International Journal of Social Science And Human Research

ISSN(print): 2644-0679, ISSN(online): 2644-0695

Volume 06 Issue 03 March 2023

DOI: 10.47191/ijsshr/v6-i3-53, Impact factor- 6.686

Page No: 1759-1768

Mathematical Proficiency of Grade 10 Students

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ABSTRACT: This study aims to determine the mathematical proficiency of Grade 10 students of a Sectarian School in Bacolod City in solving functions. The data gathering instrument used was a validated teacher-made questionnaire. Based on the results and findings of the study and considering the limitations, the following conclusions were drawn: Both male and female students had average proficiency in terms of solving Linear, Polynomial and Exponential Functions. But in Logarithmic Function, the female outdid the male by achieving a high proficiency with the male only on the average. But, in terms of Quadratic Function, both male and female students scored low. Both private and public-school students had average proficiency in solving Linear Functions, Polynomial Functions, and Exponential Functions. Yet, regardless of origin of school, when it comes to proficiency in solving Quadratic Functions, all students got low. Both high- and low-income families had average level of proficiency in terms of solving Linear, Polynomial and Exponential Functions. Both also got a low level of proficiency on the topic Quadratic Function. But in terms of Logarithmic Function, those students who belonged to higher income families displayed high level of proficiency compared to those who belong to the lower income group who only had an average level of proficiency. There was a significant difference in the level of proficiency of students when grouped according to school origin. Lastly, there was no significant difference in the level of proficiency of students when grouped according to socio-economic status.

KEYWORDS: Mathematical Proficiency

INTRODUCTION

Mathematics is a tool we use to understand and interpret our world. In our increasingly technological economy, those who can understand and apply Mathematics have significantly enhanced opportunities to achieve success in continuing education and in life. The key to opening the door to these opportunities is a deep understanding of important mathematical concepts and procedures (Quinn and Cepaitis: 2002).

In a global sense, Mathematics plays a vital role in every human being. Every individual should acquire competence and develop the power of logical thinking and in the use of Mathematics procedures in daily living (Justo, 2000:95). More so, competence in Mathematics is very important to function in everyday life (Ball:2002:10). Furthermore, a citizen of the modern world cannot afford to be ignorant of Mathematics because the world we live in is so highly mathematical. Mathematics is a universal subject, so much a part of modern life. Anyone who wishes to be a fully participating member of society must know basic Mathematics (Betz:2001).

Thus, in its truest sense, Mathematics is universally essential in our existence. Although some people find it difficult which made them feel negative about it yet, others are challenged and interested to learn it. Hence, those who truly understand the importance and can-do Mathematics will have more opportunities than others who do not.

According to the Developing Mathematical Proficiency with the Auto Skill Academy of Math (2000:3), learning Mathematics is a complex and time consuming endeavor. For many, Mathematics is a frustrating and confusing array of facts, rules and formulas. Oftentimes, confusion occurs when too many concepts are introduced to be studied in a short period of time. Since students do not have sufficient time to understand concepts, practice procedures or solve problems are never likely to obtain a sense of getting it. Thus Joseph Payne (1999:1) emphasizes that Mathematics helps young children make sense of the world around them and in finding meaning of the physical world. Through Mathematics, children learn to understand their world in terms of numbers and shape. They learn to reason out, connect ideas and to think logically. It is more than rules and operation. It is about connections and seeing relationships in everything you do.

According to the Trends in Mathematics and Science Study (2004) on the national level, knowledge of Mathematics is believed to be a valuable tool for social development and global competitiveness in this changing world. As the mathematical proficiency and literacy of individual Filipino students are developed, they, in turn, contribute to the skills, values and collective intellectual resources of the Philippines, increasing the nation's funds of knowledge. These roles are not changed from one to the other, and more often than not, are entangled and complement one another. For the significant role it plays in the lives of Filipinos, Mathematics is indeed worthy of the focus and attention it receives in the curriculum. It is hoped that educators can help enrich their students' lives as they give them the gift of a Mathematics Education.

However, according to the National Council of Teachers of Mathematics (2004), all students deserve an opportunity to understand the power and beauty of Mathematics. Students need to learn a new set of Mathematics basics to enable them to compute fluently and to solve problems creatively and resourcefully. This is because mathematical competence opens door to productive futures but closes it for those who lack it.

According to Mathematician J. H. Poincare as cited by Armani (2008) "Mathematician does not study pure Mathematics because it is useful; he studies it because he delights in it and he delights in it because it is beautiful." However, there are students who failed to discover the beauty of the subject, they only consider the power of Mathematics to solve problems. On the other hand, there are students, especially those who love to dig deeply in the mines of learning, invariably discover the power and beauty of Mathematics.

It is for this reason that mathematics subjects were given much priority in the educational endeavor, but effort did not suffice due to the depressing result in the National Achievement Test, whereby Mathematics was found to be among the different subjects that most students had suffered a low result. This finding was confirmed by Ibe (1996), that since 1984 NCEE to 1988, Mathematics showed the poorest performance in Mathematics and logical organization. A parallel finding for the NSAT, over the years spanning 19941999, showed Mathematics to be the second most difficult subject test (Ibe:2000).

According to Terry Ryan (2007), the elementary and middle school children in Ohio were passing the state's Reading and Math proficiency tests with lower scores than children in other states. The result of the test was 75.9 percent of fourth Graders passed Ohio's Math test while only 46 percent passed the National Assessment of Educational Progress (NAEP). Eighty percent of fourth Graders were proficient or better in Reading according to the state's test but just 36 percent achieved proficient on the NAEP Reading exam. Eighth-grade performance was similar. More than 71 percent of students scored proficient on the state's Math Achievement Test but only 36 percent passed the NAEP test. Eighty percent of eighth graders passed the state Reading test while just 36 percent passed the NAEP.

According to a study by the Trends in International Mathematics and Science Study (TIMSS) in 2003, out of the 45 participants in the Science Achievement test at the 8th grade level (second year high school in the Philippines), the Philippines ranked 42, beating only Botswana (43), Ghana (44) and Africa (45). The top five performing countries were Singapore, Chinese Taipei, South Korea, Hong Kong and Estonia. In the Math Achievement Test, the Philippines ranked 41, besting Botswana (42), Saudi Arabia (43), Ghana (44) and South Africa (45). The top five were Singapore, South Korea, Hong Kong, Chinese Taipei and Japan (Federis :2006).

Mathematics is also one of the subjects in which most students of La Consolacion College Integrated School find difficult as revealed in the number of students who fail every grading period and at the end of the school year. Despite the efforts of the teachers to use different strategies to make Mathematics learning easier, many students find the subject difficult. Though there are a lot of factors contributory to this state, still the reasons would redound to the perception that Math is a difficult subject. To improve students' performance in Math, the Mathematics Area introduced a lot of programs with the likes of Tutorial/Remedial Program and the Mathematics Teachers Association of the Philippines (MTAP) which cater to both average and high-performing students in Math. In high school alone, especially Grade 10, many students find topics in Mathematics difficult and thus results to failing grades.

The researcher realized the needs of the students to master their skills in the topic Functions. The result of the National Career Assessment Examination of Grade 10 students in the level of Mathematics ability was average. Therefore, there is a need to increase their mastery level in Math especially in the topic Functions. This is because these skills will help them to improve their Mathematics performance as a whole. It is the desire of the researcher to conduct an investigation concerning the mathematical proficiency of Grade 10 students of a sectarian school in Bacolod City in solving functions with the end hope of improving students' performance in Mathematics especially in solving functions through an intervention program.

STATEMENT OF THE PROBLEM

The purpose of this study was to determine the mathematical proficiency of Grade 10 students of a sectarian school in Bacolod City in solving functions. Specifically, the study aimed to answer the following questions:

1. What is the profile of the Grade 10 students in terms of the following:

a. Gender.
b. Socio-Economic Status
c. School of Origin
d. Section?

2. What is the mathematical proficiency of Grade10 students in solving functions when classified as to the following topics:

a. Linear Function.
b. Quadratic Function
c. Polynomial Function.

d. Exponential Function

3. Logarithmic Function, when taken all together and when grouped according to:

a. Gender
b. Socio-Economic Status
c. School of Origin
d. Section?

4. Is there a significant difference in the mathematical proficiency of Grade 10 students in solving Linear, Quadratic, Polynomial, Exponential and Logarithmic Functions when they are grouped and compared according to:

a. Gender
b. Socio-Economic Status
c. School of Origin
d. Section?

THE HYPOTHESIS OF THE STUDY

Based on the above problems, the hypothesis is postulated as: There is no significant difference in the mathematical proficiency of Grade 10 students in solving Linear, Quadratic, Polynomial, Exponential and Logarithmic Functions when they are grouped and compared according to gender, socio-economic status, school of origin and section.

THEORETICAL FRAMEWORK

This study is anchored on the theory of Ausubel (2001) known as the 'theory of meaningful learning". The primary idea of Ausubel's theory is that learning of new knowledge is dependent on what is already known. In other words, construction of knowledge begins with observation and recognition of events and objects through concepts one already possesses. One learns by constructing a network of concepts and adding to them. A concept map is an instructional device that uses this aspect of the theory to allow instruction of material to learners of different prior knowledge.

To learn meaningfully, individuals must relate new knowledge to relevant concepts they already know. New knowledge must interact with the learner's knowledge structure. Meaningful learning can be contrasted with rote learning which also can incorporate new information into the knowledge structure but without interaction. Rote memory is fine for remembering sequences of objects. Meaningful learning, therefore, is personal and involves recognition of the links between concepts.

It is a strange phenomenon, but a surprising number of students who enthusiastically tackle such diverse subjects as natural sciences, language and history where it needs to have mastery of every details of the subject are reduced to a quivering mass of collective insecurity when confronted with mathematics subjects.

In Mathematics, the function is set of ordered pairs in which no two pairs have the same first coordinate and different second coordinates. Any set of ordered pairs is called a relation. So every function is a relation, but a relation in which two ordered pairs have the same first coordinate and different second coordinates is not a function but just a mere relation (Malaborbor: 2003).

Basically, functions are commonly represented in three ways: Verbally by a sentence that describes how the input variable is related to output variable; Numerically by a table or a list of ordered pairs that matches input values with output values; Algebraically by an equation in two variables (Oronce:2002).

Therefore, it is not necessarily how information is presented but how the new information is integrated into the old knowledge structure that is crucial in order for meaningful learning to occur.

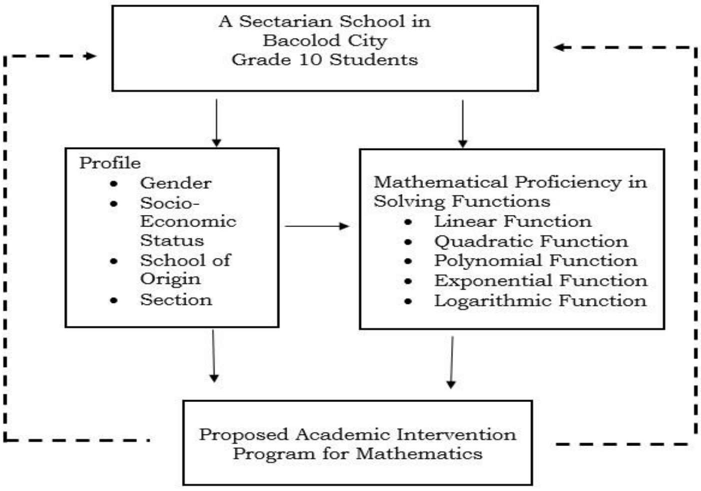

Figure 1 - Schematic Diagram Theoretical Framework

METHODOLOGY

Research Design

This research study utilized Descriptive Research Design. Descriptive design describes the status of events, people or subject as they exist and usually make some type of comparison, contrast and correlation and sometimes in carefully planned and orchestrated descriptive research, cause effect relationship may be established to some extent (Padua:2000:61).

Research Instruments

A teacher-made test was used to determine the mathematical proficiency of the Grade 10 students in solving functions specifically the linear, quadratic, polynomial, exponential and logarithmic. There were 15 prepared problems in each topic of function. The participants, however, were advised during the giving of instruction that they have to follow the steps in answering the survey questions and to read the instruction thoroughly.

The researcher constructed a teacher-made test based on the following topics: Linear Function, Quadratic Function, Polynomial Function, Exponential Function and Logarithmic Function. The test was designed to find out the mathematical proficiency in solving functions of the Grade 10 students. The mathematics IV syllabus specifically the first and the second grading period was used as the basis for the selection of the said topics.

Results

Table 1 shows the profile of the Grade 10 students of a Sectarian School in Bacolod City when grouped according to the identified variables of gender (male and female), socio-economic status (higher and lower), school of origin (private and public) and section (A, B, C, D and E).

According to gender, there are 104 or 51.23% female respondents while there are only 99 or 48.77% male respondents. The female respondents outnumbered the male.

As to socio-economic status, students with high family income has a frequency of 149 or 73.40%; on the other hand the students with lower family income has a frequency of 54 or 26.60%. Results reveal that most of the Grade 10 students belong to a family with a high family income.

In terms of school of origin, there are more students who come from the private school having a frequency of 193 or 95.07%; however, students from public school are lesser compared to those coming from the private school having a frequency of 10 or 4.93%. It shows that the majority of the Grade 10 students came from the private schools.

As to the variable section, most of the respondents come from Section E with 43 students and the least coming from Section D with 37 students. The rest of the three sections, A, B and C have 40, 42, and 41, respectively.

Table 1: Profile of the Grade 10 Students of La Consolacion College Integrated School, in terms Gender, Socio-Economic Status, School of Origin and Section

Variables	Classifications	Frequency	Percentage
Gender	Male	99	48.77%
	Female	104	51.23%
Socio-Economic Status	Lower	54	26.60%
	Higher	149	73.40%
School of Origin	Private	192	94.58%
	Public	11	5.42%
Section	A	40	19.70%
	B	42	20.69%
	C	41	20.20%
	D	37	18.23%
	E	43	21.18%
	Total	***203***	***100.00%***

Table 2 shows the level of proficiency of the Grade 10 students in solving Functions when grouped according to gender. On the topic "Linear Function", both male and female respondents have the mean scores of 4.57 and 4.59 all interpreted as "Average." On the topic "Quadratic Functions", the male and the female respondents' proficiency is interpreted "Low" having mean scores of 3.71 and 3.97 respectively. In terms of "Polynomial Functions" and "Exponential Functions", results reveal that the Grade 10 students, both male and female, though having different mean scores, exhibit "Average" level of proficiency. Surprisingly, in "Logarithmic

Functions'', the female respondents achieve "High" proficiency as evidenced by the mean score of 6.13 with the male respondents getting only the mean score of 5.92 interpreted as "Average." With the result, the notion that "Mathematics" is a male thing can be negated and that male and female can perform in Math equally at the same proficiency level.

In terms of Gender, the overall level of proficiency of the male students is Average with an overall mean score of 5.04 while that of the female is average with an overall mean score of 5.02.

On a study by Adeleke, MA. (2007), it was found out that when training of problem solving is carried out in Mathematics using Conceptual and Procedural Learning Strategies boys and girls will perform equally well without significant difference.

Table 2A: Level of Mathematical Proficiency of Grade 10 Students in Solving Functions When Grouped According to Gender

Variables	Classifications	Mean	Interpretation
a. Linear Functions	Male	4.57	Average
	Female	4.59	Average
b. Quadratic Functions	Male	3.71	Low
	Female	3.97	Low
c. Polynomial Functions	Male	5.67	Average
	Female	5.03	Average
d. Exponential Functions	Male	5.34	Average
	Female	5.37	Average
e. Logarithmic Functions	Male	5.92	Average
	Female	6.13	High
TOTAL	**Male**	**5.04**	**Average**
	Female	**5.02**	**Average**

Table 2B, shows the level of proficiency of Grade 10 students in solving Functions when grouped according to school of origin reveals no big disparity in the mean scores and interpretations. Those coming from the private and public-school exhibit "Average" level of proficiency on the topics "Linear Functions, Polynomial Functions, and Exponential Functions." Similarly, both have the same "Low" proficiency on the topic "Quadratic Functions". However, on the topic "Logarithmic Functions", students coming from the private school display "High" level of proficiency getting the mean score of 6.05 while those coming from the public-school show "Average" level of proficiency in this specific topic.

The overall level of proficiency of the Grade 10 students when grouped according to School of Origin is Average for those who came from the private school with a mean of 5.05 and Average as well for those who graduated from public school with a mean of 4.54. On a study by Delpa Kappan (2005), it was found out that public- school students scored lower on average than private-school students at both grades 4 and 8. Indeed, it is part of the common wisdom in the United States that private school students outscore public school students on standardized tests. That private schools are more effective than public schools at boosting student achievement, including that of disadvantaged students. These studies of test performance, which controlled for some potentially confounding variables such as socioeconomic status (SES), affirmed widespread assumptions about the superiority of private schools.

Table 2 B: Level of Mathematical Proficiency of Grade 10 Students When Grouped According to School of Origin

Variables	Classifications	Mean	Interpretation
a. Linear Functions	Private	4.60	Average
	Public	4.20	Average
b. Quadratic Functions	Private	3.87	Low
	Public	3.40	Low
c. Polynomial Functions	Private	5.39	Average
	Public	4.30	Average
d. Exponential Functions	Private	5.36	Average

	Public	5.20	Average
e. Logarithmic Functions	Private	6.05	High
	Public	5.60	Average
TOTAL	**Private**	**5.05**	**Average**
	Public	**4.54**	**Average**

When grouped according to Socio-economic status, Table 2C yields the following results: On the topic "Linear Functions", both high and low family income have mean scores of 4.44 and 4.94 both interpreted as "Average." Consistently, even in terms of family income, the Grade 10 students have "Low" proficiency on the topic "Quadratic Functions". "Average" proficiency is displayed by students both belonging to high and low family income on the topics "Polynomial Functions and Exponential Functions." On the topic "Logarithmic Functions", those students belonging to high family income exhibit "High" level of proficiency compared to those students whose family have low income who exhibit "Average" proficiency.

In terms of level of proficiency of Grade 10 students when grouped according to Socio-Economic Status, the overall mean of those belonging to the higher income group is 5.01 interpreted as Average while that of students belonging to lower income group has an overall mean of 5.03 interpreted also as average.

This is further supported by the study of Programme for International Student Assessment (2004) that both theory and evidence suggest that students' knowledge and behavior, including academic outcomes, are influenced by the characteristics of the schools they attend. Schools may have higher or lower average Socio-Economic Status, depending on whether their students are predominantly from low or high Socio-Economic Status families. The socioeconomic background of a school population may reflect the socioeconomic conditions of the community where the school is located and thus be a community characteristic as well as a school characteristic.

Table 2 C: Level of Mathematical Proficiency of Grade 10 Students When Grouped According to Socio-Economic Status

Variables	Classifications	Mean	Interpretation
a. Linear Functions	Higher	4.44	Average
	Lower	4.94	Average
b. Quadratic Functions	Higher	3.80	Low
	Lower	3.96	Low
c. Polynomial Functions	Higher	5.42	Average
	Lower	5.13	Average
d. Exponential Functions	Higher	5.34	Average
	Lower	5.41	Average
e. Logarithmic Functions	Higher	6.04	High
	Lower	5.98	Average
TOTAL	**Higher**	**5.01**	**Average**
	Lower	**5.03**	**Average**

Table 2D presents the level of proficiency of Grade 10 students when grouped according to Sections. On the topic "Linear Functions", Classes A, C, and D have "Average" Proficiency as revealed by mean scores 5.13, 5.37, and 5.22. Classes B and E both have a mean of 3.60 and 3.75 respectively interpreted as "Low" proficiency.

As to the topic "Quadratic Functions", four (4) classes (Classes A, B, D, and E) have a result of "Low" proficiency, with mean scores of 3.80, 3.79, 3.61, and 3.45 respectively. Only Class C has "Average" proficiency on this particular topic. This implies that most of the Fourth-Year students are not proficient when it comes to solving Quadratic Functions.

Four (4) classes exhibit "Average" proficiency in terms of solving Exponential Functions as evidenced by the mean scores of 5.31, 5.05, 5.28, and 4.20. Class A gets a "High" level of proficiency on the same topic with a mean score of 6.98.

Different levels of proficiency are revealed in relation to the topic "Exponential Function." Classes A and C perform "High" with mean scores of 6.00 and 6.88 while classes B and D perform "Average" with mean scores of 4.21 and 5.94. However, Class E attains "Low" proficiency with a mean of 3.95. As to the last topic, on Logarithmic Functions, two (2) classes show "Very High" proficiency with mean scores of 8.30 and 8.00 (Classes A and D). Three classes (Classes B, C, and E) perform "Average" with mean scores of 4.40, 5.37, and 4.50.

Mathematical Proficiency of Grade 10 Students

Thus, when grouped according to sections, the overall level of proficiency of students who belong to Section A is High, Section B is Average, Section C is Average, Section D is Average, and Section E is Low.
In general, in terms of sections, the Grade 10 students exhibit different levels of proficiency in all topics under Functions.

On a study of Torca (1997) focused on the mathematical component skills that the performance levels of fourth year students in the component skills of mathematical ability were below 50%. Likewise, the fourth year students were found to be weak in all component skills most especially in problem solving. The study recommended that to improve performance level in all sorts of test, mastery learning should be practiced in the daily lessons and remedial work be conducted after every test.

Table 2DL: Level of Mathematical Proficiency of Grade 10 Students When Grouped According to Sections

Variables	**Sections**	**Mean**	**Interpretation**
	A	5.13 3.60	verage Low
	B	5.37	Average
a. Linear Functions	C		
	D	5.22	Average
	E	3.75	Low
	A	3.80 3.79	Low
	B	4.56	Low
b. Quadratic Functions	C		Average
	D	3.61	Low
	E	3.45	Low
	A	6.98 5.31	High
	B	5.05	Average
c. Polynomial Functions	C		Average
	D	5.28	Average
	E	4.20	Average
	A	6.00 4.21	High
	B	6.88	verage High
d. Exponential Functions	C		
	D	5.94	Average
	E	3.95	Low
	A	8.30 4.40	ery High
	B	5.37	Average
e. Logarithmic Functions	C		Average
	D	8.00	Very High
	E	4.50	Average
	A	**6.04 4.26**	**High**
	B	**5.45**	**Average**
TOTAL	**C**		**Average**
	D	**5.61**	**Average**
	E	**3.97**	**Low**

The table 2E illustrates the level of proficiency of Grade 10 students in solving functions reveal the following Qualitative Interpretation: Logarithmic Functions gains a mean of 6.03 with an interpretation of "High"; Linear, Quadratic and Exponential Functions" gain a mean of 4.58, 5.25 and 5.36 respectively with an interpretation of "Average"; for Quadratic Functions, a mean of 3.81 is gained interpreted as "Low" proficiency.

Table 2 E: Level of Mathematical Proficiency of Different Topics of the Grade 10 students when taken as a whole by topic.

Topics	**Mean**	**Qualitative Interpretation**
A. Linear Functions	4.58	Average
B. Quadratic Functions	3.81	Low
C. Polynomial Functions	5.25	Average
D. Exponential Functions	5.36	Average

E. Logarithmic Functions	6.03	High
Grand Mean	**5.01**	**Average**

As revealed in Table 3, the computed two-tailed value at 0.05 level of significance is 0.889 and is greater than 0.05, this shows that there is no significant difference on the level of proficiency when grouped according to gender.

In a study by Adeleke, MA. (2007), it was found out that when training of problem solving is carried out in Mathematics using Conceptual and Procedural Learning Strategies, boys and girls will perform equally well without significant difference.

Table 3: Significant Difference on the Level of Proficiency of the Grade 10 Students when Grouped According to Gender

Paired Variable	df	Sig (2 tailed)	Interpretation	Status
Male – Female	203	0.889	Not Significant	H_0 @ 5% level of Significance Accepted

When grouped according to school of origin, the computed two-tailed value at the 0.05 level of significance is 0.029, as shown in table 3A. Hence, the null hypothesis is Rejected. The tabulated result shows that there is a significant difference on the level of proficiency in solving functions of the Grade 10 students of a certain sectarian school in Bacolod when grouped according to school of origin. This means that the students who came from the private schools performed better that those who came from the public schools.

On a study by Delpa Kappan (2005), it was found out that Public- school students scored lower on average than non-public-school students at both grades 4 and 8. Indeed, it is part of the common wisdom in the United States that private school students outscore public school students on standardized tests. That private schools are more effective than public schools at boosting student achievement, including that of disadvantaged students. These studies of test performance, which controlled for some potentially confounding variables such as socioeconomic status (SES), affirmed widespread assumptions about the superiority of private schools.

Table 3A: Significant Difference on the Level of Proficiency of the Grade 10 Students when they are Grouped According to School of Origin

Paired Variable	df	Sig (2 tailed)	Interpretation	Status
Private - Public	203	0.029	Significant	H_0 @ 5% level of Significance Rejected

When grouped according to Socio-Economic Status, the computed twotailed value at the 0.05 level of significance is 0.591. Hence, the null hypothesis is Accepted as illustrated in Table 3B. The tabulated result shows that there is no significant difference on the level of proficiency in solving functions of the Grade 10 students of a certain Sectarian Schoon when grouped according to socio-economic status. This implies that socio-economic status has no direct effect on the proficiency of students in solving functions.

This is further supported by the study of Programme for International Student Assessment (2004) that both theory and evidence suggest that students' knowledge and behavior, including academic outcomes, are influenced by the characteristics of the schools they attend. Schools may have higher or lower average Socio-Economic Status, depending on whether their students are predominantly from low or high Socio-Economic Status families. The socioeconomic background of a school population may reflect the socioeconomic conditions of the community where the school is located and thus be a community characteristic as well as a school characteristic.

Table 3B: Significant Difference on the Level of Proficiency of the Grade 10 Students when they are Grouped According to Socio-Economic Status

Paired Variable	df	Sig (2 tailed)	Interpretation	Status
Higher - Lower	203	0.591	Not Significant	H_0 @ 5% level of Significance Accepted

As shown in Table 3C and Table 3CA, The computed F - value 0.66 exceeded the 0.05 level of significance. Hence, the null hypothesis is accepted. The tabulated result shows that there is no significant difference on the level of proficiency in solving functions of the Grade 10 students of a Sectarian School in Bacolod when grouped according to sections.

Mathematical Proficiency of Grade 10 Students

On a study of Torca (1997) focused on the mathematical component skills that the performance levels of fourth year students in the component skills of mathematical ability were below 50%. Likewise, the fourth year students were found to be weak in all component skills most especially in problem solving. The study recommended that to improve performance level in all sorts of test, mastery learning should be practiced in the daily lessons and remedial work be conducted after every test.

Table 3 C: Significant Difference on the Level of Proficiency of the Grade 10 Students when they are grouped According to Sections

Source Variation	df	Sum of Squares	Mean Squares	Computed F	Tabular Value	Interpretation	Status of H_0 @ 5%
Between Group	4	13.2	3.3				
Within	21	36.1	1.72		19.45	Not Significant	Accepted
Group **TOTAL**	**25**	**49.3**	**5.02**	0.66			

CONCLUSIONS

Based on the results and findings of the study and considering the limitations, the following conclusions were drawn:

On Profile: There were more Grade 10 female students than male students. Most of the students belonged to a family with higher family income. Majority of the students graduated from private schools. Students were evenly distributed in the four (4) sections with one (1) section having only 37 students.

On Level of Proficiency in Solving Functions

According to Gender

Both male and female students had average proficiency in terms of solving Linear, Polynomial and Exponential Functions. But in Logarithmic Function, the female outdid the male by achieving a high proficiency with the male only on the average. But, in terms of Quadratic Function, both male and female students scored low.

According to School of Origin

Both private and public-school students had average proficiency in solving Linear, Polynomial and Exponential Functions. The disparity was seen in the topic Logarithmic Function where those coming from the private school scored high while those coming from the public school scored average only. Yet, regardless of origin of school, when it comes to proficiency in solving Quadratic Function, all students got low.

According to Economic Status:

The level of proficiency of students who belonged to families with higher income and lower income did not differ greatly. Both had an average level of proficiency in terms of solving Linear, Polynomial and Exponential Functions. Both also got low level of proficiency on the topic Quadratic Function. But in terms of Logarithmic Function, those students who belonged to higher income families displayed a high level of proficiency compared to those who belonged to the lower income group who only had an average level of proficiency.

According to Section:

Section A students generally displayed a high level of proficiency in solving functions. Sections B, C and D achieved only an average level of proficiency in general. Among all the sections, Section E performed poorly.

On Significant Differences

The level of proficiency of both male and female were the same.

There was a significant difference in the level of proficiency of students who graduated from the private school over the students who graduated from the public school.

There was no significant difference in the level of proficiency of students who belonged to the higher income groups and those who belonged to the lower income groups.Section A performed better than the rest of the sections.

IMPLICATIONS

Based from the conclusions of the study, the following Implications were derived: Students, whether male or female find the topic on Quadratic Functions difficult. The female generally are proficient in solving functions. It could be said then that Math is not a "male" subject.

Students who graduated from both private and public schools performed the same level of proficiency. This implied that the school of origin of students has learned and acquired the same competency in Math particularly that can tackled topic on problems involving functions.

Mathematical Proficiency of Grade 10 Students

Socio-economic status or family income does not affect much the performance of students since both levels had average level of proficiency. Since the sectioning of the Grade 10 level, though heterogeneous, most students who are achievers were probably placed in Section A because in all aspects, they performed well. Generally, students performed low in Quadratic Functions, thus this should be given more emphasis.

REFERENCES

1) Adeleke M.A. (2007). Gender Disparity in Mathematical Performance Revisited: Can Training in Problem Solving Bring Difference Between Boys and Girls?. Essays in Education Volume 21, Summer 2007.
2) Armani, Clint (2008). Beauty of Mathematics. http://clintarmani.wordpress. com/2008/09/01/beauty of mathematics/.
3) AutoSkill Academy of Math (2000), Developing Mathematical Proficiency. http://autoskills.com/pdf/FocusMath.pdf
4) Ball, Deborah (2002). Mathematics Proficiency for All Students. http://books.google.com/books?id=MphKwkmI2mwC&dq=Deborah+Loewenberg+Ball&printsec=frontcover&source=bl&ots=C9hOVnNMSX&sig=iOLHR03hcWEBuaJT93_tb1AeMY&hl=en&sa=X&oi=book_result&resnum=2&ct=result#PPP1,M1.
5) Betz, William G. (2001). Basic Mathematics: Course II, Addison Weslye Longnan Ltd, England.
6) Federis, Trina (2006). http://www.bulatlat.com/news/6-17/6-17-scheme.htm
7) Ibe,Milagros D. (2000). World Data on Education. http://www.ibe.unesco.org/fileadmin/user_upload/archive/Countries/WDE/2006/ASIA_and_the_PACIFIC/Philippines/Philippines.htm.
8) Justo, Jean A. (2000). The Modern Teacher, Teacher must Teach Mathematics in a Significant Way, PAPI Publishing Association of the Philippines Vol. 48 no. 1 (pp. 95).
9) Malaborbor, Pastor B. (2003). Functions: Advanced Algebra, Trigonometry and Statistics. Educational Resources Corporation.
10) National Council of Teachers of Mathematics (2004). http://standards.nctm.org/document/chapter1/index.htm.
11) Oronce and Mendoza (2007). E-Math Intermediate Algebra. Rex Printing Co. Inc., Quezon City.
12) Padua, Robert (2000). Elements of Research and Statistical Tool Model. Cagayan de Oro: MPSC Publishing House.
13) Payne, Joseph (1999). Early Childhood: Where Learning Begins, http://www.ed.gov/pubs/EarlyMath/intro.html
14) Phil Delta Kappan. A New Look at Public and Private Schools: Student Background and Mathematics Achievement. http://goliath.ecnext.com /coms2/gi_0199-4297816/A-New-Look-at-Public.html.
15) Programme for International Student Assessment (PISA) (2004) **Student** achievement in mathematics – the roles of attitudes, perceptions and family background. http://www.statcan.gc.ca/pub/ 81-004-x/2005001/7836-eng.htm#d.
16) Quinn and Cepaitis (2002). Montgomery County Public Schools High School Curriculum Framework Mathematics. http://www.montgomery schoolsmd.org/info/curriculum/docs/framework/MathHS.pdf.
17) Ryan, Terry (2007). Lax proficiency test scoring will ensure Ohio kids are left behind. http://www.edexcellence.net/detail/news .cfm?news_id=425.
18) Torca, F, (1997). The Mathematical Component Skills of Fourth Year Students in Private Non-Sectarian Schools in the Division of Albay. Unpublished Master Thesis. Albay City.