate sets the tone for all the learning and teaching done in the school environment and, as research proves, it is predictive of students' ability to learn and develop in healthy ways. A school that has positive climate is perceived as welcoming and is characterized by respectful interactions between individuals. In these types of surroundings, students are also motivated to achieve (Lehr, 2010). As the last social factor, this study will explore whether the school climate which is to be measured in terms of physical, social, affective, cognitive, and moral environment (National School Climate Council, 2007) influences mathematics proficiency and motivation of eighth grade students in Laguna.

To sum up, the present study determines how the above mentioned social factors influence mathematics proficiency and motivation. This study is conducted to find out whether or not these variables directly influence mathematics proficiency and motivation of eighth grade students in the Province of Laguna. The mediation role of motivation on the relationship between

sociocultural factors and mathematics proficiency are also determined. At the outset of this study, the mathematics proficiency and motivation of these groups are described through identified intertwining variables. This study fills the gap on the scarcity of research in understanding the role of social factors (e.g. family, peers, community, classroom, and school climate) in influencing mathematics proficiency and motivation among Filipino learners.

There were several reasons why more research in this area was necessary. First, although this is an idea to which many teachers subscribe, it has not been studied comprehensively and some studies even point towards a moderate or weak predictive value. It is not clear if the identified social factors are predictors of performance for all types of students and if it is a promising “lever” teachers can adjust to improve student learning. This study adds evidence and clarity to this relationship by using data from rural and urban communities in Laguna, Philippines where the effects of confounding variables such as race, language, ethnic backgrounds, and teacher effects are minimized.

Second, more explanatory studies need to be conducted within real classroom settings using actual school data for it to be more relevant to teachers. It is more useful to elaborate how the identified social factors influence mathematics performance and motivation rather than simply stating the degree of their relationship and testing if these relationships are statistically significant.

Lastly, much literature looked into the relationship between and among isolated social factors, mathematics proficiency and motivation; however the mediating role of motivation to

the relationship between social factors and mathematics proficiency, as far as the researcher knows, has not yet been explored.

Conceptual Framework

The theoretical bases of this study are anchored on the existing theories and/or models on (1) Mathematics Achievement and Proficiency; (2) Motivation; and (3) Social Influences (see Table 1). This section includes the theories and/or models developed and applied in the learning of mathematics relevant and necessary to better recognize the social influences on mathematics proficiency and motivation.

Table 1
Theories and Models Relevant to the Present Study

Theories / Models on		Proponents	
Mathematics Learning and Proficiency	Joshi's Math Achievement Model (1998)	Byrnes & Miller (2007)	Zhao (2011)
		TIMMS (1995) & PISA (2000)	Kilpatrick, Swafford & Findell (2001)
Motivation	Omrod (2008)		Student Approaches to Learning (SAL) theory (Biggs, 1993; Entwistle & Ramsden, 1983; Entwistle & Waterson, 1988)
	Eccles, 1984; Eccles et al., 1983; Wigfield, 1994; Wigfield & Eccles, 1992	O'Donnell (2005)	
Social Factors		Woolfolk (2010)	
	Bronfenbrenner (1979)	Taylor (2015)	Wilcox (2013)

Mathematics Learning

Joshi (1998) proposed a model that describes overarching interactions in the factors that affect math learning. Using an international perspective, the study incorporated a model consisting of two latent variables (personal and environmental factors) predicting the math achievement of students (see Figure 1).

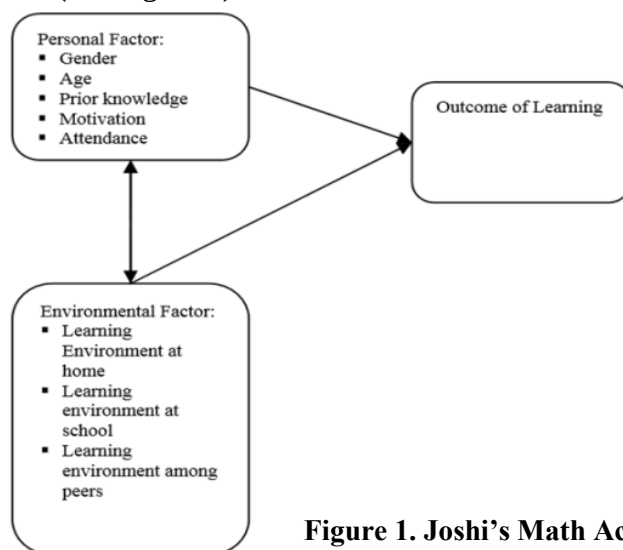


Figure 1. Joshi's Math Achievement Model (1998)

The opportunity-propensity model is another distinct model being developed in recent years in the field of mathematics learning (Byrnes & Miller, 2007; Byrnes & Wasik, 2009). The model builds a variety of factors and how they interact in the way they influence later achievement. In this model, there are three basic sets of factors (Byrnes & Miller, 2007). First, the authors distinguish “opportunities”, referring to elements in the culturally defined context in which an individual is presented with content to learn. Second, they distinguish “propensity factors” that refer to internal variables and processes that affect the ability to learn in particular. Third, the authors make explicit “distal factors” that enable or explain the extent to which learners are affected by the opportunity factors; engage the propensity factors; and/or directly influence later achievement. This model goes beyond limitations of the Walberg model. The

model expects researchers to combine the impact of opportunities (high or low), attitudes (willing to use or not), and ability (able or unable) in view of calculating the predictive impact on later achievement. In addition, the model presents a dynamic system that is to be tested over time. Current achievement has – therefore – to be entered as an additional predictor of later achievement. Available empirical research with this model points at the propensity factors to be the most important predictors for achievement (Byrnes & Wasik, 2009).

In international level, comparative studies have been conducted since the 1950s. The most famous studies – in this context – are set up by the International Association for the Evaluation of Educational Achievement's (IEA) project of Trends in International Mathematics and Science Study (TIMSS) from 1995, and by the Organization for Economic Cooperation and Development (OECD), the Programme for International Student Assessment (PISA) set up since 2000. Both studies are set up in a cyclic way and focus in part on mathematics achievement. They collect “rich” data from students, parents, teachers, and schools, thus mirroring a model that all related variables and processes influence learning and resulting mathematics achievement.

Zhao (2011) theorized three levels in specific influencing variables: individual level variables related to the student and his/her family; class level variables related to the teacher; and school level variables related to the location of the school.

Mathematics Proficiency

The analyses of the mathematics to be learned supported by researches in cognitive psychology and mathematics education, understanding, and skill people need today have led to

adopt a composite, comprehensive view of successful mathematics learning (Kilpatrick, Swafford, and Findell (2001). Recognizing that no term captures completely all aspects of expertise, competence, knowledge, and facility in mathematics, they have chosen *mathematical proficiency* to capture what it means for anyone to learn mathematics successfully.

Kilpatrick, et.al. (2001) proposed five “intertwining strands” of mathematical proficiency, namely: *Conceptual Understanding* – comprehension of mathematical concepts, operations and relations; *Procedural Fluency*– skill in carrying out procedures flexibly, accurately, efficiently, and appropriately; *Strategic competence*–ability to formulate, represent, and solve mathematical problems; *Adaptive reasoning*–capacity for logical thought, reflection, explanation, and justification; and *Productive disposition*–habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one’s own efficacy.

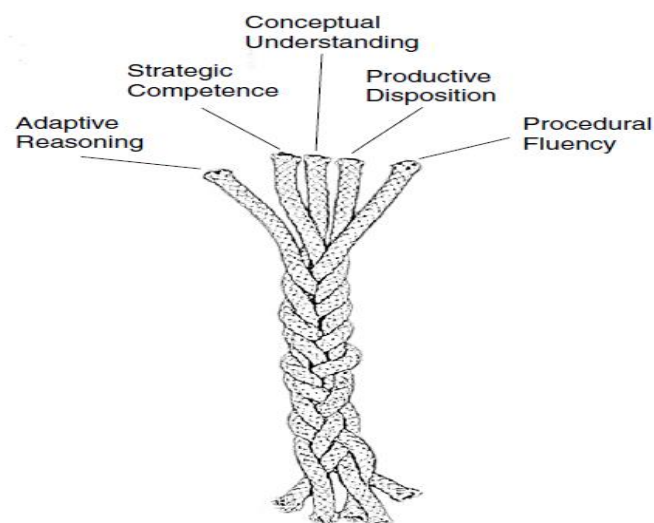


Figure 2. Intertwined Strands of Mathematical Proficiency (Source: Kilpatrick, et.al. 2001. *Adding It Up: Helping Children Learn Mathematics*)

Kilpatrick et.al. (2001) maintained that these strands are not independent; instead, they “represent different aspects of a complex whole” (p.16), thus leading to the notion of intertwined strands, as shown in Figure2.

Conceptual understanding refers to an integrated and functional grasp of mathematical ideas. Students with conceptual understanding know more than isolated facts and methods. They understand why a mathematical idea is important and the kinds of contexts in which it is useful. They have organized their knowledge into a coherent whole, which enables them to learn new ideas by connecting those ideas to what they already know (Kilpatrick et al., 2001).

According to Kilpatrick et al. (2001), procedural fluency refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently. Furthermore, while accuracy and efficiency are often associated with pencil and paper computation, students need to develop their ability to perform mental computations flexibly and fluently. Such fluency needs to be based on number sense and the understanding of important concepts.

Strategic competence refers to the ability to formulate mathematical problems, represent them, and solve them. This strand is similar to what has been called problem solving and problem formulation in the literature of mathematics education and cognitive science, and mathematical problem solving, in particular, has been studied extensively (Kilpatrick et al., 2001). For successful problem solving to take place, teachers need to create a classroom climate that supports problem solving. Problems need to be sufficiently challenging to interest students, but not so difficult that they get frustrated. When students become seriously stuck, teachers need

to intervene in such a way that students retain ownership of the problem, and to avoid, in all but the most extreme cases, providing students with the solutions. Teachers should, whenever possible, listen to what their students have already discovered and attempt to build on their ideas.

Adaptive reasoning refers to the capacity to think logically about the relationships among concepts and situations. Such reasoning is correct and valid, stems from careful consideration of alternatives, and includes knowledge of how to justify the conclusions. In mathematics, adaptive reasoning is the glue that holds everything together (Kilpatrick et al., 2001). “Students are reasoning mathematically when they explain their thinking, when they deduce and justify strategies used and conclusions reached, ... when they prove that something is true or false, and when they compare and contrast related ideas and explain their choices” (Australian Curriculum: Mathematics (F–10), Australian Curriculum Assessment and Reporting Authority, n.d.).

Developing a productive disposition requires frequent opportunities to make sense of mathematics, to recognize the benefits of perseverance, and to experience the rewards of sense making in mathematics (Kilpatrick et al., 2001).

These intertwining strands were used as the constructs of mathematics proficiency of eighth grade learners. The 50 items in the developed and validated mathematics proficiency test were equally divided in terms of conceptual understanding, strategic competence, procedural fluency, adaptive reasoning, and productive disposition which are all parallel to the desired learning competencies of Grade 8 mathematics.

Motivation

Mwamwenda (2004) defines motivation to learn as the point when a learner wants to achieve a particular goal which is to learn. Such a learner will find academic activities meaningful and worthwhile, and will try to benefit from them (Woolfolk, 2007).

As adolescents develop a motivation to learn, they will start to initiate learning activities. They will stay involved in a learning task. They will exhibit a commitment to learning as they will find academic activities meaningful and worthwhile (Zhao, 2011).

Omrod (2008) presented the motivational theories of education resulting from social and cultural factors (sociocultural theories of motivation including situative theories of cognition). These factors include the norms for behavior that family, relatives, peers, and the society communicate and encourage students for better educational achievements.

The environment is crucial for the learner because it stimulates the student to develop cognitively, as well as it encourages them to learn more through interaction with other students, their teacher, family, friends, and relatives. In addition, situative theories of cognition known as the most distinctively sociocultural theories of motivation relate knowledge and learning to social interactions and cultural activities. These theories show that learning is being ingrained in social events and takes place when the learner is interacting with people, objects, and events within the environment. Therefore, learners need assistance from their teacher in the beginning, and later from their peers, in order to improve their learning. Furthermore, research also shows that a student's development cannot be studied individually, but rather socially.

Achievement motivation theorists attempt to explain people's choice of achievement tasks, persistence on those tasks, vigor in carrying them out, and performance on them (Eccles, Wigfield, & Schiefele, 1998; Pintrich & Schunk, 2008). As discussed by Murphy and Alexander (1994), there are a variety of constructs posited by motivation theorists to explain how it influences choice, persistence, and performance. One long-standing perspective on motivation is expectancy–value theory. Theorists in this tradition argue that individuals' choice, persistence, and performance can be explained by their beliefs about how well they will do on the activity and the extent to which they value the activity (Atkinson, 1957; Eccles et al., 1983; Wigfield, 1994; Wigfield & Eccles, 1992).

Expectancies and values are assumed to influence achievement choices directly. They also influence performance, effort, and persistence. Yet expectancies and values are assumed to be influenced by task-specific beliefs such as ability beliefs, the perceived difficulty of different tasks, and individuals' goals, self-schema, and affective memories. These social cognitive variables, in turn, are influenced by the individuals' perceptions of their own previous experiences and a variety of socialization influences (Eccles et.al, 1983, Eccles et.al., 1998, and Wigfield & Eccles 1992).

According to O'Donnell, et. al. (2005), there are ten particular motivational forces that create and sustain a learner's efforts toward the achievement of a goal such as learning (see Table 2).

Table 2
Motivational forces

Cognitive motivational forces	Motivational forces involving needs, feelings and strivings
<i>Self-efficacy</i> - an 'I can do this' judgment	<i>Psychological needs</i> - conditions within the learner that can promote positive emotion
<i>Mastery beliefs</i> - a portrayal of the self during failure leading to an increase of effort	<i>Intrinsic motivation</i> - an inherent desire to engage one's interests and develop one's skills
<i>Attributions</i> - explanations of why success or failure outcomes occur	<i>Extrinsic motivation</i> - an environmentally created reason to engage in a behavior
<i>Goals</i> - what the learner is trying to achieve	<i>Positive emotions</i> - positive feelings that attract attention towards learning activities
<i>Self-regulation</i> - capacity to monitor and evaluate how goal-pursuing efforts are going	<i>Achievement strivings</i> - eagerness to exert effort when facing a standard of excellence

Key Features of Motivation

Bosman (2012) says that there are four main features of motivation, namely goal-setting, self-efficacy, self-regulation, and interest. But this particular study focuses on goal-orientation, self-efficacy, and task value.

Goal – Orientation

Goal theory is one of the approaches, according to Rueda and Chen (2005), which is used to understand motivation in relation to school achievement. The goal theory of motivation has made significant contributions in explaining the relationship between learners' motivation and their consequent school achievement while taking into account the schools' and learners' cultures and examining the interaction of these factors. Goal theory stresses that school

motivation and individual achievement are the product of a complex set of interacting goals that reflect personal, family, and cultural values. The goals held by learners direct and guide their cognition and academic behavior (Suliman & McInerney, 2006), and are powerful motivators (Tuckman & Monetti 2011).

The importance of goals to a learner's motivation and achievement is shown by O'Donnell, et.al. (2005) who state that generally, learners with goals outperform or perform better than learners without goals. Learners who set goals for themselves and learners who accept goals set by others also generally outperform their no-goal peers. On the other hand, learners who do not have goals and ambitions will lack a sense of having to move in a particular direction and will thus lack motivation (Boekarts, et al, 2010).

Mansfield and Vallance (2009) shortened this taxonomy to two main goals which learners pursue. The first type of goals is academic goals known as task mastery goals and performance goals. The pursuit of task mastery goals has been associated with high levels of cognitive engagement and intrinsic motivation. The pursuit of performance goals has been associated with the wish to receive external reinforcement regardless of the learning involved.

The second type of goals is social goals such as social responsibility goals, social status Goals, and social relationship goals. Social goals can also include a variety of other goals such as family-oriented goals (*'I do well at school so my family will be proud of me'*), teacher-oriented goals (*'I do my work because I want the teacher to like me'*), and peer-oriented goals (*'in order to be accepted by my friends, I sometimes let my schoolwork slip'*) (Maehr & Yamaguchi, 2001).

Self – efficacy

In educational settings, self-efficacy provides the underpinning for motivation (Klassen & Usher, 2010). Self-efficacy, according to Brophy (2011) and Rueda and Chen (2005), is an individual's evaluation that he or she has specific performance capabilities that allow the accomplishment of a particular type of task. Self-efficacy is generally linked to judgments of one's capacity to engage in a task rather than to the skills the task requires (Renninger, 2010). An adolescent who has high level of self-efficacy believes that *'I can'*. Such an adolescent would further endorse statements such as *'I know that I will be able to learn the material in this class'* and *'I expect to do well in this activity'*. Such learners eagerly work at learning tasks and are more likely to spend effort and persist longer at these learning tasks (Santrock, 2001). Such positive self-efficacy, according to Boekarts, et.al. (2010) and Renninger (2010), is generally considered to be a predictor of success because it has been found to influence strategy use, effort, and perseverance. If learners believe they cannot do well and have low levels of self-efficacy, they may not put in the required effort to perform well. They may think passively, avoid effort, develop negative feelings and will not be motivated. On the other hand, learners with high levels of self-efficacy develop the needed impetus to master learning activities and academic subjects. They accept more challenging tasks, exert more effort, persist longer, think actively, make an effort, develop positive feelings and achieve a higher performance - in short, they are motivated (Eggen & Kauchak, 2007; Klassen & Usher, 2010; Tanaka & Tanaka, 2009).

Task – Value

'Because it is interesting, important, and useful' is often a phrase given by learners as to why they should be motivated to engage in a task. According to Expectancy – value model,

students' motivation to learn is dependent upon two components: expectations for achievement and value attributed to the task. This study emphasizes the task value component defined as the incentive for engagement in academic activities and consists of four components, namely attainment value; intrinsic value; utility value, and cost (Wigfield & Eccles, 1992). Students who find the course worthwhile, who believe that they are capable or are focused on knowledge and skills development are more likely to develop understanding and make sense of what they are learning (Neuville, et.al, 2007).

Social Influence

Everything people learn takes place in a social context. From birth and throughout their lives, interactions with others shape the way they understand the world. Learning occurs as parents talk with their children, as children play together, and as teachers assist students. Even as people sit reading a novel by themselves, they interact with the author, the social, and the cultural context of the novel; and, in some sense, others who have read the same book.

The influence of culture and context on student learning and motivation has long been documented by empirical research (Salili, Chui & Lai, 2001). The Student Approaches to Learning (SAL) theory (Biggs, 1993; Entwistle & Ramsden, 1983; Entwistle & Waterson, 1988) is a learning paradigm that takes seriously the influence of contextual factors, sociocultural and educational, on motivation and learning. This paradigm is in line with cultural and indigenous viewpoints suggesting that culture and mind are inseparable (Cole, 1990), or as explicitly stated by Saljo (1991), "... human experiences are inescapably cultural in nature and learning takes place within cultural boundaries" (p.184).

Further, the Direct Influence Model (Taylor, 2015) is one way to consider many of the social influences that are related to mathematical ideas and orientations that emerge as people participate in a particular practice. This model considers the ways in which social influences close to the individual (proximal influences) and larger social influences (distal influences) can be related to emerging knowledge both directly and indirectly. This particular way of conceptualizing social influence draws from the work of Saxe (1991), Wertsch (1998), and Rogoff (1990) to examine how the ways individuals participate in cultural practices, the artifacts they use, and the social interactions that exist are related to the development of different types of knowledge.

The Direct Influence Model (Taylor, 2015) is the model that represents four types of influences in the immediate environment that can affect emerging mathematical understandings. The model also recognizes many social influences described in ecological approaches to development (Bronfenbrenner, 1979) by highlighting the way in which even distal influences can affect emerging mathematics problems and understandings more directly by shaping the types of mathematics that emerge. Distal influences include governmental policies, societal beliefs and customs, and the legal system. These distal components may influence components of the inner circle, but they can also directly influence emerging mathematical understanding.

Bronfenbrenner's ecological systems theory looks at a child's development within the context of the system of relationships that form his or her environment. Bronfenbrenner's theory defines complex "layers" of environment, each having an effect on a child's development. This theory has recently been renamed "*bioecological* systems theory" to emphasize that a child's

own biology is a primary environment fueling his/her development. Changes or conflict in any one layer will ripple throughout other layers. To study a child's development then, people must look not only at the child and his/her immediate environment, but also at the interaction of the larger environment as well (Paquette & Ryan, 2001).

Bronfenbrenner's ecological systems theory can be helpful in gaining a clearer picture of how adolescent development is influenced by those around them (Mentzer, 2011). Bronfenbrenner made the argument that in order to understand human development, people must move beyond the direct observable behaviors between one or two individuals in a laboratory setting and expand their view to the examinations of multiperson systems of interaction, taking into account aspects of the environment beyond the immediate situation containing the subject (Muuss, 1988). The ecological model adds to the understanding of the sociocultural environment by recognizing four key structural systems and describing the interactions between those systems. The four structural systems include the microsystem, the mesosystem, the exosystem, and the macrosystem.

Microsystem: The microsystem is defined as the complex of relations between the developing person and environment in an immediate setting containing that person (e.g. home, school, workplace, etc.) (Muuss, 1988, p. 302). An adolescent's microsystem is made up of a social network of interpersonal relationships. The adolescent both influences and is influenced by individuals within their social network with whom they have a lasting relationship. The family is the main microsystem for adolescents, followed by friends and school. Microsystems are not static; they undergo changes due to changes in time and experiences. As adolescents enter

into high school, their peer microsystem becomes more differentiated and has a stronger impact on adolescents. Healthy microsystems are based on mutual exchanges in which parents respect reasonable requests from the adolescent and adolescents respect reasonable requests from their parents. Microsystems that provide a significant amount of information, provide answers to questions, encourage exploration and experimentation, and provide guidance enhance adolescents' learning and development and leads to their being successful later in life (Muuss, 1988).

Mesosystem: The mesosystem is made up of a network of associations between the many microsystems in individual's life. An analysis of the mesosystem looks at the quality, frequency, and influence of interactions as family experiences are linked to school adjustment, characteristics of the family and conforming to peer pressure, or the link between attending church and becoming intimate with the opposite sex at a young age. Mesosystems may become impoverished if there are very few or no significant links between the microsystems. This can occur if parents do not know their children's friends, or if parents do not have any form of communication with their children's school. A challenge can occur if microsystems within a mesosystem endorse different values. Adolescents who are involved in microsystems that hold different values can experience tension within the mesosystem and they may feel they have to choose between the values, that they are being pulled in different directions, or they may feel they have to act as though they agree with both sets of values. Ecological transitions occur as microsystems within a mesosystem change, for example if an adolescent decides to go to a different church or begins spending time with a different group of friends. While adolescents will

experience changes in microsystems throughout their lives, it is important to have a strong family microsystem to help ease the ecological transition (Muuss, 1988).

Exosystem: The exosystem is the larger community within which the adolescent lives; however, they do not directly participate in the decision making of the microsystem. Examples of exosystems are parents' employers, school boards, the media, and the local government. Parents' employers determine the hours they have to work, how much the parent is paid, and if they will have to travel or relocate; while adolescents do not directly participate in their parents' work, they are impacted by the decisions made by their parents' employer. The school board can also have a significant impact on adolescents and the quality of education they will receive from their school based on decisions made regarding curricula and budget cuts. The question is raised to researchers regarding how exosystem decisions that impact the lives of adolescents actually affect adolescents' development (Muuss, 1988).

Macrosystem: The macrosystem does not directly impact adolescents' lives; however, it provides them with a blueprint of the steps they will need to take throughout the course of human development. Included in the macrosystem is a core of general cultural, societal, legal, political, religious, economic, and educational values (Muuss, 1988).

Socioecological framework (Wilcox, 2013) which stemmed from Bronfenbrenner's ecological model is another theoretical model relevant in this study. In his framework, the micro-, exo-, and macro-systems are seen as nested one within another. Microsystems can be equated to the immediate classroom settings where students experience proximal processes—direct interaction between educators and students (e.g., instruction). Exosystems are those settings in

which students do not usually participate directly (e.g., school and district administrative meetings) but within which distal processes may occur that can indirectly influence students' performance (e.g., intervention and assessment discussions). Finally, macrosystems take shape as cultures, climates, bodies of knowledge, customs, lifestyles, and socioeconomic conditions (e.g., status or class) also distally influence students' lives.

Socioecological theory posits that proximal processes generally have greater impact on development than do distal ones (those that occur in exo- and macro-level contexts). However, the nature of the impact is influenced by the stability of the climate, so that distal processes have greater impact on individual development in adverse contexts than in less challenged circumstances. If so, it is important to identify how the effects of adversity might be mitigated to support the highest levels of student achievement.

Social Factors

According to Page and Connell (2009), it is difficult to separate the two terms- social and cultural elements; hence, the term sociocultural tends to be used frequently in literature. Sociocultural entails social and cultural factors that influence individuals and are inclusive of culture, religion, language, social class, reference group, family, demographics (age, sex, education, occupation, income, and marital status), and geography (Schiffman, Kanuk and Hansen, 2008).

According to Freire (1970) as cited by Osterling (2001), a child's development could not be separated from its social context since the social context influences how and what learners

think (p. 10). As Rueda, MacGillivray, Monzo, &Arzubiaga (2001) state, through a sociocultural lens, there is a shift from looking at the child as an individual to looking at the child in situated in a larger context. This larger context can be defined in terms of the classroom, interactions with peers, family, and school staff, and the community at large. According to Arzubiaga, et. al. (2002), it is important to look at children within their environment, especially the daily practices of family and the role that it plays in literacy development.

For most people, the process of socialization begins in the family. Family is the first source through which an individual commences his/her social communication. As a child, a person learns to see and interpret himself/herself and society through the eyes and understanding of his/her parents and other elders of the family. The family plays an important role in determining the academic achievement and attitudes of children. The extent that families encourage school involvement in their children is predictive of motivation (Schunk, et.al, 2008).

Delgado-Gaitan (2004) feels that social relation with families is a key component to building trust with the families, and thus beneficial to the school experience of the child. “We build on the knowledge that every household is, in a very real sense, an educational setting” (p.320), and the need for considering the importance of social relationships within the family and community and the value of this being reflected in the classroom (Moll & Greenberg, 1990). Building such a bridge of trust between home and school, thus considering the funds of knowledge of families, benefits teachers because parents hold the greatest knowledge about their child and can be valuable allies in the academic success of their child as “educators need to be conscious of the fact that parents know about their child” (Delgado-Gaitan, 2004, p.16).

Family Structure

Family structure has changed dramatically over the last 50 years and several variations on family have been created. There are six specific types of family structures identified by society today (Blessing, n.d.). These are nuclear, extended, single-parent, blended or step family, childless family, and grandparent family.

Nuclear family is composed of only the husband and his wife together with their children while extended family is composed of the husband, the wife, the children, and other family members living together in a large family compound (Clark, 1983). Meanwhile, single-parent family consists of one parent raising one or more children on his/her own, while blended or step family is one where the parents have children from previous relationships but they have combined to form a new family. On the other hand, childless family consists of couples who either cannot or choose not to have children. Many childless families have extensive contact with their nieces and nephews as a substitute for having their own children. Finally, grandparent family consists of grandparents raising their grandchildren. In the United States, one in fourteen children is raised by his/her grandparents, and the parents are not present in the child's life (Blessing, n.d.).

Individuals from nuclear intact families had the best academic performance (Zill, 1996), completed, on average, more years of schooling, and were also more likely to graduate from high school, attend college, and complete college compared to peers raised to blended or single-parent families (Ginther, 2004). Children in stepparent families usually had elevated risks of maladjustment and school failure (Zill 1996; Cherlin and Furstenberg 1994; Zill, 1988). Eagle

(1989) reported that students from households with two original parents tend to have high academic performance; while students from single parent households, whether father only or mother only, have low performance. Milne and Eagle (1989) found that males living without fathers exhibited lower academic performance than males living with fathers, while females from single parent households tended to perform better than females from two-parent households. Pong (1997) found students who were living with one original parent and one stepparent often exhibit lower academic performance than students living with two original parents. Pong hypothesized that stepparents may have other obligations that limit resources available to the blended family. Heard (2007) supported Pong, stating that lower student performance often accompanies changes in the family structure, such as the death of a parent, remarriage, or the cohabitation of an unmarried biological parent with another adult, especially when such changes happen early in the student's life.

Parenting Style

Parenting can be defined as activities of parents with an aim of helping their child to bring forth (Gafoor & Kurukkan, 2014). There are two main dimensions underlying parental behavior (Maccoby & Martin, 1983): parental responsiveness and parental demandingness. Parental responsiveness (also referred to as parental warmth or supportiveness or acceptance) refers to the extent to which parents intentionally foster individuality, self-regulation, and self-assertion by being attuned, supportive, and acquiescent to children's special needs and demands. On the other hand, parental demandingness (also referred to as behavioral control) refers to the claims parents make on children to become integrated to the family whole, by their

maturity demands, supervision, disciplinary efforts, and willingness to confront the child who disobeys (Baumrind, 1971 in Gafoor & Kurukkan, 2014).

Categorizing parents according to whether they are high or low on parental demandingness and responsiveness creates a quadrant of parenting styles: permissive, authoritarian, authoritative, and negligent (Maccoby & Martin, 1983). Each of these parenting styles differ in naturally occurring patterns of parental values, practices, and behaviors (Baumrind, 1971).

An authoritative parent has high responsiveness and high demandingness. They exhibit firmness and has consistent control; monitor and impart clear standards for their children's conduct; give priority to child's needs and abilities; encourage children to be independent; attentive; forgiving; encourage autonomy; and offer democratic climate. Yet a parent with high responsiveness but has low demandingness is classified as permissive parent. They express warmth and affection frequently; have low enforcement of rules and authority; have high acceptance; take the role of friend rather than parent; allow the child to make own decision; and impose minimal punishment.

On the other hand, an authoritarian parent possesses low responsiveness but with high demandingness. These parents are firm in control practices; expect strict and unquestioned obedience to parental authority; not ready to accept individuality of child; enact forceful and punitive discipline for child's disobedience; sometimes neglect child's needs, with little communication with the child; and execute highly directive behaviors. The last quadrant consists of low responsiveness and low demandingness, and this creates indulgent or

uninvolved parent who exhibits inattentive behavior, neglects the child, and has little interaction with the child.

Research has shown that parenting styles can make a difference in children's academic motivation. In general, motivation is enhanced when parents allow children to have input to decisions, state expectations as suggestions, acknowledge children's feelings and need, and provide children with alternatives and choices (Dornbusch, Ritter, Liederman, Roberts, & Fraleigh, 1987). In contrast, parenting practices that are either too controlling or too permissive can undermine children's motivation and achievement (Dornbusch, et.al, 1987).

Students reporting an authoritative parenting style tend to have the highest academic performance, while students reporting a permissive parenting style tend to have the lowest academic performance (Dornbush et al., 1987; Kellaghan, Sloane, Alvarez, & Bloom, 1993; Steinberg, Mounts, Lamborn, & Dornbush, 1989). Students from single-parent households (Dornbush et al., 1987) and high school dropouts (Rumberger, Ghatak, Poulas, Ritter, & Dornbush, 1990) consistently reported low achievement and mostly permissive parenting. Similar findings were reported in Henderson and Berla (1994), Henderson and Mapp (2002), Mueller (1995), and Stage (1998).

Other parent-child interactions can influence students' motivation to school. Newman (2000) reported that parents who give children hints and prompts rather than automatically supplying answers encourage children's questioning and critical thinking – a pattern found more often among children higher in motivation. Jacobs and Bleeker (2004) reported that parents were more likely to purchase math- and science-related toys and activities for sons than for daughters.

Research also suggests that parents help to shape their children's self-perceptions of ability through causal attributions or explicit statements about their child's performance, as well as the types of activities they encourage or discourage (Eccles, et.al, 1998). Parents who make adaptive attributions for their children's performance have high confidence in the children's abilities, and value school work, encourage in their children positive motivational beliefs such as attributions, self-efficacy, and task values. Recent evidence suggests that parental expectations for achievement formed in early adolescence can predict educational plans and career choices twelve years later (Jacobs & Bleeker, 2004).

Parental Involvement

Parents' attitudes toward education and their childrearing philosophies can influence schools' decisions on instructional programs and policies, and ultimately affect their child's education and attitudes (Hallinger, et.al, 1996). Among the many aspects of parents' child-rearing practice, the construct of "parental involvement" has been most studied in relation to their children's education. Few studies operationalize this construct the same way; consequently, differences in its definition make it hard to assess cumulative knowledge across studies (Lee & Schute, 2012).

However, there seems to be three major prevalent facets of parental involvement: *attitudinal* components, such as aspirations or expectations for the child's educational success; *behavioral* aspects, such as parents' assistance with homework or attendance at parent– teacher meetings; and *stylistic* components, such as parenting style or family interaction patterns. Specifically, the aspects of the parental involvement that have been previously noted include (a)

parents' high yet reasonable expectations and aspirations for their child; (b) parents' participation in their child's school events (such as Parent Teacher Association [PTA] meetings, field trips, fundraising, volunteer work, or community service); (c) monitoring their child's homework and providing home supervision and rules; (d) discussion about school work and post-high school plans; (e) arranging for community resources for their children's learning; (f) parental modeling and support of the child's reading, as well as providing a stimulating literacy environment (Fan & Chen, 2001; Hill & Craft, 2003; Keith, et.al, 1993; Taylor, Clayton, & Rowley, 2004); and (g) authoritative, autonomy-promoting parenting style/practices (Baumrind, 1967), which reside midway between authoritarian and permissive parenting styles, (Lamborn, Mounts, Steinberg, & Dornbusch, 1991).

Peer Influence

A peer group is a group of people approximately the same age, sharing similar interests and probably belonging to similar backgrounds. A person may belong to several peer groups at a single point in time. It may include his/her schoolmates, his/her friends at the sports' club, and the children staying in his/her neighborhood. Even though all these groups are different, s/he may mingle with them every single day. What makes a peer an important factor in socialization is that it enables a child to engage in experiences which s/he would otherwise never experience within his/her family. Things such as competition, conflict, and cooperation as well as the concepts of hierarchy and egalitarianism can be learned and imbibed through a peer group.

Peer Networks

An increasing amount of research has examined the role of peer networks. Unlike close

friends, peer networks are much larger groups of peers with whom students associate. Students in peer networks tend to be highly similar to one another (Cairns, Cairns, & Neckerman, 1989), which enhances the likelihood of influence by modeling.

Engerman and Bailey (2006) found that students with high academic performance tended to have friends who thought that attending class, studying, making good grades, attending high school, and graduating high school were important; while students with low academic performance tended to have friends who did not think that (Daleure, et.al, 2013).

Peer networks can heavily influence members' academic motivation in several ways. Networks help define students' opportunities for interactions, for observing others' interactions, and access to activities (Dweck & Goetz, 1978; Ryan, 2000). Over time, network members become more similar to one another. Researchers have found that discussions among friends influence their choices of activities and that friends often make similar choices (Berndt, 1999; Berndt & Keefe, 1992).

Many parents often attribute the decline in their adolescent's motivation or school performance to "getting in with the wrong group of kids." This is a socialization explanation because it contends that the peer group has a negative influence on students, and socialized them to adopt less-adaptive motivational beliefs and to become less engaged in school. In contrast, the selectivity argument suggests that students select their friends and peer groups, often on the basis of some similarity in values, attitudes, or beliefs, and so similar individuals end up in the same groups. Within these similar groups the values and beliefs are reinforced, which can lead to more or less motivation or engagement in school (Ryan, 2000).

Peer Pressure

Peer pressure refers to the influence exerted by a peer group in encouraging a person to change his/her attitudes, values in order to conform to group norms (Kirk, 2000). While most educators believe that peer pressure has an influence on children's academic performance, Kirk (2000) observes that few studies have been done to prove this belief. Peer groups are an important socialization agent. According to Castrogiovanni (2002), a peer group is defined as a small group of similar age, fairly close friends, sharing the same activities. Adolescents ask questions relating to social identity theories such as, "Who am I?" and "What do I want out of life?" Feeling to be part of a group, be it be the stereotypical jocks, or punks, allows adolescents to feel like they are on the way to answering some of these questions. Given that adolescents spend twice as much time with peers as compared to parents or other adults is reason enough to study the influence or pressures that peers place on each other.

Peer pressure is also defined as when people of one's own age encourage or urge the person to do something or to keep from doing something else, no matter if the person personally want to do it or not (Ryan, 2000). The more subtle form of peer pressure is known as peer influence, and it involves changing one's behavior to meet the perceived expectations of others (Burns & Darling, 2002). In general, most teens conform to peer pressure on fairly insignificant things like music, clothing, or hairstyles. When it comes to more important issues like moral values, parents still remain more influential than the peer group (Black, 2002). Participating in peer group activities is a primary stage of development and adolescents' identities are often closely associated with that of their peers (Santor, et.al, 2000).

A number of students see some of their peers as role models. Teachers, parents, and peers all provide adolescents with suggestions and feedback about what they should think and how they should behave in social situations. These models can be a source of motivation or a lack thereof. Modeling refers to individual changes in cognition, behavior, or effects that result from the observation of others (Ryan, 2000). Observing others perform a particular behavior or voice a certain opinion can introduce an individual to new behaviors and viewpoints that may be different from his or her own.

Observation also enlightens an individual on the consequences of such behavior and opinions. Depending on these consequences, observation of a model can strengthen or weaken the likelihood that the observer will engage in such behavior or adopt such beliefs in the future (Korir, et.al, 2014).

Lockwood and Kunda (2002) classify role models into two, namely positive role models and negative role models. Positive role model, they say, refers to individuals who have achieved outstanding success and are widely expected to influence others to pursue similar excellence. Negative role model, on the other hand, refers to the individuals who have experienced misfortunes and are widely expected to motivate people to take the steps necessary to avoid similar unpleasant outcomes. Positive role models can inspire one by illustrating an ideal, desired self-highlighting possible achievement that one can strive for, and the root for achieving them. Negative role model can inspire one by illustrating disasters and highlighting mistakes that must be avoided so as to prevent. Because peer groups play a key part of an individual's development process, they can have a negative effect on young people due to peer pressure. Peer pressure is

the demand placed on the individual to engage in certain activities, and peer conformity is the degree to which an individual adopts actions that are sanctioned by their peer group.

Risk-taking behaviors such as substance abuse and sexual activities have been shown to negatively affect school performance in a negative way (Santor, et.al, 2000). Teenagers learn about what is acceptable in their social group by “reading” their friends’ reactions to how they act, what they wear, and what they say. The peer group gives this potent feedback by their words and actions, which either encourages or discourages certain behaviors and attitudes. Anxiety can arise when teens try to predict how peers will react, and this anxiety plays a large role in peer influence. In fact, Burns and Darling (2002) state that self-conscious teenagers worry about how others will react to their future actions; in fact this is the most common way of how adolescents are influenced by their peers. When a teen takes an unpopular stand and goes against the expectations or norms of the peer group, he or she is at risk of being ridiculed. Ridicule is not an easy thing to accept at any age, let alone when one is twelve or thirteen years old.

According to Howard (2004), adolescents have always been exposed to peer influence, but the kinds of peer influence that they encounter have changed tremendously in the past years. Peers can influence everything from what an adolescent chooses to wear to whether or not an adolescent engages in drug related or other delinquent behavior. Thus, knowledge of the effects of peer pressure is important for all in the society. Teachers and other education practitioners and those in related professional training should have an understanding of the issues surrounding negative peer influence. With this knowledge, the concerned education practitioners will be more

likely to prevent negative peer influence and be more adequately prepared to help a teenager facing negative aspects of peer pressure.

Adolescence is a time of transformation in many areas of an individual's life. In the midst of these rapid physical, emotional, and social changes, youth begin to question adult standards and the need for parental guidance. It is also a time for individuals to make important decisions about their commitment to academics performance. Young adults begin to ask questions such as, "Is school important to me?" and "How do I want to spend my time?" The choices that adolescents make regarding their motivation, engagement, and achievement in school (and in life) and the satisfaction they obtain from their choices depend, in part, on the context in which they make such choices (Ryan, 2000).

According to Lashbrook (2000), adolescents are well aware that they influence each other. Peer influence can provide many positive elements in an adolescent's life. It is important, however, to remember that peer influence can potentially have a deadly impact or other various negative effects. It is vital for education and other related professionals to understand the complex aspects of peer influence in order to stop these negative effects before they occur. It is assumed that peer influence can have both positive and negative effects on an adolescent's academic performance and socialization. It is also assumed that peer groups may not allow an adolescent to be "themselves" in the truest sense of the word. Adolescents sometimes need to put on an act in order to gain acceptance from the specific group with which they would like to be associated. Furthermore, it is assumed that peers, as well as parents, siblings, and teachers, all play a large role in how adolescents function in everyday living.

Classroom Cultural Climate

A classroom climate refers to a composite of variables working together to promote learning in a comfortable environment in a classroom. Every classroom is unique because there is a wide range of variables that have an impact on the climate in a classroom. However, a number of elements are required for the establishment of a successful learning environment. The most important thing for a classroom is to create an atmosphere promoting learning. In order to achieve this atmosphere, every item in the classroom should emphasize learning in some way.

Classroom climate is defined as the type of environment that is created for students by the school, teachers, and peers. Teachers are continually looking to create a "positive" classroom climate in which student learning is maximized. It is having an environment where students feel safe, nurtured, and intellectually stimulated. This type of positive classroom climate allows for students to meet their basic needs of physical and mental health. While there is no specific definition of what creates a negative classroom climate, it is considered to be one in which students feel uncomfortable, whether physically, emotionally, or academically, for any reason.

There are two aspects of classroom climate: the physical and social environment. Physical environment refers to the arrangement of chairs, tables, fixtures and pieces of furniture, the painting, lighting and ventilation; while the social environment refers to the leadership exhibited by the teacher like democratic, authoritarian and laissez-faire, and the mode of students' participation such as collaborative, individualistic, or competitive (Kumar, 2007).

Waldrip and Fisher (2000) tap seven culturally sensitive factors of the classroom learning environment, namely gender equity, collaboration, deference, competition, teacher authority,

modeling, and congruence. Gender Equity is the extent to which students perceive males and females (teachers or classmates) and how they are treated equally in the classroom. Collaboration is the extent to which students are willing to collaborate with other students rather than to act as individuals. Deference, meanwhile, is the extent to which students feel they defer to the opinions of other members of the classroom (teachers or classmates). Then competition refers to the extent to which students are competitive with other in the classroom. Teacher Authority, on the other hand, is the extent to which students perceive the teacher authority in the classroom. Modeling is the extent to which students expect to learn by process modeling from other members of the classroom (teachers or classmates). Finally, congruence refers to the extent to which students perceive learning at school matching their learning at home.

School Climate

A school's climate is its atmosphere for learning. It includes the feelings people have about the school, and whether it is a place where learning can occur (Howard, Howell, & Brainard, 1987). School climate is a global term that refers to the characteristics of a school's environment that influence students' academic and social development (Brand 2008). School- and classroom-climate dimensions include, for example, the quality of teacher-student relationships and peer relationships, the expectations and support for learning, the degree of connectedness and of safety that students experience in school, and the physical surroundings of the school (Brand, Felner, Shim, Seitsinger, Burns, and Bolton 2008; Bear, Gaskins, Blank, and Chen 2011; Cohen, McCabe, Michelli, and Pickeral 2009).

School climate refers to the characteristics of a school's environment that influence

students' academic and social development (Brand, 2008). Research has identified many elements, or "dimensions" that make up school climate, ranging from the size of the school to noise levels in hallways and cafeterias, from the physical structure of the building to the physical comfort levels (involving such factors as heating, cooling, and lighting) of the individuals and how safe they feel, from opportunities for student-teacher interaction, the quality of interactions in the teachers' lounge to a range of interpersonal and instructional dimensions of school life.

The National Center for Community Schools (2015) identified five dimensions of school climate which include physical environment; social environment; affective/emotional environment; learning/cognitive environment; and moral environment. Physical environment pertains to an environment that is safe, welcoming, and conducive to learning. Social environment refers to an environment that promotes communication, interactions, and relationship building. Learning/Cognitive environment is an environment that promotes learning and self-fulfillment. Affective/Emotional environment denotes an environment that promotes a sense of belonging and self-esteem; while moral environment deals with environment that promotes values, ethical behavior, and character building.

Community Environment

Academics are an important part of each student's high school years, especially since high school grades play an integral role in college acceptance. Parents spend a lot of time encouraging their teens to study more -- and play less -- in the pursuit of this goal. They believe that devoting a great deal of time to studying guarantees success in future college applications. However, there is another more playful component of a well-rounded education – outside the

regular academic program – that may positively impact students' success. Extracurricular activities available in the community, such as sports clubs, religious clubs, civic organizations among others can add to students' academic careers to great effect. Students who participate in extracurricular activities will likely see an improvement in their academic and life skills, including discipline, goal-setting, teamwork, accountability and responsibility. They will also find themselves better prepared for post-secondary education. Ultimately, students may even discover that the lessons they learned outside the classroom, in basketball or chess club, help them cope with future challenges in the workplace.

Social Factors and Mathematics Proficiency

Students in the fourth or eighth year of schooling typically have gained most of their mathematics learning at school and at home, influenced to some extent by experiences outside of school. Community, school, classroom, and home environments that support each other can create extremely effective climates for learning (Hooper, Mullis, & Martin. 2015).

Compared with peers in intact families, children in single – parent families, step – parent families, or non – parent guardian families scored, on average, lower on math achievement test (Pong & Thompson, 2003). Parental involvement, defined as motivated parental attitudes and behaviors intended to influence children's educational well-being, is a multidimensional and bidirectional construct (Christenson, 2004; Fantuzzo, Tighe, & Childs, 2000) that has been shown to have clear links with social and academic outcomes for children (Dearing, McCartney, Weiss, Kreider, & Simpkins, 2004; El Nokali, Bachman, & Votruba-Drzal, 2010). Parent involvement has traditionally been defined by parents engaging in school-based activities (e.g.,

attending parent–teacher conferences and school events) related to their child’s education (Epstein, 1995).

Literature suggests that peer effects become strongest in early adolescence. Further, the literature indicates that peers significantly influence all facets of a child's life, including academic achievement (Johnson, 2000). Consequently, there are significant differences in mathematics achievement of urban and rural schools and students in urban schools had better academic achievement than their rural counterparts (Owoeye, 2011; Eraikhuemen, 2003).

Because most of the teaching and learning in school takes place in the classroom, successful learning is influenced by the classroom environment (Hooper, et.al, 2015). Although a safe and orderly school environment does not in and of itself guarantee high levels of student achievement, student learning can be more difficult in schools where student discipline is a problem, where students are regularly absent or late to class, or where they fear injury or loss of personal property (Osher, Dwyer, & Jimerson, 2006).

Social Factors and Motivation

Research has shown a clear link between parent involvement and children’s success in school. Further, studies have also demonstrated a correlation between parent involvement and children’s educational development and subsequent intrinsic academic motivation (Gottfried, Fleming, & Gottfried, 1994).

Even if parents are unable to assist their children with a specific subject area or skill, they can still play a vital role by encouraging students’ feelings of competence and control and

positive attitudes towards academics, according to a review of the research literature on families and school motivation by Grolnick, Friendly, and Bellas (2009). This review found that families can have a strong influence on a variety of school outcomes, including the development and maintenance of positive motivation. “When parents believe in children’s competence and have high expectations for them, provide the resources that children need to feel connected to others, and facilitate a sense of autonomy by supporting children’s initiations and problem-solving, children’s motivation is most likely to thrive,” the authors conclude (p. 295). The researchers note that parent’ expectations about how well their children can achieve and their attitudes about the value of the task their children are working on can strongly influence children’s motivation.

Ronald Ferguson’s “research-based tips for high-achievement parenting” suggest that parents promote reading at home, discuss reading materials with their children in ways that encourage children to enjoy learning, and seek opportunities at home to discuss and apply what children are learning in school, among other activities. Ferguson further recommends that parents set clear and firm rules about homework, television watching, and other daily activities, and that they actively seek out-of-school opportunities and extracurricular activities that reinforce school lessons, encourage exploration and creativity, and develop children’s special talents (Ferguson, 2007a).

In other words, parents who are actively involved in their children’s education and provide a stimulating learning environment at home can help their children develop feelings of competence, control, curiosity, and positive attitudes about academics, according to various studies.

Researchers emphasize, however, that many factors can hinder parents from providing these kinds of supports. Some parents may be grappling with outside stressors, time and resources constraints, or unfamiliarity with what role they might play. Therefore, parents' involvement and capabilities differ based on their unique contexts (Grolnick, Friendly, & Bellas, 2009). But while resources can limit parents' ability to become involved, that should not be taken to mean that their desire to do so is also limited; research has found that although parents with scarcer resources may be less active in school activities, they can still be entirely aware and supportive of their children's academic progress (Grolnick, Friendly, & Bellas, 2009).

Parents' beliefs and expectations also appear to strongly influence children's motivation. For example, parents who hold high expectations for their children's learning, believe in their children's competence, expose them to new experiences, and encourage curiosity, persistence, and problem-solving can help their children develop an intrinsic motivation to learn. By contrast, parents who are controlling, use rewards and punishments for academic performance, or display negativity or anger about academics can discourage children from developing intrinsic motivation (Gottfried, Fleming, & Gottfried, 1994).

Likewise, when parents support autonomy, children are more likely to be intrinsically motivated and engaged in school and have a better ability to self-regulate at school (in other words, to take control of their own behavior and learning). Controlling parents are more likely to encourage extrinsic, rather than intrinsic, motivation in their children (Grolnick, Friendly, & Bellas, 2009). Some parental actions, such as praising children's intelligence rather than their

effort and mastery of knowledge and skills, can send a message that intelligence is a fixed attribute—a belief that can lead children to avoid challenges or fear failure (Dweck, 2010).

Student motivation is influenced not only by parents, but also to varying degrees by teachers and peers, according to a new study by Ming-Te Wang and Jacquelynne S. Eccles (2012). This study examined the relative influence of social support from parents, teachers, and peers on student engagement, as well as the level of student engagement at grades 7, 9, and 11. The researchers measured four different indicators of engagement: school compliance (positive behaviors), participation in extracurricular activities, school identification (interest and enjoyment), and the subjective value of learning (intrinsic motivation). On each of these four measures, student engagement declined on average between grades 7 and 11. Girls reported higher levels of engagement on all four indicators, but also experienced declines in each area as they got older. Students reported higher levels of school identification and value of learning than their white counterparts but lower levels of compliance with school rules and participation in extracurricular activities.

Most interesting were the effects of parents, teachers, and peers on each factor of engagement. The study found that parent social support was positively correlated with all four indicators and was a stronger predictor than peer support for three of the indicators. Teacher support played an especially important role in slowing declines in compliance, school identification, and value of learning. Social support from peers was more complicated. While students were more likely to participate in extracurricular activities, see value in learning, and identify with school when they had peer support, results for compliance were mixed and

depended on the type of peer support and the values espoused by a student's chosen friend group. The researchers concluded that "across all of the behavioral components of school engagement, peers are just as likely to exert positive influences on adolescents as negative influences." (p. 891).

A substantial body of research shows that, for good or ill, a school's social environment has broad influence on students' learning and growth, including major aspects of their social, emotional, and ethical development. When students find their school environment to be supportive and caring, they are more likely to develop positive attitudes toward themselves and prosocial attitudes and behaviors toward others (Schaps, Battistich, & Solomon 1997). Much of the available research shows that supportive schools foster these positive outcomes by promoting students' sense of "connectedness" (Resnick et al. 1997), "belongingness" (Baumeister & Leary 1995), or "community" (Schaps, Battistich, & Solomon 1997) during the school day.

Motivation and Mathematics Proficiency

Raw potential and talent are only a small part of what it takes to become proficient in a skill. Students' success depends on the material and intangible resources that are invested by families, schools and education systems to develop each and every student's potential. Crucially, students' ability to perform at high levels depends on their belief that while aptitude and talent for particular school subjects can help, mastery can be achieved if students put in the hard work and perseverance that are needed. The belief that intelligence is a fixed trait and that only those who have it can succeed in school is both a myth and an obstacle to success. Students who consider themselves intelligent do not think that they need to cultivate their intelligence to make

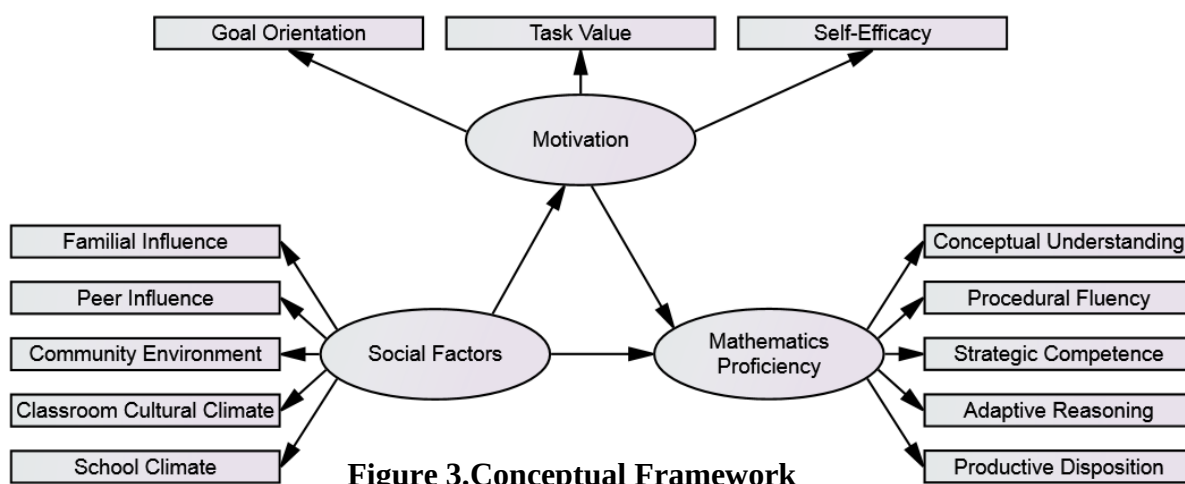
it flourish, and those who believe that they lack intelligence are not inclined to work hard to overcome initial difficulties (Rattan et al., 2012; Carr and Dweck, 2012; Dweck, 2006).

Motivation and engagement can be regarded as the driving forces behind learning. Given the importance of mathematics for students' future lives, school systems need to ensure that students have not only the knowledge that is necessary to continue learning mathematics beyond formal schooling, but also the interest and motivation that will make them want to do so. There are two forms of motivation to learn mathematics: students may learn mathematics because they enjoy it and find it interesting and/or because they perceive learning mathematics as useful. These two constructs are central in self-determination theory (Ryan and Deci, 2009) and expectancy-value theory (Wigfield, Tonks and Klauda, 2009).

Intrinsic motivation refers to the drive to perform an activity purely for the joy gained from the activity itself. Students are intrinsically motivated to learn mathematics when they want to do so because they find learning mathematics interesting and enjoyable and because it gives them pleasure, not because of what they will be able to achieve upon mastering mathematical concepts and solving mathematics problems (Gottfried, 1990; Ryan and Deci, 2009). Interest and enjoyment affects both the degree and continuity of engagement in learning and the depth of understanding reached (Schiefele, 2009). Intrinsic motivation affects the degree of student engagement, the learning activities in which students enroll, student performance, and the types of careers students aspire to and choose to pursue (Reeve, 2012). Generally, intrinsic motivation dissipates from elementary school to higher education (Gottfried, Fleming and Gottfried, 2001; Gottfried et al., 2013; Jacobs et al., 2002) because as students grow older their interests become

increasingly differentiated (OECD, 2004). Students' intrinsic motivation for mathematics also declines because of the increasing difficulty of mathematics, and because of teaching practices that undermine, rather than foster, motivation for learning mathematics (Midgley, Feldlaufer and Eccles, 1989). However, students' enjoyment of, and interest in, mathematics can be shaped by what teachers do, by students' peers, by classroom instruction and dynamics, and by parents' attitudes and behavior (Wigfield et al., 2006).

The schematic diagram showing the conceptual framework in Figure 3 illustrates the linkage among the many yet related theories discussed.



In this framework, the direct influence of social factors that emanate from family, peers, classroom cultural climate, school climate, and community environment to motivation and mathematics proficiency is determined. This study also examines the mediation role of motivation on the relationship between social factors and mathematics proficiency.

Statement of the Problem

This study generally aimed to investigate the social factors influencing the mathematics proficiency and motivation of grade eight students in five school divisions in Laguna. Specifically, this study seeks to answer the following questions:

1. How may the eighth grade students' social factors be described in terms of the following?

- 1.1. Familial Influence

- 1.1.1. Family Structure;

- 1.1.2. Parenting Style (Parents' Responsiveness and Control); and

- 1.1.3. Parental Involvement;

- 1.2. Peer Influence

- 1.2.1. Number of Peer Group Members;

- 1.2.2. Activities with Peers;

- 1.3. Classroom Cultural Climate

- 1.3.1. Gender Equity;

- 1.3.2. Collaboration;

- 1.3.3. Deference;

- 1.3.4. Competition;

- 1.3.5. Teacher Authority;

- 1.3.6. Modeling; and

- 1.3.7. Congruence;

- 1.4. School Climate

1.4.1. Physical Environment;

1.4.2. Social Environment;

1.4.3. Affective/Emotional Environment;

1.4.4. Learning/Cognitive Environment; and

1.4.5. Moral Environment

1.5. Community Environment

1.5.1. Type of Community and

1.5.2. Involvement in Community Activities?

2. What is the level of students' motivation to learn in terms of the following?

2.1. Goal Orientation;

2.2. Task Value; and

2.3. Self – Efficacy?

3. What is the level of students' mathematics proficiency in terms of the following?

3.1. Conceptual Understanding;

3.2. Procedural Fluency;

3.3. Strategic Competence;

3.4. Adaptive Reasoning; and

3.5. Productive Disposition?

4. Which social factors significantly predict motivation?

5. Which social factors significantly predict mathematics proficiency?

6. Does motivation mediate the relationship between social factors and mathematics proficiency?

7. What model may be proposed to describe the social composition of eighth grade students' mathematics proficiency and motivation?

Significance of the Study

Results of this study would hopefully contribute to a better understanding of the influences of social factors on mathematics proficiency and motivation. The findings of the current study may serve as springboard for curriculum planners to consider the potential predictors of mathematics proficiency and motivation in designing mathematics curriculum.

School heads may include the variables relating to students' mathematics proficiency and motivation in crafting school improvement plan which focuses on students' holistic development.

This study may provide mathematics teachers with a deeper understanding of, and a deeper insight into the needs and problems of their students. Addressing such needs and problems might offer students opportunities to learn mathematics.

The results of this study may drive parents to support their child's physiological, emotional, and social needs. By providing these needs and improving academic achievement and motivation, the students will likely become productive individuals.

This study may help the students identify their strengths and address their weaknesses that constantly interfere with their performance in mathematics. This will, in turn inspire the students to overcome their weaknesses, resulting to a good performance of students in Mathematics.

Finally, since this study is an in-depth understanding of social factors influencing mathematics proficiency and motivation and will reveal the finer details of the factors that influence achievement, it can be used by future researchers as a template for more extensive investigations.

Scope and Delimitation of the Study

This study investigates the factors that influence mathematics proficiency and motivation focusing on social factors such as family and peers who have direct contact with the learners, and classroom cultural climate, school climate, and community environment of eighth grade students in public secondary schools in Laguna, Region IV – A, Philippines. The participants are the eighth grade students in Laguna Province who are enrolled during the school year 2015 – 2016. There are 28 participating schools, the names of which are presented in Chapter 3.

Grade eight students are chosen since family influences have reasonable effect on this grade level compared to other grade levels. The parent – child relationship changes at puberty. The amount of time spent with parents, the sense of emotional closeness, and the degree to which teens yield to parents in decision making all decline from early adolescence to late adolescence (Crandell, et. al., 2009). Grade eight students fall under early adolescence that has been identified as a particularly precarious stage regarding changes in achievement beliefs and behaviors (Carnegie Council on Adolescent Development, 1989, 1995; Eccles & Midgley, 1989; Eccles, et. al., 1993). Certainly, for some young adolescent students, the increases in self-reflection, autonomy, and identity exploration lead to new academic interests, increased self-regulated learning, and a commitment to education (Goodenow, 1993).

The social factors investigated in the study are familial influence, peer influence, classroom cultural climate, school climate, and community environment. Familial influence is analyzed using the data on family structure, parenting style, and parental involvement, while peer influence is determined in terms of number of peer group members and activities with peers. On the other hand, the classroom cultural climate is investigated in terms of gender equity, collaboration, deference, competition, teacher authority, modeling, and congruence. Further, school climate is assessed based on physical environment, social environment, affective/emotional environment, learning/cognitive environment, and moral environment. Finally, community environment is gauged based on type of community and the community activities the participants engage in.

Student's motivation in this study is described in terms of goal orientation, task value, and self-efficacy. Mathematics proficiency of the students, on the other hand, is measured in terms of conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and productive disposition. A mathematics achievement test is developed based on the content standards of Grade 8 Mathematics Curriculum presented in the Table of Specifications in Chapter 3.

The research instruments used in this study are discussed thoroughly in Chapter 3. These instruments are utilized to measure the variables present in the study.

It is believed that there are a lot of variables or constructs that may influence the nature of mathematics proficiency and motivation. However, this study is limited to probe on such nature only through the identified social factors.

There were issues that may limit the findings of the study. First, the generalizability of this study is limited to students from a city/municipality similar to the one sampled and may not be relevant to schools larger or smaller than those in the study, nor to populations which are more rural or urban than those in the study. The sample was limited to eighth grade mathematics classrooms in a specific school division; hence they may or may not represent the entire eighth grade students since they were only chosen by chance.

Second, this study fails to take into account social and cultural factors that are important in the Philippines. Constructs used, and their measurement are all from overseas literature, particularly in the United States. Students may or may not have accurately depicted a true perception of familial influence, peer influence, community environment, classroom cultural climate, school climate and motivation to learn mathematics.

Finally, respondent's comprehension may have been a limitation of the study. The wording of the questions and the complexity of the response options may have been too difficult for the students in eighth grade. An example of the complexity of the wording demonstrated in some of the indicators of classroom cultural such as: *I want to know if teachers are authoritative on school matters; I feel that I can challenge statements made by teachers; I like to ask question what teachers want their students need to do;* and some of the items on school climate such as: *Class size of students is conducive to learning; Student groupings are diverse; The school culture reflects the values, norms, and expected behaviors for all students.* The designer of the questionnaire has to consider that the respondents are in the junior level, hence should be even more sensitive towards the pitfalls of questionnaire design.

Definition of Terms

The following terms are defined conceptually and operationally.

Adaptive Reasoning. It is the capacity for logical thought, reflection, explanation, and justification. In this study, this refers to the strand of mathematics proficiency which is gauged by mathematics proficiency test items designed to measure students' ability in using their critical thinking skills in solving mathematics problem.

Affective/Emotional environment. It is an environment that promotes a sense of belonging and self-esteem. In this study, it pertains to the dimension of school climate which students report through their personal observation whether or not their school values trust and respect among students, teachers, and staff.

Classroom Cultural Climate. It refers to the nature of classroom learning environment which includes gender equity, collaboration, deference, competition, teacher authority, modeling, and congruence. In this study, it pertains to one of the constructs of sociocultural factors which emanates from students' classroom environment.

Collaboration. It is the extent to which students are willing to collaborate with other students rather than to act as individuals. In this study, it is one of the dimensions of classroom cultural climate determined through student reports of their degree of agreement on statements about team work.

Community environment. A community is a social unit of any size that shares common values, or that is situated in a given geographical area (e.g. a village or town). It is a group of

people connected by durable relations that extend beyond immediate genealogical ties, and who usually define that relationship as important to their social identity and practice. In this study, it includes the type of community (urban or rural) and students' engagement in activities in their community (e.g. religious and sports activities).

Competition. It is the extent to which students are competitive with others in the classroom. In this study, it is one of the dimensions of classroom cultural climate determined through student reports of their degree of agreement on statements about effort or desire to equal or excel others.

Conceptual Understanding. It refers to the comprehension of mathematical concepts, operations, and relations. In this study, this refers to the strand of mathematics proficiency which is gauged by mathematics proficiency test items designed to measure students' ability in connecting their ideas to what they already know in solving mathematics problem.

Congruence. It is the extent to which students perceive whether learning at school matches their learning at home. In this study, it is one of the dimensions of classroom cultural climate determined through student reports of their degree of agreement on statements about the essence of what they are learning in class and at home.

Deference. It is the extent to which students feel they defer to the opinions of other members of the classroom (teachers or classmates). In this study, it is one of the dimensions of classroom cultural climate determined through student reports of their degree of agreement on statements about giving opinions.

Familial influence. This refers to the critical roles of family in students' mathematics proficiency and motivation. In this study, it includes family structure, parenting style, and parental involvement.

Family structure. It pertains to the composition of a family. In this study, it includes nuclear, extended, single-parent, blended or step family, childless family, and grandparent family.

Gender Equity. It is the extent to which students perceive males and females (teachers or classmates) being treated equally in the classroom. In this study, it is one of the dimensions of classroom cultural climate determined through student reports of their degree of agreement on statements about gender sensitivity in classroom.

Goal Orientation. It refers to focus on learning for the sake of learning and high achievement. In this study, it is one of the dimensions of motivation to learn mathematics with emphasis on whether students initiate their own learning activities and whether they maintain commitment to the process of learning.

Learning/Cognitive environment. It is an environment that promotes learning and self-fulfillment. In this study, it pertains to the dimension of school climate where students report their personal observation whether or not their school support student's learning.

Mathematics proficiency. It refers to students' expertise, competence, knowledge, and facility in mathematics. In this study, it is measured by an achievement test in mathematics composed of items on conceptual understanding, procedural fluency, strategic competence,

adaptive reasoning, and productive disposition.

Modeling .It pertains to the extent to which students expect to learn by process modeling from other members of the classroom (teachers or classmates). In this study, it is one of the dimensions of classroom cultural climate where students report their degree of agreement on statements about learning by example.

Moral environment. It is an environment that promotes values, ethical behavior, and character building. In this study, it pertains to the dimension of school climate where students report their personal observation whether or not their school promote ethical standards.

Motivation. It is a theoretical construct used to explain the initiation, direction, intensity, and persistence of behavior, especially goal-directed behavior . In this study, it is measured along the following constructs: goal orientation, task involvement, and self-efficacy.

Parental involvement. It refers to the involvement of parents in their children's education. In this study, it includes the attitudinal components, such as aspirations or expectations for the child's educational success and behavioral aspects (such as parents' assistance with homework or attendance at parent– teacher meetings).

Parenting style. It is used to describe family-student interactions. In this study, it comprises authoritative, authoritarian, permissive, and indulgent (uninvolved) styles which are determined by parents' level of responsiveness and control over their child.

Peer group. It is an organization or association of persons engaged in a common

profession, activity, or interest. In this study, it refers to the number of closest friends of each respondent with whom they associate.

Peer influence. It denotes the effects of peers on students' mathematics proficiency and motivation. In this study, it includes the number of peer group members and activity with peers.

Physical environment. It pertains to an environment that is safe, welcoming, and conducive to learning. In this study, it pertains to the dimension of school climate where students report their personal observation whether or not their school nurture a worry – free learning environment.

Procedural Fluency. It refers to the skill in carrying out procedures flexibly, accurately, efficiently, and appropriately. In this study, this refers to the strand of mathematics proficiency which is gauged by mathematics proficiency test items designed to measure students' ability to perform mental computations flexibly and fluently.

Productive Disposition. It refers to the habitual inclination to see mathematics as sensible, useful, worthwhile, coupled with a belief in diligence and one's own efficacy. In this study, this refers to the strand of mathematics proficiency which is gauged by mathematics proficiency test items designed to measure students' ability in making sense of mathematics.

Self – efficacy. It refers to one's beliefs and judgments regarding their ability to accomplish specific tasks such as mathematics. In this study, this is one of the components of student's motivation to learn which pertains to student's evaluation of specific performance and capabilities that allow the accomplishment of a particular type of mathematical task.

School climate. It is a global term that refers to the characteristics of a school's environment that influences students' academic and social development. In this study, it encompasses five domains: physical environment, social environment, affective/emotional environment, learning/cognitive environment, and moral environment.

Social environment. It refers to an environment that promotes communication, interactions, and relationship building. In this study, it pertains to the dimension of school climate where students report their personal observation whether or not their school cultivate a friendly learning environment.

Social factors. They are the factors in the classroom, home, and school and community that impact learning and motivation. In this study, it includes familial influence, peer influence, classroom cultural climate, school climate, and community environment which are hypothesized to influence mathematics achievement and motivation.

Strategic Competence. It pertains to the ability to formulate, to represent, and to solve mathematical problems. In this study, this refers to the strand of mathematics proficiency which is gauged by mathematics proficiency test items designed to measure students' ability in carrying out strategies in solving mathematics problem.

Task value. It is defined as the incentive for engagement in academic activities and consists of four components, namely attainment value; intrinsic value; utility value; and cost. In this study, this is one of the components of student's motivation to learn which pertains to student's evaluation of the importance and usefulness of mathematics.

Teacher Authority. It is the extent to which students perceive teacher authority in the classroom. In this study, it is one of the dimensions of classroom cultural climate where students report their degree of agreement on statements about the role of teachers in the classroom.

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter presents related literature grouped into concepts or variables of interest in the present study: mathematics proficiency, motivation, familial influence, peer influence, classroom cultural climate, school climate, and community environment.

On Mathematics Proficiency

There is a widespread interest among industrialized countries in improving the levels of mathematics achievement in schools. Apart from the economic benefits, it is argued that this would bring about economic progress by better preparing young people for the numeracy demands of modern workplaces, and raising the overall skill levels of the workforce. Also, there are social benefits tied to improving access for larger numbers of young people to post school education and training opportunities and laying stronger foundations to skills for lifelong learning.

Studies have suggested that a higher attainment in math at the high school level is predictive of a higher earning power (Rose, 2001; Statistics Canada, 2005; Lai, 2008). Mathematics is also the cornerstone for developments in the field of science and technology, where competency in basic mathematical theories is required to understand and pursue studies in engineering, physics or computer science. Due to the broad influence that mathematics has on our daily lives, it is often the main focus of education systems, where students' progress is monitored and evaluated on their understanding in mathematics rigorously.

Eraikhuemen (2015) argues that the place of mathematics in the technological development of any nation cannot be compromised. Ukeje (2005) states that without mathematics, there is no science; without science there is no modern technology; and without modern technology there is no modern society. In other words, mathematics is the precursor and the Queen of science and technology and the indispensable single element in modern societal development. Mathematics serves as a tool for use in science, technology and industries. This implies that the increase in the knowledge and the achievement in mathematics of the citizens of a nation are directly proportional to the level of development of science, technology, and industries in that nation (Eraikhuemen, 2015).

Sundai (2015) posits that to compete in the 21st century global economy, it is critical that students leave high school knowledgeable and proficient in mathematics for it is one of the primary indicators of national progress and global competitiveness. Mathematics proficiency is a key literacy component that influences children's success in education and in future society (Engle, Grantham-McGregor, Black, Walker, & Wachs, 2007; Zhao, 2011). Hence, in the quest for scientific and technological advancement, people need nothing short of good performance in mathematics at all levels of schooling (Tella, 2007).

The study of Lamb and Fullarton (2001) on differences in mathematics achievement highlights the importance of classroom, teacher, and school factors. Their study used data from the Third International Mathematics and Science Study (TIMSS) to look at student, classroom, and school factors influencing mathematics achievement in the United States (US) and Australia. They found that classroom differences account for about one-third of the variation in student

achievement in the United States and over one-quarter in Australia. Much of the classroom variation was due to compositional and organizational factors.

Kupari and Nissinen (2013) probing on the Background Factors behind Mathematics Achievement in Finnish Education Context, asked in their study the following questions, “What are the background factors most strongly related to achievement in Finnish educational context?” and “What are the changes in the explanatory models between TIMSS 1999 and TIMSS 2011?” The results revealed that most of the 14 variance in mathematics achievement is situated at the student level indicating that the majority of the variance in the achievement is situated between individuals within classes and schools. In both studies, the between-school variance was about 13 percent of the total variance in mathematics achievement based on the two-level models. However, the tentative finding produced by the three-level model of TIMSS 2011 suggested that altogether, 28 percent of the total variation in achievement comes from between-class and between-school variance. Further, the final model of 2011 explained just 33 percent of the between-school variance in mathematics achievement which was 4 percent points less than in 1999.

The study of Grootenboer and Hemmings (2007) explored the role played by affective and background factors affecting mathematics performance. The study was designed specifically to consider the potency of a number of mathematical affective factors, as well as background characteristics (such as gender, ethnicity, and socioeconomic status), on children’s mathematics performance. A correlation analysis revealed that the relationships between the respective dispositional and background variables with mathematics performance were significant and in

the direction as predicted. Moreover, the findings from a logistic regression showed that a combination of these variables was able to appropriately classify students who either were below-average or above-average mathematics performers.

Lee and Schute (2012) identified variables that are most relevant to K–12 educational achievement in reading and mathematics. They have derived four major categories of social-psychological constructs: student engagement, learning strategy use, school climate, and social-familial influences. These four variables are the building blocks of the current framework. Drawn from the social-cognitive literature, they broadly categorized student engagement and learning strategy as personal factors, and the latter two variables, school climate and social-familial influences, as social-contextual factors. Personal factors are within-student characteristics, involving psychological, cognitive, and behavioral variables. Social-contextual factors involve the variables that originate from outside of the student. There is no black-and-white distinction between personal and social-contextual factors. In fact, these two groups of factors are so intertwined that it is sometimes hard to discern their origin (i.e., inside or outside of the student). For instance, students' engagement with schoolwork can originate from the student's own motivation but may also be heavily influenced by the social context. Nevertheless they decided to categorize their major factors into one or the other, based on the locus of control on the student's part. That is, the locus of control shifts from inside-to-outside of the student: from student engagement to learning strategies to social-contextual influences. Many of the student engagement variables reside within a student's mind, will, and/or attitude. Schools can teach students about particular learning strategies, but it is the student /himself/herself who

ultimately decides to employ (or not) the instructed or learned strategies. On the other hand, the locus of control shifts more to the outside world when considering social-contextual factors.

Dimaculangan (2015) studied on contextual and psychological constructs of sixth grade pupils' mathematical proficiency. Based on the results, student background, school background, and curiosity significantly predict mathematical proficiency. The specific dimensions on number of household members, access to educational technology, family formation, level of parental involvement in child's education, class size, exploration, absorption, epistemic curiosity, and perceptual curiosity were found the most significant predictors of mathematical proficiency. These dimensions explain a statistically significant portion (91.2%) of the variance in their mathematical proficiency.

Wilcox (2013) intended to identify the classroom, school, and district factors that differentiate consistently higher-performing high-diversity schools from schools that share demographic characteristics, yet with only average performance. To do this, the study was guided by questions that sought to cut across the micro- (classroom), exo- (school and district), and macro-levels (climate and culture) and inquire into the ways educators approach aspects of their work identified in the school reform literature as correlating with higher academic achievement among diverse students (e.g., fostering of a positive school culture or climate, alignment of curriculum to rigorous academic goals, building coherence in instructional programs and practices, conducting ongoing assessment, and using performance data to inform instruction, fostering leadership and capacity-building adapted to diverse student needs, providing timely and effective interventions and adjustments (Datnow, Lasky, Stringfield, &

Teddlie, 2005; Fullan, 2005; Hargreaves & Shirley, 2009; Kowalski, Lasley, & Mahoney, 2008; Levine & Lezotte, 1990; Martin, Fergus, & Noguera, 2010).

Komunte (2011) examined sociocultural factors affecting community secondary school students' academic performance. The findings of her study indicated that sociocultural factors such as family size; family members who are capable of working; education of the parents; parents' occupations; distance to and from school; and students' time spent on doing domestic chores affect students' academic performance. There is poor parents' involvement in the academic concerns their children. The children are not encouraged in their studies by their parents. Besides, the parents do not meet their children's academic demands such as buying reference books and other stationeries. Her study further showed that students' behaviors related to their studies affected their academic performance.

On Motivation

The importance of motivation for supporting student learning has been long recognized (Lai, 2011). Like engagement, it is an important factor that may contribute to success at school and to lifelong learning. Students who recognize the importance of setting their own learning goals and who reach those goals will optimize opportunities for learning throughout life. Motivation can influence whether an individual will pursue further educational paths or particular job opportunities (De Bortoli & Thomson, 2010).

Motivation appears to be a potential factor for students to graduate from high school, go to college, persist to earn a degree, and grab better opportunities. It is a key element of education and plays a vital role in the success of the students' learning process. There are many factors

such as the norms for behavior that family, relatives, peers and the society communicate and encourage students for better educational achievement that influence motivation. It is evident that collective learning is more appropriate than individualized theories of learning. The environment is crucial for the learner because it stimulates the student to develop cognitively, as well as it encourages them to learn more through interaction with other students, their teacher, family, friends, and relatives.

A sociocultural theory of motivation initially developed by Lev Vygotsky(1978) is based on this cognitive development theory. In addition, situative theories of cognition considered as the most distinctive sociocultural theories of motivation relate knowledge and learning to social interactions and cultural activities. These theories show that learning is being ingrained in social events and takes place when the learner is interacting with people, objects, and events within the environment.

The concept of motivation is used in many different disciplines to analyze the ‘what and why’ (Deci & Ryan, 2000) of human action. A vast body of literature exists on the relationship of motivation and performance in professional work and organization settings (e.g. Osterloh, Frey & Homberger, 2011; Gagné & Deci, 2005). Motivation is widely acknowledged to enhance performance and efficiency of staff (Ryan & Deci, 2000). Beyond work settings, motivation may influence performance in academic settings and among university students.

Wilkesman, et.al. (2012) focused on a factor that may influence academic motivation. They focus on students with non-traditional characteristics, the individual field of studies, different stages of studies, social background, and the organizational perspective of studying.

Moreover, they look at the relationship between extrinsic and intrinsic motivation. They posited that undergraduate students study because all other peers study as well, or because the parents expect it. Especially students in the first two semesters study because their environment expects it. It implies that undergraduate students perceive the locus of control for their behavior outside themselves, and thus are more extrinsically motivated. Older students are less dependent from their family and peers in their behavior, and therefore more likely to be interested in the field of studies itself and therefore more intrinsically motivated.

Another factor influencing academic motivation is the social background of students, particularly the educational background of the parents. Drawing on Boudon's (1974) distinction between primary and secondary effects of social origin, a lot of German studies confirm that these effects are responsible for the under representation of working class children at German universities (Becker 2009; Schindler & Reimer, 2010; Schindler & Lörz, 2011). The majority of these studies emphasize that primary effects play only a minor role for explaining discrimination of lower class children, whereas secondary effects can better explain social inequalities. These secondary effects can explain not only general decisions for or against a university study but also the transition from Bachelor to Master programs (Ausprung & Hinz, 2011). Schindler explains the differences between both effects as follows:

since students from lower status families can rely on less cultural resources than their classmates from higher status families, their school achievement will on average be lower than that of their peers. At the same time, even if we were to compare students with the same achievement levels, we could observe additional (secondary) social background effects in that students from higher status families would aspire to higher levels of education more often than their lower status counterparts. Social differences in educational aspirations are seen as the out-come of cost-benefit considerations, while both the costs and benefits attached to continuing education differ between social backgrounds. (2010, p. 2).

On Social Influences

Over the years, researchers have failed to explain causes of the achievement gap (prominent between higher and lower income families) solely by genetic or family socioeconomic factors. Consequently, some researchers have turned their attention to psychological, social-contextual, and emotional factors as possible explanatory variables (Powell & Jacob Arriola, 2003). Lee and Shute (2010) claimed that personal and social-contextual factors, independently and together, influence academic achievement. They also posited that the main components of school climate include teacher interaction, principal leadership, and a unique atmosphere of a particular school created by the school's mission and emphasis. Whereas social-family influences can contribute to school climate through parental involvement or peer norms, they formed the social-familial influence factor as a separate entity in our framework as parents and peers can exert their influence on behavior and attitudes of learners within and outside of school.

On Familial Influence

Apart from the regular nuclear family patterns practiced by some Filipinos, majority of the society would be observed to be having or practicing the extended family type. This means that distant relatives, “such as grandparents, aunts, uncles, nephews, nieces, and grandchildren, would be living under the same roof or in the same compound” (Basbas 2007). In this situation, families have ready access to certain resources, most of which would be related to financial aid and division of responsibilities where needed, while others would be related to personal needs. The extended family is, in effect, the basic unit of Philippine society. Within given households,

nuclear families average six to eight members in size. Unmarried adult daughters and sons typically remain in their parents' home and contribute to family support. Additional extended family members such as grandparents, aunts, uncles, or cousins also may live in the same house and assume vital roles. Lack of parental supervision (with two parents working full time), the need for economic survival, and the stress of acculturation have compelled many parents to remove their teenagers' from the home and draw on the family support system in the Philippines (Heerington, 1989).

Stoodley (n.d) described some aspects of Tagalog family structure. He pointed out that the life-cycle in the Tagalog family offers some points of comparison with the American family. Children are socialized not only by the mother and father but also by the entire kin group. There is little or no distinction between the socialization of boys and girls until the age of ten or eleven. Severe corporal punishment is institutionalized, but there is also a high degree of emotional security. Most punishments are given for disrespect and disobedience. He further asserted that parents are strict at times and flexible at other times, sometimes "rational" and sometimes impulsive. A more controlling style of parenting, while possibly advantageous for other Asian students may negatively influence Filipino grades (Dornbusch, Prescott, and Ritter 1987).

Coleman (1988) argued that the ratio of adults to children in a family is an indicator of the social capital available in the home. He claimed that because single parents are less able to spend time with their children, they have fewer opportunities to interact with their children in contrast with parents of children in two parent families. This leads, according to Coleman, to less supportive learning environment for children in single parent families. Coleman also argued that

children from single parent households leads to inconsistent and weak social ties to the community, which in turn leads to lower social capital. Using data from the base year and first follow-up of the National Education Longitudinal study (NELS: 88), Pong (1998) supports Coleman's argument and suggests two possible explanations for the unfavorable effect of single parenthood on mathematics and reading achievement: first the lack of economic resources; and second the lack of social capital. She found that mathematics and reading achievement differences between schools with low concentrations of students from single parent families and schools with medium concentrations was explained by economic status and social capital (in the form of parental involvement).

In the last decades family structure has changed to a large extent around the world as more children now live in single-parent families, step and guardian families. Research shows that alternative family structures are often associated with lower educational achievement; the disadvantage is partly due to socioeconomic factors. Two- parent households typically have higher socioeconomic status that allows parents to spend more time with their children and be more involved with their children's schooling (Lareau, 2002). Much supports the notion that children in single-parent families are at a greater risk than are children in two-parent families of educational failure, either by lower achievement scores or by dropping out of school. These detrimental effects of single parenthood are found even when factors such as socio- economic status, ethnicity, and other family background factors are controlled for (McLanahan & Sandefur, 1994; Zill, 1996).

In general, researchers have found that parental involvement has positive effect on

students' achievement (Coleman 1988; Epstein 1991; Fan and Chen 2001; McNeal 1999; Singh et al. 1995). Coleman (1988) defines this capital simply as relationship between children and parents that promotes success in the field of education. He believes that parents who spend time and effort involved in their children's lives greatly enhance their children's academic and intellectual performance in school (Schneider & Coleman, 1993). Research does support Coleman's theory that there is a positive relationship between parental involvements and how children do in school. Thus, parental involvement has been found to be positively related to academic achievement (Coleman 1988; Epstein 1991; Fan and Chen 2001; Jeynes, 2007; Kristjansson & Sigfusdottir, 2009; McNeal 1999; Singh et al., 1995).

Fan and Chen (2001) conducted a meta-analysis on the effect of parental involvement on academic achievement. They found that even though the literature related to parental involvement in students education appears to be huge, a closer examination revealed that only a small number of these studies are empirically based. They also argued that that the operational use of parental involvement was not clear and consistent within the literature, which makes it difficult to draw any general conclusions across the studies and may have contributed to the inconsistent findings in this area. Twenty-five studies met Fan and Chen's (2001) inclusion criteria of and were subsequently used in their meta – analysis. Their findings revealed a small to moderate relationship between parental involvement and academic achievement. Parental involvement had stronger effects on achievement when students' GPA represented academic achievement, rather than being represented by a subject specific indicator such as mathematics achievement. Parental expectations for their children's education achievement had the strongest relationship to academic achievement, while they found that parental home supervision had the

weakest relationship to student achievement (Fan & Chen, 2001).

Jeynes (2007) undertook a meta-analysis of 52 studies to determine the influence of parental involvement on the educational outcomes of urban secondary school children. He considered the following in his analysis: to what degree parental involvement associates with higher levels of school achievement; if parental involvement in school programs positively influences urban students; what aspect of parental involvement helps students the most; and whether relationship between parental involvement and academic achievement is the same across racial groups. He found that the influence of overall parental involvement is positively related to achievement, and the relationship holds across different types of populations of children. Similar to the findings of Fan and Chen (2001), Jeynes (2007) found that expectations were the specific component of parental involvement that had the greatest impact on achievement.

Kristjansson and Sigfusdottir (2009) examined the relationship between parental support, parental monitoring, and time spent with parents on the academic achievement among adolescent girls and boys. In their analysis, Kristjansson and Sigfusdottir (2009) used data from a 7350 ninth and tenth graders in Icelandic secondary schools. Their results indicated that parental practices, such as access to care and warmth, reasonable monitoring, and time spent with parents are important factors for adolescents academic achievement. Furthermore, they found that most of the influence of parental support and time spent with parents on achievement is indirect through school effort, but the effect of parental monitoring on achievement is mostly direct and not mediated through effort. Therefore, Kristjansson and Sigfusdottir argued that children who are well supported and spend much time with their parents are more able and willing to put in the

effort that is needed in order to succeed in school; while those who are monitored more will do well for that reason only (Kristjansson & Sigfusdottir, 2009).

Even though most studies support the theory that parental support affects academic achievement, Epstein (1991) claimed that while parental involvement in students' studies showed positive relations to some achievement test, it does not have the same positive relations to mathematics achievement. She argues that the achievement gains might be greater in subject where parents feel less apprehensive about helping their children (Epstein, 1991).

Measures of parents' participation in school activities also show consistent associations with their children's academic achievement. For example, parents' participation in PTA/PTO, community involvement or volunteer work has shown positive associations to mathematics achievement in the National Education Longitudinal Study. The relationship between students' academic achievement and parents' educational *activities at home*, however, has shown mixed results. Some studies report that parent participation in learning activities at home is positively associated with students' academic achievement (Izzo, Weissberg, Kaspro, & Fendrich, 1999); but other studies report no significant relations at all (e.g., Hill & Craft, 2003).

Literature shows positive benefits of parental involvement in schooling for several motivational variables including school engagement, intrinsic motivation, perceived competence and control, self-regulation, mastery goal orientation, and motivation to read (Gonzalez-DeHass, Willems, & Doan Holbien, 2005; Ratelle, Guay, Larose, & Senecal, 2004). Parental involvement is linked significantly with children's development of self-regulation skills (Strights, Neitzel, Sears, & Hoke-Sinex, 2001). Research also shows that parental involvement among homeless

families relates positively to children's achievement and appropriate school behavior – the latter being critical correlate of motivation (Miliotis, Sesma, & Masten, 1999).

Once children are in school, father involvement both in and out of school relates directly to children's motivation and achievement (Gonzales-DeHass, et.al, 2005; Tamis-LeMonda & Cabrera, 199). Although fathers are seen less often than mothers at such events as parent-teacher conferences and school meetings, their presence at these activities is important. Perhaps father presence sends a message to the child that school is important because the father is willing to spend part of his time there.

Research shows that parental involvement raises children's perceived competence (self-efficacy) and control (Schunk, et.al, 2008). Children who feel more efficacious and in control of their learning are apt to be more motivated to learn. Parental involvement also offers children a sense of security and connectedness. Especially as children grow older, parental involvement conveys that children are very important to their parents. This sense of connectedness helps children internalize educational values. Parental involvement conveys that education is important, and this value may be especially critical among adolescents who have friends who are disengaged from school and considering dropping out. When children are motivated to do well in school and participate in activities, parents are likely to encourage and assist them. Thus, the influence between parental involvement and children's motivation may be reciprocal (Schunk, et.al, 2008).

On Peer Influence

Either through peer support and attitudes or through peer achievement, the influences from peers appears to be an important social context that should not be overlooked with respect to academic achievement (Lee and Schute, 2010).

There are empirical studies directly relating peer influences to academic achievement. Gonzales, Cauce, Friedman, and Mason (1996) reported the results from a study with middle school African American students. They measured peer support with a 28-item self-report questionnaire asking about students' attachments to peers and parents. The results showed that *peer support* was a significant predictor of GPA. Other important variables were not predictive of GPA, such as family income, parent education, number of parents in the home, maternal support, and maternal control. The study concluded that peer and neighborhood contexts may have more powerful influences on students' academic achievement than family context variables. Ryan (2001) found that *peers' achievement* can influence other peers' achievement. Either through peer support and attitudes or through peer achievement, the influences from peers appears to be an important social context that should not be overlooked with respect to academic achievement.

Attitudes, achievement, and perceived norms among peers in a school can also stimulate or discourage students' learning at school (Syvertsen et al., 2009). As with the literature on parental involvement, different definitions of "peers" exist in the literature (Ryan, 2001). Most of the differences relate to the size of the peer group, which has implications for its composition. A peer group can range from a single best friend, to a few close friends, to a slightly larger group of friends with relatively strong ties, to the entire age cohort (Brown, 1990). Urberg,

Degirmencioglu, and Pilgrim (1997) reported that students in Grades 6 through 12 considered their peer groups to consist of about five to eight students. Peers can share attitudes and beliefs and common behaviors with respect to school experiences and learning and other nonacademic activities. Peer norms as a group concept can influence individuals' attitudes and beliefs about school achievement, either directly through social reinforcement or indirectly through observation (Ryan, 2001).

Eccles and her colleagues (1994; Eccles & Midgley, 1989) have investigated changes that occur after students make the transition from elementary to high school. At the elementary level, students remain with the same peers for much of the school day. Students receive more individual attention, and individual progress is stressed. In junior high school, peer group varies from one class to another.

On classroom cultural climate

The hierarchical order of the seven cultural factors of the classroom learning environment (gender equity, collaboration, competition, congruence, teacher imitation, classmate imitation, and teacher authority) justifies that the Filipino classrooms are more hierarchical in terms of the teacher-student interactions (Darmanegar, 2006).

Student's achievement, their self-esteem, and participation in the lesson are greatly influenced by the classroom environment where they spend the major portion of their time. There must be elements of caring, trust, and respect in the interpersonal relationships between teachers and students to yield an effective teaching and learning proceses. An effective classroom climate is one in which the teachers' authority to organize and manage the learning

activities is accepted by the students; there is mutual respect and good rapport; and the atmosphere is one of purposefulness and confidence in learning. As Kumar (2007) mentioned, “a key consideration is the extent to which the teacher is able to foster favorable perceptions toward learning among students, by establishing in students self-respect and self-esteem regarding themselves as learners.”

The study conducted by Falsario et.al. (2014) focused on the relationship between classroom climate and student’s academic performance. The respondents were 123 fourth year Bachelor of Secondary Education (BSEd) and Bachelor of Elementary Education (BEEd) students taking the Teaching Profession. The results of their studies revealed that for BEEd students, there is a low positive correlation between academic performance and classroom climate.

Classroom environments, as perceived by students, have a number of characteristics that influence student growth, development, and achievement. LaRocque (2008) examined students’ perceptions of their classroom environment, as well as the possible effect of these perceptions on academic achievement. LaRocque built her study on the notion that the most valuable information regarding the effectiveness of a classroom environment come from the students within that classroom. She asserted that students are in an excellent position to provide data about this environment because they are participants, capable of assessing information that an observer may miss or consider unimportant (LaRocque, 2008). To conduct her study, over 17,000 students between third and sixth grade were surveyed using the My Class Inventory. This survey measured students’ feelings regarding cohesion, friction, satisfaction, difficulty, and

competitiveness within the classroom.

Results of this study uncovered a large range of information, beginning from the finding that students consistently feel less satisfied with their classroom environment as they move up in grade level. LaRocque discussed how this is often referred to as the fourth grade slump, a phenomenon following the transition from lower elementary school to higher elementary school in which students experience difficulty with academic material as well as social interactions. Lastly, when students perceive their environment as more difficult, their academic achievement is lower.

On School Climate

For almost one hundred years, educators have appreciated the importance of school climate. In 1908, Perry was the first educational leader to explicitly write about how school climate affects students and the process of learning.

Empirically grounded school climate research began in the 1950's when Hapin and Croft (1963) initiated a tradition of systemically studying the impact of school climate on student learning and development. Early systematic studies of school climate were also spurred by organizational research as well as studies in school effectiveness (Anderson, 1982; Creemers & Reezigt, 1999). Early school climate studies tended to focus on observable characteristics (Anderson, 1982). Over the last three decades there has been an extraordinary and growing body of research that attests to the importance of school climate, and that positive school climate supports learning and positive youth development.

A series of correlational studies have shown that school climate is directly related to academic achievement. The evidence found in the literature demonstrates that this is true for the elementary schools, middle schools, high schools, and for all levels of schooling (Gottfredson & Gottfredson, 1989; MacNeil, Prater, & Busch, 2009).

Feeling safe – socially, emotionally, intellectually, and physically is a fundamental human need (Maslow, 1943). Feeling safe in school powerfully promotes student learning and healthy development (Devine & Cohen, 2007). However, there is a great deal of research that shows that many students do not feel physically and emotionally safe in schools, largely as a result of breakdowns in the interpersonal and contextual variables that define a school's climate. In schools without supportive norms, structures, and relationships, students are more likely to experience violence, peer-victimization, and punitive disciplinary actions, often accompanied by high levels of absenteeism, and reduced academic achievement (Astor, Guerra, & Van Acker, 2010). Studies have also shown that students feel less safe in large schools and that verbal bullying is more likely to occur at such schools (Lleras, 2008).

Research has also shown that in schools where students perceive a better structured and school discipline and more positive student-teacher relationships, there are lower associations with the “probability and frequency of subsequent behavioral problems” (Wang, Selman, Dishion, & Stormshak, 2010; Gregory & Cornell, 2009).

If a teacher-student relationship is negative and conflictual in kindergarten, it is more likely that the student will have behavioral and academic problems in later grades (Hamre &

Pianta, 2001). Also, teachers' interactions with students can directly affect students' behavioral and emotional engagement in the classroom (Skinner & Belmont, 1993). When teachers support and interact positively with students, then students are more likely to be engaged and behave appropriately (Skinner & Belmont, 1993).

Research supports the notion that a positive school climate promotes students' abilities to learn. A positive school climate promotes cooperative learning, group cohesion, respect, and mutual trust. These particular aspects have been shown to directly improve the learning environment (Ghaith, 2003; Kerr, Ireland, Lopes, Craig, & Cleaver, 2004; Finnan, Schnepel, & Anderson, 2003).

On Community Environment

Beyond the immediate family, the community in which the child lives might have an influence to their academic achievement. The study of Brody and colleagues (2001) suggested that children who live in disadvantaged communities, whether urban or rural are more likely to affiliate with antisocial peers than are children living in more affluence communities. Affiliating with antisocial peers has a negative effect on children's academic progress even when those children come from nurturing supportive families. In the same vein Swanson (2004) examined how community poverty affected high school completion for different ethnic groups. He found that high school graduation rates for African American students were more adversely affected by high poverty environments, than were graduation rates of whites or Asian American students.

The study of Holloway (2004) paints a persuasive picture of the community's impact on child development and student learning. His research suggests that improvements in student

achievement will be limited if reform efforts focus solely on students in the classroom. Instead, policymakers must also look at the broader picture. They must consider how to increase the community's capacity to support its children and youth so that students' experiences outside school will enhance the teaching and learning that goes on inside school.

There are significant differences in mathematics achievement of urban and rural schools where students in urban schools had better academic achievement than their rural counterparts (Owoeye and Yara, 2011; Eraikhuemen, 2003). Eraikhuemen further stated that there was a significant interaction influence of gender and school location on the academic achievement of students. In contrast, Maliki, Ngban and Ibu (2009) found that the students of rural school performed better than students of urban schools in mathematics examination.

Synthesis

Based on this review, the constructs on social influences from family, peers, classroom, school, and community all play significant roles in affecting mathematics achievement and motivation. This review of related literature and studies has given the researcher insights on the problems identified at the beginning of this paper. Looking back on the aforementioned literature, the present study is similar in most of the works done already in the past. The key point that makes this study unique is that it brings together the five variables, familial influence, peer influence, classroom cultural climate, school climate, and community environment into one holistic way of investigating their relations to each other and to mathematics achievement and motivation.

Mathematics proficiency and motivation have become the key elements of this study because they have been given special attention as to whether the above cited variables explain a significant portion of it. As mentioned in the literature, these variables contribute to mathematics proficiency and motivation, and so this study is geared toward developing a model that would show how they intertwine in the process of reaching success or failure in attaining mathematics proficiency and motivation.

CHAPTER III

METHODOLOGY

This chapter includes the research design, target participants, research locale, the instruments, data collection procedures, and data analysis and interpretation.

Research Design

This study is descriptive – correlational and explanatory in nature. Descriptive design is a scientific method which involves observing and describing the behavior of a subject without influencing it in any way. It is usually structured and specifically designed to measure the characteristics described in research question. Hypotheses, derived from the theory, usually serve to guide the process and provide a list of what needs to be measured (Hair, Babin, Money & Samouel, 2003). On the other hand, correlational research design investigates the relations between two variables (bivariate) or three or more variables (multivariate) in order to see how they “go together” statistically, and how they are associated (Vogt, 2007). From the merging of descriptive and correlational designs, this study proceeds to theory – building design.

Since this study attempts to describe the role of social factors in influencing mathematics proficiency and motivation, explanatory research design is adopted. Saunders, Lewis, & Thronhill (2015) clarified that explanatory research design emphasizes on studying a situation or a problem in order to explain the relationship between variables.

Figure 4 outlines the research design of this study. It shows the variables to be investigated and their indicators and dimensions and the research procedure.

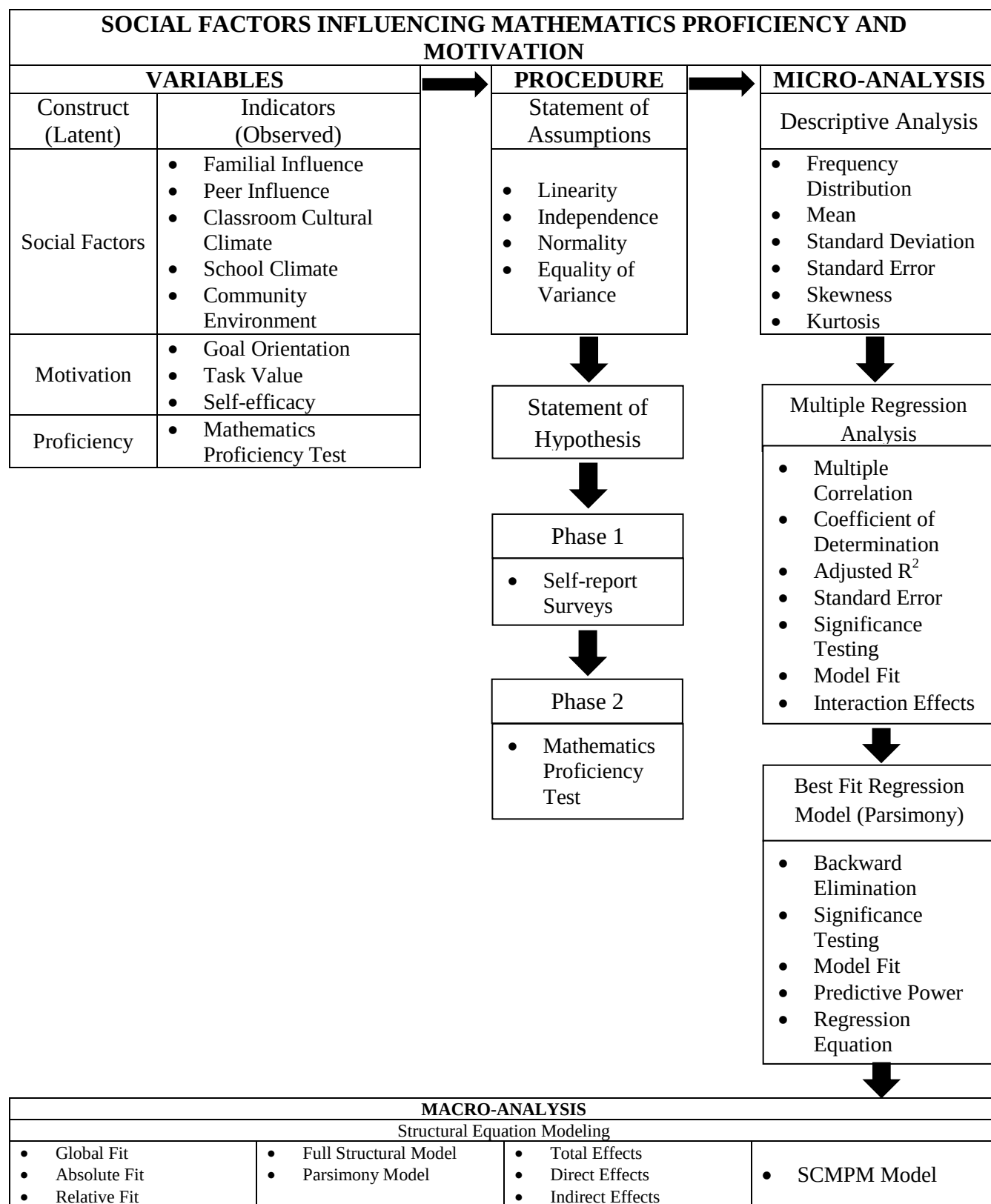


Figure 4. Research Procedure

The building of theory occurs in two major stages – the descriptive stage and the normative stage (Christensen and Carlie, 2009). In this study, the descriptive stage of theory – building is the micro-level analysis, which is necessary because researchers must pass through it in order to develop a normative theory. Descriptive theory – building typically categorizes the attributes of the phenomena. Likewise, correlations between attributes and outcomes are hypothesized and quantified through techniques such as regression analysis. From descriptive stage, the study moves beyond statements of correlation to define what causes the outcome of interest. With the understanding of causality, the theory is improved by following the same three steps used in the descriptive stage. Hypothesizing that the statements of causality are correct, it then cycles deductively to the descriptive stage and to the causal statement.

In this study, hypotheses and assumptions are sets of statements tested to draw substantive interpretation of the theoretical models. Modeling in this study, particularly regression and structural equation modeling, is a necessity in building a theory. Hypotheses are individual empirically testable conjectures; while the theory is a collection of reality and which had individually or jointly received some empirical support.

Table 3 presents the twelve regression models analyzed in this study as viewed at twelve different perspectives.

Table 3
Predictor and Criterion Variables in Each Perspective of Regression Analysis

Perspective of Analysis	Model	Predictors(Independent Variables)	Criterion(Dependent Variables)
First	Model 1	Familial Influence Peer Influence Classroom Cultural Climate School Climate Community Environment	Goal Orientation
Second	Model 2	Familial Influence Peer Influence Classroom Cultural Climate School Climate Community Environment	Task Value
Third	Model 3	Familial Influence Peer Influence Classroom Cultural Climate School Climate Community Environment	Self-Efficacy
Fourth	Model 4	Familial Influence Peer Influence Classroom Cultural Climate School Climate Community Environment	Motivation
Fifth	Model 5	Familial Influence Peer Influence Classroom Cultural Climate School Climate Community Environment	Conceptual Understanding
Sixth	Model 6	Familial Influence Peer Influence Classroom Cultural Climate School Climate Community Environment	Procedural Fluency
Seventh	Model 7	Familial Influence Peer Influence Classroom Cultural Climate School Climate Community Environment	Strategic Competence
Eighth	Model 8	Familial Influence Peer Influence Classroom Cultural Climate School Climate Community Environment	Adaptive Reasoning
Ninth	Model 9	Familial Influence Peer Influence Classroom Cultural Climate School Climate Community Environment	Productive Disposition
Tenth	Model 10	Familial Influence Peer Influence Classroom Cultural Climate School Climate Community Environment	Math Proficiency

As presented in the conceptual framework in Chapter I, this study intends to assess the impact of students' motivation on the predictive relationship between their social profile and their mathematics proficiency. To address this concern, mediation analyses are employed.

In order to verify a mediating variable (motivation) and its significance in the model, this study confirms first the significance of the relationship between the initial independent variables (social factors) and the dependent variable (mathematics proficiency). Next, the significance of the relationship between the social constructs and motivation is determined. Then, the significance of relationship between motivation and mathematics proficiency in the presence of the social constructs is tested. Finally, the insignificance (or the meaningful reduction in effect) of the relationship between the social constructs and motivation in the presence of the mediator motivation is confirmed (see Table 4).

Table 4
Predictor and Criterion Variables in Each Perspective of Structural Equation Model
(Mediating Variable: Motivation)

Perspective of Analysis	Model	Predictor (Independent Variable)	Criterion (Dependent Variables)
Eleventh	Model 11	Familial Influence	Math Proficiency
Twelfth	Model 12	Peer Influence	Math Proficiency
Thirteenth	Model 13	Community Environment	Math Proficiency
Fourteenth	Model 14	Classroom Cultural Climate	Math Proficiency
Fifteenth	Model 15	School Climate	Math Proficiency

In performing mediating effects of motivation, Structural Equation Modeling (SEM) using Analysis of Moment Structure (AMOS) is used. Structural equation modeling (SEM, also called covariance structure analysis) is designed, in part, to test these more complicated models in a single analysis instead of testing separate regression analyses. In addition, the SEM analysis

approach provides model fit information that provides information about consistency of the hypothesized mediational model to the data. If each of the social factors is no longer significant to predict mathematics proficiency when motivation is controlled, the finding supports full mediation. If the social factors and motivation both significantly predict mathematics proficiency, the finding supports partial mediation.

Participants of the Study and Research Locale

This study is conducted in Laguna, Region IV-A, Philippines since there is no attempt yet of investigating the social factors influencing mathematics proficiency and motivation of eighth grade students in this Province. Eighth grade students have an age ranging from 13 – 16 years old during the conduct of this study. Between 13 and 16, adolescents' ways of thinking about himself, others, and the world at this age bracket shift to a much more adult level (Dworetzky, 1993). Hence, they have the capacity to synthesize each item in the research instruments.

There are five divisions in the Province of Laguna with different number of public secondary schools namely Division of Laguna (with 77 schools); Division of Calamba (20); Division of San Pablo (15); Division of Biñan (8) and Division of Santa Rosa (8).

Multi-stage sampling technique is applied to obtain the participants of this study. This technique is commonly used when there is no detailed or actual listing of individuals. Sampling stages are done, which means the population elements are grouped into a hierarchy of individuals or units, and sampling is then done successively (Librero, 2012).

Table 5
List of Participating Public Secondary Schools

Division	No. of Selected Schools	Name of Schools	Location
Laguna	17	1. Alaminos NHS	Alaminos
		2. Banca-Banca NHS	Victoria
		3. Cabuyao NHS	Cabuyao
		4. Cristobal S. Conducto Memorial NHS	Rizal
		5. Dayap NHS	Calauan
		6. Don Manuel Rivera Memorial NHS	Pila
		7. Los Baños Integrated School	Los Baños
		8. Los Baños NHS – BatongMalake	Los Baños
		9. Los Baños NHS – Poblacion	Los Baños
		10. Lumban NHS	Lumban
		11. Masapang NHS	Victoria
		12. Masaya NHS	Bay
		13. Nicolas L. Galvez Memorial NHS	Bay
		14. Pagsanjan NHS	Pagsanjan
		15. Pedro Guevara Memorial NHS	Sta. Cruz
		16. Plaridel NHS	Nagcarlan
		17. Pulo NHS	Cabuyao
Calamba	4	18. Calamba Bayside NHS	Calamba City
		19. Castor Alviar NHS	
		20. E. Barretto Sr. NHS	
San Pablo	3	21. Lecheria NHS	San Pablo City
		22. Prudencia D. Fule Memorial NHS	
Santa Rosa	2	23. San Pablo City NHS	Sta. Rosa City
		24. Sta. Felomina Integrated School	
Biñan	2	25. Aplaya NHS	Biñan City
		26. Balibago NHS	
		27. Biñan NHS	
		28. Jacobo Z. Gonzales Memorial NHS	
Total	n = 28		

First, out of 128 schools in five School Divisions in Laguna, 28 public secondary schools are proportionally chosen based on the total number of schools. From each of the five divisions, 17 (60.16%) schools are taken from the Division of Laguna, 4 (15.63%) schools are considered from the Division of Calamba, 3 (11.72%) schools from the Division of San Pablo, and 4 schools are obtained from Divisions of Santa Rosa and Biñan with 2 (6.25%) schools each. Next, lottery or fishbowl sampling technique is used to identify the participating schools. After the participating schools are identified, simple random sampling with equal allocation is applied in

which 50 grade 8 students were chosen from each randomly selected school. As a result, 1400 grade eight students enrolled during school year 2015 – 2016 are the participants selected by repeated lottery or fishbowl technique (see Table 5). Some percentage of students did not accomplish the survey questionnaire completely and some were absent on the second phase of the study. Out of 1400 target participants, 1249 or 89.21% completed the research tasks and considered as the final sample group.

Research Instruments

Various research instruments were used in the study. They include the following:

1. ***Student's Family Profile (SFP)***. This is a questionnaire used to describe the profile of the participants in terms of familial influence. It includes the family structure, parents' parenting style, and parental involvement.

Parenting Style Questionnaire (PSQ) is an instrument designed to measure four parenting styles (authoritative, authoritarian, permissive, and uninvolved) based on two main dimensions underlying parental behavior which include parental responsiveness and parental control with ten items each. Parental responsiveness items such as “*comforts me when I am afraid*” describe parental warmth or supportiveness or acceptance while parental control items such as “*punishes me when I do not obey*” show the amount of degree of control the parents attempt to exert over the child.

In a scale of 1 (never) – 4 (always), two ratings were given by the participants, the first of which is for their mother, and the other one is for their father. There are no

negative items. Half of the items in the questionnaire are responsiveness item and half of them are control item. At first the total score of responsiveness and total score of control were computed separately. Scores for each parent/guardian were taken separately and sum of scores of each parent/guardian were considered for overall score of an item. Thus the instrument yielded six separate scores for each participant, namely mother's responsiveness, father's responsiveness, mother's control, father's control, parental responsiveness, and parental control. However, for a participant from a single – parent family, there are only four separate scores namely mother's/father's responsiveness, mother's/father's control, parental responsiveness, and parental control.

On the basis of these scores, parenting style of each student's parent/guardian was determined. A parent rated with high scores in both responsiveness and control (above the median) is categorized as authoritative parent. Meanwhile, a parent rated with low scores in both responsiveness and control (below the median) is characterized as indulgent (uninvolved) parent. A parent rated with high in responsiveness and low in control is categorized as permissive parent; and a parent rated with low in responsiveness and high in control is classified as authoritarian parent. It has a Cronbach's Alpha coefficient of 0.784 (mother parenting style items) and 0.84 (father parenting style items) interpreted as high reliability.

Parental Involvement Questionnaire (PIQ) is an instrument that gauges the participation of parents in student's education. It ranges from parent's attendance in a general meeting, a meeting with a teacher, or a school event, or by volunteering or

serving on a committee. Items on this instrument are crafted by the researcher based on Epstein's Model of Parental Involvement (1995; 2002) which includes home – based activities (e.g. *Spends time with me working on math exercises*), home – school communication (e.g. *Talks to my teacher about my daily school routine*), and school – based activities (e.g. *Volunteers at school works like Brigada Eskwela*) with five (5) items each.

While Far East Asian cultures have been shaped by the Confucian philosophy, Filipinos are more heavily influenced by Catholicism due to a colonial history. Thus, their parenting styles and practices are more similar to those of European Americans (Jacobsen, 2008). Hence, the adoption and modification of Epstein's Model of parental involvement is still applicable in the Philippine context.

This instrument is answerable by using the scale from 1 (Strongly Disagree) to 4 (Strongly Agree). It has a Cronbach's Alpha coefficients of 0.883 regarded as high reliability.

2. ***Student's Peer Profile (SPP)***. It is an instrument which aims to assess the influence exerted by a peer group to the research participants. It is grounded on the work of Lockwood and Kunda (2002) who classify role models (peer influence) into positive role models and negative role models. It asks participant's number of peer group members and their involvement in peer group activities (e.g. *I spend most of my time in school with friends discussing academic work/reviewing for examination*). The ten (10) – item level of peer influence was rated using the scale from 1 (Never) to 4 (Always). It has a

Cronbach's Alpha coefficients of 0.871 described as high reliability.

3. ***Student's Community Profile (SCP)***. It comprises the type of community where students live and the kinds of community activities they do after school or during weekend. These activities are commonly observed in the Philippine setting (e.g. *I participate in voluntary works in the community*). The student's level of community participation was measured using a scale from 1 (Never) to 6 (Many times a week). It reported a high reliability statistics of 0.702.

4. ***Classroom Cultural Climate Questionnaire (CCCQ)***. It is an adopted and modified instrument used to measure the perceived learning environment of the participants. This is a 35 – item self-report instrument developed from the Classroom Learning Environment Questionnaire (CLEQ) by Liem (2005). The CLEQ's seven dimensions within the classroom cultural climate section are gender equity (e.g. *I feel that male students are just as capable as female students in all class activities*), collaboration (e.g. *I feel that it is important for the class to work together as a team*), deference (e.g. *It is important to listen first before stating an opinion*), competition (e.g. *I want to be involved only in fair competitions*), teacher authority (e.g. *It is OK for me to disagree with teachers*), modeling (e.g. *I like teachers to demonstrate to me what to do*), and congruence (e.g. *What I learn in this class agrees with what I learn at home*). Since Philippine education is patterned after the American system and Filipinos internalized the American ideal of a democratic society (Florido, n.d.), these dimensions are most likely existing in the Philippine classroom.

The level of classroom cultural climate was rated using the scale from 1 (Strongly Disagree) to 4 (Strongly Agree). This instrument obtained a reliability coefficient of 0.863.

5. ***School Climate Inventory (SCI)***. This adopted and modified instrument from *www.nationalcenterforcommunityschools.org, 2015* includes five dimensions with five (5) indicators each: physical environment (e.g. *Space, like library and school facilities, is shared and accessible to everyone*); social environment (e.g. *Teachers and staff are friendly*); affective/emotional environment (e.g. *The school values diversity and is welcoming to all students' backgrounds*); learning/cognitive environment (e.g. *All students are encouraged to succeed*) and; moral environment (e.g. *The school culture reflects the values, norms and expected behaviors for all students*). Students assess the quality of their school's climate along the scale of 1 to 4 using the rating system 4– Highly Observed, 3 – Observed, 2 – Slightly Observed and 1 – Not Observed. It has an excellent reliability coefficient of 0.948.

The overall sociocultural questionnaire has a Cronbach's Alpha coefficient of 0.960 indicating an excellent reliability (Hinton, 2004). The means of each of the abovementioned four-point scale research instruments were interpreted using the guide below:

3.51 – 4.00	=	Strongly Agree (or its equivalent)
2.51 – 3.50	=	Agree (or its equivalent)
1.51 – 2.50	=	Disagree (or its equivalent)
1.00 – 1.50	=	Strongly Disagree (or its equivalent)

6. ***Student's Motivation for Learning Inventory (SMLI)***. This is another instrument adopted and modified by the researcher from the study of Dimaculangan (2015). It includes three dimensions with ten indicators each namely: goal orientation (e.g. *I like math because it really makes me learn new things*), task value (e.g. *I think the lessons in a math class will be useful to develop my critical thinking*), and self-efficacy (e.g. *I'm confident I can do an excellent job on the assignments and tests in mathematics*).

Scores for these dimensions are computed by taking the mean of the items within the subscales. The students' level of motivation was classified accordingly based on a three-level categorization. The following guide was used in assigning their level of motivation:

2.68 – 4.00	=	High (or its equivalent)
1.34 – 2.67	=	Average (or its equivalent)
1.00 – 1.33	=	Low (or its equivalent)

To ensure the face validity of the items, these six (6) research instruments were validated by the experts in the field (3 psychologists, 1 sociologist, 1 Gender and Development Director, Associate Dean of PNU CGSTER, 1 PNU Professor in educational leadership, and 1 mathematics educator). These experts rated the acceptability of each item using the scale: 4 – Highly Acceptable; 3 – Acceptable; 2 – Needs to be Reworded; and 1 – Not Acceptable (NA). Remarks column were also provided for their comments, points for revisions, corrections, and recommendations on item content and language. This instrument reported an excellent reliability coefficient of 0.955.

7. **Mathematics Proficiency Test (MPT).** It was developed to determine the level of mathematics proficiency of the participants. To ensure the face and content validity of this instrument, the seven validators (3 Master Teachers in Mathematics in public school and 4 College Mathematics Professor) evaluated the Mathematics Proficiency Test along the following criteria: clarity; overlapping responses; appropriateness of listed responses; application to praxis; relationship to research problem; and measure of constructs. One – hundred fifty (150) items were constructed following the Table of Specifications (TOS). After the items had been revised, the test was administered to a group of fifty (50) grade nine students. Item analysis was performed to determine which of the items would be retained. To measure its reliability, the final 50 – multiple choice items were administered to a group of fifty (50) eighth grade students studying outside the research locale. After the test – retest method, Pearson r correlation coefficient of .863 indicating high reliability was obtained.

The participants' level of mathematics proficiency was determined accordingly based on a five-level categorization. The following guide was used in assigning their level:

90 – 100	=	Very High
85 – 89	=	High
75 – 84	=	Average
65 – 74	=	Low
50 – 64	=	Very Low

The items were grouped into five parts: conceptual understanding (items 1 – 10), procedural fluency (items 11 – 20), strategic competence (items 21 – 30), adaptive reasoning

(items 31 – 40), and productive disposition (items 41 – 50) as shown in Table 6.

Table 6
Table of Specifications of the Mathematics Proficiency Test

TOPICS	STRANDS OF MATHEMATICAL PROFICIENCY				
	Conceptual Understanding	Procedural Fluency	Strategic Competence	Adaptive Reasoning	Productive Disposition
Special Products and Factors	1	11	21	31	41
Rational Algebraic Expressions	2	12	22	32	42
Relations and Functions	3	13	23	33	43
Linear Inequalities in two Variables	4	14	24	34	44
Systems of Linear Equations and Inequalities	5	15	25	35	45
Reasoning	6	16	26	36	46
Triangle Congruence	7	17	27	37	47
Inequalities in Triangles	8	18	28	38	48
Parallelism and Perpendicularity	9	19	29	39	49
Measures of Central Tendency	10	20	30	40	50
TOTAL (50)	10	10	10	10	10

Data Collection Procedure

Upon the approval of the division superintendents and school heads for the conduct of this study, parent's consent form (see Appendix G) was distributed to the target student – respondents. The questionnaire was then administered to those who agreed and were allowed by their parents to participate in the survey.

The purpose of the study was explained to the participants so that they could understand the nature of the research. Participants were oriented on the procedure used in the study so they knew what to expect. It was ensured that their responses were used only for the purposes of the study. Anonymity of their responses was guaranteed. For confidentiality reasons, their names were not written in the questionnaire; hence, coding scheme was employed.

The participants were given thirty (30) minutes to answer the survey questionnaire on social influences (family, peers, community, classroom, and school climate) and the motivation to learn inventory. Sixty (60) minutes were allotted to the participants to answer the 50 – item multiple choice type of mathematics proficiency test.

The main purpose of this study is to investigate the social factors influencing mathematics proficiency and motivation; hence, the researcher has no intention to compromise its research objectivity in return for any benefit that may arise. The participants are not students of the researcher and therefore, conflict of interest was avoided.

Since this study aimed to help increase stakeholders' awareness of the factors that influence mathematics proficiency and motivation, the salient findings of this study are formally communicated (if needed and requested) to the school heads of the participating public secondary schools in the Province of Laguna. The information will aid them in enhancing the instructional program of the school toward students' holistic development.

To answer the problem stated in Chapter I, a two – phase scheme of data collection was utilized.

Generally, the first and second phases are about collecting various quantitative data using different instruments. The first phase is named as the “survey phase” and the second phase as “mathematics proficiency test phase”.

The researcher took the chance to talk to the School Heads and Grade 8 Mathematics teachers of the selected schools and discussed the guidelines on how to administer the test and

the questionnaires. Results were immediately retrieved by the researcher for presentation, analysis, and interpretation.

Data Analysis Procedure

This study gathered quantitative data. Descriptive statistics were reported through measures of position. The responses of the students in the instruments were initially analyzed through the scoring guide and interpretation of results based on the guidelines set by the researcher. The scoring guides were written at the end of every instrument.

It should be noted that there were 15 perspectives of regression analysis conducted in the study (see Tables 3 and 4).

To analyze the data gathered in Phase I and Phase II, the statistical packages SPSS (Statistical Package for the Social Sciences) and AMOS (Analysis of Moment Structure) were used. AMOS is an add-on module for SPSS. It is designed primarily for structural equation modelling, path analysis, and covariance structure modelling, though it may also be used to perform linear regression analysis, ANOVA and ANCOVA. It features an intuitive graphical interface that allows the analyst to specify models by drawing them. It has also a built-in bootstrapping routine and superior handling of missing data. With SPSS – AMOS, one can specify, estimate, assess, and present a model in an intuitive interface to show hypothesized relationships among variables.

This study also utilized a more comprehensive methodology called structural equation modelling (SEM), sometimes called confirmatory factor analysis. Vogt (2007) pointed out that

SEM is the design one needs when s/he has formulated a model or a theory to test. With SEM, one can fix and adjust the model to make it work better. This method was adopted because, theoretically, the sociocultural constructs influence mathematics proficiency and motivation, but confirmatory analyses as SEM improves the acceptability of the model or theory. Specifically, this method uses (1) regression analysis for measuring the relations among variables; (2) factor analysis to describe variability among observed, correlated variables; and (3) causal modelling combined with regression to yield a way to picture and test regression models called path analysis.

Mean, standard deviation, standard error, and skewness were used in describing the familial influence, peer influence, classroom cultural climate, school climate, and community environment of the respondents. Same statistical tools were employed in determining the level of students' motivation in terms of goal orientation, task value, and self – efficacy. Kurtosis, which indicates how high the distribution is around the mean, was added in the cited tools in determining the level of students' mathematics proficiency in terms of the five strands.

Multiple Linear Regression Analysis and Backward Elimination Method were used to determine whether familial, peer, classroom, school and community factors influence mathematics proficiency, and motivation. Structural Equation Modeling (SEM) was performed to find out if motivation mediates the predictive relationship between the social factors and mathematics proficiency. SEM was also used in illustrating the theoretical model of eighth grade students' mathematics proficiency and motivation in a social perspective.

CHAPTER IV

PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

This chapter presents the data and the corresponding analyses and interpretation based on the specific problems previously raised in this study. The data presented in this chapter were taken from 1249 eighth grade students of the five divisions of Laguna, Region IV-A.

Social Profile of Eighth Grade Students

In the 19 – item social profile, participants were profiled in terms of student's family profile such as family structure, parenting style, and parental involvement; peer profile which includes number of peer groups and activities with peers; classroom cultural climate, namely gender equity, collaboration, deference, competition, teacher authority, modeling, and congruence; school climate which consists of physical, social, affective, learning/cognitive, and moral environment; and community environment on community type and involvement in community activities. The data on these are shown from Tables 7 to 25.

Familial Influence

Shown in Table 7 are the frequency and percentage distributions of the respondents' family structure.

It is noticeable in Table 7 that there is a lesser number and percentage of participants belonging to extended family in which family household includes grandparents, an unmarried aunt, an uncle, a cousin, a niece or a nephew, who are living together in the same residential unit. Further, it can be observed that most of the participants belong to nuclear family which typically

consists of married or legally bound parents and their biological children all living in the same residence and sharing the values, duties, and responsibilities of the family unit. This implies that Filipinos still put premium on having a strong and complete family.

Table 7
**Frequency Distribution of Eighth Grade Students' Family Profile
in Terms of Family Structure**

Family Structure	Number of Students	Percent
Single-Parent Family	101	8.09
Nuclear Family	831	66.53
Blended or Step-Parent Family	14	1.12
Extended Family	254	20.34
Grandparent Family	29	2.32
Living with Siblings Only	20	1.60
Overall	1249	100.00

The home environment that the parents establish is a big developing factor for the emotional and social abilities of the child. In a nuclear family which is dominant in this study, the husband and wife are obliged to live together and share responsibilities in fulfilling the needs of their children. However, in some family formations as revealed in this study, children feel secure and have high self – esteem when they have close and loving relationships with caring adults/guardians. A home, regardless of family structure, which fosters love and affection is giving the child the solid foundation that will make him/her a worthy member of society.

Table 8a presents the frequency and percentage distribution of eighth grade students' family profile in terms of parent's responsiveness and parent's control.

Table 8a
**Frequency Distribution of Eighth Grade Students' Family Profile
 in Terms of Level of Responsiveness and Control**

Level	Responsiveness		Control	
	Number of Students	Percent	Number of Students	Percent
High	612	49.0	609	48.8
Low	637	51.0	640	51.2
Overall	1249	100.00	1249	100.00

It can be gleaned from Table 8a that there are almost equal number of respondents who rated their parents as high and low in both domains. Table 8b reveals the respondents' parenting style based on the four quadrants formed by respective levels of responsiveness and control. A high level on both domains means that a parent is authoritative. A low level on both domains indicates an uninvolved parent. A high level of responsiveness and a low level of control signify a permissive parent, while a low level of responsiveness and a high level of control imply an authoritarian parent.

Table 8b
**Frequency Distribution of Eighth Grade Students' Family Profile
 in Terms of Parenting Style**

Family Structure	Number of Students	Percent
Authoritative	366	29.30
Permissive	246	19.67
Authoritarian	243	19.46
Uninvolved	394	31.54
Overall	1249	100.00

The results revealed that there is almost equal number of authoritative, permissive, authoritarian, and uninvolved parents. It clearly indicates that parenting practices of Filipino parents vary from one family to another.

The way the parents/guardians raised their child affects his/her behavior, social competence, and later academic success. Negative experiences by the students at home may probably obstruct an opportunity for learning. In contrary, a learner nurtured by firm yet loving, understanding, and responsive parents/guardians is most likely social competent, self – reliant, have higher self – worth and better adjusted.

Table 9 presents the frequency and percentage distribution of eighth grade students' family profile in terms of parent's involvement in child's education.

Table 9
**Frequency Distribution of Eighth Grade Students' Family Profile
in Terms of Parental Involvement in their Child's Education**

Parental Involvement	Number of Students	Percent
High	356	28.50
Average	847	67.80
Low	46	3.70
Overall	1249	100.00

As revealed in Table 9, a very significant number of the participants have average level of parental involvement in their child's education. It signifies an adequate home – school communication, supportive learning environment for their children at home, and parents' active participation in their children's school activities. This result could be attributed to the fact that participants are already in early teenage years where parental involvement at this stage is in moderate degree.

Parents' awareness and interest in their children's learning and school activities portray their children the importance of school, which may lead to positive behaviors such as academic

and social success. The varying degree of parental involvement among eighth grade students can be explained in three ways. First, parental involvement tends to decline across the grades unless schools make conscious efforts to develop and implement partnerships with parents. Reasons for this declining pattern include parents' lack of familiarity with curriculum at the higher grades; adolescents' preferences to have their parents stay involved in less visible ways; parents' decisions to return to the work force once their children gain more independence; and secondary teachers' lack of awareness of how to effectively involve parents at the higher levels. Second, affluent parents tend to be involved in school more often and in positive ways, whereas economically challenged parents have limited contact with schools, and usually in situations dealing with students' achievement or behavior. Schools that work on building relationships with all parents, however, can equalize the involvement of all socioeconomic groups. Lastly, single parents, employed parents, and guardians who live far from the school, on average, are less involved in the school unless the school organizes opportunities that consider these parents' needs and circumstances.

Peer Influence

Table 10 shows the frequency and percentage distribution of eighth grade students' number of peer group members or close friends.

More than half of the participants have 13 and above close friends with whom they spend the major portion of their time in school. It can be inferred that with almost two years in Junior High School, the participants are able to gain friends, typically their classmates, and share their common interests.

Table 10
**Frequency Distribution of Eighth Grade Students' Peer Profile
 in Terms of Number of Peer Group**

Number of Peer Group	Number of Students	Percent
13 and above	747	59.81
10 – 12	125	10.01
7 – 9	160	12.81
4 – 6	151	12.09
1 – 3	66	5.28
Overall	1249	100.00

Peer groups are anchors in the lives of most teenagers. Two or more people who comprise a group share a feeling of unity and are bound together in relatively stable patterns of social interaction. Group members have a psychological sense of oneness; they assume that their own experiences and emotional reactions are shared by the other members. This sense of oneness gives individuals the feeling that they are not merely *in* the group but also *of* the group. The solidarity associated with group membership furnishes security, companionship, acceptance, and a general sense of well – being.

Table 11 shows the mean and standard deviations of responses on students' engagement in peer activities.

The participants 'agreed' that their friends attend school regularly and inspire and influence their academic work positively. Most of the peers encourage the participants to perform well in examinations and work hard in school. Collaboration during group activity and review sessions are evident. Generally, eighth grade students are engaging with positive peer activities.

Table 11
Mean and Standard Deviations of Responses on Peer Activities

Indicators	Mean	SD	Verbal Interpretation
1. Most of my friends in school encourage me to perform well in examinations.	3.04	0.856	Agree
2. My friends encourage me to work hard in school.	2.95	0.899	Agree
3. My friends influence my academic work positively.	3.06	0.854	Agree
4. My friends attend school regularly.	3.46	0.770	Agree
5. I spend most of my time in school with friends discussing academic work/reviewing for examination.	2.92	0.844	Agree
6. Most of my friends behave properly in school.	2.70	0.887	Agree
7. My friends and I assist other students who are not doing well in school.	2.52	0.843	Agree
8. My friends influence me to collaborate with my classmates during group activity.	3.02	0.858	Agree
9. My friends encourage me to be punctual at all times.	2.88	0.881	Agree
10. My friends inspire me to study hard.	3.14	0.925	Agree
Overall	2.97	0.895	Agree

Behaviorism provides one way to explain the association between motivation to learn and peer interactions. In basic behaviorist theories, relationships between people affect learning only as much as people reinforce each other in the academic arena. If the peer group encourages education and learning, then individual student within that group will value learning, because the individual is reinforced, or rewarded, for behaviors that learning is valued. Thus, involving in positive peer activities with supportive friends offers an array of opportunities for the group members such as better achievement in school, high self – esteem, and psychosocial adjustment.

Classroom Cultural Climate

The tables that follow present the means and standard deviations of responses of eighth grade students on each indicator of the dimensions of classroom cultural climate.

Table 12 presents the results of classroom cultural climate inventory (CCCI) self – report survey on the respondents’ personal view of gender equity as a factor of classroom cultural climate. The five – item factor indicates personal views about gender equity as a form of classroom cultural climate, where the eighth grade students report their perception if equal treatment of males and females (teachers or classmates) is evident in the classroom.

Table 12
Mean and Standard Deviations of Responses on Gender Equity

Indicators	Mean	SD	Verbal Interpretation
1. I think that both females and males make excellent teachers.	3.45	0.610	Agree
2. I like being taught by both male and female teachers.	3.36	0.636	Agree
3. I feel that comments in class by male and female students are equally important.	3.45	0.666	Agree
4. I feel that female teachers should be shown the same amount of respect as male teachers.	3.52	0.653	Strongly Agree
5. I feel that male students are just as capable as female students in all class activities.	3.14	0.752	Agree
Overall	3.38	0.678	Agree

Generally, they ‘strongly agreed’ that female teachers should be shown the same amount of respect as male teachers, and comments in class by male and female students are equally important. There is much evidence that the respondents have similar responses in each of the five indicators that describe their behavior toward gender equity as one dimension of classroom cultural climate.

A classroom where everybody is welcome, regardless of gender, affords a conducive learning environment. If both male and female teachers are given the same amount of respect and importance by students, a positive learning climate is guaranteed. Further, teachers who called

on male and female students in nearly equal proportions and gave more precise responses to all students' comments help them further develop their thoughts. As a result, they are given equal opportunities to succeed. Hence, paying an equal attention to students in the classroom leads to better teaching and learning for male and female students.

Table 13 presents the results of classroom cultural climate inventory (CCCI) self – report survey on the respondents' personal view of collaboration as a factor of CCC. The five – item factor indicates personal views about collaboration as a form of CCC, where the eighth grade students report their willingness to collaborate with other students rather than to act as individuals.

Generally, the respondents reported that they strongly feel that it is important for the class to work together as a team. It is evident that the respondents have similar responses in each of the five indicators that describe their behavior toward collaboration as one dimension of classroom cultural climate.

Table 13
Mean and Standard Deviations of Responses on Collaboration

Indicators	Mean	SD	Verbal Interpretation
1. I like working with others on a worthy cause.	3.19	0.702	Agree
2. I feel that it is important for the class to work together as a team.	3.60	0.617	Strongly Agree
3. I consult others when making decisions rather than do it alone.	3.26	0.722	Agree
4. It is important for me to be involved in class discussions.	3.46	0.668	Agree
5. I like to work with other students.	3.32	0.664	Agree
Overall	3.37	0.691	Agree

The current K to 12 mathematics curriculum where the participants is experiencing in the classroom is established on the constructivist foundation. Constructivism encourages different activities where students can reflect, discuss with their teacher or with their peers their outcomes, understand it, and learn it. In this kind of approach, teacher provides learning activities for learners to work in group rather than individually. Group activities that build relationship and teamwork are very common and highly observed in almost all mathematics classrooms. Hence, a classroom that supports collaboration yields improved behavioral and learning outcomes.

Table 14 shows the results of classroom cultural climate inventory (CCCI) self – report survey on the respondents’ personal view of deference as a factor of classroom cultural climate. The five – item factor indicates personal views about deference as a form of classroom cultural climate, where the eighth grade students report the extent to which they defer to the opinions of other members of the classroom (teachers or classmates).

As gleaned in Table 14, they ‘agreed’ that it is important to listen first before stating an opinion. It is clear from the results that the participants have similar responses in each of the five indicators that describe their behavior toward deference as one dimension of classroom cultural climate.

Deference involves students deferring their views to teachers’ and other students’ views by focusing on what the teacher and other students expect and on giving correct responses to all questions asked by the teachers.

Table 14
Mean and Standard Deviations of Responses on Deference

Indicators	Mean	SD	Verbal Interpretation
1. I think carefully before giving my opinion.	3.34	0.643	Agree
2. I like to listen to what other students say before I answer a question.	3.29	0.692	Agree
3. I try to say what the class thinks rather than give my own opinion.	3.06	0.721	Agree
4. It is important to listen first before stating an opinion.	3.50	0.660	Agree
5. It is important to me that I give the right answers to questions in class.	3.37	0.669	Agree
Overall	3.31	0.693	Agree

Listening first before stating an opinion signals respect and defuses any potential classroom conflicts. Good listening means giving open-minded, genuinely interested attention to others, allowing oneself the time and space to fully absorb what they say. It encourages others to feel heard and to speak more openly and honestly.

Table 15 presents the mean and standard deviation of students' responses on competition as a factor or dimension of classroom cultural climate. The five – item factor indicates personal views about competition as a form of classroom cultural climate, where the eighth grade students report the extent of competitiveness with others in the classroom.

Generally, they like to do their work well to excel, like challenges that stimulate thinking, and are willing to accept defeat graciously. Like the first three dimensions, the participants have similar responses in each of the five indicators that describe their behavior toward competition as one dimension of classroom cultural climate.

Table 15
Mean and Standard Deviations of Responses on Competition

Indicators	Mean	SD	Verbal Interpretation
1. I want to be involved only in fair competitions.	3.09	0.759	Agree
2. I accept defeat graciously.	3.18	0.738	Agree
3. I like challenges that stimulate thinking.	3.23	0.690	Agree
4. I worry for others if I beat them.	3.09	0.703	Agree
5. I like to do my work well to excel.	3.30	0.708	Agree
Overall	3.18	0.724	Agree

Competitive environments take advantage of the apparently natural inclination of students to develop and enhance their own self-esteem by comparing their own performance to that of others. There is considerable evidence that especially for extremely high-performing students competitive environments stimulate higher levels of learning and performance than would be likely to occur in non-competitive environments. Healthy competition in the classroom drives self-efficacy, level of involvement, ability to cooperate, resilience, attention/interest, listening and concentration. With all these advantages, teachers must structure the competition in the classroom so that all participants have a good chance of winning by arranging the students in teams so that abilities are equally distributed. Further, have students compete against themselves rather than against other students. By evaluating students on the basis of their own personal gains, we can give everyone an opportunity to succeed. In fact, since the weakest students have the most room for improvement; this procedure can even give an advantage to the very students who are usually at a disadvantage.

As indicated in Table 16, mean and standard deviations of responses on teacher authority, the five – item factor indicates personal views about teacher authority as a form of classroom

cultural climate, where the eighth grade students report their perception on the teacher's authority in the classroom.

Table 16
Mean and Standard Deviations of Responses on Teacher Authority

Indicators	Mean	SD	Verbal Interpretation
1. I want to know if teachers are authoritative on school matters.	3.22	0.674	Agree
2. I feel that I can challenge statements made by teachers.	3.06	0.738	Agree
3. I like to ask question what teachers want their students need to do.	3.06	0.749	Agree
4. It is OK for me to disagree with teachers.	2.51	0.883	Agree
5. It is OK for me to argue with teachers.	2.45	0.952	Disagree
Overall	2.86	0.865	Agree

It appears that eighth grade students in this study want to know if teachers are authoritative on school matters and feel that they can challenge statements made by teachers. However, they are not in favor of arguing with teachers. Among all dimensions of classroom cultural climate, this factor reported the lowest overall mean which implies that they regarded teachers as the authority in the classroom. This result further characterizes that Filipino learners are not inclined to challenge authority or question the teacher even if they disagree. Due to the cultural value of respect for elders, students tend not to argue with teachers.

Table 17 presents the mean and standard deviation of responses on modeling, where eighth grade students indicate personal views on modeling as a construct of classroom cultural climate.

Table 17
Mean and Standard Deviations of Responses on Modeling

Indicators	Mean	SD	Verbal Interpretation
1. I like teachers to demonstrate to me what to do.	3.24	0.708	Agree
2. I like to learn by copying what teachers do.	2.91	0.800	Agree
3. I like to see how other students solve problems.	3.12	0.715	Agree
4. I like my teachers to tell me how to work in class.	3.19	0.700	Agree
5. I like to see how my classmates solve a problem before I do.	2.96	0.774	Agree
Overall	3.08	0.751	Agree

The respondents reported that they like their teachers to demonstrate what to do and how to work in class. They want to see how other students solve math problems before they do. Generally, eighth grade students revealed almost similar responses in each of the five indicators of modeling that describe their state of mind toward learning from other members of the classroom (teachers or classmates) as one of the dimensions of classroom cultural climate.

These results demonstrate that Filipino students are more teacher-dependent learners. The traditional examination-oriented teaching styles and teacher behaviors appear to have contributed to scores on this scale. Because students also tend to copy their teachers as leaders, teachers can lower modeled and teacher-dependent learning in their classes through constructivist teaching, which emphasizes students' understanding through the use of activities, sharing knowledge and reorganizing thought. Recently the Philippine government has introduced a new education system, called K to 12, that involves a revised curriculum for the country. This new education system was introduced in 2013 with the aim of moving teacher away from traditional teacher-centered teaching that could increase modeled learning.

Table 18 shows the mean and standard deviations of responses on congruence where eighth grade students indicate personal views if learning at school matches their learning at home.

Table 18
Mean and Standard Deviations of Responses on Congruence

Indicators	Mean	SD	Verbal Interpretation
1. What I learn at home helps me to do things at school.	3.28	0.695	Agree
2. What I learn in school helps me to do things at home.	3.29	0.673	Agree
3. I feel that ideas I learn at school are similar to those I learn at home.	3.08	0.696	Agree
4. What I learn in this class agrees with what I learn at home.	3.16	0.693	Agree
5. What I learn in this class helps me at home.	3.31	0.679	Agree
Overall	3.22	0.693	Agree

The respondents reported that what they learn in school helps them at home or the other way around. It can be inferred that teachers are effective in contextualizing and localizing instruction since the students appreciate the essence of what they are studying in class. Generally, the students have similar responses in each of the five indicators of congruence as one dimension of classroom cultural climate.

Article XIV, Section 14 of the 1987 Philippine Constitution which states that “The State shall foster the preservation, enrichment, and dynamic evolution of a Filipino national culture based on the principle of unity in diversity in a climate of free artistic and intellectual expression”. Further, Section 5 which emphasizes that “The state shall take into account regional and sectoral needs and conditions and shall encourage local planning in the development of educational policies and programs”. Along with these legal bases, the K to 12 curriculum shall

be contextualized and global. The curriculum shall be flexible enough to enable and allow schools to localize and indigenize, and enhance [the curriculum] based on their respective educational and social contexts. As a result, it is relatively easy for teachers to relate mathematics teaching to students' daily-life experience because the Philippine curriculum uses concrete daily-life experiences. Teachers can easily improve this by using project work involving home- and community-related issues in their classes. Therefore, relatively high mean values on these factors could have helped eighth grade students to perceive higher levels of congruence in their learning in their classes and in its use in real-life situations.

School Climate

The tables that follow present the means and standard deviations of responses of eighth grade students on each indicator of the dimensions of school climate.

Table 19 presents the results of school climate inventory (SCI) self – report survey on the respondents' personal view of physical environment as a factor of school climate. The five – item factor indicates personal views about physical environment as a form of school climate, where the eighth grade students report their observation about an environment that is safe, welcoming, and conducive to learning.

The respondents reported that the class size is conducive to learning, the school facilities are shared and accessible to all, and that the school area and classrooms are clean and well – maintained. Likewise, the noise level is quite appropriate for learning and activities being conducted.

Table 19
Mean and Standard Deviations of Responses on Physical Environment

Indicators	Mean	SD	Verbal Interpretation
1. Space (e.g. library, school facilities) is shared and accessible to everyone.	3.05	0.800	Agree
2. Staff and students are safe everywhere within school area.	2.98	0.784	Agree
3. Classrooms are clean and well – maintained.	2.92	0.747	Agree
4. Class size of students is conducive to learning.	3.06	0.743	Agree
5. Noise level is appropriate for learning and activities being conducted.	2.71	0.861	Agree
Overall	2.94	0.798	Agree

Physical environment where the Filipino learners are schooled greatly contribute to their holistic development. A clean, safe and conducive environment may possibly result to student's opportunity to learn. Since majority of the schools in this study are located in rural areas, there are no busy roads hence, noise level is appropriate for learning and activities being conducted. There may be big schools in this study but they are complying on double shifting of classes which addresses classroom shortage and reduces class sizes.

Table 20 shows the mean and standard deviations of responses on social environment as a dimension of school climate.

Generally, grade eight students reported that there are adequate extracurricular activities in their school like Science Fair, Math Camp, *Buwan ng Wika*, Arts Month, among others. These activities increase confidence and serve as vehicle to socially interact with others. It is also evident that there is an open, honest, and active communication among school members. It can

be noted that students regarded teachers and staff as friendly and this perception allows them to feel comfortable in school.

Table 20
Mean and Standard Deviations of Responses on Social Environment

Indicators	Mean	SD	Verbal Interpretation
1. There is an open, honest, and active communication among school members.	3.05	0.756	Agree
2. Teachers and staff are friendly.	3.16	0.749	Agree
3. Student groupings are diverse.	3.03	0.733	Agree
4. Parents and teachers are partners in the educational process.	3.12	0.776	Agree
5. There are extracurricular activities for students.	3.41	0.741	Agree
Overall	3.15	0.763	Agree

Based on these findings, it can be inferred that the schools in this study have an environment that promotes interaction, communication, and relationship building. A higher – order classroom social environment factor accounted for significant changes in all motivation and engagement outcomes (Ryan and Patrick, 2001). If this trend will continue, it is more likely that students will enjoy leaning and maximize their individual potentials.

Table 21 presents mean and standard deviations of responses on affective environment where eighth grade students report their personal views on emotional environment as a factor of school climate.

Generally, they ‘observed’ that teachers, staff, students, and families are respected and valued. In return, students trust their teachers and other school members. Caring, responsive, and

supportive interactions between and among students and teachers are evident in schools under study. There is much evidence that grade eight students have similar responses in each indicators of affective environment as one dimension of school climate.

Table 21
Mean and Standard Deviations of Responses on Affective Environment

Indicators	Mean	SD	Verbal Interpretation
1. Students trust teachers and staff.	3.32	0.732	Agree
2. Teachers, staff, students, and families are respected and valued.	3.36	0.727	Agree
3. The school values diversity and is welcoming to all student backgrounds.	3.20	0.729	Agree
4. Interactions between teachers/staff and students are caring, responsive, and supportive.	3.22	0.717	Agree
5. Families and community members perceive the school as warm, inviting, and helpful.	3.16	0.743	Agree
Overall	3.25	0.733	Agree

The learning environment is closely connected to the affective domain. How students feel about their learning, about their course material, about their teachers, about their fellow students, and about their classroom environment will all affect how they learn and engage (Barkley, 2010). The eighth grade students' higher mean value in the affective environment is attributed by the fact that Filipino people are hospitable in nature. In a school setting, Filipino teachers treat students, colleagues, parents, and other visitors in a warm and pleasant way, often going out of their way to make others comfortable. This Filipino culture builds trust, respect and positive school climate which help learners easily adjust in their learning environment and make their parents at ease that their child is in good hands.

Table 22 shows the mean and standard deviations of responses on learning or cognitive environment as a factor of school climate, where eighth grade students report their personal views on environment that promotes learning and self – fulfillment.

Generally, the students reported that all students are encouraged to succeed by providing instructional methods suited to their needs. It can be noted that eighth grade students have almost similar responses on the five indicators of learning or cognitive environment as one dimension of school climate.

Table 22
Mean and Standard Deviations of Responses on Learning/Cognitive Environment

Indicators	Mean	SD	Verbal Interpretation
1. All students are encouraged to succeed.	3.30	0.758	Agree
2. The emphasis is on student-centered learning.	3.17	0.711	Agree
3. Instructional methods respect the different ways children learn.	3.21	0.708	Agree
4. There are allocations of resources to support learning.	3.12	0.725	Agree
5. Results of assessments are promptly communicated to students and parents.	3.12	0.731	Agree
Overall	3.18	0.730	Agree

Based on the results presented in Table 22, eighth grade respondents perceive that their learning environment support academic success. Their schools focus on achieving academic goals and provide an environment that is conducive to learning. As a main feature of K to 12 curriculum, the respondents are experiencing student-centered learning which allows them to grasp learning content with breadth and depth. Combinations of traditional, authentic and alternative classroom assessments are being done to properly gauge student’s individual learning.

Results of such assessments are promptly communicated to students and parents/guardians, serving a main vehicle to monitor student's progress. If these positive conditions unceasingly occur, it may probably enhance students' engagement and increase academic performance.

As presented in Table 23, mean and standard deviations of responses on moral environment, eighth grade students report their personal observation on environment that promotes values, ethical behavior, and character building.

Generally, they reported that they 'observed' established policies and rules that help them distinguish right from wrong. Positive responses or interventions on school violence or bullying are addressed. The school culture is 'observed' as that which reflects the values, norms, and expected behaviors for all students. Like any other constructs of school climate, there is much evidence that students report almost similar responses on moral environment as one dimension of school climate.

Table 23
Mean and Standard Deviations of Responses on Moral Environment

Indicators	Mean	SD	Verbal Interpretation
1. The school culture reflects the values, norms, and expected behaviors for all students.	3.17	0.729	Agree
2. There are positive responses or interventions on topics such as school violence, bullying or teasing.	3.17	0.769	Agree
3. There are established policies and rules that help students distinguish right from wrong.	3.21	0.733	Agree
4. Fairness, kindness, cooperation, and sharing are modeled daily by all school members.	3.15	0.732	Agree
5. Parents and schools work together: consensus about values; classroom rules and discipline policy.	3.15	0.760	Agree
Overall	3.17	0.745	Agree

Every student needs and deserves to feel respected and free from physical harm, intimidation, harassment, and bullying. To ensure a safe learning environment, teachers and school heads must attend to all aspects of daily life in schools including character formation. They listen to students' perspectives and connect key moral values to these perspectives. They steadily model, teach, and reinforce prosocial values and skills so that these values are more likely to become part of a student's identity.

Community Environment

Table 24 and 25 present the community profile of eight grade students in terms of the type of community and involvement in community activities respectively.

The results in Table 24 show that more than half of the participants reside in rural areas. This finding is parallel to the fact that about half of the Philippines' 88 million people live in rural settlements. Poverty is most severe and most widespread in these areas and almost 80 percent of the country's poor people live there. Agriculture is the primary and often source of income for poor rural people, most of whom depend on subsistence farming and fishing for their livelihoods. In general, illiteracy, unemployment and the incidence of poverty are higher among indigenous people in the upland areas.

Table 24
**Frequency Distribution of Eighth Grade Students' Community Profile
in Terms of the Type of Community**

Type of Community	Number of Students	Percentage
Rural	739	59.2
Urban	510	40.8
Overall	1249	100.00

Laguna, as one of the provinces in Region IV-A, is dominated by rural communities which may develop randomly on the basis of natural vegetation and fauna available in the locality. Social solidarity or cohesiveness and unity are stronger than urban people. Common traits, similarity of experiences, common aims and purposes, common customs and traditions are the bases of unity in the community. The standard of living is low. The students had simple lives, going to school full-time while their parents worked as factory workers, servants, vendors, and other lower salaried employees.

As reflected in Table 25, the participants reported that talk with relatives and neighbors ‘once a month’. Almost ‘once a month’ they spend time to attend religious or spiritual group or organization. They ‘seldom’ participate in sport or physical recreation activities, and ‘rarely’ join musical, environmental, or animal welfare groups.

It is evident that the participants have almost similar responses on their involvement in community activities as one dimension of community profile.

Table 25
Mean and Standard Deviations of Responses on Involvement in Community Activities

Indicators	Mean	SD	Verbal Interpretation
1. I chat with neighbor.	4.53	1.835	Once a week
2. I join a musical group.	2.63	1.833	Every 2-3 months
3. I attend events that bring people together.	4.20	1.588	Once a month
4. I participate in sport or physical recreation group.	3.63	1.804	Once a month
5. I participate in voluntary works in the community.	2.90	1.673	Every 2-3 months
6. I contribute to environmental or animal welfare group.	2.51	1.637	Every 2-3 months
7. I talk about current issues with friends, family or neighbors.	4.47	1.726	Once a month
8. I spend time to attend religious or spiritual group or organization.	4.40	1.495	Once a month
9. I communicate with relatives not living with me.	4.85	1.515	Once a week
Overall	3.79	1.678	Once a month

It is evident that the student-respondents reported a low overall rating in the identified community activities. It may be due to the fact that since most of them came from rural communities, much of their time outside school was spent either doing chores at home, or hanging out with friends in the local open market, or the river or a field nearby. Common activities among peers in their community would be “sound-trips” or listening to music, group singing, or basketball. Men would commonly hang out with their male friends, while the women were expected to go back home right after school to help out with the chores.

Level of Students’ Motivation to Learn

The tables that follow present the means and standard deviations of responses of the eighth grade students on each indicator of the dimensions of motivation to learn mathematics. These dimensions are goal orientation, task value, and self-efficacy.

Table 26 shows the results of motivation to learn inventory (MLI) self – report survey on the respondents’ personal view of goal orientation. As a factor of motivation, the ten (10) items of this factor indicate personal views about goal orientation as a form of motivation not only in learning mathematics but in general. The eighth grade students report their degree of agreement on indicators of motivation that apply to them. Their responses reflect motivation to learn with emphasis on whether they initiate their own learning activities and whether they maintain commitment to the process of learning.

Table 26
Mean and Standard Deviations of Responses on Goal Orientation

Indicators	Mean	SD	Verbal Interpretation
1. I like math because it really makes me learn new things.	3.12	0.818	Agree
2. I like math lessons because it arouses my curiosity.	3.06	0.813	Agree
3. The most satisfying thing for me in a math class is trying to understand the lessons as thoroughly as possible.	3.26	0.752	Agree
4. When I have the opportunity in a math class, I choose activities that I can learn, even if they don't guarantee a good grade.	3.12	0.807	Agree
5. I want to do my best in a math class because it is important to show my mathematical ability to my family and friends.	3.25	0.762	Agree
6. I feel confident that I will do well in a math class.	3.00	0.818	Agree
7. In a math class, I try to set and achieve high standard of excellence.	3.12	0.808	Agree
8. The content of a math subject relates to my expectations and goals.	3.07	0.780	Agree
9. The kind of work I have to do is math – oriented.	2.94	0.812	Agree
10. I need to know math because it is a useful subject.	3.26	0.801	Agree
Overall	3.12	0.804	Agree

Generally, the respondents pointed out that it is ‘mostly true’ that the most satisfying thing for them in a math class is trying to understand the lessons as thoroughly as possible; that they need to know math because it is a useful subject; and that they want to do their best in a math class because it is important to show their mathematical ability to their family and friends. They indicated that they like math because it really makes them learn new things and math lessons arouse their curiosity; that when they have the opportunity in a math class, they choose activities that they can learn, even if they do not guarantee a good grade; and that they try to set and achieve high standard of excellence.

Likewise, they also reported that it is ‘mostly true’ that they are confident that they will do well in a math class. They stated that the content of a math subject relates to their

expectations and goals, and the kind of work they have to do is math – oriented. In other words, eighth grade students are motivated to learn mathematics simply because they are interested in math and they appreciate its relevance and application in their daily lives.

Table 27 presents the results of the MLI self – report survey on the respondents’ personal view of Task Value as another factor of motivation. The ten items of the factor indicate personal views about task value as a form of motivation, where the eighth grade students, just like in goal orientation, report their degree of agreement on indicators of motivation that apply to them. Their responses reflect their evaluation about the importance and usefulness of mathematical tasks.

Table 27
Mean and Standard Deviations of Responses on Task Value

Indicators	Mean	SD	Verbal Interpretation
1. I am very interested to learn all the lessons of a math subject.	3.15	0.820	Agree
2. I think the lessons in a math class will be useful to develop my critical thinking.	3.24	0.764	Agree
3. I like mathematics as a subject because it enhances my reasoning skills.	3.12	0.826	Agree
4. Understanding the lessons in mathematics helps me in making important decisions.	3.10	0.798	Agree
5. The things I am learning in math will be useful to learn other subjects.	3.15	0.773	Agree
6. A good foundation in mathematics will prepare me for college.	3.25	0.773	Agree
7. I am interested in mathematics because it helps me to think logically.	3.21	0.788	Agree
8. I feel satisfied with what I am getting from a math class because it challenges my math ability.	3.17	0.793	Agree
9. I believe I will be able to use mathematics in my future career.	3.21	0.808	Agree
10. It is important for me to learn the lessons in math in preparation for problem solving.	3.19	0.782	Agree
Overall	3.18	0.794	Agree

Generally, the respondents pointed out that it is ‘mostly true’ that a good foundation in

mathematics prepares them for college and they believe they will be able to use mathematics in their future career; and that the lessons in a math class will be useful to develop their critical thinking and help them to think logically. They also indicated that it is ‘mostly true’ that it is important for them to learn the lessons in math in preparation for problem solving; that they feel satisfied with what they are getting from a math class because it challenges their math ability; that they are very interested to learn all the lessons of a math subject; and that the things they are learning in math will be useful to learn other subjects. In other words, eighth grade students are motivated to learn mathematics because they find it useful in developing their skills and they see its relevance in their future endeavor.

Table 28 presents the results of the MLI self – report survey on the respondents’ personal view of Self – Efficacy as another factor of motivation. The ten items of the factor indicate personal views about task value as a form of motivation, where the eighth grade students, just like in goal orientation and task value, report their degree of agreement on indicators of motivation that apply to them. Their responses reflect their evaluation about their confidence in performing mathematical tasks.

At large, the respondents stated that it is ‘mostly true’ that they can succeed in any math subject if they try hard enough; that they are confident that they can learn the basic concepts taught in a math class; and that they expect to do well in a math class even when faced with the difficulty of a math course, the teacher, and their skills. Likewise, they also indicated that it is ‘mostly true’ that they can do an excellent job on the assignments and tests in mathematics; hence, they believe it will guarantee an excellent grade in a math class. On this context, it can be

inferred that eighth grade students are motivated because they feel they can perform mathematical activities that will be required of them.

Table 28
Mean and Standard Deviations of Responses on Self-Efficacy

Indicators	Mean	SD	Verbal Interpretation
1. I'm confident I can do an excellent job on the assignments and tests in mathematics.	2.98	0.794	Agree
2. I expect to do well in a math class.	3.05	0.792	Agree
3. I'm sure I can master the skills being taught in a math class.	2.87	0.808	Agree
4. Considering the difficulty of a math course, the teacher, and my skills, I will do well in a math class.	3.03	0.787	Agree
5. To accomplish my goals, it is important that I am proficient in math.	3.08	0.781	Agree
6. I believe I can succeed in any math subject if I try hard enough.	3.21	0.768	Agree
7. I believe I will receive an excellent grade in a math class.	2.99	0.782	Agree
8. I'm certain I can understand the most difficult lesson presented in a math class.	2.91	0.796	Agree
9. I'm confident I can learn the basic concepts taught in a math class.	3.16	0.777	Agree
10. I'm confident I can understand the most difficult lesson presented by the teacher in a math class.	2.92	0.843	Agree
Overall	3.02	0.800	Agree

In each factor of the dimension of motivation to learn inventory, each eighth grade students was classified according to his/her level of motivation. Table 29 presents the frequency and percentage distribution of the respondents' level of motivation across its dimensions.

Generally, the respondents reported a high level of goal orientation, task value, and self – efficacy. It suggests that eighth grade students are highly motivated to learn. This implies that for a student to be fully motivated, eighth grade students should be developed in terms of goal orientation, task value and self – efficacy.

Table 29
Frequency Distribution of Eighth Grade Students' Level of Motivation

Dimensions	Level					
	Low		Average		High	
	N	%	n	%	n	%
Goal Orientation	6	.5	238	19.1	1005	80.5
Task Value	9	.7	199	15.9	1041	83.3
Self-Efficacy	6	.5	315	25.2	928	74.3

Motivation directs behavior towards the attainment of particular goals and it is what moves a person to do something. Adolescents face many choices when deciding which goals they want to pursue. They could face a choice of either staying in to study for a test (thereby achieving an academic goal) or rather going out with friends (a social goal). A motivated learner who wants to achieve academically will choose to stay in to study. This adolescent could be considered 'motivated' because he is directing (or moving) his behavior towards achieving his goal which in this case is an academic goal. According to Expectancy- value model, students' motivation to learn is dependent upon and value attributed to the task along with expectations for achievement. Students' who believed they can perform a certain task were more likely to find their class interesting, important and useful.

In educational settings, self-efficacy beliefs provide the underpinning for motivation. It is an individual's evaluation that he or she has specific performance capabilities that allow the accomplishment of a particular type of task. Self-efficacy is generally linked to judgments of one's capacity to engage in a task rather than to the skills the task requires. An adolescent who has a high level of self-efficacy believes that 'I can'. Such an adolescent would further endorse statements such as 'I know that I will be able to learn Math in this class' and 'I expect to do well

in this math activity'. Such learners eagerly work at learning tasks and are more likely to spend effort and persist longer at these learning tasks. Such positive self-efficacy, according to Boekarts et al. (2010) and Renninger (2010), is generally considered to be a predictor of success because it has been found to influence strategy use, effort and perseverance. In short, learners who display positive self-efficacy have higher aspirations, display a better performance, are achievement-oriented and could be considered to be motivated.

Table 30 presents the mean, standard deviation, and skewness of the sociocultural constructs and their dimensions. It must be noted that only the means and standard deviations of majority of sociocultural and motivation constructs presented in the previous tables in the rows labeled 'overall' are included.

As shown in Table 30, the eighth grade students generally show clear evidence that their responses in familial influence and peer influence is more varied than other factors. The skewness of the ratings of the respondents depicts different pictures for social factors and motivation.

Overall, the negative clustered rating is at the right, or at right hand side of the distribution. In other words, they rarely have pointed out low ratings in the social and motivational factors, except for some dimensions of familial influences and type of community. Thus, despite variation of their responses, a considerably larger number of them shows higher regards to sociocultural and motivational dimensions.

Table 30
Summary of Descriptive Statistics of the Six Constructs and their Dimensions

Variables	Mean	SD	Skewness
Family Structure	3.887	1.873	1.153
Parent's Responsiveness	2.910	0.567	-0.567
Parent's Control	2.529	0.535	-.082
Parenting Style	2.468	1.211	0.038
Parental Involvement	1.492	0.500	0.034
Peer Group	4.070	1.297	-1.046
Activities with Peers	2.969	0.552	-0.385
Gender Equity	3.383	0.465	-0.659
Collaboration	3.366	0.463	-0.775
Deference	3.311	0.464	-0.655
Competition	3.179	0.489	-0.529
Teacher's Authority	2.861	0.498	-0.021
Modeling	3.085	0.503	-0.168
Congruence	3.224	0.503	-0.359
Classroom Cultural Climate	3.085	0.751	-0.729
Physical Environment	2.945	0.552	-0.157
Social Environment	3.155	0.520	-0.424
Affective Environment	3.252	0.540	-0.553
Learning/Cognitive Environment	3.183	0.540	-0.413
Moral Environment	3.171	0.555	-0.474
School Climate	3.141	0.761	-.0546
Type of Community	1.408	0.492	0.373
Involvement in Community Activities	3.761	0.875	-0.271
Goal Orientation	3.121	0.556	-0.506
Task Value	3.179	0.573	-0.652
Self-Efficacy	3.020	0.578	-0.301
Motivation	3.106	0.802	-0.496

The positive skewness in the ratings of the respondents on family structure, parenting style, parental involvement, and type of community indicates that their ratings in these dimensions are more clustered on the left, or at the low side of the distribution. In other words, they have pointed out the first items of the options in most of the items of the constructs.

Level of Mathematics Proficiency

This section presents set of tables and dimensions (to answer Problem 3) of the eighth grade students' level of mathematics proficiency in terms of conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and productive disposition.

Table 31 presents the frequency and percentage distribution of the eighth grade students' level of mathematics proficiency across its strands, namely conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and productive disposition.

Table 31
Frequency Distribution of Eighth Grade Students' Level of Mathematics Proficiency

Dimensions	Level									
	Very Low		Low		Average		High		Very High	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Conceptual Understanding	87	6.97	324	25.94	459	36.75	137	10.97	242	19.38
Procedural Fluency	159	12.73	389	31.14	372	29.78	109	8.73	220	17.61
Strategic Competence	263	21.06	460	36.83	336	26.90	72	5.76	118	9.45
Adaptive Reasoning	286	22.90	399	31.95	314	25.14	111	8.89	139	11.13
Productive Disposition	451	36.11	490	39.23	192	15.37	56	4.48	60	4.80
Overall	201	16.09	622	49.80	280	22.42	80	6.41	66	5.28

The raw scores were transformed into percentage rating, and then such rating was divided into 5 – subgroups. It was then found that based on the 5 – group decile grouping technique, most of the eighth grade students reported an average level of conceptual understanding, but low level in procedural fluency, strategic competence, adaptive reasoning, and productive disposition.

Table 32 presents the descriptive statistics such as mean, standard deviation, skewness, and kurtosis of eighth grade students in the Mathematics Proficiency Test. Based on Tables 31

and 32, most of the participants (49.80%) had scores on the low level which is 72.519. The skewness of scores, between +1 and +0.5, indicates that these were moderately skewed to the right, but the kurtosis value indicates that majority of the values are less spread around the mean.

Table 32
Descriptive Statistics of Scores on the 50 - item Mathematics Proficiency Test

Statistic	Value
Mean	72.519
Standard Deviation	8.503
Skewness	0.663
Kurtosis	-.212

This implies that for a student to learn mathematics successfully, eighth grade students should be developed in terms of conceptual understanding, procedural fluency, strategic competence, adaptive reasoning and productive disposition. Kilpatrick, et.al (2001) emphasized that the five strands are interwoven and independent in the development of proficiency in mathematics. Mathematical proficiency is not a one – dimensional trait, and it cannot be achieved by focusing on just one or two of these strands. Some researchers argue that helping students acquire mathematical proficiency calls for instructional programs that address all its strands. As they go from pre-kindergarten to eighth grade, all students should become increasingly proficient in mathematics. That proficiency should enable them to cope with the mathematical challenges of daily life and enable them to continue their study of mathematics in high school and beyond.

Social Factors that Predict Motivation

This section presents the answers to the research problem 4. Regression analyses were used to investigate the amount of variation in the criterion variable explained by the predictor variables. The dimensions of familial influence, peer, community, classroom, and school climate were used as independent or predictor variables; while goal orientation, task value, self – efficacy, and motivation were used as dependent or criterion variables.

One multiple regression analysis was performed each time. The focus of the analysis was on the scores on each dimension of every factor under investigation.

The regression model for goal orientation (GO) is labeled Model 1. Although the full Model 1 (Using Enter Method) is statistically significant in predicting goal orientation as a factor of motivation, it has predictors that are not significant (See Appendix H). Thus using Backward Method, insignificant predictors were eliminated. Table 33 presents the result of regression analysis.

It is shown in Table 33 that the parsimonious Model 1 with seven predictors, namely Family Structure, Parent's Responsiveness, Involvement in Community Activities, Competition, Congruence, Physical Environment, and Moral Environment explains 23.5% of the variance of the eighth grade students' goal orientation.

Table 33
Multiple Regression Analysis of Parsimonious Model 1
 (Dependent Variable: Goal Orientation)

Predictors	<i>F</i>	<i>df</i>	<i>R</i>²	<i>adj.</i> <i>R</i>²	<i>Std.</i> <i>Error</i>	<i>β</i>	<i>p</i> – <i>value</i>
Model 1	54.602	7	.235	.231	.48725		.000
Family Structure						.065	.010
Parent's Responsiveness						.102	.000
Involvement in Community Activities						.115	.000
Competition						.086	.004
Congruence						.151	.000
Physical Environment						.101	.000
Moral Environment						.202	.000

The Adjusted R square, which takes into account the number of variables in the model and the number of participants on which Model 1 is based, indicates no over fitting of the model and that the results should be 23.1% generalizable from the perspective of the ratio of the observations to the predictor variables. However, the standard error of the estimate, which represents an estimate of the standard deviation of the actual goal orientation values around the regression line increased slightly to .48725, thus thinly enlarged the absolute size of the prediction error when parsimonious Model 1 is used to predict goal orientation. In 95% confidence level, the margin of error for any predicted value of goal orientation can be calculated at ± 3.12 .

Table 33 also displays the analysis of variance which provides the statistical test for the overall model fit of the parsimonious Model 1 in terms of the *F* – ratio. Notice that the sum of squares (385.376) is equal to the total sum of squares of the full Model 1, the same amount of

error that would occur if only the mean of goal orientation is used to predict this strand of motivation. Using only Family Structure, Parent's Responsiveness, Involvement in Community Activities, Competition, Congruence, Physical Environment, and Moral Environment reduces this error by 23.5%. Though this reduction is smaller than 25.2% of the full Model 1, it is statistically significant with an F – ratio of 54.602 and a p – value of less than .01.

Finally, Table 33 presents standardized *Beta* coefficients of the parsimonious Model 1 whose predictors are Family Structure, Parent's Responsiveness, Involvement in Community Activities, Competition, Congruence, Physical Environment, and Moral Environment, all of which have coefficients that are statistically significant at 95% confidence level. In other words, the parsimonious Model 1 is statistically significant in predicting the levels of goal orientation when the scores in Family Structure, Parent's Responsiveness, Involvement in Community Activities, Competition, Congruence, Physical Environment, and Moral Environment are known. It must be noted that in the parsimonious Model 1, among the five factors (familial influence, peer influence, community environment, classroom cultural climate and school climate), only familial influence, community environment, classroom cultural climate, and school climate are represented by some dimensions from each one of them. **Therefore, it can be concluded that a small portion of the eighth grade students' goal orientation was explained by the students' familial factor, community environment, classroom cultural climate, and school climate.**

This means that the level of students' ability to initiate their own learning activities and commitment to the process of learning is probably predicted by family structure, parent's responsiveness, involvement in community activities, competition, congruence, physical

environment, and moral environment. Children in nuclear families receive strength and stability from the two – parent structure and generally have more opportunities due to the financial ease of two adults. Community involvement has generally been considered as being positively related to student school achievement and subsequent career choices. Competitive learning environments are sometimes contrasted disparagingly with cooperative learning settings, and to the extent that competition focuses attention on external control, it can diminish motivation. However, creating mixed-ability groups that are able to compete (on roughly equal footing) against one another can actually improve student motivation. Lastly, feeling safe – socially, morally, intellectually and physically - is a fundamental human need. Feeling safe in school powerfully promotes student learning and healthy development. Many students do not feel physically and emotionally safe in schools, largely as a result of breakdowns in the interpersonal and contextual variables that define a school's climate. In schools without supportive norms, structures, and relationships, students are more likely to experience violence, peer-victimization, and punitive disciplinary actions, often accompanied by high levels of absenteeism, and reduced academic achievement.

The regression model for task value (TV) is labeled Model 2. Although the full Model 2 (Using Enter Method) is statistically significant in predicting task value as a factor of motivation, it has predictors that are not significant (See Appendix I). Thus using Backward Method, insignificant predictors were eliminated. Table 34 presents the result of regression analysis.

It is revealed in Table 34 that the parsimonious Model 2 with seven predictors, namely Parent's Responsiveness, Activity with Peers, Involvement in Community Activities,

Competition, Congruence, Learning Environment, and Moral Environment explains 26.6% of the variance of the eighth grade students' task value scores.

Table 34
Multiple Regression Analysis of Parsimonious Model 2
 (Dependent Variable: Task Value)

Predictors	<i>F</i>	<i>df</i>	<i>R</i>²	<i>adj.</i> <i>R</i>²	<i>Std.</i> <i>Error</i>	<i>β</i>	<i>p</i> – <i>value</i>
Model 2	64.248	7	.266	.262	.49272		.000
Parent's Responsiveness						.092	.000
Activity with Peers						.081	.003
Involvement in Community Activities						.081	.002
Competition						.100	.000
Congruence						.133	.000
Learning Environment						.111	.001
Moral Environment						.202	.000

The Adjusted R square, which takes into account the number of variables in the model and the number of participants on which Model 2 is based, indicates no over fitting of the model and that the results should be 26.2% generalizable from the perspective of the ratio of the observations to the predictor variables. However, the standard error of the estimate, which represents an estimate of the standard deviation of the actual task value scores around the regression line, decreased slightly to .49272, thus it thinly reduced the absolute size of the prediction error when parsimonious Model 2 is used to predict task value. In 95% confidence level, the margin of error for any predicted score of task value can be calculated at ± 3.18 .

Table 34 also displays the analysis of variance which provides the statistical test for the overall model fit of the parsimonious Model 2 in terms of the F ratio. Notice that the sum of squares (410.465) is equal to the total sum of squares of the full Model 2, the same amount of error that would occur if only the mean of task value is used to predict this dimension of motivation. Using only Parent's Responsiveness, Activity with Peers, Involvement in Community Activities, Competition, Congruence, Learning Environment, and Moral Environment reduces this error by 26.6%. This reduction is less than 27.2% of the full Model 2, and it is statistically significant with an F – ratio of 64.228 and a p – value of less than .01.

Finally, Table 34 presents the standardized *Beta* coefficients of the parsimonious Model 2 whose predictors are Family Structure, Parent's Responsiveness, Activity with Peers, Involvement in Community Activities, Competition, Congruence, Learning Environment, and Moral Environment, all of which have coefficients that are statistically significant at 95% confidence level. In other words, the parsimonious Model 2 is statistically significant in predicting the levels of task value when the scores in Parent's Responsiveness, Activity with Peers, Involvement in Community Activities, Competition, Congruence, Learning Environment, and Moral Environment are known. It must be noted that in the parsimonious Model 2, all five factors (familial influence, peer influence, community environment, classroom cultural climate, and school climate) are represented by some dimensions from each one of them. **Therefore, it can be concluded that a small portion of the eighth grade students' task value was explained by the students' familial factor, peers, community environment, classroom cultural climate, and school climate.**

This means that the level of students' evaluation about the importance and usefulness of mathematical tasks is probably predicted by parent's responsiveness, activity with peers, involvement in community activities, competition, congruence, learning environment, and moral environment. Children who describe their parents as treating them warmly, firmly, and democratically are more likely to develop positive attitudes and beliefs about their achievement. Peers not only influence behavior but also attitudes towards school. Attitudes, achievement, and perceived norms among peers in a school can also stimulate or discourage students' learning. If the classroom cultural climate values competition, students tend to strive harder, and consequently appreciate the usefulness of mathematical tasks. Likewise, if students acknowledge the congruence of their math lessons to what they learn at home, the importance of mathematical tasks will be realized. Lastly, it is a common notion that a positive school climate promotes students' engagement and abilities to learn.

The regression model for self – efficacy (SE) is labeled Model 3. Although the full Model 3 (Using Enter Method) is statistically significant in predicting self – efficacy as a factor of motivation, it has predictors that are not significant (See Appendix J). Thus using Backward Method, insignificant predictors were eliminated. Table 35 presents the result of regression analysis.

The parsimonious Model 3 with twelve predictors, namely Family Structure, Parent's Responsiveness, Parental Involvement, Activity with Peers, Involvement in Community Activities, Teacher's Authority, Congruence, Physical Environment, Social Environment,

Affective Environment, Learning Environment, and Moral Environment explains 27.9% of the variance of the eighth grade students' self – efficacy.

Table 35
Multiple Regression Analysis of Parsimonious Model 3
 (Dependent Variable: Self – Efficacy)

Predictors	<i>F</i>	<i>df</i>	<i>R</i>²	<i>adj.</i> <i>R</i>²	<i>Std.</i> <i>Error</i>	<i>β</i>	<i>p</i> – <i>value</i>
Model 3	39.945	12	.279	.272	.49281		.000
Family Structure						.063	.009
Parent's Responsiveness						.065	.022
Parental Involvement						.057	.047
Activity with Peers						.058	.038
Involvement in Community Activities						.106	.000
Teacher's Authority						.109	.000
Congruence						.121	.000
Physical Environment						.089	.002
Social Environment						.105	.003
Affective Environment						-.080	.034
Learning Environment						.110	.003
Moral Environment						.136	.000

The Adjusted R square, which takes into account the number of variables in the model and the number of participants Model 3 on which it is based, indicates no over fitting of the model and that the results should be 27.2% generalizable from the perspective of the ratio of the observations to the predictor variables. However, the standard error of the estimate, which represents an estimate of the standard deviation of the actual self – efficacy values around the regression line, decreased slightly to .49281, thus thinly reduced the absolute size of the prediction error when parsimonious Model 3 is used to predict task value. In 95% confidence level, the margin of error for any predicted value of self – efficacy can be calculated at ± 3.02 .

Table 35 also displays the analysis of variance which provides the statistical test for the overall model fit of the parsimonious Model 3 in terms of the F ratio. Notice that the sum of squares (416.595) is equal to the total sum of squares of the full Model 3, the same amount of error that would occur if only the mean of self – efficacy is used to predict this dimension of motivation. Using only Family Structure, Parent’s Responsiveness, Parental Involvement, Activity with Peers, Involvement in Community Activities, Teacher’s Authority, Congruence, Physical Environment, Social Environment, Affective Environment, Learning Environment, and Moral Environment reduces this error by 27.9%. Though this reduction is smaller than 28.3% of the full Model 3, it is statistically significant with an F – ratio of 39.945 and a p – value of less than .01.

Finally, Table 35 presents the standardized *Beta* coefficients of the parsimonious Model 3 whose predictors are Family Structure, Parent’s Responsiveness, Parental Involvement, Activity with Peers, Involvement in Community Activities, Teacher’s Authority, Congruence, Physical Environment, Social Environment, Affective Environment, Learning Environment, and Moral Environment, all of which have coefficients that are statistically significant at 95% confidence level. In other words, the parsimonious Model 3 is statistically significant in predicting the levels of self – efficacy when the scores in Family Structure, Parent’s Responsiveness, Parental Involvement, Activity with Peers, Involvement in Community Activities, Teacher’s Authority, Congruence, Physical Environment, Social Environment, Affective Environment, Learning Environment, and Moral Environment are known. It must be noted that in the parsimonious Model 3, all five constructs (familial influence, peer influence, community environment, classroom cultural climate, and school climate) are represented by some dimensions from each

one of them. **Therefore, it can be concluded that a small portion of the eighth grade students' self – efficacy was explained by the students' familial factor, peers, community environment, classroom cultural climate, and school climate.**

This means that the level of students' evaluation about their confidence in performing mathematical tasks is probably predicted by family structure, parent's responsiveness, parental involvement, activity with peers, involvement in community activities, teacher's authority, congruence, physical environment, social environment, affective environment, learning environment, and moral environment. There is a variety of social advantages to being reared in two – parent (nuclear) home. Children of a first marriage have a variety of economic, educational, and social capital advantages in comparison to their single – parent or blended family peers. The attitudes of parents and peers also appear to be an important factor in determining children's attitudes and achievement. The aspirations and the influence of parental expectations and interest are potentially important factors in guiding student success or failure. High school students from authoritative homes performed better in psychological development and had less behavior problems than their counterparts from non-authoritative homes. The climate that the teacher creates in the classroom for the students through goal-setting, appropriate challenges, and empathy for the students may have some major factors contributing to student achievement. Even more interesting is how this could be related to student self-efficacy, which is a student's perceived capability for a specific task or subject, in this case math. Teachers may be able to influence student self-efficacy with the classroom environment that they create. Students' actual perceptions of the classroom climate are as important as the environment that the teacher attempts to create. If students do not perceive their environments in a positive way, it may not be

beneficial to the learning process.

The regression model for motivation (Mo) is labeled Model 4. Although the full Model 4 (Using Enter Method) is statistically significant in predicting motivation, it has predictors that are not significant (See Appendix K). Thus using Backward Method, insignificant predictors were eliminated. Table 36 presents the result of regression analysis.

As presented in Table 36, the parsimonious Model 4 with ten predictors, namely Family Structure, Parent's Responsiveness, Activity with Peers, Involvement in Community Activities, Competition, Congruence, Physical Environment, Social Environment, Learning Environment, and Moral Environment explains 30.0% of the variance of the eighth grade students' motivation.

Table 36
Multiple Regression Analysis of Parsimonious Model 4
(Dependent Variable: Motivation)

Predictors	<i>F</i>	<i>df</i>	<i>R</i>²	<i>adj.</i> <i>R</i>²	<i>Std.</i> <i>Error</i>	<i>β</i>	<i>p</i> – <i>value</i>
Model 4	53.093	10	.300	.294	1.32983		.000
Family Structure						.058	.015
Parent's Responsiveness						.096	.000
Activity with Peers						.074	.007
Involvement in Community Activities						.106	.000
Competition						.088	.003
Congruence						.135	.000
Physical Environment						.072	.011
Social Environment						.072	.036
Learning Environment						.083	.017
Moral Environment						.154	.000

The Adjusted R square, which takes into account the number of variables in the model and the number of participants on which Model 10 is based, indicates no over fitting of the model, and that the results should be 29.4% generalizable from the perspective of the ratio of the observations to the predictor variables. However, the standard error of the estimate, which represents an estimate of the standard deviation of the actual motivation values around the regression line, increased slightly to 1.32983, thus thinly enlarged the absolute size of the prediction error when parsimonious Model 4 is used to predict motivation. In 95% confidence level, the margin of error for any predicted value of conceptual understanding can be calculated at ± 9.32 .

Table 36 also displays the analysis of variance which provides the statistical test for the overall model fit of the parsimonious Model 4 in terms of the F ratio. Notice that the sum of squares (3128.265) is equal to the total sum of squares of the full Model 4, the same amount of error that would occur if only the mean of motivation is used to predict motivation. Using only Family Structure, Parent's Responsiveness, Activity with Peers, Involvement in Community Activities, Competition, Congruence, Physical Environment, Social Environment, Learning Environment, and Moral Environment reduces this error by 30.0%. Though this reduction is less than 30.6% of the full Model 4, it is statistically significant with an F – ratio of 53.093 and a p – value of less than .01.

Finally, Table 36 presents the standardized *Beta* coefficients of the parsimonious Model 4 whose predictors are Family Structure, Parent's Responsiveness, Activity with Peers, Involvement in Community Activities, Competition, Congruence, Physical Environment, Social

Environment, Learning Environment, and Moral Environment, all of which have coefficients that are statistically significant at 95% confidence level. In other words, the parsimonious Model 4 is statistically significant in predicting the levels of motivation when the scores on Family Structure, Parent's Responsiveness, Activity with Peers, Involvement in Community Activities, Competition, Congruence, Physical Environment, Social Environment, Learning Environment, and Moral Environment are known. It must be noted that in the parsimonious Model 4, all the five constructs (familial influence, peer influence, community environment, classroom cultural climate, and school climate) are represented by some dimensions from each one of them. **Therefore, it can be concluded that a small portion of the eighth grade students' motivation was explained by the students' familial factors, peers, community environment, classroom cultural climate, and school climate.**

This means that the level of students' initiation, direction, intensity, and persistence of behavior, especially goal-directed behavior, is probably predicted by family structure, parent's responsiveness, activity with peers, involvement in community activities, competition, congruence, physical environment, social environment, learning environment, and moral environment. The authoritative parenting style is more likely to promote a high degree of self-control and social competence in children; whereas the authoritarian, indulgent, and neglectful parenting styles (both permissive styles) contribute to low self-control and lack of social competence. Authoritative parenting is associated with more positive outcomes; whereas authoritarian, indulgent and neglectful parenting styles are more likely to lead to negative outcomes, including motivation to learn.

A correlation between parent involvement and children's educational development and subsequent intrinsic academic motivation has been established. Even if parents are unable to assist their children with a specific subject area or skill, they can still play a vital role by encouraging students' feelings of competence and control and positive attitudes towards academics. This implies that families can have a strong influence on a variety of school outcomes, including the development and maintenance of positive motivation.

Student motivation is influenced not only by parents, but also to varying degrees by teachers and peers. While students were more likely to participate in extracurricular activities, see value in learning, and identify with school when they had peer support, results for compliance were mixed and dependent on the type of peer support and the values espoused by a student's chosen friend group. Across all of the behavioral components of school engagement, peers are just as likely to exert positive influences on adolescents as negative influences. The importance of school climate in a variety of overlapping ways, including social, emotional, intellectual, and physical safety development; mental health, and healthy relationships has long been recognized. School climate may significantly impact student behavioral outcomes such as decrease discipline actions to students and increase average daily attendance.

Influence of Social Factors on Mathematics Proficiency

This section presents the answers to the research problem 5. Regression analyses were used to investigate the amount of variation in the criterion variable explained by the predictor variables. The dimensions of familial influence, peer, community, classroom, and school climate were used as independent or predictor variables; while conceptual understanding, procedural

fluency, strategic competence, adaptive reasoning, productive disposition, and mathematics proficiency were used as dependent or criterion variables.

One multiple regression analysis was performed each time. The focus of the analysis was on the scores on each dimension or factor of every construct under investigation.

The regression model for conceptual understanding (CU) is labeled Model 5. Although the full Model 5 (Using Enter Method) is statistically significant in predicting conceptual understanding, it has predictors that are not significant (See Appendix L). Thus using Backward Method, insignificant predictors were eliminated. Table 37 presents the result of regression analysis.

The parsimonious Model 5 with nine predictors, namely Parent's Responsiveness, Parent's Control, Activity with Peers, Type of Community, Involvement in Community Activities, Collaboration, Teacher's Authority, Physical Environment, and Social Environment, explains 16.5% of the variance of the eighth grade students' conceptual understanding.

The Adjusted R square, which takes into account the number of variables in the model and the number of participants on which Model 5 is based, indicates no over fitting of the model, and that the results should be 15.9% generalizable from the perspective of the ratio of the observations to the predictor variables. However, the standard error of the estimate, which represents an estimate of the standard deviation of the actual conceptual understanding values around the regression line, slightly increased to 1.89213, thus thinly enlarged the absolute size of the prediction error when parsimonious Model 5 is used to predict conceptual understanding. In

95% confidence level, the margin of error for any predicted value of conceptual understanding can be calculated at ± 5.48 .

Table 37
Multiple Regression Analysis of Parsimonious Model 5
 (Dependent Variable: Conceptual Understanding)

Predictors	<i>F</i>	<i>df</i>	<i>R</i>²	<i>adj.</i> <i>R</i>²	<i>Std.</i> <i>Error</i>	<i>β</i>	<i>p</i> – <i>value</i>
Model 5	27.191	9	.165	.159	1.89213		.000
Parent's Responsiveness						.146	.000
Parent's Control						-.106	.000
Activity with Peers						.120	.000
Type of Community						-.089	.001
Involvement in Community Activities						-.069	.013
Collaboration						.142	.000
Teacher's Authority						-.066	.018
Physical Environment						.204	.000
Social Environment						.153	.000

Table 37 also displays the analysis of variance which provides the statistical test for the overall model fit of the parsimonious Model 5 in terms of the *F* ratio. Notice that the sum of squares (5311.946) is equal to the total sum of squares of the full Model 5, the same amount of error that would occur if only the mean of conceptual understanding is used to predict this strand of mathematics proficiency. Using only Parent's Responsiveness, Parent's Control, Activity with Peers, Type of Community, Involvement in Community Activities, Collaboration, Teacher's Authority, Physical Environment, and Social Environment, reduces this error by 16.5%. Though this reduction is less than 17.3% of the full Model 5, it is statistically significant with an *F* – ratio of 27.191 and a *p* – value of less than .01.

Finally, Table 37 presents the standardized *Beta* coefficients of the parsimonious Model 5 whose predictors are Parent's Responsiveness, Parent's Control, Activity with Peers, Type of Community, Involvement in Community, Collaboration, Teacher's Authority, Physical Environment, and Social Environment, all of which have coefficients that are statistically significant at 95% confidence level. In other words, the parsimonious Model 5 is statistically significant in predicting the levels of conceptual understanding when the scores in Parent's Responsiveness, Parent's Control, Activity with Peers, Type of Community, Involvement in Community Activities, Collaboration, Teacher's Authority, Physical Environment, and Social Environment are known. It must be noted that in the parsimonious Model 5, all the five constructs (familial influence, peer influence, community environment, classroom cultural climate, and school climate) are represented by some dimensions from each one of them. **Therefore, it can be concluded that a small portion of the eighth grade students' conceptual understanding was explained by the students' familial factors, peers, community environment, classroom cultural climate, and school climate.**

This implies the level of pupils' ability to understand why a mathematical concept is important and the kinds of contexts in which it is useful is probably predicted by the parent's responsiveness, parent's control, activity with peers, type of community, involvement in community activities, collaboration, teacher's authority, physical environment, and social environment. It should be noted that parent's control, type of community, involvement in community activities, teacher's authority, and physical environment reported negative contributions to students' conceptual understanding. This means that the higher control set by parents on their child and the more activities the students get into the community, the lower the

students' scores in conceptual understanding. There are significant differences in mathematics achievement of urban and rural schools, and this study claims that students in urban schools had better academic achievement than their rural counterparts. Unlike rural areas, urban settlements are defined by their advanced civic amenities, opportunities for education, facilities for transport, business and social interaction, and overall better standard of living. Likewise, the higher authority established by teachers in the classroom and the less conducive their physical environment is, the lesser their mathematics performance.

On the contrary, activity with peers, collaboration, and social environment contribute positive coefficients which safely denote that an increased score on these constructs produce better results. Collaboration can have powerful effects on student learning, particularly for low-achieving students. In the current K to 12 curriculum, the eighth grade students are engaging in collaborative learning activities, allowing them to provide explanations of their understanding and helping them elaborate and reorganize their knowledge. Social interaction stimulates elaboration of conceptual knowledge as group mates attempt to make themselves understood, and providing elaborated explanations improves student comprehension of concepts. Once conceptual understandings are made visible through verbal exchange, students can negotiate meaning to arrive at convergence, or shared understanding.

The regression model for procedural fluency (PF) is labeled Model 6. Although the full Model 6 (Using Enter Method) is statistically significant in predicting procedural fluency, it has predictors that are not significant (See Appendix M). Thus using Backward Method, insignificant predictors were eliminated. Table 38 presents the result of regression analysis.

The parsimonious Model 6 with ten predictors, namely Parent's Responsiveness, Parent's Control, Parental Involvement, Activity with Peers, Type of Community, Involvement in Community Activities, Gender Equity, Collaboration, Physical Environment, and Social Environment, explains 16.4% of the variance of the eighth grade students' procedural fluency.

Table 38
Multiple Regression Analysis of Parsimonious Model 6
 (Dependent Variable: Procedural Fluency)

Predictors	<i>F</i>	<i>df</i>	<i>R</i>²	<i>adj.</i> <i>R</i>²	<i>Std.</i> <i>Error</i>	<i>β</i>	<i>p</i> – <i>value</i>
Model 6	24.263	10	.164	.157	2.09583		.000
Parent's Responsiveness						.142	.000
Parent's Control						-.105	.000
Parental Involvement						-.073	.020
Activity with Peers						.126	.000
Type of Community						-.108	.000
Involvement in Community Activities						-.051	.005
Gender Equity						.131	.000
Collaboration						.079	.018
Physical Environment						.194	.000
Social Environment						.119	.000

The Adjusted R square, which takes into account the number of variables in the model and the number of participants on which Model 6 is based, indicates no over fitting of the model and that the results should be 15.7% generalizable from the perspective of the ratio of the observations to the predictor variables. However, the standard error of the estimate, which represents an estimate of the standard deviation of the actual procedural fluency values around the regression line, decreased slightly to 2.09583, thus thinly reduced the absolute size of the

prediction error when parsimonious Model 6 is used to predict procedural fluency. In 95% confidence level, the margin of error for any predicted value of conceptual understanding can be calculated at ± 5.04 .

Table 38 also displays the analysis of variance which provides the statistical test for the overall model fit of the parsimonious Model 6 in terms of the F ratio. Notice that the sum of squares (6503.665) is equal to the total sum of squares of the full Model 6, the same amount of error that would occur if only the mean of procedural fluency is used to predict this strand of mathematics proficiency. Using only Parent's Responsiveness, Parent's Control, Parental Involvement, Activity with Peers, Type of Community, Involvement in Community Activities, Gender Equity, Collaboration, Physical Environment, and Social Environment, reduces this error by 16.4%. Though this reduction is less than 16.8% of the full Model 6, it is statistically significant with an F – ratio of 24.263 and a p – value of less than .01.

Finally, Table 38 presents the standardized *Beta* coefficients of the parsimonious Model 6 whose predictors are Parent's Responsiveness, Parent's Control, Parental Involvement, Activity with Peers, Type of Community, Involvement in Community, Gender Equity, Collaboration, Physical Environment, and Social Environment, all of which have coefficients that are statistically significant at 95% confidence level. In other words, the parsimonious Model 6 is statistically significant in predicting the levels of procedural fluency when the scores in Parent's Responsiveness, Parent's Control, Parental Involvement, Activity with Peers, Type of Community, Involvement in Community Activities, Gender Equity, Collaboration, Physical Environment, and Social Environment are known. It must be noted that in the parsimonious

Model 6, all the five constructs (familial influence, peer influence, community environment, classroom cultural climate, and school climate) are represented by some dimensions from each one of them. **Therefore, it can be concluded that a small portion of the eighth grade students' procedural fluency was explained by the students' familial factors, peers, community environment, classroom cultural climate, and school climate.**

This means that the level of students' skill in carrying out mathematics procedures flexibly, accurately, efficiently, and appropriately is probably predicted by parent's responsiveness, parent's control, parental involvement, activity with peers, type of community, involvement in community activities, gender equity, collaboration, physical environment, and social environment. In this study, those students who have high responsive and low control parents scored higher in procedural fluency test items. Students who have reported a low involvement of parents in their education obtained higher scores than those with active parents. Disparity in the performance of students from urban and rural areas was observed in favor of the former. The major reasons for the conjecture that students in rural areas receive an inferior education compared to their urban counterparts can probably be described as a "deficit model" of rural community and lifestyle. Gender equity, collaboration, physical and social environments are positively correlated to students' procedural fluency test scores.

The regression model for strategic competence (SC) is labeled Model 7. Although the full Model 7 (Using Enter Method) is statistically significant in predicting strategic competence, it has predictors that are not significant (See Appendix N). Thus using Backward Method, insignificant predictors were eliminated. Table 39 presents the result of regression analysis.

The parsimonious Model 7 with ten predictors, namely Parent's Responsiveness, Parent's Control, Activity with Peers, Type of Community, Involvement in Community Activities, Collaboration, Competition, Physical Environment, and Social Environment, explains 20.8% of the variance of the eighth grade students' strategic competence.

Table 39
Multiple Regression Analysis of Parsimonious Model 7
 (Dependent Variable: Strategic Competence)

Predictors	<i>F</i>	<i>df</i>	<i>R</i>²	<i>adj.</i> <i>R</i>²	<i>Std.</i> <i>Error</i>	<i>β</i>	<i>p</i> – <i>value</i>
Model 7	32.423	10	.208	.201	1.90566		.000
Parent's Responsiveness						.082	.010
Parent's Control						-.068	.018
Parental Involvement						-.089	.003
Activity with Peers						.191	.000
Type of Community						-.071	.006
Involvement in Community Activities						-.057	.041
Collaboration						.219	.000
Competition						-.116	.000
Physical Environment						.185	.000
Social Environment						.122	.000

The Adjusted R square, which takes into account the number of variables in the model and the number of participants on which Model 7 is based, indicates no over fitting of the model and that the results should be 20.1% generalizable from the perspective of the ratio of the observations to the predictor variables. However, the standard error of the estimate, which represents an estimate of the standard deviation of the actual strategic competence values around the regression line, decreased very slightly to 1.90566, thus thinly reduced the absolute size of the prediction error when parsimonious Model 7 is used to predict strategic competence.

Table 39 also displays the analysis of variance which provides the statistical test for the overall model fit of the parsimonious Model 7 in terms of the F ratio. Notice that the sum of squares (5673.324) is equal to the total sum of squares of the full Model 7, the same amount of error that would occur if only the mean of strategic competence is used to predict this strand of mathematics proficiency. Using only Parent's Responsiveness, Parent's Control, Activity with Peers, Type of Community, Involvement in Community Activities, Collaboration, Competition, Physical Environment, and Social Environment reduces this error by 20.8%. Though this reduction is smaller than 21.1% of the full Model 7, it is statistically significant with an F – ratio of 32.423 and a p – value of less than .01.

Finally, Table 39 presents the standardized *Beta* coefficients of the parsimonious Model 7 whose predictors are Parent's Responsiveness, Parent's Control, Activity with Peers, Type of Community, Involvement in Community Activities, Collaboration, Competition, Physical Environment and Social Environment, all of which have coefficients that are statistically significant at 95% confidence level. In other words, the parsimonious Model 7 is statistically significant in predicting the levels of strategic competence when the scores in Parent's Responsiveness, Parent's Control, Activity with Peers, Type of Community, Involvement in Community Activities, Collaboration, Competition, Physical Environment, and Social Environment are known. It must be noted that in the parsimonious Model 7, all of the five constructs (familial influence, peer influence, community environment, classroom cultural climate, and school climate) are represented by some dimensions from each one of them. **Therefore, it can be concluded that a small portion of the eighth grade students' strategic**

competence was explained by the students' familial factors, peers, community environment, classroom cultural climate, and school climate.

This means that the level of students' ability to formulate, to represent, and to solve mathematical problems is probably predicted by parent's responsiveness, parent's control, activity with peers, type of community, involvement in community activities, collaboration, competition, physical environment, and social environment. Most of the eighth grade students with low responsive and high control parents got lower scores in strategic competence test items. Those students from rural areas, with less involvement in community activities, and engaged in activities with peers scored higher in this strand of mathematics proficiency. Competition in the classroom is a negative predictor of strategic competence while collaboration, physical environment and social environment provoke students' mathematics competence.

The regression model for adaptive reasoning (AR) is labeled Model 8. Although the full Model 8 (Using Enter Method) is statistically significant in predicting adaptive reasoning, it has predictors that are not significant (See Appendix O). Thus using Backward Method, insignificant predictors were eliminated. Table 40 presents the result of regression analysis.

The parsimonious Model 8 with eight predictors, namely Parent's Responsiveness, Parental Involvement, Activity with Peers, Type of Community, Involvement in Community Activities, Collaboration, Competition, and Physical Environment explains 16.2% of the variance of the eighth grade students' adaptive reasoning.

Table 40
Multiple Regression Analysis of Parsimonious Model 8
 (Dependent Variable: Adaptive Reasoning)

Predictors	<i>F</i>	<i>df</i>	<i>R</i>²	<i>adj.</i> <i>R</i>²	<i>Std.</i> <i>Error</i>	<i>β</i>	<i>p</i> – <i>value</i>
Model 8	29.965	8	.162	.157	2.06774		.000
Parent's Responsiveness						.099	.001
Parental Involvement						-.077	.013
Activity with Peers						.228	.000
Type of Community						-.092	.001
Involvement in Community Activities						-.077	.007
Collaboration						.188	.000
Competition						-.112	.000
Physical Environment						.124	.000

The Adjusted R square, which takes into account the number of variables in the model and the number of participants on which Model 8 is based, indicates no over fitting of the model and that the results should be 15.7% generalizable from the perspective of the ratio of the observations to variables in the equation. However, the standard error of the estimate, which represents an estimate of the standard deviation of the actual adaptive reasoning values around the regression line, increased very slightly to 2.06774, thus thinly increased the absolute size of the prediction error when parsimonious Model 4 is used to predict adaptive reasoning. In 95% confidence level, the margin of error for any predicted value of adaptive reasoning can be calculated at ± 4.37 .

Table 40 also displays the analysis of variance which provides the statistical test for the overall model fit of the parsimonious Model 8 in terms of the F ratio. Notice that the sum of squares (6326.641) is equal to the total sum of squares of the full Model 8, the same amount of

error that would occur if only the mean of adaptive reasoning is used to predict this strand of mathematics proficiency. Using only Parent's Responsiveness, Parental Involvement, Activity with Peers, Type of Community, Involvement in Community Activities, Collaboration, Competition, and Physical Environment reduces this error by 16.2%. Though this reduction is smaller than 17.3% of the full Model 8, it is statistically significant with an F – ratio of 29.965 and a p – value of less than .01.

Finally, Table 40 presents the standardized *Beta* coefficients of the parsimonious Model 8 whose predictors are Parent's Responsiveness, Parental Involvement, Activity with Peers, Type of Community, Involvement in Community Activities, Collaboration, Competition, and Physical Environment, all of which have coefficients that are statistically significant at 95% confidence level. In other words, the parsimonious Model 8 is statistically significant in predicting the levels of adaptive reasoning when the scores in Parent's Responsiveness, Parental Involvement, Activity with Peers, Type of Community, Involvement in Community Activities, Collaboration, Competition, and Physical Environment are known. It must be noted that in the parsimonious Model 8, all the five constructs (familial influence, peer influence, community environment, classroom cultural climate, and school climate) are represented by some dimensions from each one of them. **Therefore, it can be concluded that a small portion of the eighth grade students' adaptive reasoning was explained by the students' familial factors, peers, community environment, classroom cultural climate, and school climate.**

This means that the level of students' capacity for logical thought, reflection, explanation, and justification is probably predicted by parent's responsiveness, parental involvement, activity

with peers, type of community, involvement in community activities, collaboration, competition, and physical environment. In this study, activity with peers is the strongest positive predictor of students' adaptive reasoning, followed by collaboration in the classroom and then the physical environment. Likewise, parent's responsiveness is positively related to students' scores in adaptive reasoning test items. Similar to the results in the previous tables, students from rural areas who have slight participation in community activities obtained low scores. Competition in the classroom and parental involvement were found to yield a negative correlation to students' reasoning abilities.

The regression model for productive disposition (PD) is labeled Model 9. Although the full Model 9 (Using Enter Method) is statistically significant in predicting productive disposition, it has predictors that are not significant (See Appendix P). Thus using Backward Method, insignificant predictors were eliminated. Table 41 presents the result of regression analysis.

The parsimonious Model 9 with eleven predictors, namely Parent's Responsiveness, Parent's Control, Parental Involvement, Activity with Peers, Involvement in Community Activities, Gender Equity, Collaboration, Competition, Physical Environment, Social Environment, and Affective Environment explains 18.7% of the variance of the eighth grade students' productive disposition.

Table 41
Multiple Regression Analysis of Parsimonious Model 9
 (Dependent Variable: Productive Disposition)

Predictors	<i>F</i>	<i>df</i>	<i>R</i>²	<i>adj.</i> <i>R</i>²	<i>Std.</i> <i>Error</i>	<i>β</i>	<i>p</i> – <i>value</i>
Model 9	25.873	11	.187	.180	1.86321		.000
Parent's Responsiveness						.093	.004
Parent's Control						-.059	.043
Parental Involvement						-.069	.025
Activity with Peers						.210	.000
Involvement in Community Activities						-.075	.008
Gender Equity						.070	.030
Collaboration						.180	.000
Competition						-.156	.000
Physical Environment						.152	.000
Social Environment						.148	.000
Affective Environment						.108	.003

The Adjusted R square, which takes into account the number of variables in the model and the number of participants on which Model 9 is based, indicates no over fitting of the model and that the results should be 18.0% generalizable from the perspective of the ratio of the observations to variables in the equation. However, the standard error of the estimate, which represents an estimate of the standard deviation of the actual productive disposition values around the regression line, decreased very slightly to 1.86321, thus thinly reduced the absolute size of the prediction error when parsimonious Model 9 is used to predict productive disposition. In 95% confidence level, the margin of error for any predicted value of adaptive reasoning can be calculated at ± 3.38 .

Table 41 also displays the analysis of variance which provides the statistical test for the overall model fit of the parsimonious Model 9 in terms of the F ratio. Notice that the sum of squares (5282.355) is equal to the total sum of squares of the full Model 9, the same amount of error that would occur if only the mean of productive disposition is used to predict this strand of mathematics proficiency. Using only Parent's Responsiveness, Parent's Control, Parental Involvement, Activity with Peers, Involvement in Community Activities, Gender Equity, Collaboration, Competition, Physical Environment, Social Environment, and Affective Environment reduces this error by 18.7%. Though this reduction is smaller than 19.1% of the full Model 9, it is statistically significant with an F – ratio of 14.513 and a p – value of less than .01.

Finally, Table 41 presents the standardized *Beta* coefficients of the parsimonious Model 9 whose predictors are Parent's Responsiveness, Parent's Control, Parental Involvement, Activity with Peers, Involvement in Community Activities, Gender Equity, Collaboration, Competition, Physical Environment, Social Environment, and Affective Environment, all of which have coefficients that are statistically significant at 95% confidence level. In other words, the parsimonious Model 9 is statistically significant in predicting the levels of productive disposition when the scores in Parent's Responsiveness, Parent's Control, Parental Involvement, Activity with Peers, Involvement in Community Activities, Gender Equity, Collaboration, Competition, Physical Environment, Social Environment, and Affective Environment are known. It must be noted that in the parsimonious Model 9, all of the five constructs (familial influence, peer influence, community environment, classroom cultural climate, and school climate) are represented by some dimensions from each one of them. **Therefore, it can be concluded that a small portion of the eighth grade students' productive disposition was explained by the**

students' familial factors, peers, community environment, classroom cultural climate, and school climate.

This means that the level of students' habitual inclination to see mathematics as sensible, useful, worthwhile, coupled with a belief in diligence and one's own efficacy is probably predicted by parent's responsiveness, parent's control, parental involvement, activity with peers, involvement in community, gender equity, collaboration, competition, physical environment, social environment, and affective environment. Among the eleven predictors, activity with peers and collaboration in the classroom remained to be the strong predictors of eight grade students' productive disposition scores. This implies that K to 12 curriculum has been successful in engaging students in the learning process. A positive school climate in terms of physical, social and affective environments is deemed to positively influence this stand of mathematics proficiency. However, parent's control, involvement in community activities and competition in the classroom consistently produced negative impact on students' mathematics achievement.

The regression model for mathematics proficiency (MP) is labeled Model 10. Although the full Model 10 (Using Enter Method) is statistically significant in predicting mathematics proficiency, it has predictors that are not significant (See Appendix Q). Thus using Backward Method, insignificant predictors were eliminated. Table 42 presents the result of regression analysis.

The parsimonious Model 10 with eleven predictors, namely Parent's Responsiveness, Parent's Control, Parental Involvement, Activity with Peers, Involvement in Community

Activities, Gender Equity, Collaboration, Competition, Physical Environment, and Social Environment, explains 27.1% of the variance of the eighth grade students' mathematics proficiency.

The Adjusted R square, which takes into account the number of variables in the model and the number of participants on which Model 10 is based, indicates no over fitting of the model and that the results should be 26.5% generalizable from the perspective of the ratio of the observations to variables in the equation. However, the standard error of the estimate, which represents an estimate of the standard deviation of the actual mathematics proficiency values around the regression line, decreased slightly to 7.29004, thus thinly reduced the absolute size of the prediction error when parsimonious Model 10 is used to predict mathematics proficiency.

Table 42
Multiple Regression Analysis of Parsimonious Model 10
 (Dependent Variable: Mathematics Proficiency)

Predictors	<i>F</i>	<i>df</i>	<i>R</i>²	<i>adj.</i> <i>R</i>²	<i>Std.</i> <i>Error</i>	<i>β</i>	<i>p</i> – <i>value</i>
Model 10	41.899	11	.271	.265	7.29004		.000
Parent's Responsiveness						.151	.000
Parent's Control						-.103	.000
Parental Involvement						-.088	.003
Activity with Peers						.217	.000
Type of Community						-.089	.000
Involvement in Community						-.081	.002
Activities							
Gender Equity						.072	.017
Collaboration						.191	.000
Competition						.119	.000
Physical Environment						.224	.000
Social Environment						.136	.000

Table 42 also displays the analysis of variance which provides the statistical test for the overall model fit of the parsimonious Model 10 in terms of the F ratio. Notice that the sum of squares (90233.808) is equal to the total sum of squares of the full Model 10, the same amount of error that would occur if only the mean of mathematics proficiency is used to predict mathematics proficiency. Using only parent's responsiveness, parent's control, parental involvement, activity with peers, involvement in community activities, gender equity, collaboration, competition, physical environment, and social environment reduces this error by 27.1%. Though this reduction is smaller than 27.4% of the full Model 6, it is statistically significant with an F – ratio of 41.899 and a p – value of less than .01.

Finally, Table 42 presents the *Beta* coefficients of the parsimonious Model 10 whose predictors are parent's responsiveness, parent's control, parental involvement, activity with peers, involvement in community activities, gender equity, collaboration, competition, physical environment, and social environment all of which have coefficients that are statistically significant at 95% confidence level. In other words, the parsimonious Model 10 is statistically significant in predicting the levels of mathematics proficiency when the scores in parent's responsiveness, parent's control, parental involvement, activity with peers, involvement in community activities, gender equity, collaboration, competition, physical environment, and social environment are known. It must be noted that in the parsimonious Model 10, all five constructs (familial influence, peer influence, community environment, classroom cultural climate, and school climate) are represented by some dimensions from each one of them. **Therefore, it can be concluded that a small portion of the eighth grade students'**

mathematics proficiency was explained by the students' familial factors, peers, community environment, classroom cultural climate, and school climate.

This means that the level of students' expertise, competence, knowledge, and facility in mathematics is probably predicted by parent's responsiveness, parent's control, parental involvement, activity with peers, involvement in community activities, gender equity, collaboration, competition, physical environment, and social environment. These findings connote that the successful learning and performance of mathematics rely on a range of social factors. When parents espouse responsive behaviors to their child, the result is an increase in student's academic achievement and an improved overall attitude toward school. When students select academically-oriented friends, their grades may improve. Students are more engaged in student-centered learning when they are working individually or with their peers rather than when listening to a teacher's lecture. An effective teacher ensures that students are actively involved in their own learning process. Peer-tutoring, small group work and peer mentoring are effective strategies that promote student engagement and are linked to. Collaborative learning model seem to produce better results than individualized learning. Respect for individual students and teachers, a safe and orderly environment, and constructive interactions among administrators, teachers, parents, and students all contribute to a positive school climate and may lead to higher mathematics achievement.

Mediating Effect of Motivation on the Relationship between Social Factors and Mathematics Proficiency

This section presents the mediation of motivation on the relationship between each of the social factors and mathematics proficiency. This study examined if the direct effect of each of the social factors on mathematics proficiency is reinforced by the indirect effect of the former to the latter, represented by the effect of students' social factors on their motivation and the effect of motivation on their mathematics proficiency. Structural Equation Modeling (SEM) using Analysis of Moment Structure (AMOS) was utilized to confirm the mediating role of motivation.

Table 43 presents the mediating effect of motivation on the relationship between familial influence and mathematics proficiency.

Table 43a
Direct Effect of Familial Influence to Mathematics Proficiency

Path			Std.	Unstd.	S.E	C.R	p – value
Mathematics Proficiency	←	Familial Influence	.12	.517	.149	3.477	.000

Table 43b
Indirect Effect of Familial Influence to Mathematics Proficiency through Motivation

Paths			Std.	Unstd.	S.E	C.R	p – value
Motivation	←	Familial Influence	.33	.471	.052	9.088	.000
Mathematics Proficiency	←	Familial Influence	.08	.337	.155	2.172	.030
Mathematics Proficiency	←	Motivation	.10	.287	.099	2.914	.004

Table 43a shows that the standardized direct effect of Familial Influence on Mathematics Proficiency is .12 and the probability of getting a critical ratio as large as 3.477 in absolute value is less than 0.001. In other words, the regression weight for Familial Influence in the prediction of Mathematics Proficiency is significantly different from zero at the 0.01 significance level. This means that the direct effect of familial influence to eight grade students' mathematics proficiency is statistically significant.

As shown in Table 43b, the standardized indirect effect of Familial Influence on Mathematics Proficiency was reduced to .08 which is statistically significant at .01. When motivation was added in the model, Familial Influence remained statistically significant in predicting mathematics proficiency; hence, partial mediation occurred. **Therefore, it can be concluded that a significant relationship between familial influence and mathematics proficiency is partially mediated by motivation.**

This means that parental influence on mathematics achievement outcomes through a number of mediating variables such as goal orientation, task value, and self-efficacy. Students from authoritarian homes tended to exhibit more anxious and withdrawn behavior, had a high chance of relying on authority figures to make decisions and were less likely to engage in exploratory and challenge-seeking behavior. Likewise, it was found out that children from permissive homes lacked self-reliance, had little tolerance for frustration, and were less likely to persist on learning tasks. However, students from authoritative homes were more willing to engage in exploratory behavior, were more self-reliant, independent, and curious. Based on these findings, parenting styles as measured in terms of parents' responsiveness and control are linked

with motivation. Further, students from authoritative homes that possess internal criteria and engage in academic tasks due to enjoyment of challenge and satisfaction of curiosity are more likely to produce higher mathematics achievement outcomes.

Table 44 presents the mediating effect of motivation on the relationship between peer influence and mathematics proficiency.

Table 44a
Direct Effect of Peer Influence to Mathematics Proficiency

Path			Std.	Unstd.	S.E	C.R	p – value
Mathematics Proficiency	←	Peer Influence	.37	.974	.387	2.517	.012

Table 44b
Indirect Effect of Peer Influence to Mathematics Proficiency through Motivation

Paths			Std.	Unstd	S.E	C.R	p – value
Motivation	←	Peer Influence	.36	.384	.095	4.033	.000
Mathematics Proficiency	←	Peer Influence	.43	1.304	.363	3.589	.000
Mathematics Proficiency	←	Motivation	-.03	-.081	.149	-.539	.590

Table 44a reveals that the standardized direct effect of Peer Influence on eighth grade students' Mathematics Proficiency is .37 and the probability of getting a critical ratio as large as 2.517 in absolute value. In other words, the regression weight for Peer Influence in the prediction of Mathematics Proficiency is significantly different from zero at the 0.01 significance level.

This means that the direct effect of peer influence to eight grade students' mathematics proficiency is statistically significant.

As shown in Table 44b, the standardized indirect effect of Peer Influence on eighth grade students' Mathematics Proficiency was increased to .08 which is statistically significant at .01. When motivation was added in the model, Peer Influence remained statistically significant in predicting mathematics proficiency; hence, partial mediation occurred. **Therefore, it can be concluded that a significant relationship between peer influence and mathematics proficiency is partially mediated by motivation.**

These results signify that peer groups may help a learner meet his/her needs. Social interaction with peer groups may develop important social skills such as sharing, listening, and turn taking and the process of helping and working with others can also be motivating. If learners' social needs are met, they may be motivated and could possibly become active in class and achieve better academic outcomes.

Table 45 presents the mediating effect of motivation on the relationship between community environment and mathematics proficiency.

Table 45a
Direct Effect of Community Environment to Mathematics Proficiency

Path		Std.	Unstd.	S.E	C.R	p – value
Mathematics Proficiency	← Community Environment	-.667	-59.882	309.512	2.517	.847

Table 45b
**Indirect Effect of Community Environment to Mathematics Proficiency through
 Motivation**

Paths			Std.	Unstd.	S.E	C.R	p – value
Motivation	←	Community Environment	.571	.700	6.797	.103	.918
Mathematics Proficiency	←	Community Environment	-.146	-.511	7.370	-.069	.945
Mathematics Proficiency	←	Motivation	.212	.604	3.438	.176	.861

Table 45a presents that the standardized direct effect of Community Environment on eighth grade students' Mathematics Proficiency is -.667 and the probability of getting a critical ratio as large as 2.517 in absolute value is .847. In other words, the regression weight for Community Environment in the prediction of Mathematics Proficiency is not significantly different from zero at the 0.05 significance level. This means that the direct effect of community environment to eighth grade students' mathematics proficiency is not statistically significant.

As shown in Table 45b, the standardized indirect effect of Community Environment on Mathematics Proficiency was increased to -.146 but not statistically significant at .05. **Therefore, it can be concluded that a significant relationship between community environment and mathematics proficiency is not mediated by motivation.**

Based on the results that community environment does not directly nor indirectly predict mathematics proficiency, it was excluded in the final model in the latter section.

Table 46 presents the mediating effect of motivation on the relationship between classroom cultural climate and mathematics proficiency.

Table 46a
Direct Effect of Classroom Cultural Climate to Mathematics Proficiency

	Path		Std.	Unstd.	S.E	C.R	p – value
Mathematics Proficiency	←	Classroom Cultural Climate	.185	1.179	.225	5.250	.000

Table 46b
Indirect Effect of Classroom Cultural Climate to Mathematics Proficiency through Motivation

	Paths		Std.	Unstd.	S.E	C.R	p – value
Motivation	←	Classroom Cultural Climate	.485	1.074	.092	11.735	.000
Mathematics Proficiency	←	Classroom Cultural Climate	.157	.991	.254	3.896	.000
Mathematics Proficiency	←	Motivation	.053	.150	.107	1.404	.160

Table 46a shows that the standardized direct effect of Classroom Cultural Climate on Mathematics Proficiency is .18 and the probability of getting a critical ratio as large as 5.250 in absolute value is less than 0.001. In other words, the regression weight for Classroom Cultural Climate in the prediction of Mathematics Proficiency is significantly different from zero at the 0.01 significance level. This means that the direct effect of classroom cultural climate to eight grade students' mathematics proficiency is statistically significant.

As shown in Table 46b, the standardized indirect effect of Classroom Cultural Climate on Mathematics Proficiency was reduced to .16 which is statistically significant at .01. When motivation was added in the model, Classroom Cultural Climate remained statistically significant in predicting mathematics proficiency; hence, partial mediation occurred. **Therefore, it can be concluded that a significant relationship between classroom cultural climate and mathematics proficiency is partially mediated by motivation.**

Of all the personal and psychological variables that have attracted researchers in the area of educational achievement, motivation seems to be gaining more popularity and leading other variables. When students express lack of interest in the subject, it affects the way they react or listen to the teacher. Interaction in the classroom was a way in which students met the competence needs of their classmates. The ways in which students were provided learning assistance and support to each other in the form of clarifying expectations, sharing ideas, or offering suggestions contributed to their feelings that their competence needs were met.

Being able to seek and gain assistance from classmates was seen as a source of support and encouragement that, in conjunction with a supportive teacher, met their needs to feel proficient within this context. It also demonstrated that tasks that may be difficult to accomplish alone could be achieved with the help of more competent others, contributing to positive (i.e., more self-determined) patterns of motivation and achievement.

Table 47 presents the mediating effect of motivation on the relationship between school climate and mathematics proficiency.

Table 47a
Direct Effect of School Climate to Mathematics Proficiency

Paths			Std.	Unstd.	S.E	C.R	p – value
Mathematics Proficiency	←	School Climate	.140	.447	.105	4.257	.000

Table 47b
Indirect Effect of School Climate to Mathematics Proficiency through Motivation

Paths			Std.	Unstd.	S.E	C.R	p – value
Motivation	←	School Climate	.514	.572	.034	16.873	.000
Mathematics Proficiency	←	School Climate	.098	.312	.125	2.508	.012
Mathematics Proficiency	←	Motivation	.079	.224	.109	2.052	.040

Table 47a reveals that the standardized direct effect of School Climate on Mathematics Proficiency is .14 and the probability of getting a critical ratio as large as 4.257 in absolute value is less than 0.001. In other words, the regression weight for School Climate in the prediction of Mathematics Proficiency is significantly different from zero at the 0.01 significance level. This means that the direct effect of school climate on eight grade students' mathematics proficiency is statistically significant.

As shown in Table 47b, the standardized indirect effect of School Climate on Mathematics Proficiency was reduced to .10 which is statistically significant at .01. When motivation was added in the model, School Climate remained statistically significant in predicting mathematics proficiency; hence, partial mediation occurred. **Therefore, it can be**

concluded that a significant relationship between school climate and mathematics proficiency is partially mediated by motivation.

Improving students' perceptions of safety throughout the school building can improve academic and behavioral performance. In addition, positive perceptions of emotional safety can help to fulfill students' basic psychological needs for a sense of belonging, autonomy, and influence. Schools in which students do not feel emotionally safe or cared for may demonstrate increased levels of disorder and lower academic achievement.

The SCMPM Model

This study is primarily anchored on the objective to describe and offer a clear picture of how social factors of the eighth grade students combine and associate together to find out whether they affect their mathematics proficiency and motivation. Further, it aims to describe how motivation mediates the influence of sociocultural constructs on eighth grade students' proficiency in mathematics.

Putting together all the previously analyzed models (Model 1 to Model 10), together with some counterparts called 'parsimonious' models and the ten models with mediation effects offered perspectives of analyses based on the format specified in Tables 3 and 4. The results, however, were 'bits' of pieces that explain single relationship (one at a time) of social factors. Although Models 4 and 10 seemingly gave the parsimonious picture of the entire set of constructs related to motivation and mathematics proficiency respectively, they still have a lot of loopholes that cannot be fixed by putting other models together due to overlapping issues that regression analysis is incapable of fixing.

The Structural Equation Modeling (SEM) aids the researcher to test an entire theory that considers all possible information in one comprehensive analysis. Theoretically, social factors predict motivation and mathematics proficiency and motivation mediates these relationships, but confirmatory analysis such as SEM improves the acceptability of the model or theory. With Analysis of Moment Structures (AMOS), an add – on model in SPSS to perform SEM, the theoretical model was formulated and designed. This model, presented in Figure 5, is called Structural Equation Model 1.

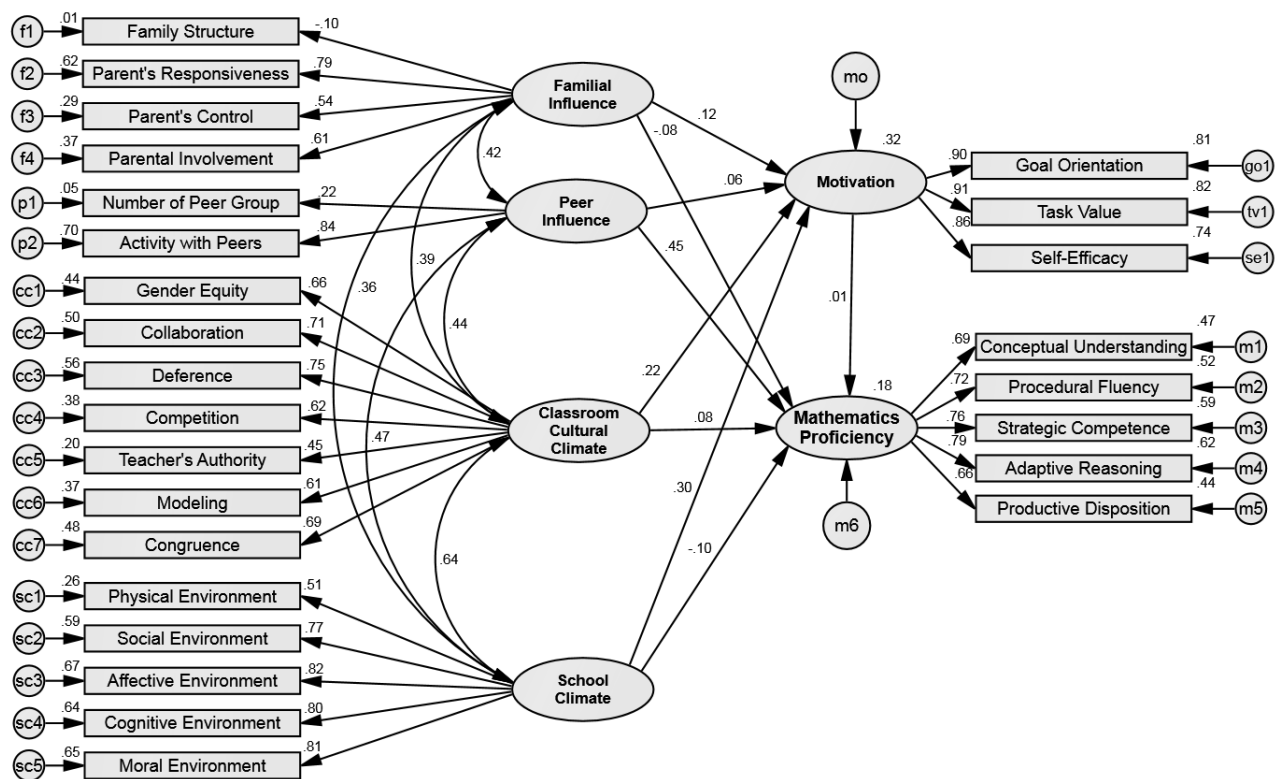


Figure 5. Structural Equation Model 1

The Structural Equation Model 1 in Figure 5 has several variables – 26 observed and 34 unobserved variables; 32 exogenous (independent) and 28 endogenous (dependent) variables. This study used maximum likelihood estimation (MLE), an alternative ordinary least squares (OLS) in the multiple regression models already presented. MLE, being superior than OLS, has iteratively improved parameter estimates to minimize the specified fit functions, which were pre-set on AMOS before estimation analysis was run. AMOS has counted 351 distinct sample moments, and with 67 distinct parameters estimated, the degree of freedom was 284.

Given the plethora of fit indices, it becomes a temptation to choose those fit indices that indicate the best fit. In a review by McDonald and Ho (2002) it was found that the most commonly reported fit indices are the Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Normed Fit Index (NFI), and the Non-normed Fit Index (NNFI). When deciding what indices to report, going by what is most frequently used is not necessarily good practice as some of these statistics (such as the GFI) are often relied on purely for historical reasons, rather than for their sophistication. While there are no golden rules for assessment of model fit, reporting a variety of indices is necessary because different indices reflect a different aspect of model fit. Although the Model Chi-Square has many problems associated with it, it is still essential that this statistic, along with its degrees of freedom and associated p value, should at all times be reported. Threshold levels suggested a two-index presentation format. This always includes the Standardized Root Mean Square Residual (SRMR) with the NNFI (Tucker – Lewis Index), Root Mean Square Estimates of Approximation (RMSEA) or the CFI. Kline (2005) speaks strongly about which indices to include and advocates the use of the Chi-Square test, the RMSEA, the CFI, and the SRMR. Boomsma (2000) has similar recommendations, but also advises for the

squared multiple correlations of each equation to be reported. Based on these authors' guidelines as reviewed above, it is sensible to include the Chi-Square statistic, its degrees of freedom and p value, the RMSEA and its associated confidence interval, the SRMR, the CFI, and one parsimony fit index such as the PNFI. These indices have been chosen over other indices as they have been found to be the most insensitive to sample size, model misspecification, and parameter estimates (Hooper, et.al, 2008).

With eleven (11) iterations, the minimum estimates were reached and the results showed that the Chi – square (χ^2) value, using goodness – of – fit (GOF) test which gave the overall fit of the Structural Equation Model 1, is equal to 1525.547 with the probability equivalent to .000. This p – value is the approximate probability of getting a χ^2 statistic as large as the χ^2 statistic obtained from the current set of data. In other words, the departure of the data from the model is not significant at .05 level. Thus, if the Structural Equation Model 1 is used to estimate parameters of another set of data, it will be 0% likely to produce the observed covariance matrix. Mueller (2003) pointed out that in structural equation modeling, a model is said to fit the observed data to the extent that the model – implied covariance matrix is equivalent to the empirical covariance matrix. In short the bigger probability, the better fit. That is why AMOS also provides modification indices such that when the model is modified based on it, the probability value increases. However, it is not a purpose of this study to chase for the empirically best – fitting model that does not conform to the theory being postulated.

Although the χ^2 test provides a test for statistical significance, in some ways its mathematical properties present trade – offs whenever the model is tested at larger samples (Hair,

et.al. 2010). So, this study also included alternative measures of fit to correct the bias against large samples and increased model complexity. Included in AMOS output are several fit indices presented in Table 48. These tests gave measure of the absolute fit indices, incremental fit indices, parsimony fit indices, and the sample size indices of the model.

Table 48
Measures of Fit Summary of Structural Equation Model 1

Measures of Fit	Criteria	Values	p
Global Fit			
Chi – square (χ^2) GOF	$p > 0.05$	1525.547	.000
Relative or Normed Chi – square Value	$2 < \chi^2 < 5$	5.372	
Absolute Fit Indices			
Goodness – of – Fit Index (GFI)	≥ 0.90	0.901	
Root Mean Square Error of Approximation (RMSEA)	< 0.05	0.059	.000
Root Mean Square Residual (RMR)	< 0.10	0.511	
Incremental Fit Indices			
Normed Fit Index (NFI)	≥ 0.90	0.891	
Tucker – Lewis Index (TLI)	Close to 1	0.896	
Comparative Fit Index (CFI)	> 0.90	0.910	
Parsimony Fit Indices			
Adjusted Goodness – of – Fit Index (AGFI)	Close to 1	0.877	
Parsimony Normed Fit Index (PNFI)	Close to 1	0.779	
‘Critical N’			
Hoelter at 0.05	Maximum	266	
Hoelter at 0.01	Maximum	281	

The goodness – of – fit index (GFI) was an early attempt to produce fit statistic that was less sensitive to sample size. Although the sample size of 1249 was not included in the GFI formula, Hair, et.al. (2010) suggests that it is still sensitive to sample size due to its effort in sampling distributions.

The root mean square error of approximation (RMSEA), being the most widely used measure, attempted to correct for the χ^2 GOF test statistic to reject Structural Equation Model

when used with a large sample or a large number of observed variables. Thus it tells how well the Structural Equation Model fits a population, not just a sample used for estimation. It explicitly tried to correct for both Structural Equation Model's complexity and sample size by including each in its computation. The RMSEA value, sometimes called 'badness – of – fit' test, of 0.059 indicates that SEM 11 is 5.9% 'incorrect', or 94.1% 'correct'. Under the hypothesis of 'close fit', (i.e., that RMSEA is not greater than 0.05, in the population), the probability of getting a sample RMSEA as large as 0.059 is 0.000. Similarly, the root mean square residual (RMR), which gives the square root of the average squared amount by which the sample variances and covariances differ from their estimates obtained under the assumption that Structural Equation Model 1 is correct, tells also the 'badness – of – fit'. With RMR of 0.511, it tells that the full Structural Equation Model 1 is 51.10% 'incorrect'.

On the other hand, the normed fit index (NFI) tells the ratio of the difference in the χ^2 value for the fitted model and a null model divided by the χ^2 value for the null model. The rule of thumb is that a model whose NFI is 0.90 or greater is a good fit. The Tucker – Lewis Index (TLI), though conceptually similar to NFI, is not normed, and thus its values can fall below 0 or above 1. Typically, models with good fit have values that approach 1. Thus Structural Equation Model 1 is almost a 'good fit'.

Moreover, the adjusted goodness of fit index (AGFI) adjusts GFI by a ratio of the degrees of freedom and used in SEM to the total degree of freedom available, taking into account differing degrees of model complexity. The parsimony normed fit index (PNFI) represents a

relatively better fit. The values of these fit indices were compared to the parsimonious Structural Equation Model 1, which is discussed at the latter part of this section.

Lastly, Hoelter's 'Critical N' is the larger sample size for which one would accept the hypothesis that a model is correct. With a sample size of over 266 at 0.05 significance level and over 281 at 0.01 significance level, Structural Equation Model 1 would have been rejected. Thus, tested at 0.05 significance level and with a sample of 1249 eighth grade students, Structural Equation Model 1 is not accepted and would not be empirically true when used to a sample size not greater than 266.

Considering the results of the fit measures, it can therefore be concluded that the proposed Structural Equation Model 1 is not empirically valid and not generally acceptable. From validity and acceptability, this study proceeded to the analysis of the regression weights and covariances to test whether each is statistically significant at 0.05 level. Table 49 presents the regression weights, while Table 50 presents the covariances specified in Structural Equation Model 1.

As shown in Table 49, five paths gave significant regression weights. Among the four constructs, one non – significant regression weight at 0.05 level indicates that the construct at the right of the path does not significantly contribute to the prediction of motivation. As displayed in Structural Equation Model 1, peer influence does not predict motivation. In other words, eighth grade students' peer influence insignificantly determines their motivation.

Table 49
Regression Weights of Structural Equation Model 1

	Paths		Std.	Unstd.	S.E	C.R	P – value
Motivation	←	Familial Influence	.116	.007	.002	3.168	.002
Motivation	←	Peer Influence	.058	.059	.043	1.383	.167
Motivation	←	Classroom Cultural Climate	.219	.487	.095	5.108	***
Motivation	←	School Climate	.304	.352	.048	7.388	***
Mathematics Proficiency	←	Familial Influence	-.083	-.014	.009	-1.599	.110
Mathematics Proficiency	←	Peer Influence	.451	1.305	.371	3.516	***
Mathematics Proficiency	←	Classroom Cultural Climate	.081	.513	.326	1.571	.116
Mathematics Proficiency	←	School Climate	-.103	-.339	.190	-1.786	.074
Mathematics Proficiency	←	Motivation	.014	.039	.112	.349	.727
Conceptual Understanding	←	Mathematics Proficiency	.689	1.00			
Procedural Fluency	←	Mathematics Proficiency	.722	1.159	.052	22.164	***
Strategic Competence	←	Mathematics Proficiency	.765	1.148	.049	23.243	***
Adaptive Reasoning	←	Mathematics Proficiency	.787	1.247	.053	23.746	***
Productive Disposition	←	Mathematics Proficiency	.663	.961	.047	20.603	***
Goal Orientation	←	Motivation	.899	1.000			
Task Value	←	Motivation	.906	1.041	.023	45.968	***
Self – Efficacy	←	Motivation	.863	.998	.024	42.337	***
Parent’s Control	←	Familial Influence	.538	1.000			
Parent’s Responsiveness	←	Familial Influence	.789	1.554	.109	14.243	***
Family Structure	←	Familial Influence	-.097	-.021	.007	-2.934	.003
Parental Involvement	←	Familial Influence	.608	.043	.003	14.073	***
Activity with Peers	←	Peer Influence	.838	1.000			
Number of Peer Group Members		Peer Influence	.218	.552	.116	4.768	***
Gender Equity	←	Classroom Cultural Climate	.664	1.374	.096	14.260	***
Collaboration	←	Classroom Cultural Climate	.710	1.544	.103	14.928	***
Deference	←	Classroom Cultural Climate	.747	1.464	.100	14.657	***
Competition	←	Classroom Cultural Climate	.618	1.490	.108	13.819	***
Teacher’s Authority	←	Classroom Cultural Climate	.451	1.000			
Modeling	←	Classroom Cultural Climate	.610	1.365	.099	13.731	***
Congruence	←	Classroom Cultural Climate	.694	1.554	.107	14.524	***
Physical Environment	←	School Climate	.506	.693	.039	17.738	***
Social Environment	←	School Climate	.767	.956	.033	28.741	***
Affective Environment	←	School Climate	.819	1.025	.033	31.120	***
Cognitive Environment	←	School Climate	.800	1.000			
Moral Environment	←	School Climate	.806	1.035	.034	30.525	***

*** <0.01

On the contrary, three of the four constructs produced non – significant regression weights at 0.05 level, indicating that the constructs at the right of the path do not significantly contribute to the prediction of mathematics proficiency. For instance, familial influence does not predict mathematics proficiency. In other words, eighth grade students' familial influence insignificantly determines their mathematics proficiency.

On the other hand, the significant regression weights at 0.05 level indicate that the constructs at the right significantly contribute to the prediction of the constructs at the left. For instance, in Structural Equation Model 1, familial influence, classroom cultural climate, and school climate do predict motivation well. In other words, the familial influence, classroom cultural climate, and school climate of eighth grade students significantly predict their motivation.

Going back to the raw scores, those eighth grade students who are highly motivated belong to nuclear family, with high responsive but high control (authoritative) parents, with high parental involvement to their child's education, and reported high regards to dimensions of classroom cultural and school climate. Moreover, peer influence predicts mathematics proficiency. Referring to the raw scores, those eighth grade students who obtained high scores in mathematics proficiency test are those who are working well with their peers.

In the structural part of the Structural Equation Model 1, there are six 2 – way paths, and in AMOS estimation, they are called covariances, the unstandardized form of correlation coefficients.

In Table 50, all six covariances among familial influence, peer influence, classroom cultural climate, and school climate are statistically significant at .01 level. In other words, these four constructs are significantly correlated with each other.

Table 50
Covariance for Structural Equation Model 1

Paths		Std.	Unstd.	S.E	C.R	p – value
Classroom Cultural Climate	↔ School Climate	.641	.062	.005	11.665	***
Classroom Cultural Climate	↔ Peer Influence	.438	.048	.005	9.394	***
Classroom Cultural Climate	↔ Familial Influence	.393	.761	.095	7.979	***
School Climate	↔ Peer Influence	.474	.100	.008	11.982	***
School Climate	↔ Familial Influence	.363	1.353	.158	8.556	***
Peer Influence	↔ Familial Influence	.424	1.794	.200	8.960	***

*** <0.01

This study has identified insignificant paths as shown in Table 51 where they become candidates for exclusion from the Structural Equation Model 1. With careful statistical analysis and review of the theoretical bases of the structure of Structural Equation Model 1, this study presents its parsimonious form presented in Figure 6. Parsimony procedure in SEM is done by removing paths from the overall structure that do not give significant estimates and poor factor loadings. Hair et.al (2010) give rules of thumb for assessing the practical significance of standardized factor loadings as denoted by either the component coefficients in the case of principal components, the factor matrix (in a single factor model or an uncorrelated multiple

factor model) or the pattern matrix (in a correlated multiple factor model). On the other hand, Field (2005) regards a factor as a reliable one if it has four or more loadings of at least 0.6 regardless of sample size. When the items have different frequency distributions, Tabachnick and Fidell (2007) suggest the use of more stringent cut – offs going from 0.32 (poor), 0.45 (fair), 0.55 (good), 0.63 (very good), or 0.71 (excellent). Following these criteria, eight out of eighteen variables were retained with very good to excellent factor loading.

The model presented in Figure 6 is called the ‘parsimonious’ structural equation model of **Social Constructs of Mathematics Proficiency and Motivation, or SCMPM Model**. For suitability purposes, the number of latent variables in SCMPM Model is equal to the Structural Equation Model 1. AMOS has counted 136 distinct sample moments, the number of distinct parameters being estimated reduced from 67 to 42, and the degrees of freedom decreased from 284 to 94. With the minimum estimation achieved, and with the reduced parameter and degrees of freedom, the Chi – square value has decreased to 453.573, but the probability has remained significant ($p = .000$).

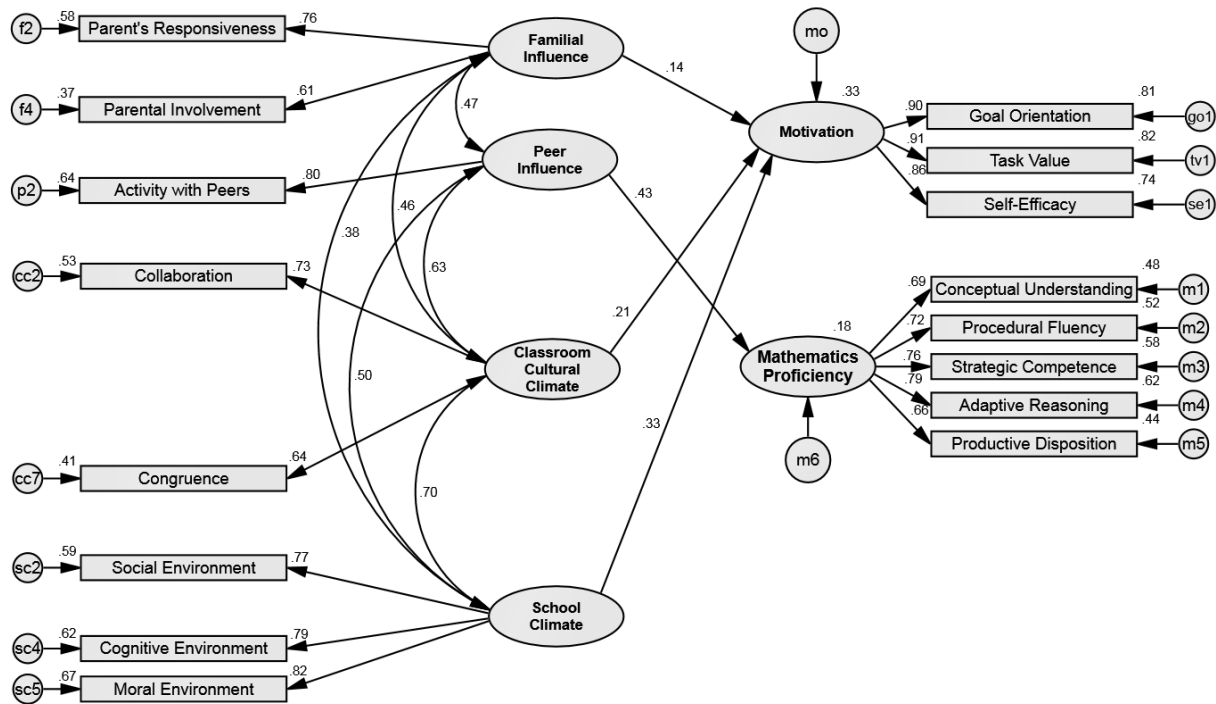


Figure 6. SCMPM Structural Equation Model

A good model fit would provide an insignificant result at a 0.05 threshold (Barrett, 2007), thus the Chi-Square statistic is often referred to as either a ‘badness of fit’ (Kline, 2005) or a ‘lack of fit’ (Mulaik et al, 1989) measure. While the Chi-Squared test retains its popularity as a fit statistic, there exist a number of several limitations in its use. First, this test assumes multivariate normality and severe deviations from normality may result in model rejections even when the model is properly specified (McIntosh, 2006). Second, because the Chi-Square statistic is in essence a statistical significance test, it is sensitive to sample size which means that the Chi-Square statistic nearly always rejects the model when large samples are used (Bentler and Bonnet, 1980; Jöreskog and Sörbom, 1993). These limitations hold true in this study and since the sample size is 1249, hence insignificant p – value is hard to achieve.

However, as mentioned earlier, in practice, chi-square is not considered to be a very useful fit index by most researchers because it is affected by the following factors: (1) sample size (larger samples produce larger chi-squares that are significant even with very small discrepancies between implied and obtained covariance matrices). Based on experience, Tanaka (1993) pointed out that it is difficult to get an insignificant chi-square (indicative of good fit) when samples sizes are much over 200 or so; (2) model size also has an increasing effect on chi-square values. Models with more variables tend to have larger chi-squares. (3) Chi-square is affected by the distribution of variables. Highly skewed and kurtotic variables increase chi-square values.

Due to the restrictiveness of the Model Chi-Square, this study had sought alternative indices to assess model fit. One example of a statistic that minimizes the impact of sample size on the Model Chi-Square is Wheaton et. al's (1977) relative/normed chi-square (χ^2/df). Although there is no consensus regarding an acceptable ratio for this statistic, recommendations range from as high as 5.0 (Wheaton, et. al, 1977; Marsh, et.al., 2004) to as low as 2.0 (Tabachnick and Fidell, 2007; Marsh, et.al., 2004).

The relative or normed chi – square value of SCMPM Model reduced from 5.372 to 4.612. Hence, considering the abovementioned claims, SCMPM Model has a reasonable fit. Therefore, it can be concluded that SCMPM Model is empirically valid and generally acceptable.

Table 51 presents the results of other measures of fit of SCMPM Model. As shown in the table, all measures of fit except Chi – square (χ^2) GOF value, indicate that the SCMPM Model is of good fit and statistically valid.

Table 51
Measures of Fit Summary of SCMPM Model

Measures of Fit	Criteria	Values	p
Global Fit			
Chi – square (χ^2) GOF	$p > 0.05$	453.573	.000
Relative or Normed Chi – square Value	$2 < \chi^2 < 5$	4.612	
Absolute Fit Indices			
Goodness – of – Fit Index (GFI)	≥ 0.90	0.956	
Root Mean Square Error of Approximation (RMSEA)	< 0.05	0.054	.107
Root Mean Square Residual (RMR)	< 0.10	0.202	
Incremental Fit Indices			
Normed Fit Index (NFI)	≥ 0.90	0.952	
Tucker – Lewis Index (TLI)	Close to 1	0.951	
Comparative Fit Index (CFI)	> 0.90	0.962	
Parsimony Fit Indices			
Adjusted Goodness – of – Fit Index (AGFI)	Close to 1	0.937	
Parsimony Normed Fit Index (PNFI)	Close to 1	0.745	
‘Critical N’			
Hoelter at 0.05	Maximum	339	
Hoelter at 0.01	Maximum	371	

The GFI value (0.956) indicates that the SCMPM Model is fit compared to the Structural Equation Model 1 (0.901); while the AGFI value (0.937) indicates that it is fit compared to the Structural Equation Model 1 (0.877). All the incremental fit indices – NFI (0.952), TLI (0.951), and CFI (0.962) of SCMPM Model indicate that they are fit compared to the Structural Equation Model 1 (0.891, 0.896, and 0.910 respectively).

Table 52 presents the new regression weights, standardized and unstandardized alike, and their corresponding standard errors, critical ratios, and probability values. The backward elimination technique was used to achieve fourteen (14) statistically significant regression weights.

Table 52
Regression Weights of SCMPM Model

	Paths		Std.	Unstd .	S.E	C.R	P – value
Motivation	←	Familial Influence	.142	.192	.052	3.677	***
Motivation	←	Classroom Cultural Climate	.206	.320	.089	3.581	***
Motivation	←	School Climate	.329	.387	.058	6.662	***
Mathematics Proficiency	←	Peer Influence	.427	1.297	.156	8.335	***
Conceptual Understanding	←	Mathematics Proficiency	.690	1.000			
Procedural Fluency	←	Mathematics Proficiency	.721	1.157	.052	22.211	***
Strategic Competence	←	Mathematics Proficiency	.764	1.144	.049	23.285	***
Adaptive Reasoning	←	Mathematics Proficiency	.787	1.245	.052	23.812	***
Productive Disposition	←	Mathematics Proficiency	.663	.957	.046	20.623	***
Goal Orientation	←	Motivation	.899	1.000			
Task Value	←	Motivation	.907	1.042	.023	45.912	***
Self – Efficacy	←	Motivation	.863	.998	.024	42.303	***
Parent's Responsiveness	←	Familial Influence	.764	35.098	3.118	11.255	***
Parental Involvement	←	Familial Influence	.612	1.000			
Activity with Peers	←	Peer Influence	.801	1.000			
Collaboration	←	Classroom Cultural Climate	.729	1.050	.062	16.958	***
Congruence	←	Classroom Cultural Climate	.639	1.00			
Social Environment	←	School Climate	.768	.975	.037	26.428	***
Cognitive Environment	←	School Climate	.785	1.000			
Moral Environment	←	School Climate	.818	1.071	.039	27.796	***

*** <0.01

In Table 52, it is shown that among the regression weights of all constructs, for the endogenous variable called motivation, the larger regression weight is given by the exogenous variable called school climate. This observation indicates that the respondents' complete aspect of initiation, direction, intensity, and persistence of behavior, especially goal-directed behavior, depends mainly on how they perceive the characteristics of their school's environment that influences their academic and social development. This result could be explained by Maslow's Hierarchy of Needs Theory (1943) which stressed that feeling safe—socially, emotionally, intellectually, and physically—is a fundamental human need. According to Weissbourd, et.al, (2013) schools are certainly not the only place where students develop moral and social capacities, they are one of the most important settings, in part because they are rich with opportunities for discussion and interaction. The teachers' relationships with students are fundamental to moral and social development. Children and teens learn moral values from adults they respect. And when they feel cared about and respected, students are more likely to develop key emotional and social capacities (Baker, 2006). They may also be more receptive to supports and activities designed to develop those skills.

The SCMPM Model also reveals that motivation is influenced by classroom cultural climate, particularly collaboration and congruence. This result could be supported by a literature review of Lai (2011) which emphasized that collaborative learning may enhance motivation, since collaborative tasks signal novelty that shifts attention, and working with others triggers situational interest and curiosity. Further, people are most motivated to learn when the task is matched to the level of skill: not so easy as to be boring, and not so hard as to be frustrating.

Moreover, motivation is influenced by familial influence, specifically parent's responsiveness and parental involvement. This could be explained by Bandura's Social Cognitive Theory which posited that parents who are responsive to their child's communicative behavior, and who create opportunities for efficacious actions by providing an enriched physical environment and permitting freedom of movement for exploration, have children who are relatively accelerated in their social and cognitive development. Parental responsiveness increases cognitive competence, and child capabilities elicit greater parental responsiveness in a process of reciprocal causation.

Meanwhile, it is reflected in Table 52 that eighth grade students' complete aspects of expertise, competence, knowledge, and facility necessary for anyone to learn mathematics successfully predominantly depend on their peer's influence. It is a long-standing hypothesis that the performance of a student depends on the behavior and characteristics of his/her fellow students. According to Hoxby (2002), the power of peers, intelligent, hard-working students can affect their peers through knowledge spillovers and through their influence on academic and disciplinary standards in the classroom. The "baseline" model assumes that peer effects are a zero-sum phenomenon—that is, in order to give one student a better peer, that peer must be taken away from another student; the two effects cancel one another out. According to the baseline model, a student's math score would be affected linearly by the average math of his/her classmates.

The complete tables of the estimated scalars (regression weights, covariances, variances, and shared multiple correlations) and matrices (factor weights, total effects, direct effects, and

indirect effects) are in Appendix R. One feature of SEM that makes it powerful is the ability to do several multivariate data analyses such as regression analysis. Interestingly, the SCMPM Model gave relatively high squared multiple correlations, or the R^2 . In AMOS estimation, the direct, indirect, and total effects of one construct on another were also determined. The path analysis summary is presented in Table 53.

Table 53
Path Analysis of SCMPM Model

		Standardized effect of...					
		Familial Influence	Peer Influence	School Climate	Classroom Cultural Climate	Motivation	Mathematics Proficiency
On...	Total						
Motivation		.142	.000	.329	.206	.000	.000
Mathematics Proficiency		.000	.427	.000	.000	.000	.000
	Direct						
Motivation		.142	.000	.329	.206	.000	.000
Mathematics Proficiency		.000	.427	.000	.000	.000	.000
	Indirect						
Self – Efficacy		.123	.000	.284	.178	.000	.000
Task Value		.129	.000	.298	.187	.000	.000
Goal Orientation		.128	.000	.296	.185	.000	.000
Productive Disposition		.000	.283	.000	.000	.000	.000
Adaptive Reasoning		.000	.336	.000	.000	.000	.000
Strategic Competence		.000	.327	.000	.000	.000	.000
Procedural Fluency		.000	.308	.000	.000	.000	.000
Conceptual Understanding		.000	.295	.000	.000	.000	.000

As shown in Table 53, the standardized total (direct and indirect) effects of school climate, classroom cultural climate, and familial influence on students' motivation are .329, .206,

and .142, respectively. That is due to both direct (unmediated) and indirect (mediated) effects of school climate, classroom cultural climate, and familial influence on motivation. That is, when school climate, classroom cultural climate, and familial influence go 1 standard deviation up, motivation score goes up by .329, .206 and .142 standard deviations respectively. While familial influence, classroom cultural climate, and school climate have no indirect effects on motivation, they have indirect effects on its dimensions, specifically goal orientation, task value, and self-efficacy. The standardized total (direct and indirect) effect of peer influence on mathematics proficiency is .427. That is due to both direct (unmediated) and indirect (mediated) effects of peer influence on mathematics proficiency. As such, when peer influence goes 1 standard deviation up, mathematics proficiency goes up .427 standard deviation. While peer influence has no indirect effect on mathematics proficiency, it has indirect effects on its strands: conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and productive disposition.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents the summary, findings, conclusions, and recommendations of the study.

Summary

The study attempted to describe and offer a clear picture of how social factors of the eighth grade students influences their motivation and mathematics proficiency. It also aims to determine whether motivation mediate the relationship between sociocultural constructs and mathematics proficiency.

The main variables of this study were familial influence, peer influence, community environment, classroom cultural climate, school climate, motivation, and mathematics proficiency. Familial influence is a social factor that describes the respondents' profile in terms of family structure, parenting style (parent's responsiveness, parent's control), and level of involvement in student's education. Peer influence is a social factor that describes the respondents' profile in terms of number of peer group members and activity with peers. Community environment is a social factor that describes the respondents' profile in terms of type of community and involvement in community activities. Classroom cultural climate is another social factor that describes the respondents' classroom environment in terms of gender equity, collaboration, deference, competition, teacher's authority, modeling, and congruence. School climate is the last among the social factors that describe respondents' physical, social, affective, learning (cognitive), and moral environments.

Meanwhile, motivation is a psychological construct that describes what drives people to learn, whether they initiate their own learning activities and maintain a commitment to the process of learning, with emphasis on goal orientation, task value, and self – efficacy for learning mathematics. Mathematics proficiency is the term what mathematics educationists believe as necessary for anyone to learn mathematics successfully. Mathematics proficiency has five strands: (1) conceptual understanding, (2) procedural fluency, (3) strategic competence, (4) adaptive reasoning, and (5) productive disposition. These components are interwoven yet representing different aspects of a complex whole. Theoretically, mathematics proficiency and motivation are dependent on familial influence, peer influence, community environment, classroom cultural climate, and school climate. It is also theorized that motivation mediates the relationship between mathematics proficiency and familial influence, peer influence, community environment, classroom cultural climate, and school climate.

With a sample size of 1249 eighth grade students in five school divisions of Laguna, this study went through two phases of data collection: (1) gathering of participants' sociocultural profile and motivation to learn through a validated self – report survey instruments; and (2) profiling participants' proficiency in mathematics through the constructed, validated, and reliably tested 50 – item Mathematics Proficiency Test (MPT). The instruments used in the two stages were validated by experts along the following criteria: clarity; overlapping responses; appropriateness of listed responses; application to praxis; relationship to research problem; and measure of constructs.

The profile of the participants in the social factors survey instruments was described using frequency and percentage distributions. Meanwhile, the profile of the respondents in motivation to learn inventory was determined through scoring guidelines. Profiling and describing the participants' social factors and motivation were done through the use of descriptive statistics such as mean, median, standard deviation, skewness, and kurtosis.

Multivariate data analysis techniques called regression analysis and covariance analysis in SPSS 20 were used to treat the data in the micro level. To answer the problems of this study regarding influences of the constructs on each other, ten regression models were designed and analyzed. Analyses were based on ten perspectives of associations that exist between and among the main variables (constructs) of this study, together with their respective subscales called dimensions of mathematics proficiency and motivation. In each perspective, regression analysis was performed on both the overall scale and the specific subscales of each construct employing stepping method called backward elimination when necessary. Analysis on ten perspectives produced twenty (20) regression models, ten (10) full regression models, and their parsimonious counterparts.

Structural Equation Modeling (SEM) using Analysis of Moment Structure (AMOS) 22 was utilized to confirm the mediating role of motivation. Moreover, in the macro – level, SEM technique was used to combine all regression models into one model that represents the overall picture of the sociocultural constructs as associated to motivation and mathematics proficiency. A model named SCMPM Model describing the postulate *‘The person’s levels of motivation to learn and proficiency in mathematics are influenced by social factors’* was theoretically

sketched and empirically tested through SEM. Overall, relative model fit tests were conducted to propose the general acceptability of the Model. Path analysis was also performed.

Findings

Based on the result of the study, the following findings were drawn:

1. In the construct **familial influence**, majority of the eighth grade students belong to nuclear family; whose parents are with almost equal distribution of authoritative (high responsiveness and high control), authoritarian (high responsiveness but low control), permissive (low responsiveness but high control), and uninvolved (low responsiveness and low control) styles; and average level of parental involvement in their education.
2. In the construct **peer influence**, majority of the eighth grade students have above 13 friends and are engaging with positive peer activities.
3. In the construct **community environment**, majority of the eighth grade students live in rural area with low level of involvement in community activities.
4. In the construct **classroom cultural climate**, most of the eighth grade students have high regard for gender equity, collaboration, deference, and congruence. They reasonably value modeling and competition in the classroom and acknowledge teacher's authority.
5. In the construct **school climate**, most of the eighth grade students feel strongly that they are socially, emotionally, mentally, and morally safe. However, they reported an average rating on physical environment.
6. In the construct **motivation**, majority of the respondents have high level of motivation and less than one percent have low level. Further, among those with high level of motivation,

most respondents exhibit high level of motivation in the Task Value, while most of them have average level of motivation on Self-Efficacy.

7. In the level of **mathematics proficiency**, most of the respondents have average level of conceptual understanding, but low level of procedural fluency, strategic competence, adaptive reasoning, and productive disposition. Likewise, most of them have low level of mathematics proficiency.
8. The ten regression models, one for each perspective of analysis, are found significant.
9. Family structure, parent's responsiveness, activity with peers, involvement in community, competition, congruence, physical environment, social environment, learning (cognitive) environment, and moral environment are the most significant predictors of motivation.
10. Parent's responsiveness, parent's control, parental involvement, activity with peers, type of community, involvement in community, gender equity, collaboration, competition, physical environment, and social environment are the most significant predictors of mathematics proficiency.
11. Familial influence, peer influence, classroom cultural climate, and school climate have indirect effect on mathematics proficiency through motivation. Additionally, motivation partially mediates the relationship among mathematics proficiency and familial influence, peer influence, classroom cultural climate, and school climate.
12. Classroom cultural climate, particularly collaboration and congruence, and familial influence, specifically parent's responsiveness, and parental involvement influence student's motivation to learn.
13. Engagement in peer activities influences student's mathematics proficiency.

Conclusions

Based on the findings of this study, the following conclusions were formulated:

1. A learner nurtured by firm yet loving, understanding, and responsive parents/guardians is most likely motivated to learn. Good parenting at home, including the provision of a secure and stable environment; participation in school events; and participation to school's work increase students' engagement in learning.
2. Students working together on the same task, rather than in parallel on separate portions of the tasks are motivated to learn mathematics. Localized and contextualized instructions assist the learners in connecting the abstract concepts of mathematics to real-life situations.
3. Safe, caring, participatory and responsive school climate tend to provide the optimal foundation for social, emotional and academic learning for high school students.
4. Involvement in positive peer group activities provides a context in which the students strive for mathematics achievement.
5. Motivation partially mediates the relationship between students' mathematics proficiency and familial influence, peer influence, classroom cultural climate, and school climate.
6. The person's level of motivation is socially channelized by the influence of family, classroom cultural climate, and school climate; and that the person's level of proficiency in mathematics is channelized by peer influence.

Recommendations

Based on the findings and conclusions of this study, the following are recommended:

1. Parents, guardians or adults at home should make home environments to be learning stimulatory and study friendly for students.
2. Teachers should extensively teach eighth grade students with learning activities that promote collaboration and congruence. Classroom activities may involve students working together on the same task; and the learning tasks may be localized and contextualized to draw maximum students' participation and motivation.
3. School heads should ensure that students are socially safe by providing multiple and varied opportunities to participate in extracurricular activities; promote a cognitively – sound environment through prompt communication of assessment results to students and parents; and foster moral environment by conducting culminating activities that could promote values, ethical behavior, and character building.
4. Future researchers may retest and revalidate the SCMPM Model with larger samples of participants who are not only eighth grade students from the province of Laguna but also from those who randomly represent the entire population of the country. On the other hand, retesting and revalidating the SCMPM Model using structural equation modeling could be done, but with equal number of observed variables per construct, including those found significant in Parsimonious Models 4 and 10.
5. Future researchers may also conduct a qualitative or longitudinal study to describe the patterns of influences of social factors influencing on students' mathematics proficiency and motivation.

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Appendix A

Letter for Validation of the Student – Family, Peer, Community, Classroom and School Profile,
Motivation to Learn Inventory and Mathematics Proficiency

Appendix B

Letter Asking Permission to Conduct Research in Schools

Appendix C

Guidelines in the Administration of the Instruments

Appendix D

Questionnaire

QUESTIONNAIRE FOR EIGHTH GRADE STUDENTS

Part I – STUDENTS’ FAMILY PROFILE

Please answer all the items in the questionnaire as honestly and accurately as you can to enable the researcher to come up with a profile of his respondents. Kindly return the accomplished questionnaire to the researcher. Rest assured that your answers will be treated with confidentiality and will be used only for the purpose of the study. Thank you very much.

ALBERTO D. YAZON

Researcher

Name in Print: (Optional) _____ Sex: _____ School: _____

1. Whom are you living with? Please put a check mark on the appropriate space that applies to you.

☐ Living with father only	☐ Living with guardian(s)
☐ Living with mother only	☐ Living with sibling(s)
☐ Living with both parents	☐ Living with other relatives

2. Parenting Style Questionnaire (PSQ)

Directions: Read and think about each statement as it applies to you and your mother/father during your years of growing up at home. Make two ratings for each item. Place your answer on the **first** line to the left of the item for your rating to your MOTHER and place your answer on the **second** line for your rating to your FATHER. Please using the scale below:

4 = Always 3 = Often 2 = Sometimes

1 = Never

Example:

[Mother]	[Father]	Statement:
4	3	1 Accepts my weaknesses.

Begin here:

[Mother]	[Father]	Indicative Statement
_____	_____	1. Comforts me when I am afraid.
_____	_____	2. Seeks to cheer me up when I am sad.
_____	_____	3. Explains why rules should be followed.
_____	_____	4. Likes to discuss things and talk to me.
_____	_____	5. Wants to know what I really think about certain events.
_____	_____	6. Celebrates in my successes with me.
_____	_____	7. Shows love by taking care of me.

_____	_____	8. Spends a lot of time with me.
_____	_____	9. Shows interest in what I learn at school.
_____	_____	10. Shows respect for my opinions by encouraging me to express them.
_____	_____	11. Respects my privacy.
_____	_____	12. Appreciates when I try to become independent.
_____	_____	13. Helps me in doing my math projects and assignments.
_____	_____	14. Points out my mistakes in the manner that I understand.
_____	_____	15. Fulfills my desires with available means.
_____	_____	16. Believes all my bad behavior should be explained somehow.
_____	_____	17. Punishes me when I do not obey.
_____	_____	18. Believes to punish me to correct me and make me improve.
_____	_____	19. Punishes me severely.
_____	_____	20. Always tell me how I am supposed to behave.
_____	_____	21. Does not trust me for a while if I break a promise.
_____	_____	22. Keeps reminding me of things I am not supposed to do.
_____	_____	23. Wants to know exactly where I am and what I am doing when I am not home.
_____	_____	24. Uses threats as punishment with little or no justification.
_____	_____	25. Dictates my likes and dislikes.
_____	_____	26. Gets angry when I get home late.
_____	_____	27. Demands me to be systematic in studies.
_____	_____	28. Discourages my interests.
_____	_____	29. Imposes rules which I cannot follow.
_____	_____	30. Scolds and criticizes me to make me improve.

3. Parental Involvement Questionnaire (PIQ)

Directions: Please indicate how much you AGREE or DISAGREE with each of the following statements using the scale below. Please think about the current school year as you consider each statement. Encircle your response.

4 = Strongly Agree (SA) 3 = Agree (A) 2 = Disagree (D) 1 = Strongly Disagree (SD)

Indicative Statement	SA	A	D	SD
1. Spends time with me working on math exercises.	4	3	2	1
2. Talks to me about careers I am interested in.	4	3	2	1
3. Helps me in doing homework or projects.	4	3	2	1
4. Asks how my day was at school.	4	3	2	1
5. Helps find other resources to help me succeed in learning math.	4	3	2	1
6. Attends conferences or PTA meetings.	4	3	2	1
7. Contacts my teacher or principal to get information.	4	3	2	1
8. Talks to my teacher about the classroom rules.	4	3	2	1
9. Talks to my teacher about my daily school routine.	4	3	2	1
10. Talks to my teacher about my difficulties at school.	4	3	2	1
11. Participates in fundraising activities at school.	4	3	2	1

12. Volunteers at school works like <i>Brigada Eskwela</i> .	4	3	2	1
13. Participates in community and family social activities at school.	4	3	2	1
14. Talks with other parents about school meetings and events.	4	3	2	1
15. Attends parent workshops/trainings at school.	4	3	2	1

Part II – STUDENTS’ PEER PROFILE

1. Please indicate the number of your close friend/s at school by putting a check mark (✓) on the appropriate space.

_____ 1 – 3 _____ 10 – 12
 _____ 4 – 6 _____ 13 and above
 _____ 7 – 9

2. Level of Peer Influence

Directions: Using the scale below, how frequent is the following statement applies to you? Encircle your response.

4 = Always (A) 3 = Often (O) 2 = Sometimes (S) 1 = Never (N)

Indicative Statement	Always	Often	Sometimes	Never
1. Most of my friends in school encourage me to perform well in examinations.	4	3	2	1
2. My friends encourage me to work hard in school.	4	3	2	1
3. My friends influence my academic work positively.	4	3	2	1
4. My friends attend school regularly.	4	3	2	1
5. I spend most of my time in school with friends discussing academic work/revising for examination.	4	3	2	1
6. Most of my friends behave properly in school.	4	3	2	1
7. My friends and I assist other students who are not doing well in school.	4	3	2	1
8. My friends influence me to collaborate with my classmates during group activity.	4	3	2	1
9. My friends encourage me to be punctual at all times.	4	3	2	1
10. My friends inspire me to study hard.	4	3	2	1

Part III – STUDENTS’ COMMUNITY PROFILE

1. What type of community are you living in? _____ Urban _____ Rural

2. Level of Community Participation

Directions: In general, how often do you do the following activities? Encircle your response using the scale below:

- | | |
|-----------------------|--------------------------|
| 6 – Many times a week | 3 – Every 2 – 3 months |
| 5 – Once a week | 2 – Once or twice a year |
| 4 – Once a month | 1 – Never |

Indicative Statement	Many times a Week	Once a Week	Once a Month	Every 2-3 months	Once or twice a years	Never
1. I have contact with relatives not living with me (in person, telephone, email, social media).	6	5	4	3	2	1
2. I attend events that bring people together.	6	5	4	3	2	1
3. I spend time to attend religious or spiritual group or organization.	6	5	4	3	2	1
4. I talk about current issues with friends, family or neighbors.	6	5	4	3	2	1
5. I participate in voluntary works in the community.	6	5	4	3	2	1
6. I participate in sport or physical recreation group.	6	5	4	3	2	1
7. I join a musical group.	6	5	4	3	2	1
8. I contribute to environmental or animal welfare group.	6	5	4	3	2	1
9. I chat with neighbor.	6	5	4	3	2	1

Part IV – STUDENT’S CLASSROOM PROFILE

1. CLASSROOM CULTURAL CLIMATE QUESTIONNAIRE (CCCQ)

Directions: Give your AGREEMENT or DISAGREEMENT with statement below by encircling the number that corresponds to your response. Please use the scale below.

4 = Strongly Agree (SA) 3 = Agree (A) 2 = Disagree (D) 1 = Strongly Disagree (SD)

Indicative Statement	SA	A	D	SD
1. I think that both females and males make excellent teachers.	4	3	2	1
2. I like being taught by both male and female teachers.	4	3	2	1

3. I feel that comments in class by male and female students are equally important.	4	3	2	1
4. I feel that female teachers should be shown the same amount of respect as male teachers.	4	3	2	1
5. I feel that male students are just as capable as female students in all class activities.	4	3	2	1
6. I like working with others on a worthy cause.	4	3	2	1
7. I feel that it is important for the class to work together as a team.	4	3	2	1
8. I consult others when making decisions rather than do it alone.	4	3	2	1
9. It is important for me to be involved in class discussions.	4	3	2	1
10. I like to work with other students.	4	3	2	1
11. I think carefully before giving my opinion.	4	3	2	1
12. I like to listen to what other students say before I answer a question.	4	3	2	1
13. I try to say what the class thinks rather than give my own opinion.	4	3	2	1
14. It is important to listen first before stating an opinion.	4	3	2	1
15. It is important to me that I give the right answers to questions in class.	4	3	2	1
16. I want to be involved only in fair competitions.	4	3	2	1
17. I accept defeat graciously.	4	3	2	1
18. I like challenges that stimulate thinking.	4	3	2	1
19. I worry for others if I beat them.	4	3	2	1
20. I like to do my work well to excel.	4	3	2	1
21. I want to know if teachers are authoritative on school matters.	4	3	2	1
22. I feel that I can challenge statements made by teachers.	4	3	2	1
23. I like to ask question what teachers want their students need to do.	4	3	2	1
24. It is OK for me to disagree with teachers.	4	3	2	1
25. It is OK for me to argue with teachers.	4	3	2	1
26. I like teachers to demonstrate to me what to do.	4	3	2	1
27. I like to learn by copying what teachers do.	4	3	2	1
28. I like to see how other students solve problems.	4	3	2	1
29. I like my teachers to tell me how to work in class.	4	3	2	1
30. I like to see how my classmates solve a problem before I do.	4	3	2	1
31. What I learn at home helps me to do things at school.	4	3	2	1
32. What I learn in school helps me to do things at home.	4	3	2	1
33. I feel that ideas I learn at school are similar to those I learn at home.	4	3	2	1
34. What I learn in this class agrees with what I learn at home.	4	3	2	1
35. What I learn in this class helps me at home.	4	3	2	1

PART V – SCHOOL CLIMATE INVENTORY (SCI)

Directions: Use the rating scale below to describe the characteristics of your school’s environment. Encircle your response.

4 – Highly Evident (HE) **3** – Evident (E) **2** – Slightly Evident (SE) **1** – Not Evident (NE)

Indicative Statement		HE	E	SE	NE
A. Physical Environment					
1.	Space (e.g. library, school facilities) is shared and accessible to everyone.	4	3	2	1
2.	Staff and students are safe everywhere within school area.	4	3	2	1
3.	Classrooms are clean and well – maintained.	4	3	2	1
4.	Class size of students is conducive to learning.	4	3	2	1
5.	Noise level is appropriate for learning and activities being conducted.	4	3	2	1
Indicative Statement		HE	E	SE	NE
B. Social Environment					
1.	There is an open, honest and active communication among school members.	4	3	2	1
2.	Teachers and staff are friendly.	4	3	2	1
3.	Student groupings are diverse.	4	3	2	1
4.	Parents and teachers are partners in the educational process.	4	3	2	1
5.	There are extracurricular activities for students.	4	3	2	1
Indicative Statement		HE	E	SE	NE
C. Affective/Emotional Environment					
1.	Students trust teachers and staff.	4	3	2	1
2.	Teachers, staff, students and families are respected and valued.	4	3	2	1
3.	The school values diversity and is welcoming to all students’ backgrounds.	4	3	2	1
4.	Interactions between teachers/staff and students are caring, responsive, and supportive.	4	3	2	1
5.	Families and community members perceive the school as warm, inviting and helpful.	4	3	2	1
Indicative Statement		HE	E	SE	NE
D. Learning/Cognitive Environment					
1.	All students are encouraged to succeed.	4	3	2	1
2.	The emphasis is on student-centered learning.	4	3	2	1
3.	Instructional methods respect the different ways children learn.	4	3	2	1
4.	There are allocations of resources to support learning.	4	3	2	1

5.	Results of assessments are promptly communicated to students and parents.	4	3	2	1
Indicative Statement		HE	E	SE	NE
E.	Moral Environment				
1.	The school culture reflects the values, norms and expected behaviors for all students and	4	3	2	1
2.	There are positive responses or interventions on topics such as school violence, bullying or teasing.	4	3	2	1
3.	There are established policies and rules that help students distinguish right from wrong.	4	3	2	1
4.	Fairness, kindness, cooperation and sharing are modeled daily by all school members.	4	3	2	1
5.	Parents and schools work together: consensus about values; classroom rules and discipline policy.	4	3	2	1

Appendix E

Motivation for Learning Inventory

STUDENT MOTIVATION FOR LEARNING INVENTORY (SMLI)

Directions: In order to better understand what motivates you as student, please respond to each of the following statements in terms of your own experiences by using the scale:

4 = Always true of me 3 = Often true of me
2 = Sometimes true of me 1 = Never true of me

Indicative Statement	Always	Often	Some- times	Never
1. I like math because it really makes me learn new things.	4	3	2	1
2. I like math lessons because it arouses my curiosity.	4	3	2	1
3. The most satisfying thing for me in a math class is trying to understand the lessons as thoroughly as possible.	4	3	2	1
4. When I have the opportunity in a math class, I choose activities that I can learn, even if they don't guarantee a good grade.	4	3	2	1
5. I want to do my best in a math class because it is important to show my mathematical ability to my family and friends.	4	3	2	1
6. I feel confident that I will do well in a math class.	4	3	2	1
7. In a math class, I try to set and achieve high standard of excellence.	4	3	2	1
8. The content of a math subject relates to my expectations and goals.	4	3	2	1
9. The kind of work I have to do is math – oriented.	4	3	2	1
10. I need to know math because it is a useful subject.	4	3	2	1
11. I am very interested to learn all the lessons of a math subject.	4	3	2	1
12. I think the lessons in a math class will be useful to develop my critical thinking.	4	3	2	1
13. I like mathematics as a subject because it enhances my reasoning skills.	4	3	2	1
14. Understanding the lessons in mathematics helps me in making important decisions.	4	3	2	1
15. The things I am learning in math will be useful to learn other subjects.	4	3	2	1
16. A good foundation in mathematics will prepare me for college.	4	3	2	1
17. I am interested in mathematics because it helps me to think logically.	4	3	2	1
18. I feel satisfied with what I am getting from a math class because it challenges my math ability.	4	3	2	1
19. I believe I will be able to use mathematics in my future career.	4	3	2	1
20. It is important for me to learn the lessons in math in preparation for problem solving.	4	3	2	1
21. I'm confident I can do an excellent job on the assignments and tests in mathematics.	4	3	2	1
22. I expect to do well in a math class.	4	3	2	1
23. I'm sure I can master the skills being taught in a math class.	4	3	2	1
24. Considering the difficulty of a math course, the teacher, and my skills, I will do well in a math class.	4	3	2	1
25. To accomplish my goals, it is important that I am proficient in math.	4	3	2	1
26. I believe I can succeed in any math subject if I try hard enough.	4	3	2	1
27. I believe I will receive an excellent grade in a math class.	4	3	2	1
28. I'm certain I can understand the most difficult lesson presented in a math class.	4	3	2	1
29. I'm confident I can learn the basic concepts taught in a math class.	4	3	2	1
30. I'm confident I can understand the most difficult lesson presented by the teacher in a math class.	4	3	2	1

Appendix F

Mathematics Proficiency Test

Appendix G

LETTER OF CONSENT TO STUDENT'S PARENTS

9402 Brgy. San Crispin
San Pablo City, Laguna

February 8, 2016

To our dearest parents,

Warm greetings!

I am Alberto D. Yazon, doctoral student of Philippine Normal University – Manila, an Assistant Professor IV at Laguna State Polytechnic University – Los Baños Campus, and am here at Los Baños National High School – Batong Malake to conduct a study entitled “A Critical Understanding of Sociocultural Factors Influencing Mathematics Proficiency and Motivation”. The results of this study will increase stakeholders’ awareness of the factors that influence students’ mathematics learning. The information will aid them in enhancing the instructional program of the school towards the holistic students’ development

As part of this study, two sets of research instruments will be administered to Grade 8 students. The first set intends to determine the number of their siblings, family structure, parenting style and parental involvement, peer influence, community environment, classroom and school climate. Students’ motivation to learn mathematics is also included in this set of questionnaire. The second set of questionnaire is designed to measure their mathematics proficiency in terms of conceptual understanding, procedural fluency, strategic competence, adaptive reasoning and productive disposition.

In view of this, I am asking your permission to allow your child to be part of this study. Their participation will not affect their grades and rest assured that their answers will be treated with confidentiality and will be used only for the purpose of the study.

Your cooperation and support in accomplishing this research is deeply appreciated. Thank you very much and I look forward to solicit your gracious approval.

Should you have any inquiries, please send it through email at adyazon_13@yahoo.com or contact 0905-3217-150.

Alberto D. Yazon
Researcher

Appendix H

Multiple Regression Analysis of Full Model 1 (Enter Method) (Dependent Variable: Goal Orientation)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.502	.252	.240	.48452

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	97.091	20	4.855	20.679	.000
	Residual	288.285	1228	.235		
	Total	385.376	1248			

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.528	.157		3.352	.001
	Family Structure	.019	.007	.063	2.520	.012
	Parent's Responsiveness	.002	.001	.076	2.417	.016
	Parent's Control	-.001	.001	-.015	-.529	.597
	Parental Involvement	.025	.028	.027	.910	.363
	Number of Peers	.011	.012	.025	.962	.336
	Activity with Peers	.043	.028	.045	1.516	.130
	Type of Community	-.030	.029	-.027	-1.051	.293
	Involvement in Community	.054	.018	.086	3.095	.002
	Gender Equity	-.019	.038	-.016	-.488	.625
	Collaboration	.001	.043	.000	.012	.990
	Deference	.037	.041	.031	.893	.372
	Competition	.086	.035	.084	2.476	.013
	Teacher's Authority	.040	.032	.035	1.220	.223
	Modeling	.041	.035	.037	1.175	.240
	Congruence	.111	.036	.101	3.059	.002
	Physical Environment	.080	.029	.085	2.782	.005
	Social Environment	.072	.039	.070	1.837	.066
	Affective Environment	-.016	.040	-.015	-.395	.693
	Learning Environment	.073	.039	.071	1.867	.062
	Moral Environment	.116	.037	.115	3.088	.002

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.9412	3.8339	3.1211	.27892	1249

Appendix I

Multiple Regression Analysis of Full Model 2 (Enter Method) (Dependent Variable: Task Value)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	.522	.272	.260	.49324

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
2 Regression	111.707	20	5.585	22.958	.000
Residual	298.758	1228	.243		
Total	410.465	1248			

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
2	(Constant)	.508	.160		3.168	.002
	Family Structure	.013	.008	.043	1.751	.080
	Parent's Responsiveness	.003	.001	.090	2.896	.004
	Parent's Control	-.001	.001	-.020	-.703	.482
	Parental Involvement	.021	.028	.022	.739	.460
	Number of Peers	-.010	.012	-.022	-.868	.385
	Activity with Peers	.071	.029	.073	2.495	.013
	Type of Community	-.013	.029	-.011	-.455	.649
	Involvement in Community	.051	.018	.078	2.854	.004
	Gender Equity	.010	.039	.008	.263	.792
	Collaboration	.001	.043	.001	.029	.977
	Deference	.034	.042	.028	.817	.414
	Competition	.088	.035	.083	2.483	.013
	Teacher's Authority	-.020	.033	-.018	-.616	.538
	Modeling	.042	.036	.037	1.173	.241
	Congruence	.121	.037	.106	3.276	.001
	Physical Environment	.032	.029	.033	1.098	.272
	Social Environment	.021	.040	.020	.536	.592
	Affective Environment	.023	.040	.022	.579	.563
	Learning Environment	.088	.040	.083	2.229	.026
	Moral Environment	.188	.038	.182	4.925	.000

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.9063	3.9085	3.1785	.29918	1249

Appendix J

Multiple Regression Analysis of Full Model 3 (Enter Method) (Dependent Variable: Self-Efficacy)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3	.532	.283	.272	.49308

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
3 Regression	118.030	20	5.901	24.273	.000
Residual	298.566	1228	.243		
Total	416.595	1248			

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
3	(Constant)	.156	.160		.976	.329
	Family Structure	.020	.008	.064	2.631	.009
	Parent's Responsiveness	.002	.001	.069	2.240	.025
	Parent's Control	.000	.001	-.006	-.230	.818
	Parental Involvement	.055	.028	.058	1.965	.050
	Number of Peers	.001	.012	.002	.074	.941
	Activity with Peers	.065	.029	.066	2.266	.024
	Type of Community	-.003	.029	-.003	-.108	.914
	Involvement in Community	.069	.018	.104	3.826	.000
	Gender Equity	.039	.039	.032	1.019	.308
	Collaboration	-.059	.043	-.047	-1.366	.172
	Deference	.011	.042	.009	.257	.797
	Competition	.032	.035	.030	.893	.372
	Teacher's Authority	.103	.033	.089	3.118	.002
	Modeling	.058	.036	.050	1.613	.107
	Congruence	.110	.037	.096	2.983	.003
	Physical Environment	.073	.029	.075	2.484	.013
	Social Environment	.124	.040	.115	3.097	.002
	Affective Environment	-.085	.040	-.080	-2.103	.036
	Learning Environment	.107	.040	.100	2.707	.007
	Moral Environment	.138	.038	.133	3.627	.000

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.8242	3.8745	3.0197	.30753	1249

Appendix K

Multiple Regression Analysis of Full Model 4 (Enter Method) (Dependent Variable: Motivation)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
4	.553	.306	.295	1.32973

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
4	Regression	956.942	20	47.847	27.060	.000
	Residual	2171.323	1228	1.768		
	Total	3128.265	1248			

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
4	(Constant)	1.192	.432		2.758	.006
	Family Structure	.052	.020	.061	2.543	.011
	Parent's Responsiveness	.008	.003	.084	2.786	.005
	Parent's Control	-.001	.003	-.015	-.539	.590
	Parental Involvement	.101	.076	.038	1.334	.182
	Number of Peers	.002	.032	.001	.056	.955
	Activity with Peers	.179	.077	.066	2.318	.021
	Type of Community	-.047	.079	-.014	-.592	.554
	Involvement in Community	.174	.048	.096	3.605	.000
	Gender Equity	.031	.104	.009	.298	.766
	Collaboration	-.058	.117	-.017	-.491	.623
	Deference	.082	.113	.024	.724	.469
	Competition	.205	.095	.070	2.154	.031
	Teacher's Authority	.122	.089	.038	1.372	.170
	Modeling	.141	.096	.045	1.461	.144
	Congruence	.343	.100	.109	3.436	.001
	Physical Environment	.185	.079	.069	2.342	.019
	Social Environment	.217	.108	.074	2.017	.044
	Affective Environment	-.077	.109	-.026	-.709	.479
	Learning Environment	.268	.107	.091	2.511	.012
	Moral Environment	.442	.103	.155	4.297	.000

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	5.6920	11.5860	9.3193	.87566	1249

Appendix L

Multiple Regression Analysis of Full Model 5 (Enter Method)

(Dependent Variable: Conceptual Understanding)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
5	.416	.173	.160	1.89132

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
5	Regression	919.265	20	45.963	12.849	.000
	Residual	4392.681	1228	3.577		
	Total	5311.946	1248			

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
5	(Constant)	3.586	.615		5.833	.000
	Family Structure	.029	.029	.027	1.015	.310
	Parent's Responsiveness	.019	.004	.158	4.803	.000
	Parent's Control	-.012	.004	-.093	-3.085	.002
	Parental Involvement	-.175	.107	-.051	-1.626	.104
	Number of Peers	-.065	.045	-.039	-1.439	.150
	Activity with Peers	.457	.110	.130	4.165	.000
	Type of Community	-.367	.112	-.087	-3.284	.001
	Involvement in Community	-.118	.069	-.050	-1.722	.085
	Gender Equity	.224	.148	.050	1.510	.131
	Collaboration	.628	.166	.141	3.776	.000
	Deference	.023	.161	.005	.140	.889
	Competition	-.165	.135	-.043	-1.216	.224
	Teacher's Authority	-.237	.127	-.057	-1.876	.061
	Modeling	-.162	.137	-.039	-1.181	.238
	Congruence	.139	.142	.034	.977	.329
	Physical Environment	-.621	.112	-.178	-5.527	.000
	Social Environment	.639	.153	.167	4.168	.000
	Affective Environment	-.083	.155	-.022	-.535	.593
	Learning Environment	-.089	.152	-.023	-.589	.556
	Moral Environment	-.044	.146	-.012	-.298	.765

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.9658	8.8170	5.4844	.85825	1249

Appendix M

Multiple Regression Analysis of Full Model 6 (Enter Method) (Dependent Variable: Procedural Fluency)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
6	.409	.168	.154	2.09962

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
6 Regression	1090.121	20	54.506	12.364	.000
Residual	5413.544	1228	4.408		
Total	6503.665	1248			

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
6	(Constant)	1.989	.682		2.914	.004
	Family Structure	.018	.032	.015	.559	.576
	Parent's Responsiveness	.019	.004	.142	4.293	.000
	Parent's Control	-.014	.004	-.098	-3.249	.001
	Parental Involvement	-.264	.119	-.070	-2.217	.027
	Number of Peers	.022	.050	.012	.432	.666
	Activity with Peers	.500	.122	.128	4.102	.000
	Type of Community	-.489	.124	-.105	-3.940	.000
	Involvement in Community	-.131	.076	-.050	-1.715	.007
	Gender Equity	.711	.165	.145	4.312	.000
	Collaboration	.455	.185	.092	2.462	.014
	Deference	.049	.179	.010	.276	.783
	Competition	-.047	.150	-.011	-.310	.756
	Teacher's Authority	-.144	.140	-.031	-1.027	.305
	Modeling	.011	.152	.002	.071	.944
	Congruence	-.019	.157	-.004	-.122	.903
	Physical Environment	-.646	.125	-.168	-5.184	.000
	Social Environment	.662	.170	.156	3.892	.000
	Affective Environment	-.175	.172	-.041	-1.016	.310
	Learning Environment	-.099	.169	-.023	-.587	.557
	Moral Environment	-.095	.162	-.023	-.583	.560

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.6611	8.1509	5.0432	.93461	1249

Appendix N

Multiple Regression Analysis of Full Model 7 (Enter Method) (Dependent Variable: Strategic Competence)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
7	.460	.211	.198	1.90885

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
7	Regression	1198.843	20	59.942	16.451	.000
	Residual	4474.482	1228	3.644		
	Total	5673.324	1248			

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
7	(Constant)	2.090	.620		3.369	.001
	Family Structure	-.029	.029	-.025	-.996	.320
	Parent's Responsiveness	.010	.004	.076	2.361	.018
	Parent's Control	-.008	.004	-.060	-2.043	.041
	Parental Involvement	-.289	.108	-.082	-2.663	.008
	Number of Peers	.044	.046	.026	.966	.334
	Activity with Peers	.692	.111	.190	6.244	.000
	Type of Community	-.299	.113	-.069	-2.650	.008
	Involvement in Community	-.145	.069	-.060	-2.092	.037
	Gender Equity	.051	.150	.011	.340	.734
	Collaboration	1.007	.168	.218	5.994	.000
	Deference	.085	.163	.019	.523	.601
	Competition	-.435	.137	-.110	-3.182	.001
	Teacher's Authority	-.107	.128	-.025	-.836	.404
	Modeling	-.015	.138	-.004	-.110	.912
	Congruence	-.104	.143	-.024	-.725	.469
	Physical Environment	-.656	.113	-.182	-5.787	.000
	Social Environment	.539	.155	.136	3.481	.001
	Affective Environment	.056	.157	.014	.360	.719
	Learning Environment	.070	.153	.018	.458	.647
	Moral Environment	-.209	.148	-.054	-1.417	.157

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.5410	8.0942	4.2362	.98011	1249

Appendix O

Multiple Regression Analysis of Full Model 8 (Enter Method) (Dependent Variable: Adaptive Reasoning)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
8	.417	.173	.160	2.06356

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
8 Regression	1097.498	20	54.875	12.887	.000
Residual	5229.143	1228	4.258		
Total	6326.641	1248			

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
8	(Constant)	2.580	.671		3.846	.000
	Family Structure	-.037	.031	-.031	-1.169	.242
	Parent's Responsiveness	.015	.004	.111	3.383	.001
	Parent's Control	-.007	.004	-.053	-1.771	.077
	Parental Involvement	-.242	.117	-.065	-2.061	.039
	Number of Peers	.013	.049	.007	.266	.790
	Activity with Peers	.828	.120	.215	6.915	.000
	Type of Community	-.400	.122	-.087	-3.279	.001
	Involvement in Community	-.192	.075	-.075	-2.567	.010
	Gender Equity	.176	.162	.036	1.084	.278
	Collaboration	.771	.182	.158	4.246	.000
	Deference	-.132	.176	-.027	-.748	.454
	Competition	-.437	.148	-.105	-2.961	.003
	Teacher's Authority	-.215	.138	-.048	-1.561	.119
	Modeling	.024	.150	.005	.158	.875
	Congruence	.049	.155	.011	.316	.752
	Physical Environment	-.562	.123	-.148	-4.583	.000
	Social Environment	.263	.167	.063	1.570	.117
	Affective Environment	.022	.169	.005	.132	.895
	Learning Environment	.197	.166	.047	1.189	.235
	Moral Environment	-.133	.160	-.033	-.836	.403

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.6096	7.7123	4.3747	.93777	1249

Appendix P

Multiple Regression Analysis of Full Model 9 (Enter Method) (Dependent Variable: Productive Disposition)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
9	.437	.191	.178	1.86527

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
9	Regression	1009.878	20	50.494	14.513	.000
	Residual	4272.478	1228	3.479		
	Total	5282.355	1248			

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
9	(Constant)	.979	.606		1.615	.107
	Family Structure	-.002	.028	-.002	-.065	.948
	Parent's Responsiveness	.012	.004	.098	3.008	.003
	Parent's Control	-.008	.004	-.066	-2.198	.028
	Parental Involvement	-.225	.106	-.066	-2.128	.034
	Number of Peers	.032	.045	.019	.707	.480
	Activity with Peers	.721	.108	.205	6.658	.000
	Type of Community	.027	.110	.006	.242	.809
	Involvement in Community	-.193	.068	-.082	-2.853	.004
	Gender Equity	.327	.146	.074	2.235	.026
	Collaboration	.846	.164	.190	5.155	.000
	Deference	-.063	.159	-.014	-.398	.691
	Competition	-.548	.134	-.144	-4.100	.000
	Teacher's Authority	.179	.125	.043	1.438	.151
	Modeling	.048	.135	.012	.351	.725
	Congruence	-.240	.140	-.059	-1.717	.086
	Physical Environment	-.533	.111	-.153	-4.813	.000
	Social Environment	.615	.151	.161	4.070	.000
	Affective Environment	-.322	.153	-.085	-2.107	.035
	Learning Environment	-.101	.150	-.027	-.675	.500
	Moral Environment	-.024	.144	-.007	-.167	.867

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.6782	7.4291	3.3803	.89955	1249

Appendix Q

Multiple Regression Analysis of Full Model 10 (Enter Method) (Dependent Variable: Mathematics Proficiency)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
10	.524	.274	.262	7.30361

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
10	Regression	24728.861	20	1236.443	23.179	.000
	Residual	65504.947	1228	53.343		
	Total	90233.808	1248			

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
10	(Constant)	11.223	2.374		4.728	.000
	Family Structure	-.020	.111	-.005	-.184	.854
	Parent's Responsiveness	.074	.015	.149	4.819	.000
	Parent's Control	-.050	.015	-.094	-3.329	.001
	Parental Involvement	-1.195	.415	-.085	-2.880	.004
	Number of Peers	.045	.175	.007	.260	.795
	Activity with Peers	3.198	.424	.220	7.544	.000
	Type of Community	-1.528	.432	-.088	-3.541	.000
	Involvement in Community	-.780	.265	-.080	-2.939	.003
	Gender Equity	1.489	.573	.081	2.596	.010
	Collaboration	3.707	.643	.202	5.768	.000
	Deference	-.038	.622	-.002	-.061	.952
	Competition	-1.631	.523	-.104	-3.120	.002
	Teacher's Authority	-.524	.489	-.031	-1.073	.283
	Modeling	-.095	.530	-.006	-.180	.857
	Congruence	-.176	.548	-.010	-.321	.749
	Physical Environment	-3.018	.434	-.210	-6.958	.000
	Social Environment	2.718	.592	.172	4.591	.000
	Affective Environment	-.502	.599	-.032	-.837	.403
	Learning Environment	-.022	.586	-.001	-.038	.970
	Moral Environment	-.505	.565	-.033	-.894	.371

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	10.2661	38.3851	22.5188	4.45138	1249

Appendix R
AMOS Estimates of SEM Model 1

Regression Weights: (SEM Model 1)

			Estimate	S.E.	C.R.	P	Label
Motivation	<---	School_Climate	.352	.048	7.388	***	par_21
Motivation	<---	Peer_Influence	.059	.043	1.383	.167	par_22
Motivation	<---	Familial_Influence	.007	.002	3.168	.002	par_24
Motivation	<---	Classroom_Cultural_Climate	.487	.095	5.108	***	par_26
Mathematics_Proficiency	<---	Classroom_Cultural_Climate	.513	.326	1.571	.116	par_5
Mathematics_Proficiency	<---	Peer_Influence	1.305	.371	3.516	***	par_23
Mathematics_Proficiency	<---	School_Climate	-.339	.190	-1.786	.074	par_25
Mathematics_Proficiency	<---	Motivation	.039	.112	.349	.727	par_27
Mathematics_Proficiency	<---	Familial_Influence	-.014	.009	-1.599	.110	par_35
CU_Scores	<---	Mathematics_Proficiency	1.000				
PF_Scores	<---	Mathematics_Proficiency	1.159	.052	22.164	***	par_1
SC_Scores	<---	Mathematics_Proficiency	1.148	.049	23.243	***	par_2
AR_Scores	<---	Mathematics_Proficiency	1.247	.053	23.746	***	par_3
PD_Scores	<---	Mathematics_Proficiency	.961	.047	20.603	***	par_4
Authority	<---	Classroom_Cultural_Climate	1.000				
Competition	<---	Classroom_Cultural_Climate	1.490	.108	13.819	***	par_6
Deference	<---	Classroom_Cultural_Climate	1.544	.103	14.928	***	par_7
Collaboration	<---	Classroom_Cultural_Climate	1.464	.100	14.657	***	par_8
GenderEquity	<---	Classroom_Cultural_Climate	1.374	.096	14.260	***	par_9
Modeling	<---	Classroom_Cultural_Climate	1.365	.099	13.731	***	par_10
Congruence	<---	Classroom_Cultural_Climate	1.554	.107	14.524	***	par_11
GoalOrientation	<---	Motivation	1.000				
TaskValue	<---	Motivation	1.041	.023	45.968	***	par_12
SelfEfficacy	<---	Motivation	.998	.024	42.337	***	par_13
CognitiveEnvi	<---	School_Climate	1.000				
AffectiveEnvi	<---	School_Climate	1.025	.033	31.120	***	par_14
SocialEnvi	<---	School_Climate	.956	.033	28.741	***	par_15
PhysicalEnvi	<---	School_Climate	.693	.039	17.738	***	par_16
MoralEnvi	<---	School_Climate	1.035	.034	30.525	***	par_17
PeerActivity	<---	Peer_Influence	1.000				
PeerGroup	<---	Peer_Influence	.552	.116	4.768	***	par_18
PARENT_CONTROL	<---	Familial_Influence	1.000				
PARENT_RESPONSIVENESS	<---	Familial_Influence	1.554	.109	14.243	***	par_19
FamStructure	<---	Familial_Influence	-.021	.007	-2.934	.003	par_20
ParentalInvolvement	<---	Familial_Influence	.043	.003	14.073	***	par_34

Standardized Regression Weights: (SEM Model 1)

		Estimate
Motivation	<--- School_Climate	.304
Motivation	<--- Peer_Influence	.058

		Estimate
Motivation	<--- Familial_Influence	.116
Motivation	<--- Classroom_Cultural_Climate	.219
Mathematics_Proficiency	<--- Classroom_Cultural_Climate	.081
Mathematics_Proficiency	<--- Peer_Influence	.451
Mathematics_Proficiency	<--- School_Climate	-.103
Mathematics_Proficiency	<--- Motivation	.014
Mathematics_Proficiency	<--- Familial_Influence	-.083
CU_Scores	<--- Mathematics_Proficiency	.689
PF_Scores	<--- Mathematics_Proficiency	.722
SC_Scores	<--- Mathematics_Proficiency	.765
AR_Scores	<--- Mathematics_Proficiency	.787
PD_Scores	<--- Mathematics_Proficiency	.663
Authority	<--- Classroom_Cultural_Climate	.451
Competition	<--- Classroom_Cultural_Climate	.618
Deference	<--- Classroom_Cultural_Climate	.747
Collaboration	<--- Classroom_Cultural_Climate	.710
GenderEquity	<--- Classroom_Cultural_Climate	.664
Modeling	<--- Classroom_Cultural_Climate	.610
Congruence	<--- Classroom_Cultural_Climate	.694
GoalOrientation	<--- Motivation	.899
TaskValue	<--- Motivation	.906
SelfEfficacy	<--- Motivation	.863
CognitiveEnvi	<--- School_Climate	.800
AffectiveEnvi	<--- School_Climate	.819
SocialEnvi	<--- School_Climate	.767
PhysicalEnvi	<--- School_Climate	.506
MoralEnvi	<--- School_Climate	.806
PeerActivity	<--- Peer_Influence	.838
PeerGroup	<--- Peer_Influence	.218
PARENT_CONTROL	<--- Familial_Influence	.538
PARENT_RESPONSIVENESS	<--- Familial_Influence	.789
FamStructure	<--- Familial_Influence	-.097
ParentalInvolvement	<--- Familial_Influence	.608

Covariances: (SEM Model 1)

	Estimate	S.E.	C.R.	P	Label
Classroom_Cultural_Climate <--> School_Climate	.062	.005	11.665	***	par_28
Classroom_Cultural_Climate <--> Peer_Influence	.048	.005	9.394	***	par_29
Classroom_Cultural_Climate <--> Familial_Influence	.761	.095	7.979	***	par_30
School_Climate <--> Peer_Influence	.100	.008	11.982	***	par_31
School_Climate <--> Familial_Influence	1.353	.158	8.556	***	par_32
Peer_Influence <--> Familial_Influence	1.794	.200	8.960	***	par_33

Correlations: (SEM Model 1)

	Estimate
Classroom_Cultural_Climate <--> School_Climate	.641
Classroom_Cultural_Climate <--> Peer_Influence	.438
Classroom_Cultural_Climate <--> Familial_Influence	.393
School_Climate <--> Peer_Influence	.474
School_Climate <--> Familial_Influence	.363
Peer_Influence <--> Familial_Influence	.424

Variances: (SEM Model 1)

	Estimate	S.E.	C.R.	P	Label
Classroom_Cultural_Climate	.050	.006	7.834	***	par_36
School_Climate	.187	.011	16.371	***	par_37
Peer_Influence	.241	.047	5.172	***	par_38
Familial_Influence	74.427	8.631	8.623	***	par_39
mo	.169	.009	18.849	***	par_40
m6	1.659	.153	10.860	***	par_41
m1	2.236	.106	21.106	***	par_42
m2	2.496	.123	20.292	***	par_43
m3	1.885	.100	18.860	***	par_44
m4	1.929	.108	17.923	***	par_45
m5	2.369	.110	21.615	***	par_46
cc5	.197	.008	23.954	***	par_47
cc4	.181	.008	22.482	***	par_48
cc3	.095	.005	19.863	***	par_49
cc2	.106	.005	20.845	***	par_50
cc1	.121	.006	21.791	***	par_51

	Estimate	S.E.	C.R.	P	Label
cc6	.159	.007	22.590	***	par_52
cc7	.131	.006	21.211	***	par_53
go1	.059	.004	15.337	***	par_54
tv1	.059	.004	14.505	***	par_55
se1	.085	.005	18.531	***	par_56
sc4	.105	.005	19.439	***	par_57
sc3	.096	.005	18.633	***	par_58
sc2	.119	.006	20.562	***	par_59
sc1	.260	.011	23.934	***	par_60
sc5	.108	.006	19.217	***	par_61
p2	.102	.045	2.271	.023	par_62
p1	1.463	.060	24.333	***	par_63
f3	183.020	8.697	21.044	***	par_64
f2	109.132	10.848	10.060	***	par_65
f1	3.471	.139	24.899	***	par_66
f4	.231	.012	18.940	***	par_67

Squared Multiple Correlations: (SEM Model 1)

	Estimate
Motivation	.322
Mathematics_Proficiency	.177
ParentalInvolvement	.369
FamStructure	.009
PARENT_RESPONSIVENESS	.622
PARENT_CONTROL	.289
PeerGroup	.048
PeerActivity	.703
MoralEnvi	.649
PhysicalEnvi	.256
SocialEnvi	.588
AffectiveEnvi	.671
CognitiveEnvi	.640
SelfEfficacy	.744
TaskValue	.822
GoalOrientation	.808
Congruence	.482
Modeling	.372

	Estimate
GenderEquity	.441
Collaboration	.505
Deference	.557
Competition	.382
Authority	.203
PD_Scores	.440
AR_Scores	.619
SC_Scores	.585
PF_Scores	.521
CU_Scores	.474

Standardized Total Effects (SEM Model 1)

	Familial_ Influence	Peer_In fluence	School_ Climate	Classroom_Cul tural_Climate	Moti vatio n	Mathematics _Proficiency
Motivation	.116	.058	.304	.219	.000	.000
Mathematics_Pr oficiency	-.082	.452	-.099	.084	.014	.000
ParentalInvolve ment	.608	.000	.000	.000	.000	.000
FamStructure	-.097	.000	.000	.000	.000	.000
PARENT_RESP ONSIVENESS	.789	.000	.000	.000	.000	.000
PARENT_CON TROL	.538	.000	.000	.000	.000	.000
PeerGroup	.000	.218	.000	.000	.000	.000
PeerActivity	.000	.838	.000	.000	.000	.000
MoralEnvi	.000	.000	.806	.000	.000	.000
PhysicalEnvi	.000	.000	.506	.000	.000	.000
SocialEnvi	.000	.000	.767	.000	.000	.000
AffectiveEnvi	.000	.000	.819	.000	.000	.000
CognitiveEnvi	.000	.000	.800	.000	.000	.000
SelfEfficacy	.100	.050	.262	.189	.863	.000
TaskValue	.105	.053	.276	.198	.906	.000
GoalOrientation	.104	.052	.274	.197	.899	.000
Congruence	.000	.000	.000	.694	.000	.000
Modeling	.000	.000	.000	.610	.000	.000

	Familial_ Influence	Peer_In fluence	School_ Climate	Classroom_Cul tural_Climate	Moti vatio n	Mathematics _Proficiency
GenderEquity	.000	.000	.000	.664	.000	.000
Collaboration	.000	.000	.000	.710	.000	.000
Deference	.000	.000	.000	.747	.000	.000
Competition	.000	.000	.000	.618	.000	.000
Authority	.000	.000	.000	.451	.000	.000
PD_Scores	-.054	.300	-.066	.056	.009	.663
AR_Scores	-.064	.355	-.078	.066	.011	.787
SC_Scores	-.063	.346	-.076	.064	.010	.765
PF_Scores	-.059	.326	-.071	.061	.010	.722
CU_Scores	-.056	.311	-.068	.058	.009	.689

Standardized Direct Effects (SEM Model 1)

	Familial_ Influence	Peer_In fluence	School_ Climate	Classroom_Cul tural_Climate	Moti vatio n	Mathematics _Proficiency
Motivation	.116	.058	.304	.219	.000	.000
Mathematics_Pr oficiency	-.083	.451	-.103	.081	.014	.000
ParentalInvolve ment	.608	.000	.000	.000	.000	.000
FamStructure	-.097	.000	.000	.000	.000	.000
PARENT_RESP ONSIVENESS	.789	.000	.000	.000	.000	.000
PARENT_CON TROL	.538	.000	.000	.000	.000	.000
PeerGroup	.000	.218	.000	.000	.000	.000
PeerActivity	.000	.838	.000	.000	.000	.000
MoralEnvi	.000	.000	.806	.000	.000	.000
PhysicalEnvi	.000	.000	.506	.000	.000	.000
SocialEnvi	.000	.000	.767	.000	.000	.000
AffectiveEnvi	.000	.000	.819	.000	.000	.000
CognitiveEnvi	.000	.000	.800	.000	.000	.000
SelfEfficacy	.000	.000	.000	.000	.863	.000
TaskValue	.000	.000	.000	.000	.906	.000
GoalOrientation	.000	.000	.000	.000	.899	.000
Congruence	.000	.000	.000	.694	.000	.000

	Familial_ Influence	Peer_In fluence	School_ Climate	Classroom_Cul tural_Climate	Moti vatio n	Mathematics _Proficiency
Modeling	.000	.000	.000	.610	.000	.000
GenderEquity	.000	.000	.000	.664	.000	.000
Collaboration	.000	.000	.000	.710	.000	.000
Deference	.000	.000	.000	.747	.000	.000
Competition	.000	.000	.000	.618	.000	.000
Authority	.000	.000	.000	.451	.000	.000
PD_Scores	.000	.000	.000	.000	.000	.663
AR_Scores	.000	.000	.000	.000	.000	.787
SC_Scores	.000	.000	.000	.000	.000	.765
PF_Scores	.000	.000	.000	.000	.000	.722
CU_Scores	.000	.000	.000	.000	.000	.689

Standardized Indirect Effects (SEM Model 1)

	Familial_ Influence	Peer_In fluence	School_ Climate	Classroom_Cul tural_Climate	Moti vatio n	Mathematics _Proficiency
Motivation	.000	.000	.000	.000	.000	.000
Mathematics_Pr oficiency	.002	.001	.004	.003	.000	.000
ParentalInvolve ment	.000	.000	.000	.000	.000	.000
FamStructure	.000	.000	.000	.000	.000	.000
PARENT_RESP ONSIVENESS	.000	.000	.000	.000	.000	.000
PARENT_CON TROL	.000	.000	.000	.000	.000	.000
PeerGroup	.000	.000	.000	.000	.000	.000
PeerActivity	.000	.000	.000	.000	.000	.000
MoralEnvi	.000	.000	.000	.000	.000	.000
PhysicalEnvi	.000	.000	.000	.000	.000	.000
SocialEnvi	.000	.000	.000	.000	.000	.000
AffectiveEnvi	.000	.000	.000	.000	.000	.000
CognitiveEnvi	.000	.000	.000	.000	.000	.000
SelfEfficacy	.100	.050	.262	.189	.000	.000
TaskValue	.105	.053	.276	.198	.000	.000

	Familial_ Influence	Peer_In fluence	School_ Climate	Classroom_Cul tural_Climate	Moti vatio n	Mathematics _Proficiency
GoalOrientation	.104	.052	.274	.197	.000	.000
Congruence	.000	.000	.000	.000	.000	.000
Modeling	.000	.000	.000	.000	.000	.000
GenderEquity	.000	.000	.000	.000	.000	.000
Collaboration	.000	.000	.000	.000	.000	.000
Deference	.000	.000	.000	.000	.000	.000
Competition	.000	.000	.000	.000	.000	.000
Authority	.000	.000	.000	.000	.000	.000
PD_Scores	-.054	.300	-.066	.056	.009	.000
AR_Scores	-.064	.355	-.078	.066	.011	.000
SC_Scores	-.063	.346	-.076	.064	.010	.000
PF_Scores	-.059	.326	-.071	.061	.010	.000
CU_Scores	-.056	.311	-.068	.058	.009	.000

Appendix S

Model Fit Summary (SEM Model 1)

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	67	1525.547	284	.000	5.372
Saturated model	351	.000	0		
Independence model	26	14051.462	325	.000	43.235

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.511	.901	.877	.729
Saturated model	.000	1.000		
Independence model	6.422	.357	.305	.330

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.891	.876	.910	.896	.910
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.874	.779	.795
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	1241.547	1122.885	1367.692
Saturated model	.000	.000	.000
Independence model	13726.462	13341.936	14117.315

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	1.222	.995	.900	1.096
Saturated model	.000	.000	.000	.000
Independence model	11.259	10.999	10.691	11.312

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.059	.056	.062	.000
Independence model	.184	.181	.187	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	1659.547	1662.510	2003.263	2070.263
Saturated model	702.000	717.523	2502.665	2853.665
Independence model	14103.462	14104.612	14236.845	14262.845

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	1.330	1.235	1.431	1.332
Saturated model	.563	.563	.563	.575
Independence model	11.301	10.993	11.614	11.302

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	266	281
Independence model	33	35

Appendix T

Authenticity Result

Appendix U

Certification from Language Editor

CURRICULUM VITAE

Name Alberto D. Yazon

Date of Birth December 13, 1985

Place of Birth San Jose, San Pablo City, Laguna

Educational Attainment

Doctorate Degree Doctor of Philosophy with Specialization in Mathematics Education
Philippine Normal University – Manila; September, 2016

Master's Degree Master of Arts in Teaching (Mathematics)
Laguna State Polytechnic University, San Pablo City Campus
San Pablo City, Laguna; 2010

Bachelor's Degree Bachelor of Secondary Education Major in Mathematics
Laguna State Polytechnic University, San Pablo City Campus
San Pablo City, Laguna; 2007
Cum Laude

Scholarship

Awardee, Department of Science and Technology (DOST)
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Teaching Experiences

2015 – present	Assistant Professor IV Laguna State Polytechnic University, Los Baños Campus, Los Baños, Laguna
2014 – 2015	Instructor III Laguna State Polytechnic University, Los Baños Campus, Los Baños, Laguna
2010 – 2014	Instructor I – Permanent Laguna State Polytechnic University, Los Baños Campus, Los Baños, Laguna
2008 – 2010	Substitute Instructor Laguna State Polytechnic University, Los Baños Campus, Los Baños, Laguna



2007 – 2008 Secondary School Teacher (Math & Science)
 Infant Jesus Montessori Center Phils., Lipa City,
 Batangas

Researches Conducted/Presented/Published

Self – Directed Approach in Teaching Contemporary Mathematics, presented during International Research Conference on Higher Education, held at Travelers Hotel and Convention Center, Subic Bay Freeport, Philippines, December 2 – 5, 2015

Emotional Intelligence Attributes and Academic Performance of Grade VI Pupils, presented during International Research Conference on Higher Education, held at Travelers Hotel and Convention Center, Subic Bay Freeport, Philippines, December 2 – 5, 2015

Effectiveness of Singaporean Math in Teaching Word Problems among Fourth Year Laboratory High School Students of Laguna State Polytechnic University – Los Baños Campus during SY 2014-2015, presented during Higher Education Research Forum 2015, held at Century Park Hotel, Malate, Manila, Philippines, August 19 – 20, 2015.

Academic Confidence, Effort and Achievement of Selected Students at the Laguna State Polytechnic University, Los Baños Campus, Los Baños, Laguna, presented during the International Conference in Education, held at Kuala Lumpur, Malaysia, July 19-20, 2015; published in an International Journal of Technical Research and Applications: e-ISSN; 2320-8163, www.ijtra.com. Special Issue 22 (July, 2015), pp. 9 – 13.

Learning Styles and Mathematics Performance of Grade Eight Students in Los Baños Integrated School, S.Y. 2014-2015, presented during the 2nd International Conference on Education, Psychology and Social Science, held at Hiyas ng Bulacan Convention Center, Malolos City, Bulacan, Philippines, on May 22-23, 2015; published in Proceedings Journal of Education, Psychology and Social Science Research: ISSN: 2423 – 1924, www.e-journaldirect.com. Open Access, pp. 109 – 113.