



A Study on SAGUT Scholars' Self-concept Towards Mathematics

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ABSTRACT

In this study, quantitative-descriptive-comparative-correlational research design was employed to determine SAGUT scholars' self-concept towards Mathematics during this new normal set-up of learning as learned, organized and dynamic, and their demographic profile such as sex, year level and academic achievement. Likert-Scale questionnaire adopted from Peteros, et.al., (2019) was used and being analysed to answer the level of self-concept of the SAGUT scholars, the significant differences within the demographic variables and its relationship. Results show that SAGUT scholars had moderate level of self-concept towards mathematics, also, that their self-concept towards Mathematics differs when grouped according to the profile variables, however, they are not correlated to each other. It implies that scholars still need to understand more the concept of Mathematics and its influence to one's life. It may suggest that they should view more Mathematics positively in order to improve their self-concept on this subject as it will also reflect on their learning process and achievement.

Keywords: Self-concept, Achievement, Mathematics

1. Introduction

The study of mathematics, which has an impact on every element of daily life on various levels, is regarded by society as the cornerstone of scientific and technological knowledge that is essential to the country's social and economic progress. We become more logical and analytical thinkers as a result of math (Deville, 2018). Mathematical self-concept, defined by NCTM (1989) as the student's perception or belief in their own capacity to succeed in mathematics, is acknowledged as a crucial element of mathematical literacy (retrieved from Wang, J. (2004)). The same report has been claimed by Erdogan, F., & Sengul, S. (2014) and Ireson and Hallam, (2009). Self-concept emerges early in a child's academic career, and within two years of beginning school, a positive association between self-concept and achievement is established (Chapman, Tunmer, & Prochnow, 2000) from Chiu, M. M., & Klassen, R. M. (2010).

According to studies, countries that were wealthier, more egalitarian, more tolerant of uncertainty, or more flexible with regard to gender norms had a stronger correlation between pupils' MSC and mathematics proficiency (Chiu, M. M., & Klassen, R. M. (2010)). It is directly associated with wanting to pursue a profession in mathematics. (Goldman, A. D., & Penner, A. M. (2016)). Additionally, based on the grade levels, it has been suggested that elementary school pupils' levels of mathematical self-concept varied statistically significantly (Erdogan, F., & Sengul, S. (2014)). Additionally, there was a sizable gender difference in the mathematical self-concept levels of elementary school students. It corroborates the study of Wilkins, J. L. (2004) who asserted a gender gap favouring men and a developmental gap implying a deterioration in kids' self-concept in math and science as they age. The same report has been concluded which says that boys had significantly higher math self-concept than girls (Mejía-Rodríguez, A. M., Luyten, H., & Meelissen, M. R. (2021), Lee, C. Y., & Kung, H. Y. (2018), Githua, B. N., & Mwangi, J. G. (2003)). According to Goldman, A. D., et al. (2016), both boys and girls in these nations exhibit worse self-concepts in mathematics and less interest in pursuing a career in the subject.

However, the COVID-19 epidemic forced a shift in the old method of education toward distance learning, and a new standard setup that combines face-to-face instruction with modular learning is currently being implemented. Since they had been using a modular self-learning strategy for the previous two years, the adjustments would lead children to believe that mathematics is more difficult. This study is being done to determine the self-concept of the SAGUT scholars towards Mathematics during this new normal set-up of learning. Additionally, it was determined whether there were any changes in the students' self-concepts about mathematics when they were divided into groups based on their academic achievement, year level, and sex. Specifically, this study will answer the following problems:

1. What is the level of self-concept of the SAGUT scholars towards Mathematics as learned, organized and dynamic?
2. Is there a significant difference on the self-concept of the SAGUT scholars towards Mathematics when grouped according to the profile variables in terms of;
 - a. Sex
 - b. Year Level

c. Academic achievement

3. Is there a significant relationship between the self-concept of the SAGUT scholars towards Mathematics to their profile variables?

2. Methodology

To accomplish the objectives of the study, quantitative-descriptive-comparative-correlational research design was employed to determine SAGUT scholars' self-concept towards Mathematics during this new normal set-up of learning as learned, organized and dynamic, and their demographic profile such as sex, year level and academic achievement. Likert-Scale questionnaire adopted from Peteros, et.al., (2019) was used and being forwarded to the SAGUT Scholars of Nueva Vizcaya Province. The data collected were compiled in Excel and analysed based on the objectives of the study.

For the data analysis, descriptive statistics was used to determine the frequency and percent of the demographic profile variables while mean, median and standard deviation was utilized for the level of self-concept of the respondents towards Mathematics. The mean ranges used described the level of self-concept towards Mathematics as very low self-concept for mean range 1.00-1.49, low self-concept for mean range 1.50-2.49, moderate self-concept for mean range 2.50-3.49 and high self-concept for mean range 3.50-4.49 and very high self-concept for mean range 4.50-5.00. Mann Whitney U test and Kruskal-Wallis' test was used to determine the differences between the independent variables while Spearman's rank correlation was used to determine the relationship between the demographic profiles and the level of self-concept of the respondents towards Mathematics.

3. Results

Objective 1

Determine the SAGUT Scholars' Level of Self-Concept towards Mathematics

Table 1. SAGUT Scholars' Level of Self-Concept towards Mathematics

Self-Concept towards Mathematics	Mean	Median	Std. Deviation	Description
Learned	3.39	3	0.79	Moderate Self-Concept
Organized	3.47	3	0.85	Moderate Self-Concept
Dynamic	3.50	3	0.87	Low Self-Concept
Over all	3.45	3	0.84	Moderate Self-Concept

Legend

1.00-1.49	Very High Self-Concept	3.50-4.49	Low Self-Concept
1.50-2.49	High Self-Concept	4.50-5.00	Very Low Self-Concept
2.50-3.49	Moderate Self-Concept		

Table 1 reveals that with an overall mean of 3.45 and an overall standard deviation of 0.84, SAGUT scholars had a moderate self-concept towards Mathematics. In accordance to this, scholars had a moderate level of self-concept towards mathematics as learned ($\mu=3.39$, $\sigma=0.79$) and organized ($\mu=3.47$, $\sigma=0.85$) while scholars had a low level of self-concept towards mathematics as dynamic ($\mu=3.50$, $\sigma=0.87$). Through this, it might suggest that there's a need for the scholars to view Mathematics positively to improve their self-concept especially towards Mathematics as dynamic which may also reflect their academic achievement.

Objective 2

Determine if there a significant difference on the self-concept of the SAGUT scholars towards Mathematics when grouped according to the profile variables in terms of;

- Sex
- Year Level
- Academic achievement

Table 2. Mann Whitney U Test result on the significant difference on the Self-Concept of the SAGUT Scholars when grouped according to Sex.

Sex	Count	Mann Whitney U	Total Rank	U	U (minimum)	z	p-value
Male	26	1348	4371	745	745	-52.8598	0.00
Female	67	3023		997			
Total	93	4371					

It has been shown in Table 2 that the computed Mann Whitney U for male and female was 4371, the total rank was 4371, the minimum U was 745, the z-value was -52.8598 and the p-value was 0.00. Hence, the computed p-value (0.00) is lesser than the confidence level of 0.05, therefore, it indicates that there is a difference on the self-concept of the SAGUT scholars when grouped according to sex which supports the claim of Erdogan, F., & Sengul, S. (2014).

Table 3. Kruskal-Wallis Test result on the significant difference on the Self-Concept of the SAGUT Scholars when grouped according to Year Level.

Year Level	Count	Sum of Rank	k	H	Chi-Square	P-Value
1	47	1774.5	4	935161.934	7.815	0
2	24	478				
3	11	75				
4	11	32.5				
Total	93	2360				

Legend:

1 - 1st Year 2 - 2nd Year 3 - 3rd Year 4 - 4th Year

The Kruskal-Wallis Test result in Table 3 reveals that the computed sum of rank of the year level was 2360, H value was 935161.934, the chi-square was 7.815 and p-value was 0.00. It indicates that there is a difference on the self-concept of SAGUT scholars when grouped according to year level such that the computed p-value (0.00) is lesser than the confidence level of 0.05. It might imply that as the scholars differ in their academic year level, their self-concept towards mathematics also differs. It supports the study of Erdogan, F., & Sengul, S. (2014) who claimed that there is a statistically significant difference between elementary school students' mathematics self-concept levels based on their grade levels.

Table 4. Kruskal-Wallis Test result on the significant difference on the Self-Concept of the SAGUT Scholars when grouped according to Academic Achievement.

Academic Achievement	Count	Sum of Rank	k	H	Chi-Square	P-Value
1	46	671	4	809042.631	7.815	0
2	6	198				
3	9	321				
4	32	1116.5				
Total	93	2306.5				

Legend:

1 - With/Without Honor 3 - Academic Awardee

2 - With High/Highest Honor 4 - Not an Academic awardee

Through Kruskal-Wallis Test, Table 4 presents that the computed sum of rank for the academic achievement was 2306.5, H value was 809042.631, the chi-square was 7.815 and p-value was 0.00. It suggests that there is a difference on the self-concept of SAGUT scholars when grouped according to academic achievement such that the computed p-value was 0.00 which was lesser than the confidence level of 0.05. It might imply that their self-concept towards Mathematics was reflected on their academic achievement. It corroborates the study of Wilkins, J. L. (2004) who found out an overall positive relationship between achievement and self-concept.

Objective 3

Determine if there is a significant relationship between the self-concept of the SAGUT scholars towards Mathematics to their profile variables.

Table 5. Spearman's Rank Correlation Test result for the Relationship between the Profile Variables and the Self-Concept of the SAGUT Scholars.

Profile Variables	N	Coefficient (r_s)	df	T stat.	p-value
Sex	93	-0.1126	91	1.0738	0.2857
Year Level	93	0.01039	91	0.0992	0.9212
Academic Achievement	93	0.01487	91	0.1419	0.8875

Table 5 shows that computed p-value for sex was 0.2857, the p-value for year level was 0.9212 and the p-value for academic achievement was 0.8875. hence, these computed p-values for the profile variables were greater than the confidence level of 0.05, which mean there is no relationship between the profile variables and self-concept of the SAGUT scholars towards Mathematics. This might suggest that even though the scholars differ in sex, year level and academic achievement, it doesn't affect anything such that profile variables were not correlated with the self-concept of the SAGUT scholars towards Mathematics.

4. Summary of Findings

It has been revealed that SAGUT scholars had moderate level of self-concept towards Mathematics during this new normal set-up of learning. Relatively, they had moderate level of self-concept towards Mathematics as learned and organized while low self-concept towards Mathematics as dynamic. Additionally, it has been shown that there is no difference on the self-concept of the SAGUT scholars when grouped according to sex, year level and academic achievement. Moreover, it has been presented that there is no relationship between the variables which might implies that even though scholars differ in sex, year level and academic achievement, still it will not affect their self-concept towards Mathematics. These findings supported the study of Ayodele, O. J. (2011) and Goldman, A. D., et.al., (2016) who investigated the relationship between self-concept and performance in Mathematics as well as the difference and influence of gender on self-concept and performance in Mathematics.

5. Conclusions

Based on the study's findings, it has been determined that throughout this new regular learning environment, students had a moderate self-concept about mathematics. Additionally, there is no difference in how they view themselves in terms of their academic success, sex, or year level. They still need to learn more about the idea of mathematics and how it affects one's life, though. It can imply that students should perceive mathematics more favourably in order to enhance their perception of this subject matter because it will also have an impact on their academic performance. To promote greater self-concept and a better perspective on mathematics, teachers should also foster in their students a positive self-concept toward mathematics and enjoyable teaching experiences.

Recommendations

Future researchers can use the findings of this study and suggest to add more variables that are not included in the study for further researches such that this study was limited only to sex, year level and academic achievement and focused only to SAGUT scholars.

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