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Exploring the Influences of Gender, Teacher Traits, and Parental Involvement on the Interest and Performance of Grade Six Pupils in Mathematics

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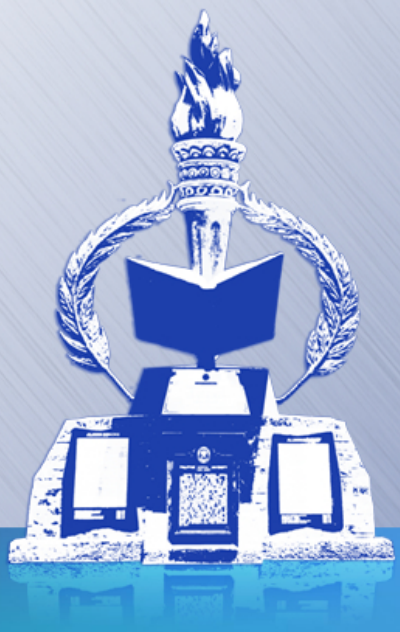

EXPLORING THE INFLUENCES OF GENDER, TEACHER TRAITS, AND PARENTAL INVOLVEMENT ON THE INTEREST AND PERFORMANCE OF GRADE SIX PUPILS IN MATHEMATICS

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CHERRIE S.GATCHALIAN

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APPROVAL SHEET

This special project entitled **"EXPLORINGTHE INFLUENCES OF GENDER, TEACHER TRAITS, AND PARENTAL INVOLVEMENT ON THE INTEREST AND PERFORMANCE OF GRADE SIX PUPILS IN MATHEMATICS"**prepared and submitted by **CHERRIE S. GATCHALIAN**, in partial fulfillment of the requirements for the degree of **Master of Arts in Teaching Mathematics**, is hereby recommended for approval and acceptance.

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ABSTRACT

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Title: Exploring the Influences of Gender, Teacher Traits, and Parental Involvement on the Interest and Performance of Grade Six Pupils in Mathematics

Key Concepts: Gender, Teacher Traits, Parental Involvement, Mathematics Interest, and Mathematics Performance

Degree: Master of Arts in Teaching

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This study zeroed in on the provision of evidences in the relationship between pupils mathematics interest and their mathematics performance. The evidences of mathematics interest were related to gender, parental involvement, and teacher's traits. The mathematics performance of the pupils was based on seatworks, quizzes, and quarterly examination.

The study was conducted among ninety-six (96) Grade 6 pupils of San Sebastian College Manila during the Third Quarter of the School Year 2013-2014. There were 60 grade six boys and 36 grade six girls.

The study found out that there is no gender difference when it comes to mathematics interest among grade 6 pupils. Similarly, the factors of parental involvement and teachers' traits show significant relationship with the mathematics interest of the grade six pupils. Lastly, the mathematics interest of the pupils is significantly correlated with their mathematics performance.

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And to Jesus Christ, my Lord, for the unconditional love and blessings He keeps on pouring upon me.

C.S.G.

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CHAPTER I

The Problem and Its Background

This chapter presents the background of the study, the statement of the problem, the conceptual framework, the significance of the study, the scope and delimitations, and the definition of terms.

Introduction

Interest has a powerful influence on academic performance (Hidi & Harackiewicz, 2000). Many studies have shown the energising function of interest in fostering, remembering, understanding material, and stimulating student's positive attitude towards a topic (Mason & Boscolo, 2004; Schiefele, 1991,1998 as cited in Del Favero, Boscolo, Vidotto, & Vicentini, 2007).

With our quest for education comes the power of academic interest in guiding our behavior and making choices. Interest is a powerful force in determining the quality of learning (Baumert & Schnabel,1998) together

with the educational and occupational choices (Nagy, Trautwin, Baumert, Koller, & Garrett, 2006).

The lack of academic interest among many adolescent students is a major problem for educators (Hidi & Harackiewicz,2000). According to them the key to influencing an individual's academic performance lies in increasing the interest of that individual in a particular domain.

There is a need to catch and hold students' interest in mathematics, tapping the full potentials of talents and encouraging the pursuance of math-related careers between male and female. A number of researches have documented that boys are more interested in mathematics than girls (Watt, 2004). The constant decline and the gender differences in mathematics interest during adolescence are significant (Watt,Richardson,& Pietsch, 2009).

Lack of interest in mathematics has direct implications for student motivation to learn skills needed for accomplishing everyday tasks and for student involvement in science, technology, engineering, and math (STEM) disciplines, particularly for females. Lower interest is closely related to lower performance on math-related achievement tests and lower grades in math (Betz, 1978; Singh, Granville, & Dika, 2002; Uerz, Dekkers, & Beguin, 2004), less interest in taking challenging mathematics

curricula prior to enrolling in college (Nosek, B.A., Banaji, M.R., & Greenward, A.G., 2002), and less interest in pursuing a career in STEM disciplines (Usher,2009) with females at a higher risk (Betz, 1978; Usher, 2009).

The education of school children requires the partnership between parents and teachers. The institutionalization of the home-school relationship is provided for in the Education Act of 1982 which clearly states that, children's education is the responsibilities of parents and the school (Duka, 1999).

According to Commer (1989), the development of quality education is not the monopoly of the school. Hand in hand with the school is the home, each one complementing and supplementing in the maximum development of the child.

Students are most likely to value what their parents value (Eccles, Adler, & Kaczala, 1982). When parents show interest and enthusiasm for a particular subject, they provide a support system at home that should buttress a child's own value of the subject (Gonzales-DeHass, Willems, & Holbein, 2005). The teacher attitudes and enthusiasm, on the other hand, are found to be related to the development of students' interest (Eccles, Wigfield, Harold, & Blumenfeld, 1993).

Researches reveal a very low performance of pupils in school particularly in mathematics and science education. The results of the Trends in International Mathematics and Science Study (TIMSS, 2003) show that the Philippines is one of the six lowest performing countries out of 50 participating countries in TIMSS. Sadly, the elementary school is blamed by high school and college mentors for forming graduates who are not prepared to pursue advanced work in higher educational ladder.

Despite the legal program requirements in basic education for academic improvement, the results particularly in elementary level manifested poor performance as reflected in the National Achievement Test (NAT) and card grades of the pupils in every quarter of the school year.

In light of this reality, the researcher aims to find out how the factors of gender, parental involvement, and teacher traits influence pupils' interest in mathematics. In this study, it seeks to determine the relationship between pupils' interest and performance in mathematics.

Math confidence, math achievement, and interest in math are all related (Kloosterman & Cougan, 1994). According to Bartsch & Wellman (1989), Stipek (1988), and Wittrock (1986) the notion that beliefs influence acrtion is consistent with research that indicates that actions are motivated

by what an individual perceives is the outcomes of those actions. Likewise, students will not be highly motivated in school unless they believe that what they are learning will be of value to them and that effort will help them learn.

Shapiro (2000) defines mathematics as the study of qualitative relations or simply, it is the science of structure, order, numbers, space and relationships about counting, measuring and describing of shapes and objects. It qualifies in its own right as a science, but it is often regarded as a language of and a link between all the sciences. In addition, Osafehinti (1990) describes learning mathematics in schools as representing a basic preparation for adult life and opening a gateway to a vast array of career choices. Competence in mathematics is essential for the preparation of an informed citizenry and continuous production of highly skilled personnel required for industry, technology and science. The progress of any nation depends upon the scientific and technological advancement which can be built on a sound mathematical education capable of making citizens effectively functional in the natural and applied sciences. Lastly, the study of mathematics equips students to live effectively in our modern age of science and technology according to Nigerian National Policy of Education (NPE) Federal Republic of Nigeria (FRN, 2004).

However, among the subject areas tested in National Achievement Test, mathematics always gets the lowest passing rate. Likewise, a number of pupils in both public and private schools have mathematics as their lowest card grade. A high percentage of contributions to mathematical competencies of the learners are the skills mastered from their previous grade levels.

This study determines the relationship between the mathematics interest and mathematics performance among grade six pupils of San Sebastian College, Manila. Likewise, this study seeks to find the influence of factors such as gender, parental involvement ,and teacher traits on the mathematics interest of the grade six pupils. The interest in Mathematics and performance of the said learners are of great importance for the Mathematics curriculum and teaching strategies in all grade levels.

Statement of the Problem

This study aims to provide empirical evidences on the interest and performance in Mathematics among grade six pupils of San Sebastian College Manila.

Specifically, it seeks to answer the following questions:

1) Is there gender difference among grade six pupils in terms of level of mathematics interest?

2) How do pupils' mathematics interest relate to the mathematics valuing of the following :

   2.1) Parents?

   2.2) Teacher ?

3) Is there a significant relationship between the level of pupil's interest and performance in mathematics?

Hypothesis

H_0 : There is no significant difference between the levels of mathematics interest among grade six pupils and their gender.

H_0 : There is no significant relationship between the pupils' mathematics interest and their parents' and teachers' mathematics valuing.

H_0 : There is no significant relationship between the pupils' mathematics interest and their level of mathematics performance.

Conceptual Framework

The Social Cognitive Theory of Albert Bandura (1977,1986) assumes that learning and behavior concern triadic reciprocality or the view that personal, behavioral, and environmental factors influence one another in a bidirectional and reciprocal fashion. From such a perspective, parents, peers, and teachers are of primary importance for the formation of self- and task-related beliefs and values pertaining to varied domains (Eccles et al., 1983; Pekrun, 2000).

In the light of the above theory it is expected that value-nurturing contexts provided by parents who value mathematics and mathematics teachers who know how to teach the learning areas and who enthusiastically transmit the attractiveness of mathematics should relate positively to pupils' interest in mathematics.

The mathematics performance is measured in terms of the pupils' performance for the third quarter in seatworks, quizzes, and third quarterly examination.

The study presumed that there is a high positive relationship between pupils' interest and performance in mathematics. Those students who were exposed to higher parental values and teacher enthusiasm

would reveal higher overall level of interest (Eccles, Adler, & Kaczala, 1982).

The conceptual framework showing the relationship among variables in this study is shown in Figure 1.

Mathematics interest is correlated with mathematics performance.

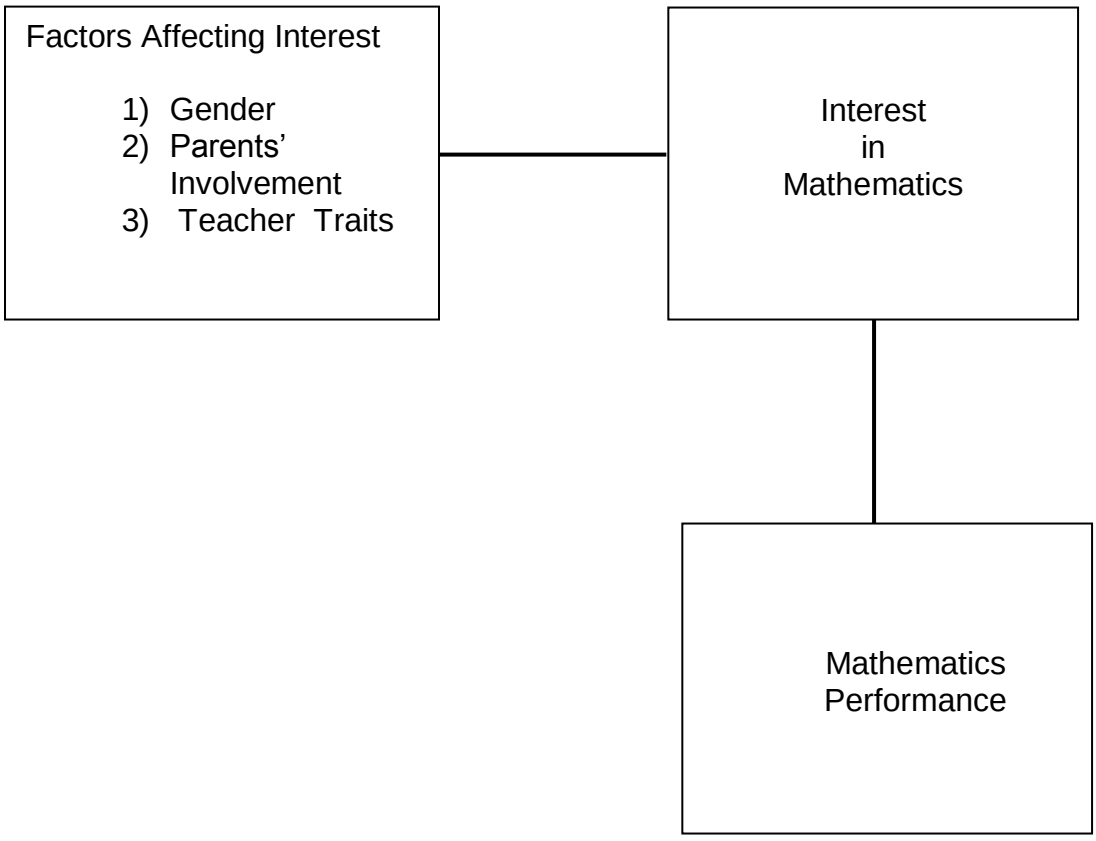

Figure 1. The Conceptual Model Showing Relationship Among Variables in the Study.

Significance of the Study

This study is deemed significant to the educational system as a whole.

To Teachers. Mathematics teachers have the greatest influence over the learning performance of their pupils. This study helps the math teachers to reflect on their classroom practices thereby enriching themselves with workable and appropriate instructional approaches to make mathematics interesting to all. According to Dweck (2007) lessons should be designed to emphasize how famous mathematicians or other influential individuals arrived at their conclusions through hard work rather than emphasizing the idea of “math geniuses” who were born with a gift. Furthermore, mentors can help develop attitudes that contribute to their pupils interest and confidence in studying mathematics, their belief in their own ability, and the knowledge that more careers are open to them if they pursue the study of advanced mathematics.

To Pupils. The results of this study could provide insights on how to better improve pupils’ skills in mathematics through the development of interest and value in mathematics. The pupils are the direct benefactors of the findings of this study regardless of gender for they are the ultimate

recipients and beneficiaries of quality instruction being the center of the educative process.

To Parents. Results of this study could encourage parents to be active participants and have better involvement in matters related to their children's performance in mathematics. They could be guided in some measures to remedy or enrich the mathematics performance of their children such as valuing mathematics and providing learning resources at home. According to Mau (2003) parents should support females who indicate an interest in math-based careers and become involved in helping students select the courses that provide appropriate academic preparation for such fields. This type of behavior among parents is associated with greater retention and success in females pursuing math-based careers such as engineering.

To School Administrators. This study is also intended for the school administrators and curriculum planners to work hard towards improving and producing students who are interested and high performing in mathematics. Thus, having graduates with better developed knowledge, values and skills thereby offering adequate, meaningful and relevant mathematics education. The priority of Faculty development efforts should be designed to provide educators with information about the usefulness of

math across content areas and the provision of training for all educators on teaching math skills so that cross-disciplinary activities can be designed appropriately.

To Future Researchers. Lastly, results of this study could provide other researchers benchmark data which may be valuable to their studies.

Scope and Delimitations

This study focuses mainly on how the factors of gender, parental involvement, and teacher traits influence the interest in Mathematics and the relationship of interest on Mathematics performance among Grade 6 pupils of San Sebastian College, Manila for the school year 2013-2014.

The researcher selected the Grade 6 pupils as her respondents because she is the level's teacher in mathematics. Being so, she has easy access in terms of data gathering and collection.

The learning areas covered in this study are delimited to the content standards for the third quarter namely: proportion problem, percent (rate, base, percentage), and application of percent (discount, sale price, total cost, sales tax, and total cost). The mathematics

performance of the pupils is based on the results of their seatwork, quizzes, and quarterly exam for the third grading period of the school year 2013-2014.

Factors affecting mathematics interest are limited only to gender, parental involvement, and teacher traits.

Pupils' demographic profile is delimited to gender.

Parental involvement is delimited to how they value mathematics through provision of learning resources at home and the guidance they provide for their children.

This study utilizes data on the pupils' mathematics scores based on the seatworks, quizzes, and quarterly exam for the third grading period.

Definition of Terms

In order to facilitate better understanding of the terms and concepts used in this study, the following terms were used for the purpose of clarity:

Gender. This refers to the state of being male or female.

Interest. This is considered as a unique motivational variable and psychological condition that happens during interactions between persons and their objects of interest and characterized by increased attention, concentration and effect (Hidi, 2006). In this study, interest focuses on motivation, value and enjoyment, and learning content.

Mathematics Performance. This refers to the degree of mastery skills, fundamental concepts, processes and general knowledge of mathematics. In this study, it refers to the performance of the respondents on third quarter topics in mathematics in grade 6 based on their seatworks, quizzes, and quarterly exam for the third quarter.

Teacher Traits. In this study, teacher traits refer to the characteristics, attitudes, and abilities of the teacher to arouse motivation and interest among the pupils.

Parental Involvement. In this study, it refers to the interactions between parents and their children's schoolwork in terms of the provision

of learning resources at home and the guidance they provide to their children. It also refers to how parents regard mathematics in their lives.

Learning Areas. This refers to the topics of instruction for the third quarter in grade 6 mathematics namely: proportion problems (inverse, direct, partitive), percent (rate, base, percentage), and application of percent (discount, sale price, sale tax, and total cost).

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter presents existing conceptual literature and related studies relevant to pupils' interest in mathematics and their mathematical performance. The concepts and ideas gained from the literatures and studies have opened opportunities for better understanding and possible solutions of the problems presented in this research.

Interest and Academic Performance

Interest is the effect that relates one's self to the activities that provide the type of novelty, challenge, or aesthetic appeal that one desires (Boekaerts and Boscolo, 2002). In addition, Hidi and Harackiewiez (2000) define interest as an interactive relation between an individual and certain aspects of his or her environment (e.g. objects, events, ideas).

Research has revealed that interest has a powerful influence on academic performance (Hidi and Harakiewiz,2000). This is supported by Hidi (1990) asserting that interest has a profound effect on students'

recollection and retrieval processes, their acquisition of knowledge, and their effort expenditure. Likewise, an interested individual is more likely to develop high competency and to receive positive feedback from others as argued by Hidi, Berndorff, & Ainley (2002). In addition, according to Hidi & Renniger (2006) being interested may also serve as protection against the negative effects of failure. Lastly, interest may be the key to early stages of learning and having interested in a topic or domain, students are more likely to use higher-order learning and improve their knowledge (Alexander, 1997).

Interest in Mathematics and Mathematics Performance

Lower interest is closely related to lower performance on math-related achievement tests and lower grades in math (Uerz, Dekkers, & Beguin, 2004) .

A consistent downward trends of interest in mathematics from a three time period: end of grade 7, end of grade 10 and middle of grade 12 was reported by (Koller, Baumert, & Schnabel, 2001). During 1980s and 1990s there was a decline in intrinsic mathematics values across the transition to junior high school and into the high school years (Wigfield,

Eccles, Mac Iver, Reuman, & Midgley, 1991). Using latent growth curve modelling, curvilinear declines of intrinsic mathematics values were more pronounced in earlier years and then plateaued in senior years (Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002).

Interest in Mathematics and Math Teacher Factors

Mathematics can be made exciting for students if fresh perspective on mathematical concepts are adopted and presented in schools (Steen,1990). The teacher plays a crucial role in the realization of Steen's study. Bergin (1999) states it is important that teachers always demonstrate their own interest in the subject matter and engage their students in the topic. This can be done according to Hidi and Harackiewcz (2000) using modification of teaching materials and strategies, and how tasks are presented such as games, puzzles, and hands-on activities depending on the particular topic.

Mitchell (1993) found that the two main factors in maintaining student interest over time were the significance of the task and student involvement. Significance of the task refers to students' perception of topics as important to their own lives. Mitchel (1993) explains that significance of the task appeared effective because content that is

perceived as being personally meaningful to students is empowering students and holding their interest.

According to Ruffell, Mason, and Allen (1998), “A teacher’s attitude to mathematics is increasingly put forward as a dominant factor in children’s attitudes to mathematics (p.1)”. Haladyna, Shaughnessy, and Shaughnessy (1983), study the connection of teacher quality and the learning environment to attitudes towards mathematics. Their study revealed that attitude toward mathematics is to be most influenced by teacher quality and the social-psychological dimension. Whereas the management-organization dimension shows no effect on the attitude, but may have had some influences on student motivation.

Likewise, Mitchell (1993) defines student involvement as the degree to which students feel they are active participants in the learning process. Student involvement is effective because when the process of learning is experienced as absorbing, then that process is perceived as empowering to students and holding their attention. Students are more interested when they learn by doing as opposed to sitting and listening.

Use of competitive, public motivational approaches, seldom use of drill and practice, and insincere use of praise and criticism are identified as classroom practices that undermine the interest and value that students

attach to mathematics and science (Turner, Midgley, Meyer, Gheen, Anderman, Kang, 2002).

Lastly, Eccles, Arberton, Miller Buchanan, Jacobs, Flanagan, Harold, & et al. (1993) teachers' attitudes and enthusiasm are likely related to students' interest development. In fact according to Patrick, Hisley, Kempler, & College (2000) a few studies have shown that there is a positive relationship between teachers' verbal and nonverbal messages about the value of learning material , and students' interest and intrinsic motivation.

Interest in Mathematics and Gender

Licht & Dwech (1984) argue that students of both gender commonly experience math anxiety, but more likely to be experienced among the female students. Female students interest in mathematics is lower than that of the male students (Nosek, Banaji, Greenwald, 2002) with females at a higher risk (Usher, 2009). Lack of interest in mathematics has direct implications for student motivation to learn skills needed for accomplishing everyday tasks and for student involvement in science, technology, engineering, and math (STEM) disciplines, particularly for females.

Likewise, Usher (2009) argues that lower interest in mathematics means less interest in pursuing career in STEM discipline with females at the higher risk.

There are no gender differences in generalized mathematics values among primary school children according to the study of Wigfield, Eccles, Yoon, Harold, Arbreton, & Freedman-Doan (1997). However, for mathematics enjoyment there is a consistent gender differences as early as grade 3 and 4 (Lichtenfeld, Frenzel, & Pekrun, 2007) and grade 5 (Frenzel, Pekrun, & Goetz, 2007). According to Dossey, Millis, Lindquist, & Chambers (1983), it is more than two decades ago boys and girls in the elementary school achieve at the same level in mathematics, but by age 17 boys outperform girls.

While students interest in mathematics is low overall, male interest in math is higher than that of their female peers (Frenzel, Goetz, Pekrun, & Watt, 2010). This claim is supported by Spelke (2005) and Watt (2006) that lack of interest in mathematics among females directly affects the number of females pursuing math-related degrees, including science, technology, and engineering. In addition, Spelke & Grace (2007) state that social and cultural factors that manifest themselves as gender-based stereotypes in educational settings and outside of these institutions negate

female interest in mathematics starting at a young age. According to Usher (2009) the influential role models such as parents and teachers reinforce harmful stereotypes about who is good at math, further dampening female interest in this field. Lastly, Nosek, Banaji, & Greenward (2002) research indicates that the greater the math gender stereotypes that girls possessed the less likely they were to indicate an interest in Math.

Hyde, Fennema, Ryan, Frost, & Hopp (1990) have found that by adolescence, boys have systematically higher scores on intrinsic values. Boys have higher level of interest in mathematics than girls (Koller, Baumert, & Schnabel, 2001).

There are gender differences in levels, but not more unfavourably curved trajectories of mathematics values between girls and boys (Fredericks and Eccles,2002; Watt,2004).

Mathematics Interest and Parental Involvement

George and Kaplan (1998) claim that parental involvement does not only influence achievement but also the child's attitudes towards schoolwork.

Hurlock (1978) emphasized that most of successful people come from homes where parental attitudes when they were children are favourable and where a wholesome relationship existed between children and their parents.

According to Mc.Donald (2008), with the middle school and secondary students and their families, parent involvement remains very beneficial in promoting positive achievement and affective outcomes with older students.

Bactad (1990) narrated in her study that to promote good study habits, parents took upon them to choose the reading materials appropriate for their child, setting regular hours for studying their lessons and in guiding children in doing their homework.

Bergantinos (2000) discussed parents' involvement as directly affective of the students' performance. The initial stage of learning is at home, thus parents are the first teachers. They set the initial stage of learning and are the very sources of encouragement and support to the students that drive them to study hard and attain meritorious accomplishments. It is along this line that this study closely relates with Bergantinos' study. The only difference is on the type of respondents as

Bergantinos' study is on high school students while this study is on elementary pupils.

Valdez (2001) the study proved that majority of the parents were found to have a moderate to favourable role in the school success of their children. Majority were found to have a very favourable role in the moral development of their children.

Jeynes (2005) indicates that parental involvement is associated with higher student achievement outcomes. These findings emerged consistently whether the outcome measures were grades, standardized test scores, or a variety of other measures, including teacher ratings. This trend holds not only for parental involvement overall but for most components of parental involvement that were examined in the meta-analysis. Moreover, the pattern holds not only for the overall student population but for minority students as well. For the overall population of students, on average, the achievement scores of children with highly involved parents was higher than children with less involved parents. It has been shown that middle and high school students with parents who are highly involved in their education have higher levels of achievement on average than those with less engaged parents (Fan, 2001; Jeynes, 2007).

Henderson and Mapp (2002) found that families' influence on their children's school achievement is consistent, positive, and considerable. This report examines research on parent and community involvement and its impact on student achievement. The report finds that there is strong and steadily growing evidence that families can improve their children academic performance in school and have a major impact on attendance and behavior. Children at risk of failure or poor performance can profit from the extra support that engaged families and communities provide. All students, but especially those in middle and high school, would benefit if schools supported parents in helping children at home and in guiding their educational career.

Studies have also found that when parents are more involved in their children's lives and education, children show more signs of becoming responsible for their own learning. They are more likely to limit risks taking behavior, pursue challenges, and feel satisfied with the tasks they have accomplished (Gonzalez-DeHass, Willems, & Holbeins (2005).

Gardose's (2004) study revealed that the pupils' academic performance is generally "good" but needs to be improved further. A "very Strong" parental involvement is highly recommended to improve the pupils performance. The significant relationship between the pupils, academic

performance and their respective parents' involvement should be made known to the parents to get full support for their respective children in school activities.

According to Ermitano (2009), parental involvement given to pupils was to a very high extent; they were proficient in their academic achievement; and parental involvement has a significant influence on the academic achievement of intermediate grade pupils in English, Mathematics, and Science. The study concluded that the significant influence of parental involvement on the academic achievement of pupils is due to the concern of parents that their children will become successful in their studies.

Lucero (1996) noted that pupils whose parents did not care about their children's education tend to have poor academic performance.

Maloco (2003) narrated that parental involvement does have an effect on grades although contrary to expectations, its indirect effect on grades through homework and tv was negligible. Although the effect of parental involvement in grades might seem small in comparison to that of ability, its effect was meaningful and positive.

The abovementioned studies have linked positive parenting practices to children's achievement motivation. According to Eccles, Adler, & Kaczala (1982), mentioned that students are most likely to value what their parents value. Likewise, when parents show interest and enthusiasm for particular subject or domain, they provide a support system at home that should buttress a child's own value of the subject (Gonzales-DeHass, Willems, & Holbein 2005).

In the study of Eccles, Adler, & Kaczala (1982), parents' beliefs about the importance of mathematics for their 5th through 12th grade children were significantly positively related to the students' own values of mathematics. Likewise, parents' perceptions of the importance of mathematics and student valuing of mathematics were positively related and that this relationship was mediated by the students' perceptions of their parents' aspirations for them.

Synthesis of Review

The presented concepts played crucial roles in framing empirical evidences for developmental trends in mathematics interest among the grade school pupils, in particular the 6th graders in this study.

Teachers in mathematics and parents should recognize the importance of modeling appropriate behaviors toward mathematics. The encouragement, enthusiasm, and valuing of mathematics between parents and teachers play crucial roles for pupils to model and practice in school especially in mathematics class.

The teacher's attitudes in mathematics directly affect the interest of the pupils in mathematics. This conclusion is a taken from the studies of Ruffell, Mason, & Allen (1998), Halydyna, Shaughnessy, & Shaughnessy (1983), Turner, Midgley, Meyer, Gheen, Anderman, & Kang (2002), and Eccles, Arberton, Miller Buchanan, Flanagan, Harold, et al. (1993).

The level of value given to mathematics by the parents is directly proportional to the level of interest in mathematics among the pupils. The studies conducted by the following researchers give evidences to the significance of parents' high valuing in mathematics: Smith and Hausatus (1998), George & Kaplan (1998), Hurlock (1978), Bergantinos (2000), Henderson & Mapp (2002), Gardose (2004), Jeynes (2005), and Ermitano (2009).

Interest has a profound effect in the academic performance of the students as asserted by Boekaerts & Boscolo (2002), Hidi & Harakiewiz (2000), Hidi (1990), and Alexander (1997). Likewise, having interest in

mathematics is correlated with achieving good mathematical performance as revealed in the study of Singh, Granville, & Duka (2002) and Uerz, Dekkers, & Beguin (2004) .

There are no gender differences in mathematics interest among elementary pupils as cited in the work of Dossey, Mills, Lindquist, & Chambers (1988). But, gender differences in mathematics interest starts in junior high school where male students show high interest and perform better in mathematics than female students according to the works of Koller, Baumert, & Schnabel (2001), Hyde, Fennema, Ryan, Frost, & Hopp (1990), and Frenzel, Pekrun, & Goetz (2007).

The foregoing reviews provided the researcher with directions and insight in the conduct of the present study.

CHAPTER III

THE RESEARCH METHODOLOGY

This chapter presents the research methods of the study, the population and the sampling procedure, the instruments used for gathering data, the data gathering procedure, and the statistical treatment of the data.

Research Design

The descriptive-correlational research method is adopted to accomplish the purpose of this study. According to Sevilla, Ochave, Punsalan, Regala, & Uriarte (2001) this research method is designed to help identify the extent to which different variables are related to each other in the population of interest. The descriptive method has been chosen in many areas of investigation. It presents logical use in studies which aim towards information dissemination or creating good public relations.

In this study, the gender, parental involvement, and teacher traits are the focus of evidences of interest in mathematics among Grade six pupils. In addition, it explores the correlation between pupils' interest and their performance in mathematics.

This research design is considered appropriate for determining the influence of factors such as gender, parental involvement, and teacher traits on the mathematics interest of grade six pupils together with the relationship between their mathematics interest and Mathematics performance.

Respondents of the Study

The study was conducted among Grade six pupils of San Sebastian College- Recoletos located in Claro M. Recto Avenue, Manila for school year 2013-2014. The total population of the Grade school pupils in San Sebastian College was 792 pupils. There were 96 pupils in Grade six. There were 60 grade six boys and 36 grade six girls.

Table 1 presents the profile of the respondents based on their gender.

Population Frame

Table 1
Profile of the Respondents

Name of Section	Number of Boys	Number of Girls
Grade VI- St. Thomas of Villanova	20	10
Grade VI- St. Ezekiel Moreno	21	13
Grade VI- St. Augustine of Hippo	19	13
Total	**60**	**36**

The grade 6 pupils are grouped homogeneously according to their general card grade average in Grade 5. There are three sections formed namely: Grade VI- St. Thomas of Villanova, Grade VI- St. Ezekiel Moreno, and Grade VI- St. Augustine of Hippo. The latter section is composed of the Top 32 pupils in the level. There are 30 pupils in Grade VI- St. Thomas of Villanova consisting of 20 boys and 10 girls. The next section is composed of 34 pupils from Grade VI- St. Ezekiel Moreno with 21 boys and 13 girls. The Grade VI- St. Augustine of Hippo has 19 boys and 13 girls with a total of 32 pupils. Therefore, there are 60 boys and 36 girls Grade six pupils with a total of 96 pupils as respondents of the study.

Table 2 presents the profile of pupils according to performance in mathematics. This mathematics performance is based on pupils' grades in seatworks, quizzes, and quarterly exam during the third grading period.

Table 2
Profile of Pupils According to Mathematics Performance

Letter Grade	Numerical Value	Interpretation
A	90% and above	Advanced
P	85-89%	Proficient
AP	80-84%	Approaching Proficiency
D	75-79%	Developing
B	74% and below	Beginning

The rating used in grading the mathematics academic performance is patterned from the Department of Education K-12 levels of proficiency.

Research Instruments

In order to collect data in this study, three sets of questions

(Appendix A) were utilized.

To assess the mathematics interest of the pupils, the items under “Assessing Math Interest” were adopted from the study of Frenzel, Goetz, Pekrun, & Watt (2010) (Appendix A). Some items in the mathematics interest survey were taken online, one from Shawna H. from www.teacherpayteacher.com and others from the Boston College Survey.

The first seven statements (Items #1-7, Appendix A) were taken from Frenzel, Goetz, Pekrun, & Watt (2010). These seven items were suited to the target group. The items assessed the personal interest in the subject of mathematics, tapping both cognitive and affective components of the construct of interest.

Items # 8-13 (Appendix A) were statements focusing on parents mathematics valuing. These items were modified from the Math Interest Survey constructed by Shawna H. The author used this survey in her math class and sold it online to be used by others (www.teacherspayteachers.com/Product/Math_Survey_91746).

The items in assessing math interest focusing on teacher’s mathematics valuing 9 (Items #14-20, Appendix A) were adopted from the list of surveys published online by Boston College on Mathematics

interest.

(www.bc.edu/research/intase/PDF/opd_bat.studentPost_fall06.pdf) .

All the items under this instrument on mathematics interest were revalidated as a matter of standard procedure. Vocabulary loading, appropriateness and clarity of language used were considered in the validation. The validation was conducted among grade 6 pupils of St. Rita College.

The word *"brainteasers"* was asked for clarity by one of the pupils. The researcher defined the word and gave examples. This had led the researcher to define first the same word to the respondents of this study before administering the instrument during the gathering of data. Sixty-seven percent of the pupils was able to answer the instrument in 8 minutes and the rest in 4 minutes. Most of them spent longer time in answering the items on their parents' math valuing. With the highest score of 4, they gave a rating of 3.8 for the format, content, and language used in the instrument.

One item under parent's math valuing: *"My parents believe that Math is important in life,"* was modified to *" My parents like math,"* because one of the evaluators commented that this item is not needed and has no direct connection to the child or learner.

Data Gathering Procedure

The data gathering tools utilized in the study were adapted from existing studies modified to fit the context of the current study. The following studies conducted were lifted and used in the study : study on Assessing Mathematics Interest by Frenzel, Goetz, Pekrun, & Watt (2010) (Appendix A) together with some items in the mathematics interest survey taken online by Shawna H. from www.teacherpayteacher.com and others from the Boston College Survey.

These tools were revalidated to ensure that the data regarding parental involvement, teacher traits and gender were valid and reliable.

Further, the modified data gathering tools were evaluated by qualified evaluators using the evaluation instrument employed by Macababbad (2012). The tools to be used in the study were evaluated by four evaluators. The evaluators were the dean of Institute of Graduate Studies, dean of College of Arts and Science, a mathematics teacher for 23 years, and a guidance counsellor. One evaluator mentioned of non-inclusion of an item under the section in parent's math valuing that states *"My parents believe that Math is important in life."* According to the evaluator, it has no direct connection to the child or learner and therefore is not needed. The researcher modified the item to *" My parents like*

math," which was accepted by the evaluator. One evaluator commented, " *Questions are appropriate and seek to answer the interest of the students in studying mathematics and realizing the importance of mathematics in their lives."* The instrument got a mean rating of 3.9 from the evaluators. The comments and suggestions of the evaluators were incorporated to improve the data gathering tools.

Likewise, the data gathering tools were pre-validated by Grade Six pupils of St. Rita College. They evaluated the content and face validity of the said tools. In order to do so, the researcher secured permission from the principal of the above stated school. Item #3 which states that *" I like to solve brainteasers related to mathematics,"* made one pupil asked the meaning of "brainteaser". The researcher explained the meaning and gave examples for better understanding of the word. The pupils were able to answer the survey in 8 minutes. They gave a mean rating of 3.8 as regards the font, content, and language used in evaluating the instrument.

Feedbacks coming from the evaluation procedure were considered for improvement.

After the evaluation procedures and necessary modifications were done, the tools were administered to the respondents of this study

consisting of 96 grade six pupils as approved by the principal of San Sebastian College-Recoletos, Manila, Grade School Department.

To gather the data of the study, the researcher distributed the mathematics interest survey to the respondents after the third quarterly exam.

The data gathered from the questionnaire were subjected to statistical treatment.

Statistical Treatment of Data

The following indicators were used to determine how the factors of gender, parental involvement, and teacher traits influence the interest of pupils in mathematics and the relationship between their mathematics interest and mathematics performance.

Pearson-Product Moment. This statistical tool is used to measure the degree of association between the mathematics interest of the pupils and their performance in mathematics.

Mean and Standard Deviation. These measures describe the levels of mathematics valuing of the parents and teacher and its influence in the mathematics interest of the pupils.

Two Sample Population. This statistical procedure using the two-tailed test is utilized to test the confidence interval of the difference between mathematics interest and gender.

CHAPTER IV

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

This chapter presents, analyzes, and interprets the data gathered from the respondents using the mathematics survey. The data are presented in tabular form and organized sequentially based on the problems posed in the statement of the problem.

Problem 1. Is there gender difference among Grade Six pupils in terms of their levels of Mathematics interest?

Tables 1 and 2 present the levels of mathematics interest among Grade 6 pupils when grouped according to their gender. These are illustrated using the seven questions where each weighted mean is interpreted. Similarly, the two-sample population using two-tailed test is utilized in comparing the mathematics interest of Grade 6 pupils when grouped according to their gender.

Table 1 presents the mean distribution level of Grade 6 pupils and their interest in mathematics.

Table 1
Mean Distribution Level of Grade 6 Pupils and their Interest in Mathematics

	Boys		Girls		Grade 6 Class	
Level of Mathematics Interest	Weighted Mean	Interpre-tation	Weighted Mean	Interpre-tation	Weighted Mean	Interpre-tation
1) I am interested in mathematics.	4.18	HI	4.09	High	4.14	HI
2) I like to read books related to mathematics.	3.36	AI	3.44	AI	3.40	AI
3) I like to solve brainteasers related to mathematics.	3.51	HI	3.75	High	3.63	HI
4) Doing mathematics is one of my favorite activities.	3.95	HI	3.88	High	3.91	HI
5) I often find the things we deal with in mathematics really exciting.	3.82	HI	3.69	High	3.75	HI
6) After a math class, I am often curious about what we are going to do in the next lesson.	3.64	HI	3.38	A	3.51	HI
7) I would like to find out much more about some of the things we deal with in our mathematics class.	3.75	HI	3.75	H	3.75	HI
Over-All Mathematics Interest of Grade 6 Pupils	**3.74**	**HI**	**3.71**	**HI**	**3.73**	**HI**

Interpretation:

4.21 – 5.00 Very High Interest (VHI) 1.81 – 2.60 Low Interest (LI)

3.41 – 4.20 High Interest (HI) 1.00 – 1.85 Very Low Interest (VLI)

2.61 – 3.40 Average Interest (AI)

Table 1 demonstrates that both boys and girls have high interest in Mathematics. Both female and male respondents have high interest on "*doing mathematics as one of their favorite activity," "dealing mathematics with excitement," " finding out much more about some of the things they deal with in mathematics class,"* and *"solving brain teaser related to mathematics"*.

This table also shows that the boys are highly interested on *"curiosity on what they will do on the next lesson,"* while the girls are on the average level of interest.

It can also be observed on table 1 that the Grade 6 pupils have the same average level of mathematics interest in the aspects of *"reading related materials in Mathematics"*.

In summary, the female and male respondents got high interest in mathematics.

Table 2 presents the comparison on mathematics interest among Grade 6 pupils when grouped according to gender.

Table 2
Comparison on Mathematics Interest among Grade 6 Pupils When Grouped According to Gender

Two- Sample Population				
Two-Tailed Test				
Gender	**x**	**Verbal Interpretation**	**t- value**	**Significance**
Male	3.74	High Interest	0.8059	Not Significant
Female	3.71	High Interest		

$\propto$ = 0.05, t-tabular = 1.987

Table 2 shows the comparison between the gender of the respondents and their level of mathematics interest. The data presented from the table revealed that there is no significant difference on the level of Mathematics Interest among Grade 6 pupils when grouped according to gender. To establish the validity of the study, the researcher utilized the two- sample population of two-tailed test.

With the results, there is enough evidence to claim that the Grade 6 pupils of San Sebastian College- Recoletos Manila have the same level of mathematics interest regardless of gender.

The data presented in Table 2 reveal no gender differences as regards to the mathematics interest among the pupils. This finding is somehow related with Wigfield, Eccles, Yoon, Harold, Arbreton, & Freedman-Doan's claim (1997) that "There are no gender differences in generalized mathematics values among primary school children."

However, the results in Table 2 is contrary with the following studies: for mathematics enjoyment there is a consistent gender differences as early as grade 3 and 4 (Lichtenfeld, Frenzel, & Pekrun, 2007) and grade 5 (Frenzel, Pekrun, & Goetz, 2007).

Problem 2. How do pupils' mathematics interest relate to the Mathematics valuing of the following:

2.1) Parents?

2.2) Teacher ?

Tables 3 and 4 present the relationship that exists between pupils' mathematics interest and the mathematics valuing of both parents and teachers. In addition, the correlation of the mathematics interest of Grade

6 pupils and the mathematics valuing of their parents and teachers is measured using Pearson-product moment at alpha level of 0.05.

To establish the comparison between pupils' mathematics interest and mathematics valuing of parents and teachers, the researcher used the Pearson-product moment after the researcher got the mean and standard deviation for pupils interest, parents' mathematics valuing, and teachers mathematics valuing.

Table 3 presents the mean and standard distribution level in the mathematics interest among the pupils, their parents, and teachers.

Table 3
Mean and Standard Distribution Level in the Mathematics Interest

Level of Mathematics Interest	Mean	Std. Deviation	Verbal Interpretation
Pupils Interest in Mathematics	3.74	0.69615	High Interest
Parents Valuing in Mathematics	3.59	0.86049	High Interest
Teachers Valuing in Mathematics	4.08	0.75368	High Interest

It is evident from the table above that the Grade 6 pupils together with their parents and teachers have high interest in Mathematics. Based on the table, the teachers' and parents' high valuing in mathematics affect the mathematics interest of the pupils.

Table 3 also reveals that the mean difference between teachers' interest and pupils' interest of 0.34 is significant in making teachers' mathematics valuing influence pupils' mathematics interest. In this study, it is evident from the table shown that teachers have high valuing in Mathematics with a respective mean of 4.08. The mathematics teachers of Grade 6 pupils possess the teacher traits which mean having the characteristics, attitudes, and abilities of the teacher to arouse motivation and interest among the pupils. Among the items under the teachers' traits, item # 20 *" My teacher praises my work and effort,"* yielded the highest mean score of 3.8. This item reveals that pupils appreciate teachers who provide appraisals and affirmation for their work and effort. This finding supports the study of Turner, Midgley, Meyer, Gheen, Anderman and Kang (2002) that identifies the use of competitive, public motivational approaches, seldom use of drill and practice, and insincere use of praise and criticism as classroom practices that undermine the interest and value that students attach to mathematics and science.

The parents' valuing in mathematics yielded a mean of 3.59 that got a high interest interpretation. Both parents and pupils obtained an interpretation of high interest in Mathematics. This means that the high valuing of parents in mathematics affect their children's mathematics interest. With the high valuing of parents in mathematics, it results to pupils' high interest in mathematics. In so doing, this data support the study of Eccles, Adler, & Kaczala (1982) stating that parents' beliefs about the importance of mathematics for their 5^{th} through 12^{th} grade children were significantly positively related to the students' own values of mathematics. Likewise, parents' perceptions of the importance of mathematics and student valuing of mathematics were positively related, and that this relationship was mediated by the students' perceptions of their parents' involvement. Furthermore, according to the study of Gardose's (2004), a "Very Strong" parental involvement is highly recommended to improve the pupils' performance. The significant relationship between the pupils' academic performance and their respective parents' involvement should be made known to the parents in order for them to provide full support for their respective children in school activities.

Table 4 presents the correlation between mathematics interests of Grade 6 pupils and the mathematics valuing of their parents and teachers.

Table 4
Correlation on Mathematics Interest of Grade 6 Pupils and Mathematics Valuing of Their Parents and Teachers

Pearson- Product Moment				
Mathematics Interest of the Pupils	**r**	**Verbal Interpretation**	**t- Value**	**Significance**
Parents	0.2116	Low Correlation	1.9958	Significant
Teacher	0.4029	Low Correlation	4.0583	Significant

$\propto$ = 0.05 , t-tabular= 1.987

Table 4 shows the correlation of the mathematics interest of Grade 6 pupils with their parents and teachers interest in mathematics using Pearson- product moment at the alpha level of 0.05.

Based on the table above, there is a significant relationship between the mathematics interests of Grade 6 pupils to their parents mathematics valuing. Therefore, there is a sufficient evidence to claim that parent's mathematics valuing is an indicator of pupil's mathematics

interest. This means that the parents have a great influence on their child's mathematics interest. The presented data link positive parenting practices to children's motivation to achieve. According to Eccles, Adler, & Kaczala (1982) they mentioned that students are most likely to value what their parents value. Likewise, when parents show interest and enthusiasm for particular subject or domain, they provide a support system at home that should buttress a child's own value of the subject (Gonzales-DeHass, Willems, & Holbein, 2005). Furthermore, according to Ermitano (2009), parental involvement given to pupils to a very high extent makes pupils proficient in their academic achievement; and parental involvement has a significant influence on the academic achievement of intermediate grade school pupils in English, Mathematics, and Science.

In addition, it is evident from the table that there is a significant relationship between the pupils' mathematics interest and their teachers' mathematics valuing. Therefore, there is enough evidence to claim that the teachers mathematics valuing is correlated with the pupils' mathematics interest. This means that the teacher characteristics, attitudes, and abilities of the teacher to arouse motivation and interest among the pupils are indeed tools to inspire and develop pupils mathematics interest. According to Ruffell, Mason, and Allen (1998), "*A*

teacher's attitude to mathematics is increasingly put forward as a dominant factor in children's attitudes to mathematics (p.1)". Haladyna, Shaughnessy, and Shaughnessy (1983), study the connection of teacher quality and the learning environment to attitudes towards mathematics.

Therefore, there is enough evidence to assert from the data presented in Table 4 that if teachers and parents have high value in Mathematics, pupils' interest in Mathematics will increase as well. Teachers in mathematics and parents should recognize the importance of modeling appropriate behaviors toward mathematics. The encouragement, enthusiasm, and valuing of mathematics between parents and teachers play crucial roles for pupils to model and practice in school especially in mathematics class.

Problem 3. Is there a significant relationship between the level of pupil's interest and performance in mathematics?

In order to establish the relationship between the mathematics interest and performance of the pupils, the researcher determines the performance level of the pupils in mathematics through the frequency and percentage distribution. After analyzing each performance the relationship

between the two mentioned variables is measured using the Pearson-product moment.

Tables 5-8 present the mathematics performance of Grade 6 pupils according to gender. The mathematics performance refers to the performance of the respondents on third quarter topics in mathematics based on their seatworks, quizzes, and quarterly exam for the third quarter. Likewise, Table 9 presents the correlation between mathematics interest and mathematics performance of Grade 6 pupils using the Pearson-product moment at 0.05 alpha level.

Table 5 presents the frequency and percentage distribution of mathematics performance in quizzes of Grade 6 pupils according to their gender.

Table 5
Frequency and Percentage Distribution of Mathematics Performance in Quizzes of Grade VI Pupils According to their Gender

	Gender					
	Boys		Girls		Total	
Performance Level in Mathematics (Quizzes)	**f**	**%**	**f**	**%**	**f**	**%**
Beginning	1	1.149	0	0	1	1.15
Developing	8	9.195	0	0	8	9.20
Approaching Proficiency	8	9.195	8	9.195	16	18.39
Proficient	14	16.09	10	11.49	24	27.59
Advanced	24	27.59	14	16.09	38	43.68
Total	**55**	**63.22**	**32**	**36.78**	**87**	**100.00**

The table reveals that majority of grade 6 pupils are in the advanced and proficient levels in Mathematics quizzes. This means that the student understand thoroughly the lesson taught by their teachers in Mathematics. Likewise, the table shows that the boys are at the levels of approaching proficiency, proficiency and advanced respectively. The table also reveals that no one from the girls is in the beginning or at the developing level. In summary, the data presented in Table 5 also indicate that boys performed better in quizzes as compared to the girls.

Table 6 presents the frequency and distribution of mathematics performance in seatwork of Grade 6 pupils according to gender.

Table 6
Frequency and Percentage Distribution of Mathematics Performance in Seatwork of Grade VI Pupils According to their Gender

	Gender					
	Boys		Girls		Total	
Performance Level in Mathematics (Seatwork)	**f**	**%**	**f**	**%**	**F**	**%**
Beginning	12	13.79	1	1.15	13	14.94
Developing	5	5.75	4	4.60	9	10.34
Approaching Proficiency	11	12.64	8	9.20	19	21.84
Proficient	8	9.20	6	6.90	14	16.09
Advanced	19	21.84	13	14.94	32	36.78
Total	**55**	**63.22**	**32**	**36.78**	**87**	**100.00**

Table 6 shows the frequency and percentage distribution of Grade 6 pupils according to their seatwork. Based from the data presented in the table, the least number of Grade 6 pupils is in the developing stage with a respective frequency of nine (9) or 10.34%. Moreover, a frequency of 13 or 14.94% of the Grade 6 pupils belong to the beginning level in respect to their seatwork performance. With this given figure, there are 12 or 13.79% boys who belong to the beginning level as compared to 1 or 1.15% from the girls who belong in the same level.

As can be seen in Table 6, majority of Grade 6 pupils are in the levels of advanced and approaching proficiency in seatwork. Most of the boys are in the advanced level with a frequency of 19 or 21.84% as

compared to frequency of 13 or 14.94% of the girls. This means that most of the Grade 6 pupils have a schema and knowledgeable on the topics that were discussed by their teachers.

Table 7 presents the frequency and percentage distribution of mathematics performance in third quarterly examination of Grade 6 pupils according to their gender.

Table 7
Frequency and Percentage Distribution of Mathematics Performance in the Third Quarter Examination of Grade VI Pupils According to their Gender

	Gender					
	Boys		**Girls**		**Total**	
Performance Level in Mathematics (3rd Quarter Examination)	**f**	**%**	**f**	**%**	**F**	**%**
Beginning	14	16.09	3	3.45	17	19.54
Developing	1	1.15	4	4.60	5	5.75
Approaching Proficiency	6	6.90	3	3.45	9	10.34
Proficient	8	9.20	9	10.34	17	19.54
Advanced	26	29.89	13	14.94	39	44.83
Total	**55**	**63.22**	**32**	**36.78**	**87**	**100.00**

The table shows that the greater number of students is in the advanced and proficient levels in terms of the topics included in their third quarter examination. This indicates that majority of the students study

each lesson taught by their mathematics teachers. The data presented implies that most of the Grade 6 pupils are well equipped and prepared for the preceding lesson. As evident in the table, the frequency of boys in the advanced level is twice that of the frequency of girls.

Based on the data above, there are 17 or 19.54% beginning Grade 6 pupils. This means that these students should take remedial classes in order to enhance their mathematics skills. Furthermore, the result of the examination indicates that the test is good and reliable because of the equal distribution of proficient and beginning pupils.

Table 8 presents the frequency and percentage distribution in the mathematics performance of grade 6 pupils according to their gender.

Table 8
Frequency and Percentage Distribution in the Mathematics Performance of Grade VI Pupils According to their Gender

	Gender					
	Boys		**Girls**		**Total**	
Mathematics Performance	**F**	**%**	**f**	**%**	**F**	**%**
Beginning	6	6.90	0	0.00	6	6.90
Developing	9	10.34	3	3.45	12	13.79
Approaching Proficiency	10	11.49	8	9.20	18	20.69
Proficient	7	8.05	9	10.34	16	18.39
Advanced	23	26.44	12	13.79	35	40.23
Total	**55**	**63.22**	**32**	**36.78**	**87**	**100.00**

Table 8 shows the frequency and percentage distribution of Grade 6 pupils according to their mathematics performance. The data presented in this table reveal that no one among the girls is categorized in the beginning level. However, 7% or 6.90% of the boys need to take the competencies in their third quarter grading period. Likewise, the presented data in Table 8 show that most of the Grade 6 pupils are in the approaching proficiency and advanced levels. This means that the teaching methodologies implemented by their teachers are effective to the level of the students.

In addition, the data showed that 26.44% of the boys is in the advanced level as compared to 13.79% of the girls. According to Dossey, Millis, Lindquist, & Chambers (1988), boys and girls in the elementary school two decades ago achieved at the same level in mathematics, but when they reach the age 17 boys outperformed girls.

However, the findings in Table 8 reveal that there is a level of difference in terms of mathematics performance between the boys and the girls. In this study, the boys performed better than the girls. The same data findings came from the studies of Frenzel, Goetz, Pekrun, & Watt (2010) that claim " *with students interest in mathematics is low overall,*

male interest in math is higher than that of their female peers." Moreover, this claim is supported by Spelke (2005) and Watt (2006) that lack of interest in mathematics among females directly affects the number of females pursuing math-related degrees, including science, technology, and engineering. This only proves that women have less inclination and interest in mathematics as compared with men of their age.

Table 9 shows the correlation between the mathematic interest of the pupils and their mathematics performance.

Table 9
Correlation Between Mathematics Interest and Mathematics Performance of Grade 6 Pupils

Pearson- Product Moment				
Correlation	**r**	**Verbal Interpretation**	**t- Value**	**Significance**
Student Interest and Math Performance	0.3651	Low Correlation	3.6152	Significant

$\propto$ = 0.05 , t-tabular= 1.987

The data from the table reveal that there is a significant relationship between the mathematics interest of Grade 6 pupils and their mathematics performance in quiz, seatwork, examination and quarterly examination. This means that there is sufficient evidence to claim that the interest of the

pupils in mathematics is attributed to their mathematics performance. Likewise, the data presented in this table indicate that pupils' performance in Mathematics is affected by their interest in Mathematics. If the interest is high, the performance in mathematics is also high. Thus, the current study from the work of Uerz, Dekkers, & Beguin (2004, claiming that pupils' mathematics low interest in mathematics is closely related to lower performance in math-related achievement tests and lower grades in math. Furthermore, as asserted by Hidi (1990), interest has an intense effect on students' recollection and retrieval processes, their acquisition of knowledge, and their effort expenditure. Lastly, according to Hidi & Harackiewics (2000) the key to influencing an individual's academic performance lies in increasing the interest of that individual in particular domain. In this study, it illustrates that the high interest of the Grade 6 pupils affects their high performance in mathematics.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter sums up the findings, draws conclusions and gives recommendations.

Summary

The main purpose of the study was to determine the relationship between pupils' interest and performance in mathematics among grade six pupils of San Sebastian College, Manila. Likewise, this study aimed to establish the influences of factors such as gender, parental involvement, and teachers' traits to pupils' mathematics interest.

There are 96 grade six pupils as respondents, 60 are boys and 36 are girls. The evidences on mathematics performance are centered on seatworks, quizzes, and quarterly examination during the third grading period for school year 2013-2014. The instrument used in the study is a structured questionnaire checklist patterned after models in the literature, Frenzel, Goetz, Pekrun, & Watt (2010) for Assessing Math Interest.

Likewise, some items in the checklist are modified taken from Shawna H. and some are published on line by Boston College. The statistical treatments of data used in the study are two sample population, mean and standard deviation, and pearson-product moment correlation.

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Findings

Based on the data gathered and analysis, the study yielded these findings:

1) The mean distribution level of Grade 6 pupils to their interest in mathematics showed that boys and girls have high interest in Mathematics. The boys have a very slight difference on mathematics interest compared to girls especially with the curiosity on what they will do on the next lesson. It can also be observed that Grade 6 pupils have an average level of mathematics interest in the aspects of reading related materials in Mathematics. In the aspect of doing mathematics as one of their favorite activity, dealing things in mathematics with excitement, and solving brain teaser related to mathematics also yielded high interest for both male and female respondents.

2) The comparison between the gender of the Grade 6 respondents and their mathematics interest showed no significant difference. To establish the validity of the study, the researcher utilized the two- sample population using two-tailed test. With the results, there is evidence to claim that the Grade 6 pupils of San Sebastian College- Recoletos Manila have same level of mathematics interest regardless of gender.

3) The teachers and parents have high value in Mathematics that affects directly the pupils' interest in Mathematics.

4) The teachers' high valuing in mathematics is correlated with the pupils' high interest in mathematics. With a respective mean of 4.08 on the teachers' high valuing in Mathematics, the teacher's traits which mean having the characteristics, attitudes, and abilities of the teacher to arouse motivation and interest among the pupils are indeed tools to inspire and develop pupils mathematics interest.

5) The parents valuing in mathematics obtained a mean of 3.81 and was given an interpretation of high interest in Mathematics.

6) The parents' valuing in mathematics yielded a mean of 3.59 that got a high interest interpretation. Both parents and pupils obtained an interpretation of high interest in Mathematics. This means that the high valuing of parents in mathematics affect their children mathematics interest. With the high valuing of parents in mathematics, it results to pupils' high interest in mathematics.

7) There is a significant relationship between the mathematics interests of Grade 6 pupils to their parents mathematics valuing. Therefore, there is a sufficient evidence to claim that parent's mathematics valuing is an indicator of pupil's mathematics interest. This means that the parents have a great influence on their child's mathematics interest.

8) There is a significant relationship between pupils' mathematics interest and their teachers' mathematics valuing. Therefore, there is enough evidence to claim that the teachers mathematics valuing is correlated with the pupils' mathematics interest.

9) There is low correlation of the mathematics interest of grade 6 pupils and the mathematics valuing of the parents and teachers using the Pearson-product moment correlation.

10) Majority of grade VI pupils are in the levels of advanced and proficient in Mathematics quizzes. This means that the student have understood thoroughly the lesson taught by their teachers in Mathematics. Likewise, the boys performed better in quizzes as compared to the girls. The boys are at the levels of approaching proficiency, proficiency and advanced respectively.

11) Majority of grade VI pupils are in the levels of advanced and approaching proficiency in seatwork. This means that most of the grade VI pupils have a schema and knowledgeable as regards the topics that were discussed by their teachers. Most of the boys are in the advanced level with a frequency of 19 or 21.84% as compared to frequency of 13 or 14.94% of the girls. The least number of grade VI Pupils is in the developing stage with a respective frequency of nine (9) or 10.34%.

12) The greater number of students is in the levels of advanced and proficient in terms of the topics included in their quarter

examination. This indicates that majority of the students study each lesson taught by their mathematics teachers. The data presented implies that most of the grade VI pupils are well equipped and prepared for the preceding lesson. The frequency of boys in the advanced level is twice that of the frequency of girls. However, there are 17 or 19.54% beginning grade VI pupils. This means that these students should take remedial class in order to enhance their Mathematics skills. Furthermore, the result of the examination indicates that the test is good and reliable because there was equal distribution of proficient and beginning pupils.

13) The frequency and percentage distribution of grade VI pupils according to Mathematics grades revealed that there is a level of difference in terms of mathematics performance between the boys and the girls. In the over-all mathematics performance, no one among the girls is ranked in the beginning level. However there are 6 or 6.90% of the boys that still need to take the competencies in their 3rd quarter grading period. Most of the grade VI pupils are in the approaching proficiency and advanced levels. This means that the teaching methodology

and pedagogies implemented by their teachers is effective to the level of the students. In addition to the mathematics performance, 26.44% from the boys are in the advanced level as compared to 13.79% from the girls.

14) There is a significant relationship between the mathematics interest of Grade 6 pupils and their mathematics performance. This means that there is sufficient evidence to claim that the interest of the pupils in mathematics is attributed to their mathematics performance namely quiz, seatwork, and examination.

15) Pupils' performance in Mathematics is affected by their interest in Mathematics using the person-product moment of correlation.

Conclusions

Based on the above findings, the following conclusions were derived:

1) There is no significant difference on the level of Mathematics Interest among grade 6 pupils by gender. The boys and the girls

both yielded high interest in mathematics. Therefore, there is no gender difference in the level of mathematics interest among the grade six pupils.

2) There is a significant relationship between the pupils' mathematics interest and their teachers' mathematics valuing.

3) There is a significant relationship between the pupils' mathematics interest and their parents' mathematics valuing.

4) The frequency and percentage distribution in the mathematics performance of grade 6 pupils according to gender revealed that there is a level of difference in terms of performance between the boys and the girls. The boys performed well in mathematics than the girls.

5) The mean distribution level of grade 6 pupils and their interest in mathematics showed that boys and girls have high interest in Mathematics. The boys have a very slight difference on mathematics interest compared to girls especially with the curiosity on what they will do on the next lesson.

6) There is a significant relationship between pupils' mathematics interest and their mathematics performance. Therefore, pupils'

performance in Mathematics is affected by their interest in Mathematics.

Recommendations

On the basis of the findings and conclusions of the study, the following recommendations are hereby presented:

1) A study maybe conducted to determine other variables in developing interest in mathematics that may have direct effect in mathematics performance among pupils.

2) A study maybe conducted to determine and enhance the mathematics interest among female students and its correlation to their performance.

3) Researchers may also like to develop effective tools in improving the mathematical interest among the pupils that will lead to a better performance in mathematics.

4) A trajectory study may be conducted to facilitate the validity of this research.

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APPENDICES

APPENDICES

APPENDIX A

RESEARCH

INSTRUMENT

*Mathematics Interest Survey

Assessing Math Interest : Pupils Interest in Mathematics

Items	Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1
1) I am interested in mathematics.					
2) I like to read books related to mathematics.					
3) I like to solve brainteasers related to mathematics.					
4) Doing mathematics is one of my favourite activities.					
5) I often find the things we deal with in mathematics really exciting.					
6) After a math class, I am often curious about what we are going to do in the next lesson.					
7) I would like to find out much more about some of the things we deal with in our mathematics class.					

Assessing Math Interest: Parental Involvement

Items	Strongly Agree 5	Agree 4	Neutral/ Undecided 3	Disagree 2	Strongly Disagree 1
1) My parents like math.					
2) My parents encourage me to do well in math.					
3) My parents help me on my math homework.					
4) My parents help me prepare for my exams					
5) My parents review me in my math lessons every day.					
6) My parents check my scores in math.					

Assessing Math Interest: Teacher Traits

Items	Strongly Agree 5	Agree 4	Neutral/ Undecided 3	Disagree 2	Strongly Disagree 1
1) My teacher is interested in my work even if it is wrong.					
2) When I don't understand something, my teacher tries to help me by asking me questions about my thinking.					
3) My teacher asks us to think about different ways to solve each math problem.					
4) My teacher uses computer when s/he teaches the class.					
5) My teacher tries to understand my way of doing math problems.					
6) My teacher shows us how to solve math problems and then we practice similar problems.					
7) My teacher praises my work and effort.					

Name: _____

Grade & Section: _____ Gender: _____

MATH INTEREST SURVEY

Put a check (/) in the column that corresponds to your answer.

Items	Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1
1) I am interested in mathematics.					
2) I like to read books related to mathematics.					
3) I like to solve brainteasers related to mathematics.					
4) Doing mathematics is one of my favorite activities.					
5) I often find the things we deal with in mathematics really exciting.					
6) After a math class, I am often curious about what we are going to do in the next lesson.					
7) I would like to find out much more about some of the things we deal with in our mathematics class.					
8) My parents like math.					
9) My parents encourage me to do well in math.					

10) My parents help me on my math homework.					
11) My parents help me prepare for my exams					
12) My parents review me in my math lessons every day.					
13) My parents check my scores in math.					
14) My teacher is interested in my work even if it is wrong.					
15) When I don't understand something, my teacher tries to help me by asking me questions about my thinking.					
16) My teacher asks us to think about different ways to solve each math problem.					
17) My teacher uses computer when s/he teaches the class.					
18) My teacher tries to understand my way of doing math problems.					
19) My teacher shows us how to solve math problems and then we practice similar problems.					
20) My teacher praises my work and effort.					

Thank you very much for answering the Math Interest Survey. God bless us. 

APPENDIX B

EVALUATION

OF

INSTRUMENT

Rating Scale to Assess the Mathematics Interest Survey

I. Personal Data

Name:

_____

Position/Title:

_____

Highest Educational Attainment: _____

Number of Years in Teaching Math: _____

II. Evaluation Instrument

Directions: Listed below are some criteria in evaluating the instrument used in determining the developmental trajectory of Mathematics interest among grade six pupils of San Sebastian College- Manila Grade School Department.

Please rate each item by checking the column that corresponds to the component equivalent in the four-point scale. Thank you very much.

4	=	Strongly Agree
3	=	Agree
2	=	Disagree
1	=	Strongly Disagree

CRITERIA	4	3	2	1
I. Format				
1) The font size is appropriate.				
2) The font style is appropriate.				
3) The printing is clear.				
4) The printing is easy to read.				
II. Content				
1) The directions are clear.				
2) The directions are easy to follow.				
3) The items reflect interest in math.				
III. Language				
1) The language is appropriate.				
2) The language used is easy to understand.				

Please write your comment/s:

_____

_____

_____

Kindly write your suggestion/s:

_____

_____

_____

Thank you very much.

_____

Signature of the Evaluator

APPENDIX C

LETTER OF

COMMUNICATIONS

December 18, 2013

DR. WINSTON S. SIRUG
Dean
College of Arts and Sciences
San Sebastian College, Manila

Dear Dr. Sirug,

Greetings in the Augustinian spirit!

I am a graduating student in Master of Arts in Teaching Mathematics undertaking a seminar paper entitled "**EXPLORING THE INFLUENCES OF GENDER, TEACHER TRAITS, AND PARENTAL INVOLVEMENT ON THE INTEREST AND PERFORMANCE OF GRADE SIX PUPILS IN MATHEMATICS**".

In this regard, I would like to seek your assistance by evaluating the instrument to be used in the said study for the provision of empirical evidences on interest in Mathematics among the grade six pupils.

Attach is the survey to be used for the study.

I hope for your utmost consideration regarding this request. Your honest responses, comments, and suggestions are of great help in the completion of this study.

Let us continue to be advocates and instruments of providing quality mathematics education among the students.

Thank you very much. More power!

Yours in St. Sebastian,

Cherrie S. Gatchalian
Researcher

December 18, 2013

DR. VAUGHN S. BUAQUIÑA
Dean
Institute of Graduate School
San Sebastian College, Manila

Dear Dr. Buaquiña,

Greetings in the Augustinian spirit!

I am a graduating student in Master of Arts in Teaching Mathematics undertaking a seminar paper entitled "**EXPLORING THE INFLUENCES OF GENDER, TEACHER TRAITS, AND PARENTAL INVOLVEMENT ON THE INTEREST AND PERFORMANCE OF GRADE SIX PUPILS IN MATHEMATICS** ".

In this regard, I would like to seek your assistance by evaluating the instrument to be used in the said study for the provision of empirical evidences on interest in Mathematics among the grade six pupils.

Attach is the survey to be used for the study.

I hope for your utmost consideration regarding this request. Your honest responses, comments, and suggestions are of great help in the completion of this study.

Let us continue to be advocates and instruments of providing quality mathematics education among the students.

Thank you very much. More power!

Yours in St. Sebastian,

Cherrie S. Gatchalian
Researcher

December 18, 2013

MRS. CORAZON A. TUAZON
Guidance Counselor
Grade School Department
San Sebastian College, Manila

Dear Mrs. Tuazon,

Greetings in the Augustinian spirit!

I am a graduating student in Master of Arts in Teaching Mathematics undertaking a seminar paper entitled "**EXPLORING THE INFLUENCES OF GENDER, TEACHER TRAITS, AND PARENTAL INVOLVEMENT ON THE INTEREST AND PERFORMANCE OF GRADE SIX PUPILS IN MATHEMATICS**".

In this regard, I would like to seek your assistance by evaluating the instrument to be used in the said study for the provision of empirical evidences on interest in Mathematics among the grade six pupils.

Attach is the survey to be used for the study.

I hope for your utmost consideration regarding this request. Your honest responses, comments, and suggestions are of great help in the completion of this study.

Let us continue to be advocates and instruments of providing quality mathematics education among the students.

Thank you very much. More power!

Yours in St. Sebastian,

Cherrie S. Gatchalian
Researcher

December 18, 2013

MRS. AMELIA G. LUMBIS
Faculty, Mathematics Arae
Grade School Department
San Sebastian College, Manila

Dear Mrs. Lumbis,

Greetings in the Augustinian spirit!

I am a graduating student in Master of Arts in Teaching Mathematics undertaking a seminar paper entitled "**EXPLORING THE INFLUENCES OF GENDER, TEACHER TRAITS, AND PARENTAL INVOLVEMENT ON THE INTEREST AND PERFORMANCE OF GRADE SIX PUPILS IN MATHEMATICS**".

In this regard, I would like to seek your assistance by evaluating the instrument to be used in the said study for the provision of empirical evidences on interest in Mathematics among the grade six pupils.

Attach is the survey to be used for the study.

I hope for your utmost consideration regarding this request. Your honest responses, comments, and suggestions are of great help in the completion of this study.

Let us continue to be advocates and instruments of providing quality mathematics education among the students.

Thank you very much. More power!

Yours in St. Sebastian,

Cherrie S. Gatchalian
Researcher

December 18, 2013

The Grade School Principal
Saint Rita College
Manila

Dear Sir/Madam,

Greetings in the Augustinian spirit!

I am a graduating student in Master of Arts in Teaching Mathematics undertaking a seminar paper entitled "**EXPLORING THE INFLUENCES OF GENDER, TEACHER TRAITS, AND PARENTAL INVOLVEMENT ON THE INTEREST AND PERFORMANCE OF GRADE SIX PUPILS IN MATHEMATICS**".

In this regard, I would like to seek your assistance by allowing me to conduct the validation of the instrument to be used for the said study among your 18 grade six pupils (9 girls and 9 boys) as respondents. Each gender is represented by equal number of pupils in varying levels of performance in mathematics (high, average, low performing pupils).

I hope for your utmost consideration regarding this request. Your support is of great help in the completion of this study.

Let us continue to be advocates and instruments of providing quality mathematics education among the pupils.

Thank you very much. More power!

Yours in St. Sebastian,

Cherrie S. Gatchalian
Researcher

December 18, 2013

MRS. OLGA O. PAGUIA
Principal
Grade School Principal
San Sebastian College, Manila

Dear Mrs. Paguia,

Greetings in the Augustinian spirit!

I am a graduating student in Master of Arts in Teaching Mathematics undertaking a seminar paper entitled "**EXPLORING THE INFLUENCES OF GENDER, TEACHER TRAITS, AND PARENTAL INVOLVEMENT ON THE INTEREST AND PERFORMANCE OF GRADE SIX PUPILS IN MATHEMATICS**".

In this regard, I would like to seek your assistance by allowing me to conduct the math interest survey to our grade six pupils. These pupils are my respondents in the abovementioned study.

I hope for your utmost consideration regarding this request. Your support is of great help in the completion of this study.

Let us continue to be advocates and instruments of providing quality mathematics education among the pupils.

Thank you very much. More power! Bravo Baste!

Yours in St. Sebastian,

Cherrie S. Gatchalian
Researcher

APPENDIX D

SPSS 20 OUTPUT

APPENDIX E

CERTIFICATIONS

- Anti- Plagiarism Test
- Language Edit

```
CROSSTABS
  /TABLES=Quizzes Seatwork Exam Grade BY Gender
  /FORMAT=AVALUE TABLES
  /STATISTICS=CC
  /CELLS=COUNT
  /COUNT ROUND CELL.
```

Crosstabs

Notes

Output Created		24-FEB-2014 15:41:47
Comments		
Input	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	87
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each table are based on all the cases with valid data in the specified range(s) for all variables in each table.
Syntax		CROSSTABS /TABLES=Quizzes Seatwork Exam Grade BY Gender /FORMAT=AVALUE TABLES /STATISTICS=CC /CELLS=COUNT /COUNT ROUND CELL.
Resources	Processor Time	00:00:00.06
	Elapsed Time	00:00:00.23
	Dimensions Requested	2
	Cells Available	174762

[DataSet2]

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Quizzes * Gender	87	100.0%	0	0.0%	87	100.0%
Seatwork * Gender	87	100.0%	0	0.0%	87	100.0%
Exam * Gender	87	100.0%	0	0.0%	87	100.0%
Grade * Gender	87	100.0%	0	0.0%	87	100.0%

Quizzes * Gender

Crosstab

Count

		Gender		Total
		Male	Female	
Quizzes	below 74	1	0	1
	75-79	8	0	8
	80-84	8	8	16
	85-89	14	10	24
	90 and above	24	14	38
Total		55	32	87

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.267	.154
N of Valid Cases		87	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Seatwork * Gender

Crosstab

Count

		Gender		Total
		Male	Female	
Seatwork	below 74	12	1	13
	75-79	5	4	9
	80-84	10	8	18
	85-89	8	6	14
	90 and above	19	13	32
	7.00	1	0	1
Total		55	32	87

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.262	.267
N of Valid Cases		87	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Exam * Gender

Crosstab

Count

		Gender		Total
		Male	Female	
Exam	below 74	14	3	17
	75-79	1	4	5
	80-84	6	3	9
	85-89	7	9	16
	90 and above	26	13	39
	7.00	1	0	1
Total		55	32	87

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.323	.072
N of Valid Cases		87	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Grade * Gender

Crosstab

Count

		Gender		Total
		Male	Female	
Grade	below 74	6	0	6
	75-79	9	3	12
	80-84	10	8	18
	85-89	7	9	16
	90 and above	23	12	35
Total		55	32	87

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.279	.118
N of Valid Cases		87	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pupils	87	2.00	5.00	3.8046	.69615
Parents	87	2.00	5.00	3.8046	.86049
Teachers	87	2.00	5.00	4.2184	.75368
Valid N (listwise)	87				