

UNIVERSITY OF EDUCATION, WINNEBA

**PUBLIC AND PRIVATE JUNIOR HIGH SCHOOL STUDENTS' ATTITUDE
AND PERCEIVED PARENTAL INFLUENCE ON THEIR MATHEMATICS
LEARNING**

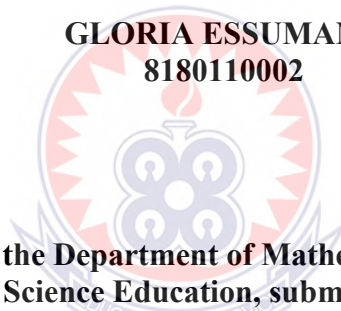


2022

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**PUBLIC AND PRIVATE JUNIOR HIGH SCHOOL STUDENTS'
ATTITUDE AND PERCEIVED PARENTAL INFLUENCE
ON THEIR MATHEMATICS**

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**A thesis in the Department of Mathematics Education,
Faculty of Science Education, submitted to the School
of Graduate Studies in partial fulfillment
of the requirements for the award of the degree of
Master of Philosophy
(Mathematics Education)
in the University of Education, Winneba.**

FEBRUARY, 2022

DECLARATION

Candidate Declaration

I, Gloria Essumang, declare that this thesis, with the exception of quotations and references contained in published works which have all been identified and acknowledged is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

SIGNATURE:

DATE:



Supervisor's Declaration

I hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on the supervision of thesis laid down by the University of Education, Winneba

SUPERVISOR'S NAME: DR. (MRS.) GLORIA ARMAH

SIGNATURE:

DATE:

DEDICATION

This thesis is dedicated to Madam Vida Gyan and the Essumang family for all their support in all aspect of my life which has brought me great strength.



ACKNOWLEDGEMENTS

First, I want to bless God for the opportunity given me to offer this course at the University.

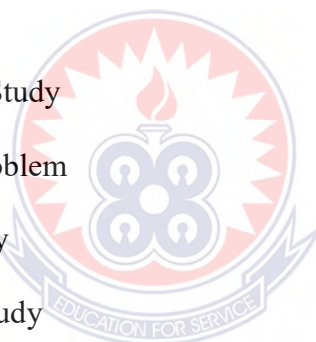
I am very thankful to my supervisor, Dr. Mrs. Gloria Armah, who is one of my role-models, whose direction and guidance has made this work a reality. I would sincerely like to express my heartfelt gratitude to her, for her patience, in-depth constructive criticisms and valuable suggestions, which immensely contributed to the success of this work. God richly bless you.

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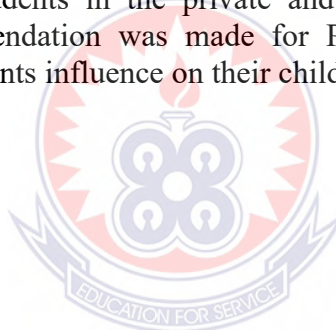
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ABSTRACT

The purpose of this study was to investigate Private and Public Junior High School (JHS) students' perceptions of parent's influence on their mathematics learning and their attitude towards mathematics. One hundred and fifty participants from four Junior High Schools of which two are private and two are public schools in the Ga South Municipal were the participant for the study. Perceived Parents Influence (PPI) and Mathematics Attitudes Questionnaire (MAQ) were the data collection tools. The (PPI) was to identify the perception of their parents influence on their mathematics learning. Four subscales: Monitoring, Motivation, Communication and Material Support were identified for the PPI. Also, four subscales: Anxiety, Confidence, Enjoyment, and Benefit/Value were identified as for MAQ. Data collected were analysed using Means and Standard Deviations. The t-test was used to investigate whether there was a significant difference between private and public JHS students' perception of their parents influence and their attitude towards mathematics. The results indicated that there was statistically significant difference between the perception of their parents influence of private and public JHS students' parent's influence. Also, the results on students' attitude towards mathematics indicated that there was a statistically significant difference between the attitude of private and public JHS students in the favour of this the finding of the study shows that parental influence may affect students in the private and public JHS attitude in learning mathematics. A recommendation was made for Parents Teachers Associations in schools to encourage parents influence on their children's mathematics learning.



CHAPTER 1

INTRODUCTION

1.0 Overview

This chapter provides an introduction to the study. It discusses the background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance of the study, delimitations, and organization of the study.

1.1 Background to the Study

A number of studies have examined the role of parents in their children's mathematical learning (Fan & Chen, 2001; Marchesi & Martín, 2002; Huston & Rosenkrantz, 2005; Summers, Turnbull, Poston, Hoffman & Nelson, 2005; Jacobs & Harvey, 2005; Halawah, 2006; Potril, Deater-Deckard, Thompson, DeThorne & Schatschneider, 2006). This showed that parental involvement has a significant impact on students' mathematics achievement and attitudes. Parental aspirations and parents' actions towards their wards academic performance have also been identified as having a significant impact on students' participation in advanced level mathematics (Mau, 2001). Despite the vast research on parental involvement and student attitude towards mathematics, there is a paucity of research on students in the public and private school in mathematics learning. Notably, although parental influence has been investigated to some extent in relation to mathematics education, there are more gaps to be filled, one of these gaps is what this study intends to look into.

Parents in one way or the other expect their children to perform very well in their academics, ranging from primary education to postgraduate university degree (Jacobs

& Harvey, 2005). This parent educational goal for their wards leads to parents putting in more efforts on their end to help achieve this goal.

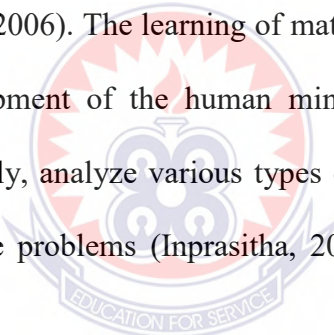
The world's education continues to be more and more competitive. The global structure of education revolves around students' attitude and performance in mathematics. Mathematics being one of the key subjects to others is made compulsory in all schools (Khonkarn, 2006). Mathematics, a parent rock and an essential tool for scientific technology and economic advancement of nations (Umameh, 2011), has become the concern to promote its study for all educators and stakeholders.

Mathematics achievement among high school students is influenced by a range of factors including mathematics self-concept (Wang, 2005); mathematics anxiety (Ashcraft, 2002; Ma & Xu, 2004; Hembree, 1990); attitude towards mathematics (Hannula, 2002); mathematics self-efficacy (Pietsch, Walker & Chapman, 2003) parental involvement (Jeynes, 2007); teachers (Hill & Rowe, 1998); peers (Berndt & Keefe, 1995); and gender (Kenney-Benson, Pomerantz, Ryan & Patrick, 2006). The less explored is the parental influence. Wilson, Cordry, Notar and Friery (2004) suggest that parental influence must be widely looked at in students learning.

Authorities have predominantly focused greatly on demonstrating students' performance on intellectual development rather than on their development of "habits of mind, values and attitudes" toward learning mathematics and science (National Research Council, 2012). This has been the main concern of many researchers to improve on students' performance to help them succeed in their career path (Durik, Vida, & Eccles, 2006; Harackiewicz, Barron, Tauer, & Elliot, 2002; Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008;). The principal pipeline toward

careers of students in science, technology, engineering, and mathematics (STEM) begins to leak in junior high school, when some students choose not to take advanced mathematics and science courses. Only a hand full continued in the program (National Science Board, 2004). High school course choice has significant implications for academic and career trajectories (Simpkins, Davis-Kean, & Eccles, 2006) and it is crucial to mobilize all potential resources for motivating students to take courses that will best prepare them for their future.

Achievements in science and technology largely depends on the broad range of mathematical discipline (Frith, Jaftha & Prince, 2004). The Thai Education system lays tremendous emphasis on mathematics as the basis for overall learning development (Khonkarn, 2006). The learning of mathematics imparts many skills that contribute to the development of the human mind. It trains the learner to think methodically and rationally, analyze various types of situations, anticipate and plan, make decisions and solve problems (Inprasitha, 2004; Khonkarn, 2006; Kilpatrick, 1993).



Mathematical skills and knowledge are indeed essential to enhance the standard and quality of living in the modern era. The reduction of Ghana's competitiveness in the world put the country's future at risk. Despite the importance of educating people, there is still deficiency of proper enforcement to make it a zilch fault in the school setting a better one. Consequently, quality of the education system needs more systematic research in order to accomplish the national objectives in educating people (Khonkarn, 2006).

Modifications in the education systems of Ghana have gone along with huge financial outlays and investments into education. Thompson and Casely-Hayford (2008) stated

that, US\$1 billion was spent on the Ghanaian education sector in 2006. It is on record that these reforms and investments have improved enrolments at the basic level, somewhat they failed to translate into the much-expected performances of these students. Ankomah, Y. A., Koomson, J. A., Rosemary, A. B., & George, K. T. (2005) iterated that despite all these huge financial interventions, and expenditures, the quality of basic education leaves much to be desired.

Studies have evaluated the participation response to the impact of parental involvement such as, the extent to which parents are interested in, knowledgeable about, and willing to take an active role in the day-to-day activities of their children (Wong, 2008; Davis-Keen, 2005). Parents play a critical role in promoting their wards' academic attitude to prepare them perform well and aspire for their careers path.

In most countries, it has been observed that the role of parents, particularly through Parent-Teacher Associations (PTA), is one of the silent stakeholders in education. Chen, Lee, and Stevenson (1995) compared students' achievements and their parents involvement in China and the USA. Mau (1997) also investigated differences in parental influence on the academic achievements of Asian immigrants, Asian Americans, and White Americans. These authorities found that parents had higher expectations of their children's performance and spent more time helping their children with school work and other academic work.

Researchers have also elaborated that parent-child interactions, in the activities of their wards in school, are important influences on a child's academic development (Christian, Morrison, & Bryant, 1998; Committee on Early Childhood Pedagogy, 2000). The parent involvement engulfs the abilities of the adult's influence in their

ward's learning activities process, which pose as one of the important solutions for the improvement of poor attitude in mathematics (Grouws & Cebulla, 2000).

Dronkers and Robert (2003) argued in favor of private schools over government sponsored schools claiming that the school climate; learning conditions as well as parent social compositions are factors responsible for this. Similar to this, the study of Braun, Jenkins and Grigg (2006) deduced similar conclusion positing that students from private schools have higher performance compared to their counterpart in the public schools. The public and private students were considered separate in this study to identify their uniqueness in mathematics learning in their attitude and parental influence. The diversity in the public and private school students compares their similar thoughts weighting their differences and similarity experiences as students.

Supportive conclusion as well is seen in the study of Olasehinde and Olatoye (2014) after comparing high schools in Nigeria. The supportive argument for the above claim is found in the study of Berkeley Parent Network (2009) claiming that the involvement of parents who bear the expensive cost of education to suit family status influence the performances of private schools over that of public schools.

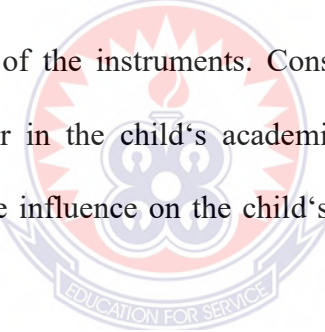
Students' attitude toward learning mathematics also plays a significant role in retention and enrolment (Gasiewski, Eagan, Garcia, Hurtado & Chang, 2012). In spite of the significant role mathematics plays, most students find it challenging to perform well in their high school (Brown, Brown & Bibby, 2008). Most developed countries have profited holistically from researching factors that can promote student's mathematical performance and positive attitude. This concerns the attitudes that are directed towards learning mathematics which are seen as either positive or negative, and are grounded with experience (McLeod, 1992). Way and Relich (1993)

commented that although definitions of attitude vary, they generally include the idea that students' attitudes are learnt which manifest themselves in one's response to the object or situation concerned, and can be evaluated. A key attitudinal dimension is mathematical confidence (Stevens, Olivarez, Lan & Tallent-Runnels, 2004), and it has been identified as critical to effective numeracy development (Wilkins, 2000). Dickson (2011) also suggested that the attitudes of students towards the learning of mathematics differs at various levels, Khan and Rodrigues (2012) in their study concluded that both public and private schools' students had highly positive attitudes towards mathematics, though students from the private schools showed a significant high degree of confidence in learning mathematics as compared to students from the public schools.

In this study students' attitudes towards mathematics in relation to their perceived parent influence on their mathematics will be investigated to consider the attitude of students in learning mathematics. Some researchers have also argued that students from private schools showed significantly more positive attitudes towards mathematics than students from public schools (Alderman, Orazem & Paterno, 2001; Arif & Saqib 1999; Aslam, 2009). In studying the relationship between attitude of students towards mathematics and achievements, Wilson (2008) explained that there is a strong positive correlation between students' attitudes towards the learning of mathematics and their achievements. Also the issue of gender difference in mathematics education in terms of attitude and performance have been discussed in various studies (Amelink's, 2009; Owiti, 2011, Tang, Chen & Zhang, 2010; OCDE, 2014).

1.2 Statement of the Problem

As mathematics is one of the principal subjects in the field of many careers the poor performance of students has consequently been affecting their career path, agreeing with Ankomah, Y. A., Koomson, J. A., Rosemary, A. B., & George, K. T. (2005). Improving academic performance, as measured by the examination results, is one of the major goals of schools in Ghana and many countries. The notion to enhancing good academic performance in the public and private schools has been a concern to all stakeholders in education (Desforges, 2002). In these past years, trepidations have been raised about low mathematical performance of students in the country by stakeholders. Research has shown that, there are other factors that influence learners' mathematics achievements in the classroom if serious attention is paid to them, the parent as a factor is one of the instruments. Considering parents as the first most extrinsic motivation factor in the child's academic performance, the parent has a direct, positive or negative influence on the child's academic performance in school (Davis-Keen, 2005).

The logo of the University of Education, Winneba, is a circular emblem. It features a central figure that appears to be a stylized person or a symbol of knowledge, surrounded by a sunburst or starburst pattern. Below the central figure, the motto "EDUCATION FOR SERVICE" is written in a banner. The entire emblem is set against a light background.

Studies have shown that parents who are more considerate to stir up their children's cognitive ability which can be expected to provide an optimal environment for the child to learn and also ignite the child's own interest to perform well. In older children and adolescents, parents are also thought to shape aspirations and motivation by acting as role models, providing and selecting opportunities for the children, and setting expectations and definitions of success for them (Bell, K.L., Allen, J.P., Hauser, S.T. & O'Connor, T.G. 1996; Gutman & Eccles, 1999; Jodl, Michael, Malanchuk, Eccles & Sameroff 2001).

Glasgow, K. L., Dornbusch, S. M., Troyer, L., Steinberg, L. & Ritter, P.L. (1997) have reported that parenting style is also associated with school achievement. Positive links have also been found between a secure (optimal) attachment in childhood and academic achievement in schools (Feldman, R., Gutfreund, D. & Yerushalmi, H., 1998). Several groups have also shown that students in the public and private schools who are helped by parents become better in their academic performance, moreover their attitude towards learning is increased. Desforges & Abouchar, (2003) has shown that children's performance ability is associated with the environment they receive, independent of parental intelligence or education.

Booth & Dunn, (1996) has also shown from his work that parental involvement with the child's school is associated with the child's achievement. Their finding has prompted a movement to improve home-school links as a way of improving children's educational outcomes especially in mathematics. Students in the public and private schools who perform well in mathematics can also be associated with parents who aid them in solving more mathematical problems.

There is a considerable consistency across studies about the basic connection between quality parent-child relationship and child outcomes. Conceptual reviews of studies (Collins, W. A., Maccoby, E. E., Steinberg, L., Hetherington, E. M. & Bornstein, M. H. 2000) have reached a similar view. Unanimity on a magnitude of association is somewhat less clear, and depends on how the data were collected and the kind of sample assessed. Questions of inconsistency arise in relation to the extent that there are specific connections between different dimensions of parenting and public and private school students' outcomes. The various indicators that certain dimensions may play an important role in students' achievement and attitude in learning, such

indicators as overprotective parenting for anxiety or monitoring/ control for delinquency. However, evidence of strong specificity is rare.

The quality of parent-child relationship is also associated with an impressive array of different public and private students outcomes. Parental behavioural/emotional outcomes have attracted much of the attention in student's performance, but there is also strong evidence concerning multiple aspects of psychological, social, educational, intellectual and physical health. The implication here, may be profitable to invest in assessing a range of outcomes, and to consider the extent to which some of those outcomes may be viewed in terms of public and private student's outcome.

Parents active involvement in their ward's life, support and assistance with school helps instil motivation and confidence in students. Accordingly, it is therefore important to carry out an empirical study on how to improve the public and private school students' performance and attitude towards mathematics in relation to the influence of their parents to improve their mathematical learning. The parents' level of education is one of the main factors influencing their wards achievements in school (Okantey, 2008). The public and private students all benefits from their parent in different ways other than their parents educational level, therefore looking for prospects and suggesting measures to assist on-going efforts to improve the student academic achievements in general parents cannot be taken out. This led to the great need to investigate the causes of low achievement in mathematics in the Ghanaian society. The current study was planned bearing in mind to find out the influence of parents and students' attitude in mathematics learning. The study is an effort to explore the influence of parent and students attitude towards mathematics learning in public and private junior high school.

1.3 Purpose of the Study

The aim of this study is therefore to investigate the attitude towards mathematics and parental influence (in terms of Communication, Motivation, Monitoring and Material support) of public and the private junior high students' mathematics learning.

1.4 Objectives of the Study

The objectives of the study are to:

1. investigate public and private junior high school students' perception of their parent's influence on their mathematics learning.
2. investigate the attitude of public and private junior high school students towards mathematics learning.
3. investigate whether there is a significant difference in perceived parental influence on student's mathematics learning between junior high school students in the public and private schools.
4. investigate whether there is a significant difference between the attitudes of public and private junior high schools towards mathematics learning.

1.5 Research Questions

From the objectives of the study the following research questions guided the study:

1. What is the perceived parental influence on student's mathematics learning among public and private junior high school students?
2. What is the attitude of public and private junior high school students towards mathematics learning?
3. Is there a significant difference in perceived parental influence on student's mathematics learning among public and private junior high school students?

4. Is there a significant difference between the attitude towards learning mathematics among public and private junior high school students?

1.6 Research Hypothesis

To be able to answer research question three (3) and four (4), the following hypotheses were set as hypothesis for research question 3:

There is no significant difference in perceived parental influence on student's mathematics learning among public and private junior high school students

Research hypothesis for research question 4:

There is no significant difference between the attitude towards mathematics among public and private junior high school students.

1.7 Significance of the Study

This study will provide useful information for education policy makers about junior high school mathematics attitude in the public and private schools. In addition, it will serve as a base-line study for policy makers in mathematics education to carry out other research works in a similar area.

The outcome of the study will also assist mathematics teachers at the senior high school level to be aware of the effect of attitude on student's mathematics learning in order to design appropriate methodologies to enhance achievements in mathematics. It will also encourage mathematics teachers to vary their teaching styles to be able to teach in a way to make learning easier.

This study will help provide relevant information to help parents relate better with their wards with their academic performance. To help increase parents-ward

relationship, promoting positive outcome on the students' attitude in mathematics. Also, to provide information for parents on their contributions to promote students' performance in mathematics. The study will also help junior high school students to understand the importance of attitude towards mathematics. This will encourage them to develop a positive attitude towards the subject to cause higher achievements.

1.8 Delimitation

The study will be conducted in only four junior high schools consisting of two public schools and two private schools in the Greater Accra Region of Ghana due to time and resource constraints of the researcher.

1.9 Limitation

The results of the study could not be generalized due to restricting the schools to only two public schools and two private schools due to the restriction in movement in the country as a result of the global pandemic covid-19. Also, the interaction of students was also limited since most of the schools were observing social distance protocols.

1.10 Organization of the Study

The study is organized in five different chapters. Chapter One discusses the background of the study, statement of the problem, purpose of the study, research questions, significance of the study, delimitations and finally, organization of the study. Chapter Two discusses review of related literature on the study. Chapter three describes the methodology used in conducting the study which comprise of the research design, population and sampling, research instruments, data collection procedure and data analysis plan. Chapter Four looked at the results of the data analysis and discussions, while chapter Five addresses the summary, conclusion and recommendations.

CHAPTER 2

LITERATURE REVIEW

2.0 Overview

This chapter discusses the review of related literature to the study. Relevant areas include the concept of the parental influence on students, student performance and attitude in mathematics, parents' involvement in mathematics learning, theories of parental influence on students learning, parent involvement models, parental factors that affects students' performance and attitude in mathematics in terms of communication, encouragement, monitoring and material support.

2.1 Introduction

Parents' influence on their children's education is the result of their actions that are shown in their usual activities at home. These activities of parents affect students' learning and are mostly in the form of communication, encouragement, material support and monitoring (Johnson, 2016). The purpose of identifying these key factors in parents' practices is to ascertain whether they influence student's mathematical attitude.

Mathematics is one of the most important aspects of primary school learning. The role of parents in a child's life is irrefutable (UNESCO, 2004, 2005; Kelly, 2007).

Pinantoan (2013)) points out the influence of parents on a student's academic success should not be underestimated in their academic achievement. Moreover, parents are the single influential factor in the life of their children and also concerning how well their children achieve in school (Stich, 2009). In the study of Conway (2008), parents' effort inconsistency is associated with higher levels of achievement among children. According to their research, it was found out that parents' influence is most

geared towards their children, especially female children. Parents' actions in the home that contribute to positive students' performance and attitude in mathematics are discussed in this chapter.

2.2 Theoretical Framework

The main theoretical framework of this study is Bronfenbrenner's Ecological Systems Theory. This theory is advocated by Urie Bronfenbrenner and it explains human development. Bronfenbrenner's (1979, 27) defined human development as the process through which the growing person acquires a more extended differentiated, and valid conception of the environment, and becomes motivated to engage in activities. The theoretical framework explains more of the interaction of the processes human development takes place, considering its environment. According to Bronfenbrenner (1989; 2002, 222), the utmost goal of any scientific effort is to understand a system with its processes and results of human development as a common equation of man and the environment.

In his masterpiece, *The Ecology of Human Development* Bronfenbrenner (1979), he described ecology as the settings and institutions that impact humans as they grow. The ecological environment is pictured as a nested arrangement of concentric structures, with each of these structures contained within the next. He arranged these ecological systems as microsystems, mesosystems, exosystem, and macrosystems (Bronfenbrenner, 1979). In addition, the theoretical approach focuses on the developing child's interactions with people, objects, and symbols in "proximal processes" across multiple settings, contexts, and environments (Prior & Gerard, 2007).

Bronfenbrenner's Ecological Systems Theory

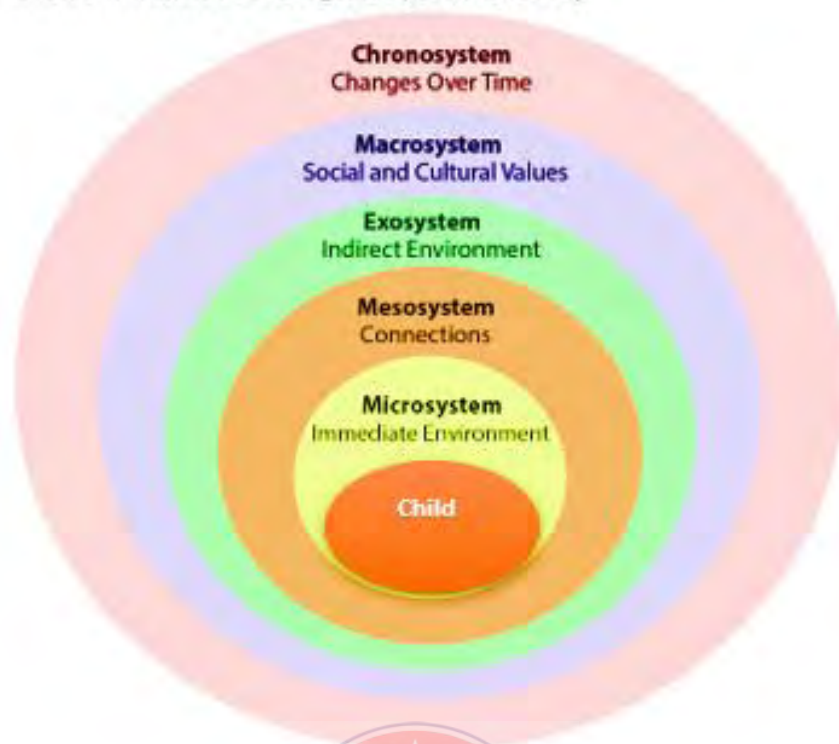


Figure 2.1: Bronfenbrenner's ecological systems theory

–A microsystem is a pattern of activities, roles, and interpersonal relations experienced by the developing person in a given setting with particular physical and material characteristics” (Bronfenbrenner, 1979, p. 22). This is the layer that affects the child most closely (Gestwicki, 2007), the family, school, teachers, peers, child health services, and the neighborhood are some of the main settings and institutions that he mentioned in his definition. Children experience a reciprocal face-to-face relationship with these immediate surroundings. These institutions within the microsystem also interact and influence each other. For example, school affects locality and locality affects the family members of the child.

Also, the exosystem consists of one or more settings that do not involve the child as an active participant. Extended family member, parents' workplaces, local school board, and the media are considered some of the settings and institutions in the

exosystem. These elements indirectly influence the child. For example, if extended family members support the parent psychologically and financially, this parent tends to have a more positive attitude at home.

Furthermore, the mesosystem connects the microsystem and exosystem. This system includes the interrelations among two or more settings in which the child is an active participant. For example, the relations among school, home, and neighborhoods comprise the mesosystem. The development of a child is enhanced when the linkages among components of this system are strong and positive (Prior & Gerard, 2007).

Moreover, another layer is called the macrosystem, which refers to consistencies in the form and content of lower-order systems (micro-, meso-, and exo-) that exist at the level of the subculture or the culture as a whole” (Bronfenbrenner, 1979, p. 26). This system includes attitudes and ideologies of the cultures such as laws, morals, values, customs, and worldviews. Although these elements of the culture are not readily parts of children’s immediate world, they can be very prominent in their development.

Bronfenbrenner inserts another system known as the chronosystem. This system refers to change or consistency over time in the life of a person. For example, changes in family structure over time, such as its demographic characteristics, have effects on a child’s development. In conclusion, based on Bronfenbrenner’s theory, one can easily argue that children’s school experience is not just made up of interactions between them and the school or teacher. It also includes a broader system involving parents, the family and community. As a result, understanding the influences of a child’s environment provides theoretical support for the idea of parent involvement in children’s education.

2.3 Students Attitudes toward Mathematics

Reid (2006) reports that there are as many definitions of the term “attitude” as there are researchers. Attitude is regarded as a belief displayed by individuals that reflect their opinions and feelings and can be sometimes revealed in their behaviour (Joseph, 2013). Attitude is a construct that cannot be observed directly but can be inferred from measurable reactions to the attitude object (Ajzen & Fishbein, 2005), as it is the case in our study, learning mathematics.

Neale (as cited in Ma & Kishor, 1997) also defined attitude towards mathematics as an aggregated measure of “a liking or disliking of mathematics, a tendency to engage in or avoid mathematical activities, a belief that one is good or bad at mathematics, and a belief that mathematics is useful or useless” (p.27). From the definition offered by Neale, attitude is seen to be formed as a result of a multiplicity of factors that together influence the individual’s subsequent behaviour either positively or negatively.

In accordance with Syyeda (2016), attitude is multidimensional. It takes into account three components: affect, cognition, and behaviour. The affect is composed of emotions, beliefs, and vision of the subject. Emotions are the state of mind of enjoyment or pleasure in learning the subject or seeing it as boring, difficult, and dull. Beliefs are related to students’ confidence in their capabilities to learn the subject. Vision represents students’ perceptions regarding mathematics. Cognition represents the students’ perceived usefulness of the subject. Conversely, the behaviour is connected to students’ motivation to learn that is reflected in student’s actions, commitment, and performance in class. Using these components to understand the students’ attitude towards mathematics, we measure the following aspects: – Self-

confidence, anxiety, enjoyment (affect) – Intrinsic motivation (behaviour) – Perceived usefulness (cognition). Eshun (2000) defined attitude towards mathematics as “a disposition towards an aspect of mathematics that has been acquired by an individual through his or her beliefs and experiences but could be changed” (p.2).

In this study, students attitude towards mathematics is looked at as the tendency of an individual to consciously or unconsciously discipline his or her interaction to have an interest in mathematics. The notion of an attitude refers to an individual’s basic like or dislike of a topic or an idea. Attitude is a behaviour that is measured by various evaluative processes. This study operationalizes students attitude considering the variables indicators of Attitudes Toward Mathematics Inventory (ATMI) (Tapia & Marsh, 2004) in the form self-confidence, value, enjoyment, and motivation.

The Attitudes Toward Mathematics Inventory (ATMI) (Tapia & Marsh, 2004) is one of the up-to-date questionnaires for studies related to student’s attitude toward mathematics. It was chosen for this study because it provides a distinct focus and identifies four dimensions along which attitudes toward mathematics could be measured. ATMI examines other areas of attitude toward mathematics such as confidence, anxiety, value/belief and enjoyment of mathematics. The Inventory clearly shows the subscale of confidence measures student's confidence and how they perceive their performance in mathematics. Anxiety measures feelings of anxiety and the outcomes of those feelings. The value of mathematics refers to the students’ views on the worth of mathematics. As to how often the student enjoys working mathematics and attending mathematics classes.

Furner & Berman found that two-thirds of American adult’s fear and loathe mathematics and also students recall more bad experiences in mathematics than in

other subjects. Math anxiety usually develops from a lack of confidence when working in mathematical situations (Perina, 2002). When students are not comfortable with mathematics, the cultural attitude, which is where society presents mathematics as difficult and useless because of technology, discourages the students from finding the relevance and making sense of the mathematics. A study by Levpušcek, Zupancic and Socun (2013) researched student individual factors and social factors (one being parental involvement) as predictive of academic achievement and interest.

Over the years it has been explained by researchers that students' attitudes toward mathematics generally decline when students enter middle school, but remain steady during their high school years (Rice et al., 2012; Hannula, 2002; Stodolsky, Salk, & Glaessner, 1991; Wilkins & Ma, 2003). Although students' attitudes may decrease over time, Ma and Xu (2004) reported an increase in their achievement across time. Students' prior attitude has an effect on later attitude, and students' prior achievement has an effect on later achievement, with the effect of prior achievement being stronger (Ma & Xu, 2004). Students' prior achievement predicted later attitude for grades 7–12, however, prior attitude did not predict later achievement (Ma & Xu, 2004).

From the findings of, Usher (2009), students' negative attitudes were attributed to failure, feelings of difficulty, and frustration with the subject matter. In the study of Stodolsky. (1991) it was reported that most students could not learn mathematics on their own, but needed guidance from a teacher or parent, unlike other subjects in which most students reported they could learn themselves. Similarly, Rowan-Kenyon et al. (2012) found that students are more likely to develop their interest in a subject if they feel competent or have high self-efficacy in that area, while they are likely to create a dislike for the subject matter when they feel as if they will fail. Stodolsky et

al. (1991) also reported that mathematics was considered one of the challenging subjects. Contrary to other subjects, students' attitudes toward mathematics were based on their achievement rather than their interest.

Researchers have found out that students' attitude toward mathematics is a good indicator of their success in the subject, with positive attitudes leading toward higher achievement (Akin & Kurbanoglu, 2011; Thorndike-Christ, 1991; Wilkins & Ma, 2003).

According to (Gilroy, 2002; Rice et al., 2012), when students' attitude toward mathematics improves, it enhances their achievement and interest in studying a STEM-related subject in future. Several authorities (Pedersen et al., 1986; Rowan-Kenyon et al., 2012; Sheldon & Epstein, 2005; Usher, 2009) have regarded parents' attitudes toward mathematics as important, and they have suggested that it has an effect on students' attitudes toward mathematics. Moreover, Student attitude scales have been developed and validated to measure student perceptions on their parent's influence that affect their attitudes (Fennema & Sherman, 1976; Khine & Afari, 2014; Ngurah & Lynch, 2013). Most studies have largely used qualitative data collection and analysis to make a connection between parents' and students' attitudes toward mathematics or used quantitative data reported by their parents to quantify their children's attitude.

2.4 Aspects of Attitude in Mathematics Learning

According to Neal (1969), he underlined that, "attitude plays a crucial role in learning mathematics and positive attitude towards mathematics is thought to play an important role in causing students to learn mathematics" (p. 631). Students attitude towards mathematics has been described in various aspects, for this study the

Attitudes Toward Mathematics Inventory developed by Tapia & Marsh, (2004) discusses four factors; self-confidence, value, enjoyment, and motivation.

2.4.1 Mathematics anxiety

Mathematics anxiety is a feeling of tension, helplessness and distress that impede the ability to concentrate and consequently affects learning of mathematics (Zakaria & Nordin, 2008). Accordingly, Mathematics anxiety is defined as a condition of emotional response towards mathematics whereby students experience negative reactions to mathematical concepts and testing (Chaman & Callingham, 2013). It was known in the study by Hoorfar and Taleb (2015) that mathematics anxiety is negatively correlated with metacognitive knowledge which is the ability to reflect, understand, and control one's learning. This means that the more anxious the students are, the less metacognitive knowledge they possess that in the long run hampers their performance. Since anxiety is related to students' attitudes and achievement in mathematics, it is worth examining the level of anxiety of students at all levels of education.

2.4.2 Mathematics self-confidence

Adelson and McCoach (2011) explains self-confidence in mathematics as students' perceptions of self as a mathematics learner that include views about one's own ability to learn and perform well in mathematics. The outcome of Hannula, Majjala, and Pehkonen (2004) indicates that self-confidence is a significant factor that influences students' learning which in turn affects their performance in mathematics. Van der Bergh (2013) claims that students with high self-confidence believe in their abilities that they can be successful in learning mathematics, thus overcoming the fear of failing.

2.4.3 Enjoyment of mathematics

Students' enjoyment while learning can influence their behaviour or cognitive aspect of attitude (Syieda, 2016). According to the Program for International Student Assessment (PISA 2012) results published by the Organization for Economic Co-operation and Development (OECD 2013), students may learn mathematics because they find it enjoyable and interesting. They further posit that interest and enjoyment affect both the degree and continuity of engagement in learning and the depth of understanding. Moreover, enjoyment of mathematics is the extent to which the students enjoy doing and learning mathematics (Kupari & Nissinen, 2013). This means that the more students enjoy doing mathematics the more they are likely to engage in problem-solving thus enhancing their learning and performance.

2.4.4 Mathematics benefits

Students are intrinsically motivated to learn mathematics if they have the desire to do so after finding learning of mathematics interesting (OECD, 2013). It is believed that motivation is the driving force for learning to see the benefits (Yunus & Ali, 2009). According to PISA results 2012 in OECD (2013), intrinsic motivation affects both the degree of student engagement, career choice, and performance. Therefore, studying motivational variables as related to attitude and achievement is crucial. Cognition Perceived usefulness refers to students' perception about the importance of mathematics in the present everyday life and in the future (Adelson & McCoach, 2011). Perceived usefulness of mathematics is believed to have an influence on students' attitude towards the subject. If students recognize the importance of mathematics in their lives, they will become motivated to study, practice, and learn the subject (Syieda, 2016).

2.5 The Concept of Parental Influence

In this study, Parents are considered as any person who has accepted responsibility for a child's academic learning. Parent's influence has always been an essential component of every teacher-student-school academic endeavour. Leithwood and Patrician (2015) observed that children's academic performance and behaviour in school was affected by the lack of parental involvement. Parents who actively get involved in their children's education are more encouraging than their colleagues. This is because their ability to achieve academic proficiency must often exhibit confident and bold behaviour to take on more academic tasks (Kim & Page, 2013; Leithwood & Patrician, 2015).

On the other hand, when parents do not get involved in the activities of the school and their wards there is a negative change in students' behaviours (Avvisati, Gurgand, Guyon, & Maurin, 2014). Parents are considered as one of the stakeholders of the school community, play tremendous roles in the child's educational and environmental transformation; thus, the intensity or extent of participation that parents have in their child's education (Sheldon, 2002). Sheldon (2002) also indicates that stakeholders in the educational community include students, families, teachers, administrators, policymakers, and the public who have a stake and must have an equal voice in the development, interpretation, and reporting of assessment information. Parents are concerned because their wards quality of knowledge and skills acquisition is linked with their ward's career. Stakeholder participation in Ghana in basic education was given a push by the 1959 Accelerated Development Plan, the Education Act of 1961, the Local Government Act of 1988, the 1987 Education Reforms, the 1992 Republican Constitution of Ghana, specifically provision on Free Compulsory Universal Basic Education (FCUBE), the GES Act of 1995, Act 506 and

the Education Act of 2008, Act 778 among others. They sought to provide legal backing to education, delegating stakeholders' roles and responsibilities. This shows that the Ghana Education Service Act (Act 506 of 1995) established School Management Committees (SMCs) and Parent Teacher Associations (PTAs), for them to discharge their responsibilities of rekindling communal spirit as a way of improving quality education delivery at the basic education level. These groups are charged to analyse the problems in their schools and adopt strategies towards the improvement of teaching and learning (GES, 2007).

In the school community, most parents as stakeholders have neglected the crucial roles in children's educational and societal upbringing. In view of this, most of the parents who are partially and totally illiterate feel uncomfortable in the school environment. Parents in these cases may feel extremely intimidated and may not know how to join with teachers and the school body to partners in their success and progress of their children's learning. However, Dei (2004), asserts that it is important not to limit the involvement and influence of parents who have not gone to school. He said that illiterate parents could be a source of guidance and counseling for their children that may lead them to achieve their aspirations. A study conducted by the World Statistics Institute (WSI) shows that over 27% of the world population are illiterates. Another study by the same institute shows that the speed at which illiteracy rate rises is 32% (Adepoju, 2013). These rates are relatively important, as schools become more aware that not all parents are literate therefore there should be a room for such parents to partake in their wards academic life in a positive way.

Moreover, the literates are not left out, some of them are mostly also over packed with their work and other responsibilities of the family leading them to ignore their

responsibilities to the school. Nevertheless, parents are not only important reinforcements for their children but also role-models to them. Literature acknowledges parents are probably the first teachers of their children and therefore can be the most influential, not only in the general welfare of the child, but also in their academic life (Feinstein, Duckwoth & Sabates, 2008). In the education sectors of the Ghanaian schools the public and private are well known for their pros and cons in the mathematics performance and attitude of students. Over the decade's schools have been complaining of unsatisfactory performances of students in mathematics.

2.5.1 Parents involvement in mathematics learning

Students' interest in mathematics and performance is gradually worsening, and has become the concern of many researchers (Rice, Barth, Guadagno, Smith & McCallum, 2012). Research suggests a student's environment and the home influences their attitude toward mathematics (Sheldon & Epstein, 2005), and parental involvement can increase student achievement (Areepattamannil, Khine, Melkonian, Welch, Al Nuaimi & Rashad, 2015; Jacobbe, Ross, & Hensberry, 2012). As also suggested by Bofferding, Kastberg, & Hoffman (2016) it is very important to engage parents in their child's mathematical learning to help them improve in their attitude.

Although, some parents do not have the mathematical content knowledge or pedagogical knowledge for assisting in teaching and learning. Most of these parents feel incompetent in their mathematical ability and interact less with their child when teachers reach out to them (Drummond & Stipek, 2004; Jacob, et al., 2012). Schools' ideas and perception about parental involvement is also linked with supporting students' achievement in all other aspects related to their contact, taking part,

monitoring, and discipline which are very supportive to learning (Barge & Logos, 2003).

This support of parents as a mechanism through which parents' influences student academic outcome suggests that, positive parents' behaviour patterns should be maintained because of their consequences (Skinner, 1989) which affect students' attitude in learning. Children learn behaviours when they consistently associate them with desired consequences, the parent's activity which includes the use of positive values in response to the child's behaviours results in the reinforcement influence of learning. This is because it increases the likelihood that the child will demonstrate similar skills, attitudes, and behaviours again.

Parents are particularly well suited for helping children to learn through reinforcement. Since teachers work with groups of students and may find it difficult to administer contingencies of reinforcement with sufficient frequency or consistency (Skinner, 1989). Parents often have direct knowledge of reinforcement contingencies effective for the individual child and are often able to respond to behaviour directly and immediately. As Barge and Logos (2003) found, for parental involvement in relation to students learning, it implies: Parental assistance with school work, stimulation from parents, communication between parents and school.

Parental influence in the involvement of their children's education is the reflections of parents' expectations and principles about what they should do in relation to children's schooling. These influences are generally built from personal experience and prospects as well as the perceptions and expectation of relevance (Barge & Logos, 2003). Applied to parents' involvement in children's education, parents' roles appear to define the array of activities that parents believe important, necessary, and

permissible for their own engagement in children's schooling (Hoover-Dempsey & Sandler, 1997).

Several authorities have reported parents' belief that involves in children's schooling is a normal requirement and responsibility of parents (Hoover-Dempsey, Bassler, & Burow, 1995; Okagaki, Frensch, & Gordon, 1995; Stevenson, Chen, & Uttal, 1990). Also, parents' beliefs have been identified to be important in helping with homework, opinions about homework goals and interest in knowing more about effective homework helping strategies. The parent's involvement in children's school work concerns about personal limitations or children's learning difficulties (Levin et al., 1997), this shows the responsiveness is an aspect of supportive parenting described across different theories and research frameworks, which is an important role in providing a strong foundation for children.

According to Landry, Smith and Swank (2004), responsive behaviours in this framework promotes joint engagement and mutuality in the parent-child interaction which helps children learn to assume a more active and ultimately independent role in the learning process. Vygotsky explains the responsive support for the child, is to become actively engaged in solving problems which is often referred to as parental scaffolding. Bernier, Carlson & Whipple (2010), Hammond, Muller, Carpendale, Bibok, Liebermann-Finestone. (2012), also confirms parental scaffolding as a key for facilitating children's development of self-regulation and executive function skills. These behaviours allow the child to ultimately assume responsibility for their well-being.

2.5.2 Parental influence in developed countries

Authorities have examined the relation of parental influence to student achievement, in their studies, researchers have tested and found strong and consistent evidence of a positive association or significant pathways between parental influence and achievement for European American families (Davis-Kean 2005; Entwisle and Alexander 1990; Neuenschwander et al. 2007; Okagaki & Frensch 1998; Pearce 2006; Peng & Wright 1994; Phillipson 2007; Sy & Schulenberg 2005). The findings were not consistent for Asian Americans or African Americans. However, more recent research conducted by Vartanian and colleagues (2007) with 9,494 participants showed that parental expectations was a significant predictor of college completion for the non-Asians but not for Asian Americans after controlling for 8th grade GPA and standardized test scores. Davis-Kean (2005) studied 8 to 12-year-old children and found similar patterns with African Americans; parental influence had a direct significant effect on academic achievements for European American but not for African American students.

With regard to Latino families, it was identified in the reviewed literature of the studies that the significant relation between parental expectations and student performance. A study by Goldenberg (2001) assessed Latino families' parental expectations and their children's academic performance each year from kindergarten to sixth grade. Analyses conducted with a small sample of 57 found no significant paths from early parental influence to later school performance (as measured by teacher ratings) or to reading and math test scores. Similar results emerged from a large study of 1,050 Latino immigrant students and families, which found that parental expectations assessed when children were 10th graders were not related to children's math achievement at 12th grade (Carpenter, 2008).

2.6 Theories of Parents Influence on Students Learning

Educationalist perceptions provide the foundation for research and instigate scholars to go further in the social sciences bringing about theories that promote student attitude and performance in school. This has become one of the concerns in the field of parental influence. This study continues to outline all the major theories related to parent's involvement:

Vygotsky's sociocultural theory,

Piaget's cognitive development theory,

These two theories have a great impact on the research field, and thus are discussed with respect to parent involvement in relation to the theoretical framework.

2.6.1 Vygotsky's sociocultural theory

The relationship between human beings and their environment is well highlighted by Lev Vygotsky, both physical and social in his sociocultural theory. Affected partially by Piaget's views, to him, the influences of social and cultural factors on development and learning processes are abundant (Vygotsky, 1978). Human beings are surrounded by many influential people, the most crucial are the family members who are ready to impact directly or indirectly, the culture in which they live (Rieber & Robinson, 2004).

In addition, children's interaction with their family members in the community is so essential for their learning and development since their first teacher is the family and their first learning take place in the community. For this reason, children gain knowledge about the world through this interaction where the parents are the most involving in the learning and development process. Furthermore, Vygotsky introduced another level that refers to the child's abilities when working under the

guidance of an adult (Vygotsky, 1978). For example, riding a bicycle is a tool of the society and beyond the child that is why it can be learned through working with a more capable adult. As a result, by emphasizing interrelatedness and interdependence in learning and development, his theory supports the idea that a child's home life is of great importance. Therefore, these parents influence (Prior & Gerard, 2007) where the parents contribute greatly to the development and academic achievement of a child, promotes the child's academic success.

2.6.2 Piaget's cognitive development theory

Jean Piaget proposed a theory of cognitive development in children and stressed on the constructive role of experience with family members. The basic notion of his theory was that young children are active learners with a constant drive to match their internal constructions (their own view of the real world) and external constructions (the external realities they face with in their surroundings) (Piaget, 1981). Children, as agents in his term, continually rework and revise thus they assimilate and accommodate their internal constructions with each new experience (Prior & Gerard, 2007). Also, Children assimilate new learning and accommodate on their own incorrect views of the world more quickly if they are more actively involved with people and things in their surroundings. In this regard, children learn best when they have opportunities to interact with their environments, and particularly with their parents who are a vital part of children's environments (Athey, 2007). An instance, when parents involvement in activities such as practicing interactive homework creates prospects for children to interact implicitly with their parents, such children construct their own idea of knowledge within both a social and physical environment through this process (Bailey, Silvern, Brabham & Ross, 2004).

As a concern, Piaget's social development theory supports the idea that parent involvement is a crucial factor in children's academic and social development achievement. Relatively to the achievement of mathematics it is very crucial the parents get involved in the learning process to help children bring out their best.

2.7 Parent Involvement Models

The understanding of parent involvement in education makes better use of it in both research and practice areas, numerous parent involvement models have been established and accepted in the field of research. Some of these models are more popular and considered as more practical than others. Psychologists, often draw from a comprehensive model developed by Seginer (1983) that pinpoints intra-individual and school factors contributing to the formation of parental expectations. In particular, Seginer (1983) underscores the importance of feedback from the school about previous academic performance in shaping parental expectations about their children's future, along with parental estimates of students' intellectual ability and parents' aspirations for children's achievement.

Equally, McKenna and Millen (2013) studied parental involvement through the grounded theory models of parent voice and parent presence. The first model, parent voice is represented by parent's discussions about their educational aspirations for their children. Parent voice is also expressed through concerns, frustrations, and feelings. Parents experience within the educational process relating to lack of resources at their children's school and lack of communication between schools and parents (McKenna & Millen, 2013).

Also, Epstein and Hoover-Dempsey are two major figures in the research field whose parent involvement models are the most widely recognized and broadly used. The study provides information on these two perspectives in the following subsections.

2.7.1 Epstein's parent involvement model

Epstein (2001), a main figure in parent involvement research and practice, introduced six types of parent involvement:

- i. Parenting,
- ii. Communicating,
- iii. Volunteering,
- iv. Learning at home,
- v. Decision making,
- vi. Collaborating with the community.

These six types of involvement have been suggested for the use in a comprehensive program of school, family, and community partnerships (Sheldon & Epstein, 2005).

These six types of involvement are expounded below.

Epstein et al. (2002) explained *parenting* as an assistance family provide to support the home environments for children as students. The home settings that serve to advance learning, parental education deeds and family support programs, are some practical examples of this type. Results for children include good and improved attendance, awareness of importance of school, and development of respect for parents.

Epstein et al. (2002) outlines *communicating* in terms of parent involvement as the effective two-way of creating interaction about school programs and children's

progress. Parent-teacher conferences, clear information on school policies and programs, and phone calls are some of the examples of this kind of communication. Some of the benefits for children are awareness of their own progress, understanding school policies, and improving communication skills (Epstein et al., 2002).

Epstein et al. (2002) also simplifies *volunteering* as the organizing and employing of parents help and support at school and home, Parents helping with school maintenance by way of volunteering for safety and operations of schools, assisting educators and helping other parents are examples of this type of involvement. The improvement of communicating skills in children can increase learning skills from tutoring by means of these volunteering activities parents get involve (Epstein et al, 2002). The extent of parental *volunteering* in the activities of the school and the home plays a crucial significance in children's academic progress.

Epstein et al. (2002) continue to argue that the parents who assist their wards at home when learning provide more information and ideas to parents about how to help their children at home with their learning. For example, the information on homework's and project assignments policies and how to supervise children, parents' activities at school are included in this involvement type. Outcomes of children with higher homework completion rates, increased view of parent as more similar to teacher, and enhanced self-concept of the student which eventually affects the learner success in class.

Epstein et al. (2002) explains parent's representatives and leaders on school committees focuses the concern of the students to the right highlights of academic success. The (Parent Teacher Association) PTA organizations are seen as networks to link all parents to the school. Awareness and the understanding of representation of

parents in schools creates a platform for student rights to be protected, giving students the confidence to learn more and succeed in their academics. These are some of the outcomes for children.

According to Epstein et al. (2002), in collaborating with the community, the parents are identified as the integral influence in the international context. The account of parent involvement efforts and programs both in the United States and Turkey provides a useful context for engaging in an in-depth analysis of parent involvement in young children's education. The historical overview is important because the historical developments in the subject matter have shaped the understandings, philosophy, perceptions, and beliefs about parent involvement issues today.

Moreover, parental involvement proves to be integral in a child development. Oftentimes, this involvement begins at birth and ends when the child grows into an adult (Sheldon & Epstein, 2005). This section on parental involvement in academic concerns the school systems, which attempt to take an active role in their children's academic performance. This involves parents communicating with teachers or the suitable school personnel, and supportive comments, attitudes, or behaviours towards academic and career decisions of their wards. These concerns which are crucial to addressing academic learning is recognized by (Simmons, 2008).

Simmons (2008) examined student-parent interactions about academic and career decisions in school, from the study of Amatea, Daniels, Bringman, and Vandiver, (2004) students who participated in his semi-structured interviews reported that they rely on their parents for general support and for advice about academic and career decisions. As a result, the Attachment theory and Baxter Magolda's self-authorship model of adult development supported these findings. Analysis of the findings draws

on majority of the implications for advising practice as well as suggestions for fostering constructive parent involvement. Amatea, Daniels, Bringman, and Vandiver (2004) also introduced various approaches for the counsellors to strengthen teacher-parent connections to their students' academic performance.

One of the goals that encourage counselors to amplify the positive effects family school ties have on student performance is the parent. Parent-school collaboration was clearly defined as a cooperative process of planning and problem-solving involving school staff, parents, children, and other important personnel to maximize resources for students' academic achievement and social-emotional development (Amatea, Daniels, Bringman & Vandiver, 2004). This concept backs the need for parents to take a more active role in their students' lives and schools.

For this purpose, parents' deliberations about what must be done to support children's developmental needs has been on the rise. This activity must be a conscious one that promotes the child's academic achievement and attitude to study more. The parental involvement can be explored through school-home communication, parental involvement at school, and involvement in the student's learning activities, and in-school decision-making and governance provide opportunities for parents to become involved (Amatea, Smith-Adcock & Villares, 2006). These activities that support achievements include monitoring homework, social activities, and children's school performance. Parent involvement in learning activities can be utilized in the parent-child conversations about school achievement as well as future-term goals (Amatea, Smith-Adcock & Villares, 2006).

Children's up-to-date school performance and attitude needs to be sought out by parents consistently in a semester (term) to help them be abreast with their knowledge

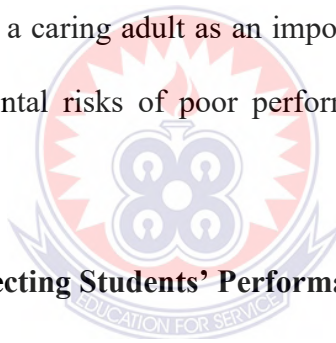
and explore their children's strengths and weaknesses in learning. Parents of high achievers reported a strong sense of purpose and demonstrate in their own lives the necessity of setting goals, committing themselves to meet these goals, and persisting at difficult tasks in their learning journey (Furstenberg, Cook, Eccles, Elder & Sameroff, 1999)

Parents must also set standards for their children to set goals for themselves and to encourage them to work hard to achieve these goals (Amatea, Smith-Adcock, & Villares, 2006). Parents make children aware of this expectation for purposeful action in several ways, typically by initiating the process through frequent talks with their children about future life goals and the necessary steps to getting there (Zellman & Waterman, 1998). Accordingly, they encourage their children to dream, to make plans for the future, and to seek "a better life." Parents use themselves as examples or a means to encourage their children to do better in educational and occupational attainment (Amatea, Smith-Adcock & Villares, 2006).

Griffith (1996) examined the relationship between parental influence and student academic performance; he stated that positive relations of parental involvement to student test performance have little effect by school characteristics or the socioeconomic, racial, and ethnic composition of the student population. In addition, Comer and Haynes (1991) agreed to the finding that parental participation in a child's education encourages smooth and successful teaching and learning. Comer and Haynes (1991) also submitted parental involvement through parents' participation in school events and activities, help in the classroom, and participation in parent groups. These findings assist the development of career interests among students. The student

receives the required feedback to positively discover career options as additional opportunities for growth if there is parental involvement.

Most recently, research-initiated documents the role of perceived support network on the students' performance. As mentioned earlier, Blustein, Phillips, Jobin-Davis, Fikelberg, Roarke, (1997) identified perceived support from family members as an important source of guidance in the conversion from school to work. Other studies provide support for this position, using both qualitative and quantitative methods with samples ranging from primary students to adults. Accessible support networks through family, school, or the community embody potential resources that can be accessed in overcoming perceived barriers. Researchers recognized the presence of a positive relationship with a caring adult as an important protective factor in reducing the impact of environmental risks of poor performance in students' academic life (Blustein et al., 1997).



2.8 Parental Factors affecting Students' Performance and Attitude in

Mathematics

The influence of parents operates in both direct and indirect ways (Salkind, 2008) which impacts on the school achievement of the child. The direct impact examines the ways parents' influence children's school achievement through their own skills. This occurs when they engage unswervingly in their children's academic activities, helping with homework, discussing academic related matters, use of language and joining in shared activities at home (Chevalier, 2004; Feinstein, Duckwoth, Sabates, 2008; Biddulph, 2003; Kalil, Ryan & Corey, 2012; Ardila, Rosselli, Matute, & Guajardo 2005).

However, indirect influences are those relating to parents' dispositions such as belief, attitude, values and knowledge of the educational system, which in turn, influences their educational practices at home (Eccles, 2005; Feinstein, Duckwoth & Sabates, 2008; Hanushek, 2007; Hoff, 2003a, 2003b). This also includes the resources (human, material and financial) and the use of them for the benefit of the child's education as may be mediated and moderated by parental education (Hanushek & Wößman, 2007).

Overall, Feinstein et al. (2008) identified six elements that summarizes their hypothesis on the impact of parental education and transmission to children's educational success:

- i. imparting proximal processes such as teaching practices and educational behaviour in the home;
- ii. moderating the effects of proximal processes, changing the nature of their influence;
- iii. impacting on the internal features of contexts and, in turn, on proximal processes;
- iv. supporting individuals and families in managing a set of characteristics and hence moderating the effect of characteristics;
- v. impacting on key distal factors such as income;
- vi. protecting the effect of each distal factor, that is, by acting protectively and providing resilience in the family. (Feinstein et al., 2008:29)

In this study parental influence will explore parents' communications, monitoring, material support and encouragement skills that influence students (Johnson, 2016). Parental attitudes and parental acts of doing something to impact their student's achievement in math by investing their time, attention, and resources (McNeal, 2014). The involvement of parents in their ward's educational life influences their

academic achievement and attitude. The most immediate involvements of parents that affect student's mathematics performance and attitude is elaborated:

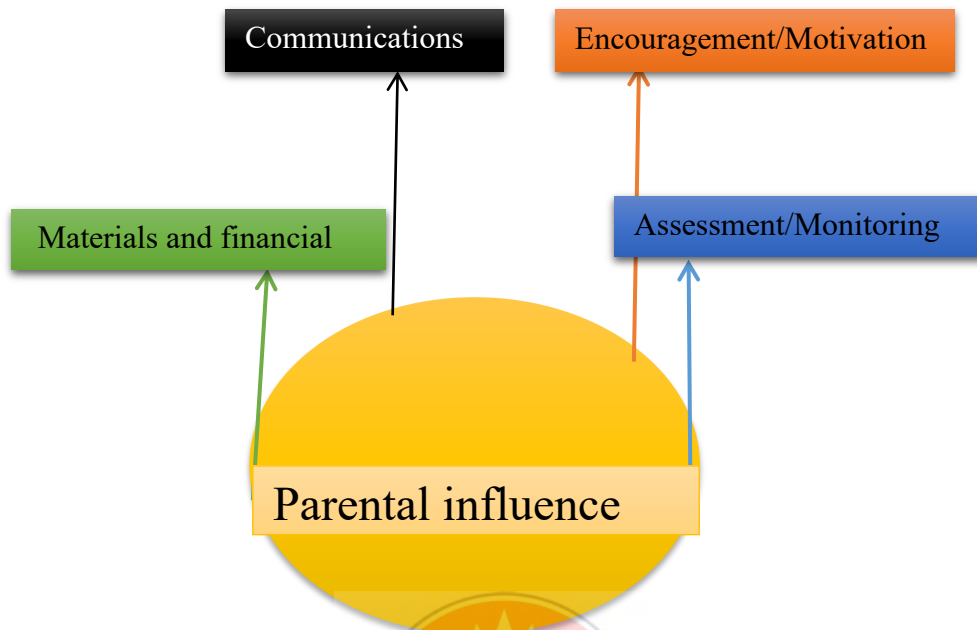


Figure 2.2: Parental influence chart

- Parent-Student Discussion (Communication)
- Parent-Student Motivation: (Encouragement)
- Parent-Student Monitoring: (Assessment)
- Parent-School Support: (Material/ Financial)

2.8.1 Parent-student discussion (Communication)

Parents deliberations with their wards about school related topics is perceived as parent-students discussion. Implicitly there is high expectations that parent communication will contribute to the improvement of student success in school (Tschannen-Moran, 2001; Virginia Department of Education, 2002). Parents are children's first communication partners (Holman & Koenig Kellas, 2015). Parents' responses to their children's behaviour as if the behaviours were intended to communicate not only supports the sharing of early intention, but also shapes

undifferentiated behaviours into culturally most important communication partners and language teachers (Johnson, 2016).

Although, parents are communication partners and language teachers for their children, the context yield more natural responsibilities, specifically defined duties to support their children's learning. The more math and numbers there are around a child, the more likely children will like and enjoy math and develop as mathematicians (Geist, 2009). Also, the role for parents in one of co-interventionist, working closely with the school to promote generalization of newly learned skills across settings and people. This role maintains the normative parent as a communication partner and first language teacher and incorporates some additional naturalistic supports for child communication.

Parent's communication in systematic strategies; conduct assessments; assist the teacher in planning intervention; and may continue to support teacher implementation of a direct instruction protocol or a more naturalistic, embedded teaching plan, but they do not provide direct intervention for children (Hattie & Timperley, 2007). This role might be chosen by parents in different circumstances. Parents may move among these roles with their children's changing needs for communication support on the basis of their interests and skills, the time they have available for supporting their children's academic performance.

Parental influence can function as a form of communication that conveys to students the value their parents place on achievement. Students perceive this communicated value as a norm, which becomes internalized as a standard that students strive to attain (Johnson, 2016). This concept was introduced by early sociologists who

argued that parents' influence in the form of communication boosts their children's interest and expectations, and in turn leads them to high achievement.

According to Dumais (2006), he extended this notion by characterizing student perceptions of parental influence, as the internalization of a social structure that “forms one's worldview and serves as a guide throughout an individual's life” (p.85). Psychologists have proposed a similar notion, describing parents as “expectancy socializers” (Eccles et al., 1982) and focusing on the ways in which parental influence function as an environmental factor that compels students to meet parental standards.

To investigate the possible operation the internalization of norms mechanism in communication, studies have assessed the relation between parental influence and students' own expectations or aspirations. Authors have found that parental expectations were closely related to students' expectations 5 years later even after controlling for demographic variables and children's previous achievement scores. Parent's communication of their expectations to their children, also influenced their children's later achievement scores via the mediating effect of children's expectations (Rutchick et al., 2009).

2.8.2 Parent-student motivation: (Encouragement)

Direct action by parents in the learning process of the student, such as providing tutoring for the student, taking their student to school before or after school and directly helping their own children to learn, rewarding good behaviours, explaining consequences for negative behaviours. Findings of Agarwal (1998), Jeynes (2007), Sharma and Thahira (2011), Sekar and Mani (2013) and Singh (2016) confirms the relation between parents' encouragement and their children's achievements. They

confirm parental encouragement and involvement in education is associated with better grades and test scores, better attendance to school, higher rates of homework completion, increase in positive attitudes and behaviours at school and at home, higher graduation rates, higher college attendance rates, greater overall student achievement, better attitude toward school and individual subject areas, more time spent on homework and studying, and better self-concept etc.

Children who experience encouragement often from parents, exhibit learning enthusiasm and teamwork improving their intrinsic motivation for learning (McLoughlin et al., 2003).

In the study of Sharma and Hajuria (2014), parental encouragement scale by Kusum Agarwal was used and the results revealed that there was a significant and positive relationship between parental encouragement and the academic achievements of senior secondary school students. The study also indicates that there is significant difference between the male and female students with regard to parental encouragement. The female students show greater parental encouragement than male students.

Also, Anuradha Kolnala (2014), the findings of the investigator revealed that adolescents in rural schools, whether male or female, perceive less parental encouragement which in turn, leads to lesser academic achievement. It also revealed urban adolescents, whether male or female, perceive high parental encouragement which leads to higher self-confidence, when the Agarwal Parental Encouragement developed by Kusum Agarwal, and Agnihotri's self – confidence inventory was used by Rekha Agnihotri.

According to a study by Cornell researchers Woolley and Fishbach (2016), students who received instantaneous, frequent rewards for completing small tasks reported more interest and more enjoyment in their work, compared with students who received delayed rewards only given out at the end of a long project. Moreover, they also found that those same people, particularly when they started receiving frequent rewards earlier on in their workload, remained interested and engaged in their tasks even after the rewards were removed, suggesting a lasting positive effect between rewards or positive reinforcement and performance.

As the researchers put it, people who received these frequent rewards immediately upon completion of a task will stay “intrinsically motivated” to perform well and continue completing tasks, even when the reward is no longer offered. The idea that immediate rewards could increase intrinsic motivation sounds counterintuitive, as students often think about rewards as undermining interest in a task. Students get challenged when teachers associate a task with a reward but when parents associate the performance of their children with a reward the more challenged, they become. However, some students may not be enticed to have a positive attitude towards mathematics and performance when parents encourage them to learn.

2.8.3 Parent-student monitoring: (Assessment)

The procedure of enquiring and engaging in the student’s life which involves knowing where they are at certain times, whether they have completed homework, limiting certain activities, and doing all of these consistently. The degree to which parents are communicating with teachers by phone, email, or visiting classrooms (such as meetings or during parent-teacher conferences). Although the school generally agree that parental involvement in their children’s education is important, few parents are

effectively involved (Eccles & Harold, 1996). The major vehicle through which parents help their children with school subjects, and checking up on their homework, class exercise and every academic work.

Although few studies have examined the effect of homework time specifically on mathematics achievement, several studies have examined the effect of homework time on scholastic achievement generally. Some assessment can be redirected to the home where the parents take part in monitoring their wards academic performance. Necessarily most of the parents may not be able to assess the performance at home but constantly checking on their ward's performance in school, with their attitude parents contribute highly to their ward's success.

In a meta-analysis of nearly 120 empirical studies of the effects of homework on scholastic achievement, Cooper (1989) concluded that increased amount of time parents spent on academic work generally benefited scholastic achievement for high school students but had little effect on scholastic achievement for elementary school students. Similar findings were reported both by Cooper, Lindsay, Nye, and Greathouse (1998) reported that for younger students' parents' estimates of the amount of time students spent on homework were not a significantly affected by their parent's participation.

Trivette et al. (2009) found that each of these adult learning strategies had positive effects on parents' knowledge, skills, attitudes, and self-efficacy that help them to communicate effectively and efficiently with their wards, promoting parent-child relationship. This activity has been found positive in the life of learners. Although individual adult learning strategies have positive effects on their children's learning outcomes, the largest effects on students learning occur when multiple strategies are

used concurrently. Trivette et al. (2009) found that incorporating more adult learning methods is strongly associated with larger effects on students. On the basis of the finding that multiple strategies for effective monitoring, he incorporated all six of the adult learning methods and found to be effective by Trivette et al. (2009) into this model of parent training.

2.8.4 Parent-school support: (Material/ Financial)

The provision of learning materials to enriching and stimulating children's education (Mandy, 2010) entice students' interest in learning. Direct provision of resources that will help in the learning, Provision of textbooks, workbooks, stationary are considered as materials used in assisting students to learn. In terms of material and financial support, the materials for assisting the students are to focus on learning and performing well.

As a result, the Government of Ghana introduced free education in Ghana which has released most of the financial burden on parents with junior high students in only the public schools, but the case is not a hundred percent, parents have a role to play in their wards text books, mathematical set, calculators and some technological materials that can help improve the learning of mathematics. Some of these materials are very crucial in the learning and improvement of mathematical performance and attitude. Students with limited resources mostly rely on their intelligent quotient to do some of the calculations and others use wrong ways and procedures to go through a concept.

The use of these materials may not necessarily promote students' performance and attitude but can link as a variable that must not be neglected in the student's mathematical studies. According to Aslanargun (2007) strengthening parents'

involvement in school activities shows that it can increase students' success in school and prevent the occurrence of disciplinary problems in the school as well.

2.9 Parental styles and their influence on students

Parenting styles are useful in composite attitudes and behaviours associated with children's achievements in the school (Rodriguez, Donovanick & Crowley, 2009). Parental influence is one of the variables that have been studied broadly in human development inculcating the styles that brings about these influences (Baldwin, McIntyre & Hardaway, 2007). Parental styles and their effect on the attitude and performance of students cut across all aspects of the child's life. Every type of parental style produces positive and negative outcomes that affect children's academics especially, mathematics performance. The word 'parenting', from its root, is more concerned with the activity of developing and educating (Clarke & Stewart, 2006). Parent's behaviours which encompass choices, freedoms, and profits as well as frustrations, doubts, and disappointments that they portray to their children leads to their style of parenting. In this study we will focus on the positive actions that can be found in all the styles of parenting to relate to the parental influence. It is widely recognized that if students are to maximize their potential from schooling, they will need the full support of their parents (Desforges & Abouchar, 2003; Brown & Iyengar, 2008; UNESCO, 2005). Parent's relationships and activities with their children are centered on their interest with substantial and permanent pleasure.

Baumrind (1991) suggested nine parenting styles which affect students, these are; authoritative, demanding, traditional, authoritarian, undifferentiated, democratic, permissive, nondirective, and rejecting/neglecting. Nevertheless, researchers have found out that parenting styles are often altered and revised in every generation

(Brown & Iyengar, 2008) and are approved by the society. Therefore, Parental influence is considered an important determinant of several aspects of children's outcome in their academic performance (Gadeyne, Ghesquiere & Onghena, 2004). Parents influence consistently affects their children's academic achievements, optimism, confidence, motivation, externalizing problem behaviour and attention problems especially in their adolescence stage (Gadeyne, Ghesquiere & Onghena, 2004). Most of the styles of parenting converge to make the children's aspects of their lives better.

Academic performance and attitude of children especially adolescents are reliably influenced by family activities and parents' behaviour, which are seen as the external factor of the school. Phillipson (2007) suggested that parents communicate their characteristics or explanations to their children's achievement in terms of day-to-day interactions and behaviour with them. He also stated that children's achievements is influenced by their parents' attitudes. The belief systems and attitudes of parents are the basis for parenting style and academic achievement (Brown & Iyengar, 2008). Children's ideas at home or at school are influenced by parents' views, which is an important factor for academic achievement (Sarason, Pierce, Bannerman & Sarason, 1993). Adolescents' perceived level of independence when interacting with their parents also seemed to have a direct relationship on their academic achievements. Research concerning children's progress in mathematics as related to parenting style and gender stereotype was also uncovered by Ramirez, Xiaowei, Schofer & Meyer (2006). Evidence was found to support the notion that parental education can have an indirect impact on children's academic achievements in various cultures.

General patterns of parent's attitude towards their children promote parenting styles advanced. Basically, parenting styles were introduced by Baumrind in 1967 as the display in the central predisposition of parent's own characteristics. Her influential work identified three parenting styles i.e., authoritative, authoritarian, and permissive which is popularly known in Africa. The study looked into the authoritative, authoritarian, and permissive parenting style in relation to the parental influence on learning.

2.9.1 Authoritative parenting

The Authoritative parents use the self-assured method towards their children and set clear standards for them. Authoritarian parents show restricted and status-oriented attitude towards their children. Baumrind revealed that authoritative parenting style affects positively the life of children rather than other parenting styles in the context of acquisition of knowledge. In authoritative parenting, parents are more demanding while children are also highly responsive to issues. Authoritative parents have high expectations for achievements in all aspects of the child's life leading to maturity; however, they are also warm and responsive. These parents set rules and enforce boundaries by having open discussions and using reasoning. They are affectionate and supportive and encourage children's independence. This parenting style is also known as Democratic parental style which gives the child's opinion equally as important as the parents.

2.9.2 Authoritarian parenting

Although authoritarian and authoritative parenting styles have similar names, they have several important differences in parenting beliefs. This parental style demands high standards, authoritarian parents demand blindly and obedience is used in the

reason of knowledge. These parents use strict discipline and often employ punishment to control children's behaviour when they are in the wrong. Authoritarian parents are unresponsive to their children's needs and are generally not nurturing.

Children of authoritarian parents:

- Tend to have an unhappy temperament.
- Are less independent.
- Appear insecure.
- Possess lower self-esteem.
- Exhibit more behavioural problems.
- Perform worse academically.
- Have poorer social skills.
- Are more prone to mental issues.
- Are more likely to have drug use problems.

2.9.3 Permissive parenting (Indulgent)

Permissive parents set very few rules and boundaries and they are reluctant to enforce rules. These parents are warm and indulgent but they do not like to say no or disappoint their children. Low demandingness and high responsiveness to issues.

Children of permissive parenting:

- Cannot follow rules.
- Have worse self-control.
- Possess egocentric tendencies.
- Encounter more problems in relationships and social interactions.

2.10 Students' Perceptions of Parents and Students' Attitude

The relationship between the child and the parent is a crucial home factor that influences the child's learning. Parents who are responsive to their children's needs can influence the attitude and perception of their children in schools. A close look at the types of homes, the Socio- Economic Status (SES) of the family among others, will indicate that, there is a relationship between the home and students' attitudes.

Brecko (2010) contended that, a key goal of education is to ensure that every student has a chance to excel, both in school and in life. She argued further that, children's success in school determines their success as adults, determines whether and where they go to college, what profession they enter and how much they earn. The home of the students as a determinant of his or her attitude and perception in school is apparent. According to Loop (2012), the actual schooling is not the only contributing factor that could assist a student's learning and achievement in school. Loop (2012) contended further that, although the academic environment is important, each student's individual home situation greatly influences educational goals and progress. Therefore, attitude and perception in high schools do not depend on a student's mental and physical abilities alone. The family of students greatly influence the student's attitude and perception (Paul, 2012).

All other things being equal, parents who have aspirations that challenge, inspire and motivate their children relate with their children's attitude and perception in school. If a child comes from a home where parents are not responsive to their physical and emotional needs, such students become depressed and if the situation is not handled well, it will go a long way to affect their attitude towards learning. The school according to Paul (2012) is no doubt important in a student's achievements.

According to Paul (2012), recent research has shown that, parental involvement in checking the homework of their children, regular attendance of school meetings, discussing school activities with their children has more powerful influence on students' academic attitudes and perceptions, causing good academic performance than anything about the school the student attends.

Students of varied family backgrounds attend educational institutions. In Ghana like every other country, these differences range from parents' level of education, interests in education, and support for their children among others. It is most probable that educated parents will be more inclined to giving good education by providing the needs of their children. It must however be added that, there are some parents who are well educated yet pay very little attention to the education of their own children. If this scenario persists, students of parents who pay little attention to their children's education will perform poorly in schools due to the negative attitude they put forward. However, there are situations where illiterate parents pay more attention to their children's education even though they are illiterate themselves. Such illiterate parents, they do not want their children to suffer the deprivations they had to endure. It may therefore be that parents level of education is a strong determinant of students' attitude and perception of students in school. A home that encourages learning is perhaps the most accurate predictor of success at school.

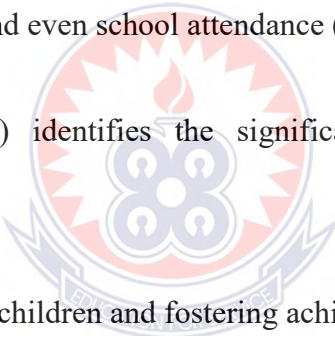
2.11 Benefits of Parental Influence in the School

Jeynes, (2007) explains parental influence as important in the lives of their children's education, and the advantages of it for students are numerous. (Fan & Chen, 2001; Jeynes, 2003; Jordan et al., 2001; Gonzalez-pienda et al., 2002; Henderson & Mapp, 2002). In particular, parental influence has more effect on students' test scores than

GPA grade point average (Jeynes, 2003). According to Shaver and Walls (1998), students with high levels of parental influence have positive influence on the students' academic success in math than those with a low level of parental involvement.

Furthermore, González-Pumariega, Roces (2000) identified that parental involvement makes a positive contribution to students' academic achievement by affecting their academic attitude which is of great importance in academic success. Also, Hara and Burke (1998) claimed that the key to improvement of children's academic accomplishment is boosted by parental influence. Moreover, Pelletier and Brent, (2002) acknowledges that when parents get involve with the school of their wards, they make a contribution to their children's emotional development and behaviour, well-being, social skills and even school attendance (Henderson & Mapp, 2002).

In addition, Lily (2014) identifies the significance of parents influence that encompasses:

- 
- Setting goals with children and fostering achievement of those goals;
 - Accessing and using children's academic scores to ensure they're on track;
 - Frequently viewing the parent portal (or whichever tool their school uses);
 - Developing a relationship with the children's teachers and keeping in touch with them often; and
 - Advocating for improvements in the school building and with local school boards and state and federal government to ensure schools have the resources they need to provide a world class education to every student.

2.11.1 Challenges affecting parents influence

School performance is tantamount to the degree or the extent of parental involvement. It is important to identify the roadblocks that create impact on parent's participation and the children's proper education. According to Singh, Mbokodi and Msila (2004), one of the challenges that hampers effective parental involvement is low income that some parents receive per month, which leads them to working more jobs and not to spend enough time at home helping their children with their school work (Chavkin & William, 1989). This causes a burden to the teachers because they are expected to produce good results yet they are not receiving any support from parents (Singh, Mbokodi & Msila, 2004).

Moreover, some schools sometimes fail to create strong links between the home and school, this makes parents feel unwelcomed in schools more especially low-income earners. This situation is made worse by the fact that some parents are unable to read and write and they can only communicate in their mother tongue, which makes it difficult for them to assist their children with their homework or any academic discussion (Lemmer, 2007).

Also, posted in the National Centre for School Engagement, Family Support America shared with its readers the common barriers associated with increasing parental involvement in schools and community programs, as follows:

1. Attitudes – Staff do not feel comfortable talking about issues in front of families. Families don't trust staff. Staffs think families are too overwhelmed to participate. School staff is not willing to accept families as equal partners. Families think they have nothing to contribute. Staff thinks that families will violate client confidentiality.

2. Logistics – Schools and programs cannot pay for childcare. Transportation is unavailable for families to get to meetings. Meetings are held only during working hours – or at times inconvenient for parents. Families are not reimbursed for the time they take off of work to attend meetings.
3. System barriers – No systems are in place for paying parent leaders for their time and contributions. Staff time can only be paid during regular working hours. Lack of resources available for supporting parents and family involvement.
4. Lack of skills – Families have never participated in (school-type) meetings/committees. Most families are unaware of applicable procedures and policies. Staffs are not ready to work with families in new ways. Lack of information about the role of families and staff.

2.12 Summary of Literature Review

The review points to the facts that most parental influence on students is underutilized in students' attitude towards learning mathematics. Though parents influence their wards in many ways, this influence is mostly not seen to affect student attitude towards learning mathematics. Studies have found out that student attitude toward mathematics is a good indicator of their success in the subject, with positive attitudes leading toward higher achievement. This study discusses four factors of student's attitude; self-confidence, value, enjoyment, and motivation (Tapia & Marsh, 2004). As Neale (1969) also reveals mathematical attitude as ~~a~~ liking or disliking of mathematics, an inclination to participate in or avoid mathematical activity, a credence that one is good or bad at mathematics.

Moreover, from the review, studies have also looked at parental influence and student's attitudes in mathematics from many dimensions. This literature reveals details of parental influence in terms of; Communication, Assessment, Material support and Encouragement (Johnson, 2016). This affect students' mathematical attitude in the private and public junior high school. The parental involvement can be explored through school-home communication, parental involvement at school, and involvement in the student's learning activities, and in-school decision-making and governance provide opportunities for parents to become involved (Amatea, Smith-Adcock, & Villares, 2006).

The review is in direction of the problem of the study. This is to help identify perceived parental influences that affect student attitude in the junior high schools.



CHAPTER 3

METHODOLOGY

3.0 Overview

This chapter outlines the methodology used for the study. The research design, population, sample and sampling procedure, research instruments, validity and reliability of instruments, data collection procedure, and data analysis procedures are all discussed.

3.1 Research Design

The study employed the quantitative approach. The purpose for the quantitative approach was to use the quantitative results to explain and interpret the findings of the study. The quantitative approach carefully designs the structure of the research and the concepts of research before going out into the field. Going from the general to the specific, or beginning with the theory and testing ideas empirically (Hardwick & Worsley 2011; de Vaus 2002).

The descriptive survey design was adopted in this study. The design allowed the use of questionnaires that generated large volumes of data that were analyzed statistically and also enabled the researcher to observe, describe, and document certain occurrences that existed. By the descriptive survey, the researcher used questionnaires to gather the data, using statistics, to analyze the information she collected to see whether student's ideas about relationships are supported by 'the facts' as revealed in the research (De Vaus, 2002). McMillan (2000) posited that descriptive study simply describes and provides an understanding of a phenomenon usually with simple descriptive statistics and it is particularly valuable when an area is first investigated.

He further elaborated that, the descriptive survey seeks at describing, observing, and documenting aspects of a situation as it naturally occurs rather than explaining.

3.2 Population

The population for this study was all junior high form three (Grade 9) students in the Ga-South Municipal Assembly in the Greater Accra Region of Ghana. The researcher selected the Ga-South Municipal district due to the proximity and also had stayed and taught in that district for five years and was familiar with the district and its environment, The familiarity of the researcher with the district helped the researcher to obtain the necessary data required for this study. The form three students were selected because they had experienced most of the topics in the mathematics curriculum and have enough experience with their parents at home. The ages of these junior high school students ranged between 10 to 18 years.

3.3 Sample and Sampling Technique

Gerrish and Lacey (2010), define a sample as a subset of a target population, normally defined by the sampling process. According to Castillo (2009) convenience sampling is a non-probability sampling technique where subjects are selected because of their convenient accessibility and proximity to the researcher. As such four schools were conveniently selected from all the junior high schools in the Ga Municipal Assembly. These schools were the Ngleshie Amanfro and Galilea JHS which are public schools and Mary Star of the Sea, and High-Class International schools which are private schools chosen from the Municipal.

The simple random sampling is a process of selecting a sample from a population in such a way that every different possible member of the desired size has the same chance of being selected (Devore & Peck, 2005).

The simple random sampling technique was used to select 35 students from each of the four sampled schools. This sampling technique was also used to avoid bias in selecting only brilliant students by the teachers. This totalled 140 students selected as the sample for the study.

In selecting the students, coded number cards from 1-50 and Alphabet codes from A-Z were presented to each group of the school. Those with the first 15 alphabets and 20 number cards were selected for the research. In the private schools eight students could not partake in the study due to their extra-curricular activities after school. These students were replaced with students in the public school. These students were to take part in competition for their school, they could not complete their input before leaving the class. The next school was the public school (Ngleshie Amanfro) where the eight students were added to obtain the total of 140 sampled student.

3.4 Research Instrument

The instrument used in the study was the questionnaire, two types of questionnaires were employed for the study: The Mathematical Attitude Questionnaire (MAQ) which operationalized four variables in terms of students attitude; Confidence, Enjoyment, Benefits, and Anxiety adapted from Asoma (2014). The Perceived Parental Influence (PPI) scale was developed based on the previous work in the parental influence area (Cai, 2003; Poffenberger & Norton, 1959) this was linked with the theoretical framework and parental involvement in the literature.

The PPI operationalized four variables of the parental influence; communication, encouragement, assessment, and materials support. It consisted of 20 items divided into the four sections. The MAQ also consisted of 27 items which had four sections

relating to the themes of student's attitudes: Confidence, Enjoyment, Benefits and Anxiety.

Both instruments (MAQ and PPI) used a five-point Likert scale response format which considered Strongly Disagree (SD), Disagree (D), Undecided (U), Agree (A), Strongly Agree (SA). Responses were assigned the following values 1, 2, 3, 4, 5 based on the response format, Strongly Disagree, Disagree, Undecided, Agree, Strongly Agree respectively.

3.5 Validity

Validity shows the credibility of how well the measuring instrument performs its purpose in a study. The credibility of the instrument is related with whether the measuring instrument measures the behaviour or quality that it is intended to measure (Anastasi and Urba, 1997). Whiston (2012) also defined validity as obtaining data that is appropriate for the intended use of the measuring instruments. In the validity of this study views of mathematical supervisors and experts were considered to provide a credible instrument which according to Shenton (2004) it provides details of the framework of the study helps a reader to decide whether the existing environment is comparable to another situation he or she is familiar with. It also helps other researchers to imitate the study with similar settings in different situations (Anney, 2014). Before information was obtained from participant of this study, they were briefed on the purpose of the study and also made to feel at ease. They were made to understand that the results were not going to part of their assessment and they must give accurate answers based on their experience. They were given a time frame of an hour to complete the questionnaires to ensure their responses were based on their personal experience. Participant were made to do an individual work under the

supervision of the researcher. The researcher read the questions to the students to help students who may not understand some of the questions. Participants were guided not to give chorus answers.

3.6 Reliability

The dependability of an instrument is an indicator of the stability of the measured values obtained in repeated measurements under the same circumstances using the same measuring instrument. Reliability is not only a feature of the measuring instrument, but it is also a feature of the results of the measuring instrument. The most popular method used in research to test reliability of the factors is the alpha coefficient. Different calculations have been developed for the alpha coefficient despite this diversity the Cronbach's alpha coefficient, which was developed by (Cronbach, 1951) was used in this study. The SPSS was used to find the Cronbach's alpha coefficient for the items in the instruments. This according to Shenton (2004) will assist future researchers to be able to replicate the study. For this study, the researcher made sure all research procedures were described in detail. Also, the opinions of supervisors, advisors and experts in the field of quantitative research were sought to ensure the right research procedures were followed to confirm dependability. A pilot study was used to obtain the reliability co-efficients from the SPSS is illustrated in Tables 3.1 and 3.2. From the pilot study,

The reliability in the MAQ of the 27 items shows a reliability coefficient of 0.726 and above for each subscale. This indicates the instrument is reliable and acceptable. Table 3.1 shows the reliability estimates of the subscales on the (MAQ).

Table 3.1: The reliability co-efficient of the subscales on the MAQ

Extract constructs (subscale)	Reliability co-efficient	No. Items
Anxiety	0.898	6
Confidence	0.912	8
Enjoyment	0.792	5
Benefits/value	0.726	8

The reliability coefficient in the Perceived Parental Influence, was above 0.676 for each subscale with 20 items in all. This indicates the instrument is reliable and acceptable. Table 3.1 shows the reliability estimates of the subscales on the mathematics attitude questionnaire (MAQ).

Table 3.2: Reliability co-efficient of the subscales on the Perceived Parental Influence (PPI)

Extract constructs (subscale)	Reliability co-efficients	No. Items
Communication	0.759	4
Encouragement	0.676	5
Monitoring	0.756	6
Material Support	0.792	5

3.7 Data Collection Procedure

The researcher visited the junior high schools from the 20th January 2021 of their first term of the 2020/2021 academic year. The visit was to discuss the purpose of the study with the headteachers of the school and also to seek permission from the school to administer the questionnaire. Before administering the questionnaire, the researcher sought the concern of the students and explained the purpose of the study to them in order for them to feel at ease. They were made to understand that the results of the questionnaires were not going to be part of their continuous assessment. They were also assured confidentiality. The questionnaires were completed by the participants and returned the same day. A day was used to administer the questionnaire in each

school, as such, a total of ten days was used from Tuesday 20th to Friday 30th January 2021 was used.

3.8 Data Analysis Procedure

Both instruments the MAQ and PPI used a five-point Likert scale response format which considered Strongly Disagree (SD), Disagree (D), Undecided (U), Agree (A), Strongly Agree (SA) for each item. Responses were assigned the following values; Strongly Disagree-1, Disagree-2, Undecided-3, Agree-4, and Strongly Agree-5. Items obtaining a score of less than 3.0 on the scale were labelled as being a negative perception whilst those items obtaining 3.0 and above were labelled as being a positive perception.

The study used descriptive and inferential procedures to analyse the data. The Descriptive statistics, inferential statistics tools were used in the Statistical Package for the Social Sciences (SPSS 26.0), while the chart tools were used in the Microsoft Excel were the electronic softwares used in the data analysis. In the descriptive analysis (percentages, means, and standard deviations) were used to describe the JHS students' attitudes towards mathematics. With the inferential statistics (independent samples t-tests) was used to determine if a significant difference exist between the junior High School students' perception of their parents' influence and their attitude towards mathematics.

3.9 Ethical Considerations

For accessibility and acceptance, an official permission letter from the Department of Mathematics Education of the University of Education Winneba was taken to the headteachers of the selected schools under study. A sample of the permission letter is provided in the Appendix. All headteachers freely accepted the letter and the date set

for the collection of data. The official letter indicated the purpose of the research in the schools to gather information from participants. All the headteachers gave their consent and agreed to the date set for the collection of data. The consent of the participants was also sought before the study. This was done by giving them a consent form to fill. A sample of the participants' consent form is shown in Appendix. The participants' privacy of personal information was highly protected. Confidentiality and anonymity were ensured by using codes.



CHAPTER 4

RESULTS AND DISCUSSION

4.0 Overview

This chapter presents the results of the data analysis as well as discussions of the main findings. Data was collected and then analyzed in response to the problems posed in this study. The significant findings identified are interpreted and discussed within the existing literature base.

The purpose of this study was to investigate the effect of parental influence (in terms of Communication, Motivation, Monitoring and Material support) on their wards in the public and the private high student's mathematics learning. It was also to investigate the attitude of public and private junior high school students towards mathematics.

In the chapter the results are presented under the themes in response to the research questions posed. The chapter focused on the following areas

1. Demographic information of participants.
2. Research question one - The perceived parental influence on mathematics learning among public and private junior high school students.
3. Research question two - The attitude of public and private junior high school students towards mathematics.
4. Research question three – The difference in perceived parental influence on student's mathematics learning among public and private junior high school students.
5. Research question four - The significant difference between the attitude towards mathematics among public and private junior high school students

4.1 Demographic Information of Participants

Demographic information of participants addressed their gender status and age. Below is the gender distribution of participants for the study. The gender and age pattern of participants are described. Table 4.1 presents the number of participants and the gender of junior high school students from the four schools.

Table 4.1: Gender of Participants

School		Females		Males		Total	
		N	%	N	%	N	%
Private	School 1	16	11.4	14	10.0	30	21.4
	School 2	13	9.3	19	13.6	32	22.9
Public	School 3	13	9.3	22	15.7	35	25
	School 4	20	14.3	23	16.4	43	30.7
Total		62	44.3	78	55.7	140	100

Out of the one hundred and forty participants, 20.7% were female students from the private schools, whereas 23.6% of public-school students were females. The total males formed 60.8% show (Table 4.1). Participants of the public school were eight more than the private school. The total number of female participants was 62 and the total number of male students was 72. This was due to the fact that there were more male students than female students in each school.

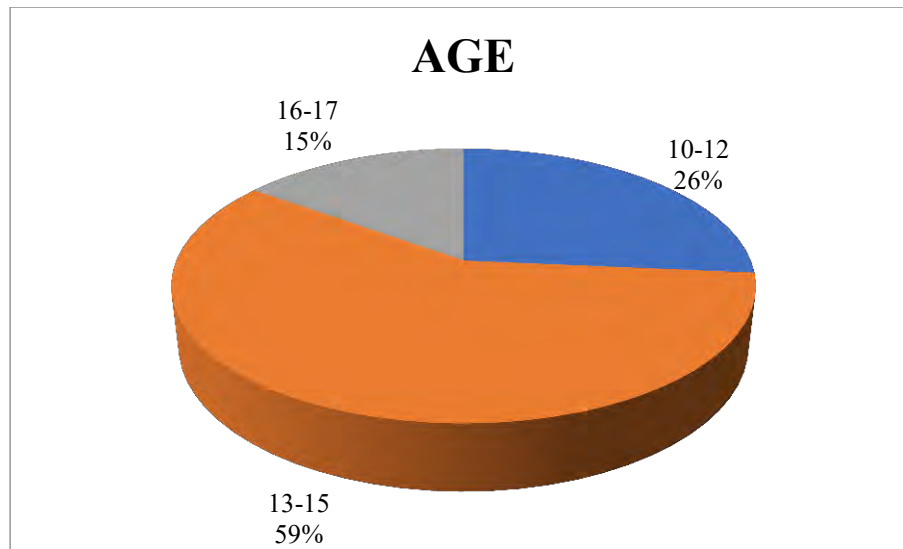


Figure 4.1: Age of Participants

Figure 4.1 shows the age distribution of participants for the study. It was revealed that majority of the participants 59% were between the ages of 13 and 15 years whilst 26% (37) were also between 10 and 12 years, and 15% (21) between 16 and 17 years. This shows that students below the age of 10 and above 17 were not part of the participant.

4.2 Research Question 1

The perceived parental influence on student's mathematics learning among public and private junior high school students

Research question 1 sought to identify the junior high school student's perception of their parent's influence in terms of monitoring, encouragement, communication, and material support. Participants were presented with a Perceived Parental Influence questionnaire on mathematics and their responses were rated on a five-point Likert scale. For participants responses on the Likert scale, see Appendix C. Table 4.2 shows the means and standard deviations of the participants responses for both private and

public schools on their perception of their parents monitoring on the Likert rating scale.

Table 4.2: Means and standard deviation of students' responses on perception on their parents' monitoring in their mathematics learning

Variable	Private Mean	Std. Deviation	Public Mean	Std. Deviation
My Parents attend PTA meetings always.	3.58	1.19	3.13	1.44
My parents ask my mathematics teacher about my performance.	3.44	1.29	3.44	1.33
My parents expect me to do well in mathematics.	3.87	1.18	3.38	1.35
My parents are concerned about my score in math exams.	3.66	1.29	3.68	1.22
My parents check my math books always.	3.52	1.32	3.64	1.23
My parents visit me at school often.	3.58	1.19	3.55	1.20
Overall	3.61	1.24	3.47	1.30

The responses in Table 4.2 indicate the perceived parental influence on student's mathematics learning in terms of monitoring in the private and public junior high schools. Item one was used to find out whether parents attend PTA (Parents Teachers Association) meetings. Participants in the private and public schools recorded a mean of 3.58 and 3.13 respectively indicating that the private and public-school students –Agreed” that their parents attend PTA meeting regularly. Generally, participants responses to the perceived parental influence in terms of monitoring in mathematics shows a high mean of 3.87 and 3.68 for the private and public schools respectively in Table 4.2. The overall average score on parental monitoring shows that private schools are high monitored by their parents in terms of their mathematics learning. A high consistency of student's responses in the private school was also shown than that

of the public student's responses. In Appendix C responses of student in the private schools a maximum count on "Agree" and "strongly Agree" as 35 (25.0%) and 23 (16.0%) respectively. Whereas 33 (24.0%) and 20 (14.0%) of students in the public schools indicated a maximum count of "Agree" and "strongly Agree" respectively to parents' monitoring on mathematics learning.

Table 4.3: Means and standard deviations of students' responses on perception on their parents' encouragement in their mathematics learning

Variable	Private	Std. Deviation	Public	Std. Deviation
	Mean		Mean	
My parents advise me about studying mathematics more.	3.84	1.15	3.17	1.26
My parents advise me to do my mathematics homework and classwork.	3.82	1.18	3.27	1.38
My parents advise me to ask questions in class when I don't understand.	3.82	1.02	3.72	1.34
My parents reward me when I do well in mathematics.	3.53	1.25	3.45	1.34
My parents inspire me to do mathematics.	3.95	1.09	3.36	1.24
Overall	3.79	1.14	3.39	1.31

Table 4.3 present participants' responses on the parental influence in relation to encouragement in mathematics. In item 4, student's response on how they are rewarded was looked at. This indicated an average score of 3.53 and 3.45 for private and public students respectively. As shown in Appendix C the number of students that Agreed and strongly Agreed to the statement in the private schools is 18 (13.0%) and 19 (14.0%) respectively, whereas 17 (12.0%) and 22 (16.0%) of students in the public school. The responses of students on parental encouragement shows an overall average score of 3.79 and 3.39 for private and public schools respectively, indicating that students in both private and public schools have a positive perception of how

their parent encourage them in studying mathematics. However, students in the private schools perceive their parents mostly encourage them as compared to their counterparts in the public schools. In addition the students in the private schools showed consistency in their responses with a standard deviation of 1.14 than that of their counterpart.

Table 4.4: Means and standard deviations of students' responses on perception on their parents' communication in their mathematics learning

Variable	Private		Public	
	Mean	Std. Deviation	Mean	Std. Deviation
My parents tell me to learn mathematics more.	3.95	1.09	3.36	1.24
My parents ask me about my mathematics class always.	3.82	1.17	3.44	1.19
My parents make me add and subtract numbers in the house.	3.73	1.15	3.69	1.12
My parents make me feel I can do better in mathematics.	3.68	1.08	3.78	1.22
Overall	3.79	1.12	3.57	1.19

Table 4.4 shows the results of participants responses on their parents influence on their parents' influence on their mathematics learning in terms of communication. From the Table 4.4, Items one and four recorded the highest mean of 3.95 and 3.78 for students in the private and public school respectively on their perceived parental influence in communication. Considering the highest mean score of the distribution of responses there is a very impressive disposition of private Junior high school students. It is also indicated from Appendix C that 26 (19.0%) and 22 (16.0%) students in the private school Agreed and strongly Agreed respectively, moreover 26 (19.0%) and 27 (19.0%) of students in the public school also Agreed and strongly Agreed respectively to parents' communication on mathematics studies.

Table 4.5: Means and standard deviations of students' responses on their perception of their parent's material support in their mathematics learning

Variable	Private Mean	Std. Deviation	Public Mean	Std. Deviation
My parents buy my mathematics textbooks	3.50	1.29	3.73	1.22
My parents provide me with enough stationary to practice mathematics questions.	3.53	1.36	3.32	1.27
My parents allow me to study with friends.	3.79	1.15	3.06	1.25
My parents pay for my mathematics extra classes.	3.71	1.21	3.58	1.25
My parents give me time to do my mathematics homework.	3.69	1.30	3.49	1.43
Overall	3.65	1.26	3.44	1.29

From Table 4.5 participants' response on their perception of Parents Material Support in their mathematical studies shows a high mean score of 3.79 in the private schools and 3.06 with their counterpart public schools on Item three. This indicates that 14% (20) and 15% (21) students in the private school Agree and strongly Agree respectively, whereas 17% (24) and 19% (26) of students in the public school also Agree and strongly Agree respectively to parents' material support on mathematics studies (see Appendix C). The overall average score indicated a difference of 0.21 in the mean score, with the private schools having a high mean score of 3.65. The private and public schools indicate an equivalent consistency of responses with standard deviation of 1.26 and 1.29 respectively.

Table 4.6: Overall subscale Means and Standard Deviations of students' perception of their Parental influence

	Private		Public		Total	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Parental Monitoring	3.61	0.62	3.47	0.63	3.53	0.63
Parental Encouragement	3.79	0.81	3.39	0.89	3.57	0.87
Parental Communication	3.79	0.82	3.57	0.90	3.67	0.87
Parental Material Support	3.65	0.84	3.44	0.92	3.53	0.89
Overall	3.71	0.77	3.47	0.84	3.57	0.82

Table 4.6 shows public and private school student's perception of their parent's influence on their mathematics learning in terms of monitoring, encouragement, communication and material support. It can be seen that in all the sub themes the average score and the consistency of responses of the private schools were higher than to the public school. The overall average score of the public and private junior high school respondents shows 3.47 and 3.71 respectively. The overall standard deviation score of the public and private junior high school respondents shows 0.77 and 0.84 respectively,

4.3 Discussion of Findings

Research question 1 identifies the perceived parental influence among public and private junior high school students on their mathematics learning. Students' responses indicated that the overall mean score of both the public and private schools was above the average mean score of 3.0 from the five-point Likert-type rating scale. The means the private school students' responses were higher than those in the public school on all the sub-theme. Generally, all groups recorded means above the average mean of 3 on the Likert scale for most of the variables. This confirms the findings of Campbell,

(2000) and Bronfenbrenner's theory which indicates that parents have an influence on students' mathematics learning. From this study, the variables in parental influence indicated that students' perception of their parent's encouragement and communication recorded the highest mean score with the private school students compared to the public schools. Perception of students on their parent's influence was higher with communication than the other sub-themes among the public-school students. In addition, the private school recorded a higher average score than the public school with a total of 3.71 and 3.57 respectively. Also a high consistency of students responses was shown in the private students than that of their counterpart.

4.4 Research Question 2

The Attitude of Public and Private Junior High School Students Towards

Mathematics

Research Question 2, sought to investigate the attitude of public and private school students towards mathematical learning in the public and private schools. Responses of the MAQ (Mathematical Attitude Questionnaire), consisted of four domains anxiety, confidence, enjoyment and benefit in terms of students' attitude. The first five items of the MAQ looked at the student's anxiety in mathematics. In scoring these items on students anxiety, assigned values were reversed since the statements were negative statements. Thus, Strongly Disagree was assigned 5, Disagree – 4, Undecided - 3, Agree—2 and Strongly Agree- 1. The next seven items looked at student's confidence in solving and learning mathematics, the next six items looked at students' enjoyments towards their mathematics learning the last eight items looks at the benefit/value students place on mathematics (See Appendix B).

Table 4.7: Means and standard deviations of students' responses on mathematics anxiety

	Private		Public	
	Mean	Std. Deviation	Mean	Std. Deviation
Working mathematics makes me nervous.	3.76	1.20	3.41	1.11
I get unhappy when I think of learning mathematics.	3.95	1.09	3.36	1.23
Learning mathematics is very annoying.	3.82	1.17	3.44	1.19
I am not confident about asking for clarification in mathematics class when I do not understand something.	3.74	1.14	3.67	1.13
I get worried when my mathematics teacher is in class.	3.74	1.10	3.78	1.22
Overall	3.80	1.14	3.53	1.18

In Table 4.7, Students responded positively to statement that needed positive response and negative statement were negatively responded. Item one recorded a mean of 3.76 and 3.41 with a standard deviation of 1.2 and 1.11 respectively for the private and public-school students' responses towards the anxiety in their mathematics learning. The overall mean of the private schools is higher than that of their counterpart in the public school indicating a mean of 3.80 and 3.53 respectively.

Table 4.8: Means and Standard Deviations of students' responses to mathematics confidence

Variable	Private		Public	
	Mean	Std. Deviation	Mean	Std. Deviation
Mathematics does not scare me at all.	3.50	1.29	3.71	1.24
I have self-confidence in learning mathematics.	3.53	1.36	3.32	1.27
I have confidence in taking mathematics test.	3.79	1.15	3.06	1.25
I can solve more mathematics questions within a short time.	3.71	1.21	3.55	1.27
I am able to solve mathematics problems without difficulty.	3.53	1.25	3.41	1.33
I have confidence in asking mathematics questions in class.	3.58	1.19	3.13	1.44
I am able to answer mathematics questions in class.	3.44	1.29	3.44	1.33
Overall	3.58	1.25	3.37	1.31

In Table 4.8, it can be seen that students responded positively to their confidence in mathematics learning in all items. Apart from item 1 where the public-school students indicated a higher confidence and item 7 where students in both schools indicated the same level of confidence, students in the private school indicated a higher confidence in all other items than their counterpart in the public school. The overall mean also shows a high confidence from both schools, However, students in the private school recorded a higher mean confidence 3.58 than their counterparts the public school with a mean of 3.37.

Table 4.9: Means and Standard Deviations of students' responses to mathematics learning enjoyment

Variables	Private		Public	
	Mean	Std. Deviation	Mean	Std. Deviation
I enjoy working mathematics questions.	3.87	1.18	3.36	1.36
I enjoy word problems in mathematics.	3.66	1.29	3.68	1.22
I look forward to a mathematics class.	3.53	1.33	3.67	1.24
Mathematics is very interesting to me.	3.58	1.19	3.55	1.20
I enjoy learning mathematics with my friends.	3.84	1.15	3.17	1.26
I feel happy working more mathematics problems.	3.82	1.18	3.27	1.38
Overall	3.72	1.22	3.45	1.28

From the Table 4.9, all of the items received a favorable response with means above the stipulated mean of 3.0. Out of the 6 items, the public school students indicated a higher enjoyment in learning mathematics in only 2 (item 2 and 3). Though the overall mean score for both schools were above the average mean 3, students in the private school again showed a higher mean of enjoyment of 3.72 than their counterparts with a mean of 3.45

Table 4.10: Means and Standard Deviations of students' responses to how they Value Mathematics

	Private		Public	
	Mean	Std. Deviation	Mean	Std. Deviation
Mathematics is important in everyday life.	3.82	1.02	3.72	1.34
I want to develop my mathematics skills.	3.53	1.25	3.41	1.33
Knowing mathematics will help me earn a living.	3.40	1.26	3.13	1.44
Mathematics is very necessary.	3.73	1.28	3.44	1.33
I will need mathematics for my future work.	3.95	1.05	3.37	1.35
Mathematics help people to make good decisions.	3.32	1.46	3.68	1.22
Mathematics improves my thinking capacity.	3.73	1.26	3.62	1.25
Mathematics is very important for other subjects.	3.81	1.20	3.55	1.20
Overall	3.66	1.22	3.49	1.31

Table 4.10 shows the means and standard deviations of public and private junior high students' responses to how they value mathematics. From Table 4.10, all items recorded a mean above the average of 3.0. This indicates that students in the public and private schools agree to the importance of learning mathematics. In item 6 students in the public school recorded a higher mean of 3.68 as compared to their private school counterparts with a mean of 3.32. However, the overall means show a higher mean of 3.66 with standard deviation of 1.22 for the private school students with a mean of 3.49 with standard deviation of 1.31.

Table 4.11: Overall subscale Means and Standard Deviations of students' responses on their Mathematics attitude

	Private		Public	
	Mean	Std. Deviation	Mean	Std. Deviation
Anxiety	3.78	0.78	3.53	0.84
Confidence	3.58	0.63	3.37	0.68
Enjoyments	3.72	0.77	3.45	0.80
Benefits	3.66	0.57	3.49	0.63
Overall	3.69	0.56	3.46	0.62

It can be seen from Table 4.11 students' attitude was based on four domains of Anxiety, Confidence, Enjoyments and Benefits. On all the four domains, the junior high school students had positive attitude on all items. The Overall responses of the private school shows a mean of 3.69 whereas their counterpart from the public school shows a mean of 3.46 with standard deviations 0.56 and 0.62 respectively. This indicate that though students from both schools have positive attitude towards mathematics, those in the private school have a more positive attitude towards mathematics than their counterparts from the public school.

4.5 Discussions of Findings

Research question 2 identifies public and private junior high school students' attitudes towards mathematics learning. Comparing the means of the schools, the private schools had a slightly higher mean than that of the public schools, however, the findings of this study contradict Eshun (2000) findings stating that students' attitude to mathematics is appealing as compared to other subjects. Moreover, Duedu (2008) also found that Junior High School students, in general, had a positive attitude towards mathematics. Confirming with Khan and Rodrigues (2012) in their study it was concluded that both public and private schools' students had highly

positive attitudes towards mathematics, though students from the private schools showed a high degree of confidence in learning mathematics as compared to students from the public schools. The private school students indicated from their responses that their attitude to learning mathematics is higher than that of the public school in the mean scores of all the domains of the attitude.

4.6 Research Question 3

The difference in perceived parental influence on student's mathematics learning among public and private junior high school students?

Research question 3 sought to investigate whether the difference between the public and private junior high school students' perception on parental influence on their mathematics learning is significant. An independent sample t-test was performed to find the significant difference. The means of the public and private schools were compared on various subscales as found in Table 4.12

Table 4.12: The statistics of difference between public and private junior high school students' perception on parental influence on the subscales

Sub-scale	Private		Public		Total	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Monitoring	3.61	0.62	3.47	0.63	3.53	0.63
Encouragement	3.79	0.81	3.39	0.89	3.57	0.87
Communication	3.79	0.82	3.57	0.90	3.67	0.87
Material Support	3.65	0.84	3.44	0.92	3.53	0.89
Overall	3.71	0.77	3.47	0.84	3.57	0.82

It can be seen from Table 4.12 that for the all subscales (Monitoring, Encourage, Communication and Material support) the results of the high mean score of the two groups (public and private) and their consistency in their responses. This indicates that the two schools had equal perception on their parents influence on their

mathematics learning in the subscales Monitoring, Encouragement, Communication and Material Support. To test for difference in overall perceived parental influence on students' mathematics learning among public and private junior high school students, it was hypothesized that:

H_0 : There is no significant difference in perceived parental influence on student's mathematics learning among public and private junior high school students.

Table 4.13: Group Means and standard deviation on students' perception of their parental influence

	School Type	N	Mean	Std. Deviation	Std. Error Mean
TOTAL	Private	62	3.69	0.56	0.07
	Public	78	3.46	0.62	0.07

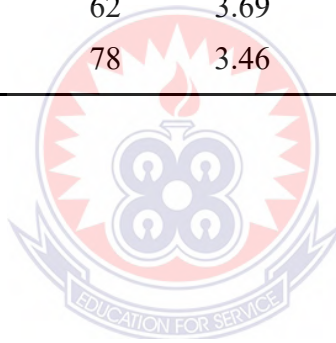


Table 4.14: Independent samples test

		Levene's Test for Equality of Variances		Independent Samples Test						
		F	Sig.	t-test for Equality of Means						
				t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Total	Equal variances assumed	0.42	0.52	2.24	138	0.03	0.24	0.11	0.03	0.46
	Equal variances not assumed			2.27	135.88	0.03	0.24	0.11	0.03	0.46

From table 4.14. Levene's test of equality of variance yields a non-significant result, hence we assume equal variance between the public and private schools. The result for the independent samples t test is significant since $p < 0.05$. As such of no significant difference in perceived parental influence on students' mathematics learning among public and private junior high school students in favour of the alternate hypothesis. It can therefore be concluded that "there is a significant difference between the public and private junior high school student's perception on parental influence towards their mathematics learning" in favour of the private school.

4.7 Discussion of Findings

The statistical analysis shows that there are different ways in which students perceive parental influence in their mathematics learning by the public and the private school students. Parental influence considered as subconscious and therefore misrecognized by the students and perhaps even by parents themselves, as Drummond & Stipek, (2004) reported in their findings that most these parents feel incompetent in their mathematical ability and interact less with their child when teachers reach out to them. This confirms the statistical significant different among the public and private school. The total mean of all items of the subscales Monitoring, Encouragement, Communication and Material support, indicated to be different between the two schools. Agreeing with other researchers, parental influence such as behavioural control and pressure in contrast to psychological support (Campell and Mandel, 1990) is perceived differently from student to student. Also, Lemmer, (2007) confirms the results that some schools sometimes fail to create strong links between the home and school, this makes parents feel unwelcomed in schools more especially low-income earners. This situation is made worse by the fact that some parents are unable to read and write and they can only communicate in their mother tongue, which makes it difficult for them to assist their children in their learning.

Overall, the results of our findings indicated that there was a statistically significant difference between the public and private junior high school student's perception on parental influence towards their mathematics learning. The reasons for these calls for further studies. According to Loop (2012) the actual schooling is not the only contributing factor that could assist a student's learning and achievement in school.

4.8 Research Question 4

The Difference between attitude towards mathematics among public and private junior high school students

Research question 4 sought to investigate whether there is a significant difference between the public and private junior high school students' attitude towards mathematics. An independent sample t-test was performed. The following hypothesis was formulated to guide the analysis:

H_0 : There is no significant difference between the attitude towards mathematics among public and private junior high school students.

Table 4.15: Group statistics of public and private junior high school attitude towards mathematics

	School Type	N	Mean	Std. Deviation	Std. Error Mean
Total	Private	62	3.69	0.56	0.07
	Public	78	3.46	0.62	0.07

Table 4.16: Independent sample t-test results

		Independent Samples t Test								
		Levene's Test for Equality of Variances			t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Total	Equal variances assumed	1.02	0.31	2.25	138	0.03	0.23	0.10	0.03	0.42
	Equal variances not assumed			2.27	135.80	0.03	0.23	0.10	0.03	0.42

Table 4.15 indicates the overall mean of the private school students' responses as 3.69 with a standard deviation of 0.56 while that of the public-school students stood at 3.46 with a standard deviation of 0.62. The results suggest that both the public and private JHS students in the study had favorable attitudes toward mathematics with a difference of 0.23 in their means. To test whether this difference is significant, the Levene's test for equality of variances in Table 4.16 yielded a non-significant result. This indicates that the variances are equal. As a result, the independent sample t-test indicated a significant difference between the overall mean scores of the attitude between the private and public schools' students towards mathematics ($p < 0.05$). This warrants the rejection of the null hypothesis that "there is no significant difference between the public and private junior high school student's attitude towards their mathematics learning" in favour of the alternate hypothesis. It can therefore be concluded that there is a significant difference between the attitude towards mathematics among public and private junior high school students in favour of those in the private school.

4.9 Discussion and Findings

Gardner (1975) explained how an attitude always consists of a specific 'attitude object' which stimulates the subjective response. It has been largely agreed that an attitude is held intrinsically within the individual, and thus, is inaccessible to direct observation. Various researchers found in their studies that students from private schools showed significantly more positive attitudes towards mathematics than students from public schools (Alderman, Orazem & Paterno 2001; Arif & Saqib 1999; Aslam, 2009). This is in consonant with the results of this current study. The findings also confirm the results of Duedu (2008) who found that JHS students in general had positive attitudes toward mathematics with respect to the four aspects of attitude to

mathematics examined. Also, Khan and Rodrigues (2012) in their study concluded that both public and private schools' students had highly positive attitudes towards mathematics, though students from the private schools showed a significant high degree of confidence in learning mathematics as compared to students from the public schools.



CHAPTER 5

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

5.0 Overview

This chapter provides a summary conclusions and recommendations and avenues for further studies are suggested.

5.1 Summary of the Study

The study investigated junior high school students' attitude towards mathematics and their perception on the parents influence on their mathematics learning. It also considered the difference between public and private junior high schools students' attitude towards mathematics and their perception on their parents influence on mathematics learning. A descriptive survey design was used as the research design for the study. Data collected for the study were quantitative and were used to investigate the junior high school students' attitude towards mathematics and perception on the parents influence on their mathematics learning.

The target population for this study were, final year junior high school students in the Ga south Municipal Greater Accra Region of Ghana. The sample size for the study consisted of 140 participants from four junior high schools, consisting of two public school and two private schools.

A day was assigned to each school for the collection of data. In total ten days was used. Mathematics Attitude Questionnaire (MAQ) and Perceived Parental Influence Questionnaire (PPI) were the instruments for data collection. Analysis of data was based on descriptive (means, standard deviations and percentages) and inferential statistics (t-Test analysis).

5.2 Summary of Findings

After the analysis of the data collected the following findings evolved from the current study:

- That junior high school students from both private and public schools have a positive or favourable perception of their parents' influence on their mathematics learning. In all the subscales considered: Monitoring, Encouragement, Communication and Material support, students in both type of schools showed a positive perception. However, it was revealed that students in the private school perceived that their parents influence their mathematics learning in the various subscales more than those in the public schools.
- That junior high school students from both private and public schools have a positive attitude towards mathematics. Students' attitude was based on four domains: Anxiety, Confidence, Enjoyments and Benefits. On all the four domains, the junior high school students had positive attitudes on all variables. However, the responses of the private school's students revealed a higher attitude in all domains than students in the public schools.
- Though a difference in overall perceived parental influence on student's mathematics learning was found among public and private junior high school students in favour of those in the private school, a difference in the means was found between the subscales Monitoring, Communication and Material support. This indicated a statistically significant difference in means was however found between their perception on their parent's encouragement in mathematics learning in favour of the private junior high school students.

- Finally, although students in both schools showed a positive attitude in all subscales examined, there was a statistically significant difference found between the overall attitude towards mathematics among public and private junior high school students in favour of those in the private school.

5.3 Conclusion

Students' mathematics achievement is influenced by many factors. The role of parent is critical in their children's learning. The contribution of the thesis to new knowledge is that it extends previous literature by providing an understanding of the difference between the attitude of students toward mathematics learning across school types - private and public schools, as well as how they perceive the influence of their parents in their mathematics learning. The present study adds to the several studies which have observed students' perceived parental influence on their mathematics learning and attitude (Khan & Rodrigues, 2012; Eshun, 2000; Cao & Bishop, 2006; Cai, 2003). In accordance with Fullan (2007) and Lumpkin (2010), that teacher can't educate their students alone without the collaboration of parents, so it is important to develop a good rapport for the well-being of students and regular meetings sessions with parents for school-parents relation to assessing how parents can help their children in their mathematics learning. Also, parents are of no doubt they have influence on children's mathematics learning in an indirect way and that teachers, schools and other educational stakeholders must know the relevance of this in their students' academic life Cao, Bishop and Forgasz (2006) also distinguish between direct and indirect parental influence. Even though parents in the private schools are perceived to be highly influencing their wards in mathematics learning their counterparts in the public schools are not left out. The attitude of students towards mathematics learning is very fundamental in mathematics learning. As such looking out for students'

anxiety, confidence, enjoyments and benefits in mathematics will help develop a high interest in learning mathematics.

5.4 Limitations

The major limitation placed on this study was the inability to cover more junior high schools in the Ga-South Municipal of Ghana due to lack of finances and time. This limited the generalization of the results of the study to all Junior High Schools in the Municipal and even Ghana. According to Best and Kham (1993), limitations are conditions beyond the control of the researcher that place restrictions on the conclusion of the study and its application. Therefore, the researcher used only four Junior High Schools which represented a very small portion of the entire population.

5.5 Recommendations

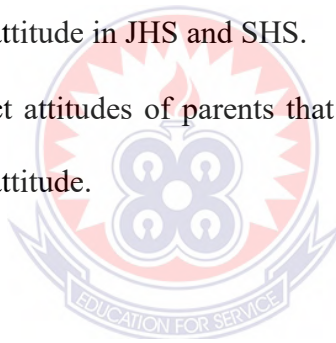
From the findings of this study, the following recommendations are offered:

- Mathematics educators at the junior high level of education should implement parental strategies that will influence their students' attitude in mathematics learning.
- The Ghana education service should spell out the parental influences that will help promote students' attitude in learning mathematics.
- Mathematics teachers must continually educate and encourage students for them to know how their attitude towards mathematics affect their mathematics learning.
- The Ghana Education Service (GES) and the Mathematics Association of Ghana (MAG) should involve parents in most of their mathematics decision making to help parents relate appropriately with their wards at home when learning mathematics.

5.6 Suggestions for Further Research

Based on the outlined limitation, this study can be useful as a baseline study for future research in world settings. To continue building upon the literature on high school students' perceptions of their parent's influence in mathematics learning, any possible influence of the parent must be considered in the learning process. This may have a positive influence on the students' attitude towards mathematics, the following suggestions are put forward:

- Parental influence on students' attitude and performance of students in the senior high schools.
- Effect of parent's mathematical attitude and performance on their ward's performance and attitude in JHS and SHS.
- Direct and Indirect attitudes of parents that influence students' mathematical performance and attitude.



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APPENDICES

APPENDIX A

Student's Questionnaire

UNIVERSITY OF EDUCATION, WINNEBA

FACULTY OF SCIENCE EDUCATION

DEPARTMENT OF MATHEMATICS EDUCATION

Dear Student,

This questionnaire is being used to conduct a survey on student attitude towards mathematics. Your responses are going to be treated as confidential and, for the purpose of this research only. Your answers must be voluntary and truthful.

Please write your name and your age in the space provided on this sheet.

And tick all other to indicate your choice.

Name: _____ Gender: Female
Male

Age _____ School Type: A. Public B. Private

		Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
	SECTION A					
1	My Parents attend PTA meetings always.					
2	My parents ask my mathematics teacher about my performance.					
3	My parents expect me to do well in mathematics.					
4	My parents are concerned about my score in maths exams.					
5	My parents check my maths books always.					
6	My parents visit me at school often.					
	SECTION B					
7	My parents advise me about studying mathematics more.					
8	My parents advise me to do my mathematics homework and classwork.					

9	My parents advise me to ask questions in class when I don't understand.					
10	My parents reward me when I do well in mathematics.					
11	My parents inspire me to do mathematics.					
SECTION C						
12	My parents tell me to learn mathematics more.					
13	My parents ask me about my mathematics class always.					
14	My parents make me add and subtract numbers in the house.					
15	My parents make me feel I can do better in mathematics.					
SECTION D						
16	My parents buy my mathematics textbooks					
17	My parents provide me with enough stationary to practice mathematics questions.					
18	My parents allow me to study with friends.					
19	My parents pay for my mathematics extra classes.					
20	My parents give me time to do my mathematics homework.					

APPENDIX B

Student's Questionnaire

Dear Student,

This research is a survey on student attitude towards mathematics. These questions are confidential, for research and research only; information will not be shared with anyone outside of this project. Your answers must be voluntary and truthful. Please write your name on this sheet. Please tick all questions that apply.

Age _____ School Type: A. Public B. Private Gender: Female/Male

	Questions	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
	SECTION A					
1	Working mathematics makes me nervous.					
2	I get unhappy when I think of learning mathematics.					
3	Learning mathematics is very annoying.					
4	I am not confident about asking for clarification in mathematics class when I do not understand something.					
5	I get worried when my mathematics teacher is in class.					
	SECTION B					
6	Mathematics does not scare me at all.					
7	I have self-confidence in learning mathematics.					
8	I have confidence in taking mathematics test.					
9	I can solve more mathematics questions within a short time.					
10	I am able to solve mathematics problems without difficulty.					
11	I have confidence in asking mathematics questions in class.					
12	I am able to answer mathematics questions					

	in class.					
13	Mathematics does not scare me at all.					
	SECTION C					
14	I enjoy working mathematics questions.					
15	I enjoy word problems in mathematics.					
16	I look forward to a mathematics class.					
17	Mathematics is very interesting to me.					
18	I enjoy learning mathematics with my friends.					
19	I feel happy working more mathematics problems.					
	SECTION D					
20	Mathematics is important in everyday life.					
21	I want to develop my mathematics skills.					
22	Knowing mathematics will help me earn a living.					
23	Mathematics is very necessary.					
24	I will need mathematics for my future work.					
25	Mathematics help people to make good decisions.					
26	Mathematics improves my thinking capacity.					
27	Mathematics is very important for other subjects.					

APPENDIX C

Distribution of Responses (%) of Students' Perception on the Likert-

Type Rating Scale

PARENTAL INFLUENCE

Parental Influence	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	Private	Public	Private	Public	Private	Public	Private	Public	Private	Public
My Parents attend PTA meetings always.	7 (5%)	14 (10%)	5 (4%)	18 (13%)	5(4%)	6 (4%)	35 (25%)	24 (17%)	10 (7%)	16 (11%)
My parents ask my maths teacher about my performance.	8 (6%)	9 (6%)	6 (4%)	13 (9%)	12 (9%)	10 (7%)	23 (16%)	27 (19%)	13 (9%)	19 (14%)
My parents expect me to do well in maths.	3 (2%)	11(8%)	8 (6%)	9 (6%)	5 (4%)	16 (11%)	24 (17%)	23(16%)	22(16%)	19 (14%)
My parents are concerned about my score in maths exams.	1(1%)	8(4%)	18 (13%)	11 (8%)	5 (4%)	11(8%)	15 (11%)	28(20%)	23(16%)	23 (16%)
My parents check my maths books always.	5 (4%)	6(4%)	11(8%)	11(8%)	12(9%)	8(6%)	15 (11%)	33 (24%)	19(14%)	20 (14%)
My parents visit me at school often.	4 (3%)	4 (3%)	10 (7%)	13 (9%)	8 (6%)	18 (13%)	26 (19%)	22 (16%)	14 (10%)	21 (15%)
Parental Encouragement										
My parents advise me about studying mathematics more.	2 (1%)	9(6%)	9 (6%)	18 (13%)	7 (5%)	13 (9%)	23 (16%)	27 (19%)	21 (15%)	11(8%)
My parents advise me to do my maths homework and classwork.	3(2%)	11(8%)	8 (6%)	14 (10%)	7 (5%)	15 (11%)	23 (16%)	19(14%)	21 (15%)	19(14%)
My parents advise me to ask questions in class when I don't understand.	2 (1%)	6(4%)	5 (4%)	14 (10%)	11(8%)	5 (4%)	28(20%)	24 (17%)	16 (11%)	29 (21%)
My parents reward me when I do well in math.	4(3%)	9(6%)	11(8%)	10 (7%)	12 (9%)	18(13%)	18(13%)	19(14%)	17(12%)	22(16%)
My parents inspire me to do maths.	2 (1%)	7 (5%)	7 (5%)	12 (9%)	5 (4%)	22 (16%)	26(19%)	20 (14%)	22 (16%)	17(12%)
Parental Communication										
My parents tell me to learn maths more.	2 (1%)	7 (5%)	7 (5%)	12 (9%)	5 (4%)	22 (16%)	26 (19%)	20 (14%)	22 (16%)	17(12%)
My parents ask me about my maths class always.	2 (1%)	4(3%)	9(6%)	18 (13%)	9(6%)	11(8%)	20 (14%)	30 (21%)	22 (16%)	15 (11%)
My parents make me add and subtract numbers in the house.	3 (2%)	4(3%)	9(6%)	9(6%)	6 (4%)	13 (9%)	28 (20%)	33(24%)	16 (11%)	19 (14%)
My parents make me feel I can do better in maths.	1(1%)	5 (4%)	9(6%)	9(6%)	16 (1%)	11(8%)	19 (14%)	26 (19%)	17(12%)	27(19%)
Parental Material Support										
My parents buy my math textbooks	3 (2%)	5 (4%)	16 (11%)	9 (6%)	8 (6%)	14 (10%)	17 (12%)	24 (17%)	18 (13%)	26 (19%)
My parents provide me with enough stationary to	8 (6%)	7 (5%)	7 (5%)	18 (13%)	9 (6%)	11 (8%)	20 (14%)	27 (19%)	18 (13%)	15 (11%)

practice maths questions.										
My parents allow me to study with friends.	1 (1%)	7 (5%)	11 (8%)	24 (17%)	9 (6%)	17 (12%)	20 (14%)	17 (12%)	21 (15%)	13 (9%)
My parents pay for my maths extra classes.	2 (1%)	6 (4%)	11 (8%)	13 (9%)	11 (8%)	9 (6%)	17 (12%)	30 (21%)	21 (15%)	20 (14%)
My parents give me time to do my maths homework.	2 (1%)	11 (8%)	16 (11%)	12 (9%)	4 (3%)	7 (5%)	17 (12%)	24 (17%)	23 (16%)	24 (17%)



ATTITUDE

Attitude	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	Private	Public	Private	Public	Private	Public	Private	Public	Private	Public
ANXIETY										
Working maths makes me nervous.	02 (1%)	4 (3%)	10(7%)	15(11%)	10(7%)	15(11%)	19(14%)	33	21(15%)	11(8%)
I get unhappy when I think of learning maths.	02 (1%)	7 (5%)	7 (5%)	12(9%)	5(4%)	22(16%)	26(19%)	20(14%)	22(16%)	17(12%)
Learning maths is very annoying.	02(1%)	4 (3%)	9(6%)	18(13%)	9(6%)	11(8%)	20(14%)	30	22(16%)	15(11%)
I feel unconfident about asking maths questions in class when I do not understand.	03(2%)	4 (3%)	9(6%)	10(7%)	6(4%)	13(9%)	27(19%)	32	17(12%)	19(14%)
I get worried when my maths teacher is in class.	01(1%)	5 (4%)	10(7%)	9 (6%)	16(11%)	11(8%)	18(13%)	26	17 (12%)	27(19%)
CONFIDENCE										
Maths does not scare me at all.	03(2%)	5 (4%)	16(11%)	10(7%)	8(6%)	14(10%)	17(12%)	23(17%)	18(13%)	26(19%)
I have self-confidence in learning maths.	08	7(5%)	7(5%)	18(13%)	9(6%)	11(8%)	20(14%)	27(19%)	18(13%)	15(11%)
I have confidence in taking maths test.	01(1%)	7(5%)	11(8%)	24(17%)	9(6%)	17(12%)	20(14%)	17(12%)	21(15%)	13(9%)
I can solve more maths questions within a short time.	02 (1%)	6 (4%)	11(8%)	14(10%)	11(8%)	9(6%)	17(12%)	29	21(15%)	20(14%)
I am able to solve maths problems without difficulty.	04 (3%)	9(6%)	11(8%)	11(8%)	12(9%)	18(13%)	18(13%)	19(14%)	17(12%)	21(15%)
I have confidence in asking maths questions in class.	07 (5%)	14	5 (4%)	18	5 (4%)	6 (4%)	35	24(17%)	10(7%)	16(12%)
I am able to answer maths questions in class.	08 (6%)	9(6%)	6 (4%)	13(9%)	12(9%)	10(7%)	23(17%)	27(19%)	13(9%)	19(14%)
ENJOYMENT										
I enjoy working maths questions.	3(2%)	11(8%)	8 (6%)	10(7%)	5 (4%)	16(12%)	24(17%)	22(16%)	22(16%)	19(14%)
I enjoy word problems in maths.	1(1%)	5(4%)	18(13%)	11(8%)	5 (4%)	11(8%)	15(11%)	28(19%)	23(16%)	23(16%)
I look forward to a maths class.	5(4%)	6(4%)	11(8%)	11(8%)	12(9%)	8(6%)	14(10%)	31	20(14%)	22(16%)
Maths is very interesting to me.	4 (3%)	4 (3%)	10(7%)	13(9%)	8(6%)	18(13%)	26	22(16%)	14(10%)	21(15%)
I enjoy learning maths with my friends.	2(1%)	9(6%)	9(6%)	18(13%)	7 (5%)	13(9%)	23	27	21(15%)	11(8%)
I feel happy working more maths problems.	3(2%)	11(8%)	8(6%)	14(10%)	7 (5%)	15(11%)	23	19(14%)	21(15%)	19(14%)

BENEFITS/VALUE											
Maths is important in everyday life.	2(1%)	6(4%)	5(4%)	14(10%)	11(8%)	5(4%)	28	24(17%)	16(12%)	29(21%)	
I want to develop my maths skills.	4(3%)	9(6%)	11(8%)	11(8%)	12(9%)	18(13%)	18(13%)	19(14%)	17(12%)	21(15%)	
Knowing maths will help me earn a living.	7(5%)	14	12(9%)	18(13%)	0	6(4%)	35	24(17%)	8(6%)	16(11%)	
Maths is very necessary.	7(5%)	9(6%)	35(2%)	13(9%)	10(7%)	10(7%)	22(16%)	27	20(14%)	19(14%)	
I will need maths for my future work.	2(1%)	11(8%)	6(4%)	9(6%)	5(4%)	17(12%)	19(14%)	22(16%)	20(14%)	19(14%)	
Maths help people to make good decisions.	6(4%)	5(4%)	20(14%)	11(8%)	4(3%)	11(8%)	12(9%)	28	20(14%)	23(16%)	
Maths improves my thinking capacity.	1(1%)	6(4%)	15(11%)	12(9%)	8(6%)	9(6%)	14(10%)	30	24(17%)	21(15%)	
Maths is very important for other subjects.	3(2%)	4(3%)	9(6%)	13(9%)	6(4%)	18(13%)	23(16%)	22(16%)	21(15%)	21(15%)	



Appendix D

Participant's Consent Form

I _____, a student of High-Class Junior High School, give my consent to be part of this study. I understand the study will involve completing two different questionnaires. I understand that all information including my name and age will be kept confidential. I understand that these activities will not disrupt my studies and results of the test will not form part of my assessment.

Signed:

Date:

