ACADEMIA | Letters

Value of Mathematics for Filipino Grade 11 Students

Chard Aye Reyes Alova, University of St. La Salle

Introduction

Learners as social beings with personal beliefs, emotions and views, and most especially, students' attitudes should be considered in the learning process. Their motivation to learn plays an important role for them to achieve. Thus, attitude cannot be easily separated from learning because they are acquired through the process of learning (Akinsola & Olowojaiye, 2008).

Attitude towards Mathematics plays a crucial role in the teaching and learning processes of Mathematics. It affects students' achievement in Mathematics. (Sandman, 1980).

To present the significant findings of the paper of Alova (2019), this study shows that Value of Mathematics, which is one of the factors of the attitudes toward Mathematics as taken from the Attitudes Toward Mathematics Inventory (ATMI), an instrument developed by Tapia and Marsh (2004), is one salient factor in the students' attitude and perception in the Mathematics subject.

Methodology

Descriptive-comparative, correlational research design employing survey method was used in this study. Descriptive research design is a study designed to depict the participants in an accurate way. More simply put, descriptive research is all about describing people who take part in the study and it can be done using observational, case study, or survey (Kowalczyk, 2015).

A total of 313 Grade 11 students from all the strands of Liceo De La Salle Senior High School of the University of St. La Salle, Bacolod City, Negros Occidental were the respondents of the study. A multi-stage sampling method was used in selecting the respondents of the study, making use of the stratified random sampling using proportionate selection first, to categorize them according to their chosen strands and to identify the number of samples needed to be taken per strand. Then, cluster sampling through lottery method was used to identify what particular sections to take as samples in this study, this is likewise done per strand. All the students from the drawn sections was taken as respondents of the study except in the last section drawn, in which the respondents were chosen by simple random sampling via lottery method. The simple random sampling was used in the last section to preserve the randomness of the data being gathered. This was done to complete the sample size of the study. If all the students in the last section drawn was taken as respondents, the number of respondents will be beyond the sample size of the study.

In order to determine the level of attitude towards Mathematics of Grade 11 students. the researcher used a standardized questionnaire from the works of Tapia and Marsh (2004) on Attitudes Toward Mathematics Instrument: An Investigation with Middle School Students. This instrument was the Attitudes Toward Mathematics Inventory (ATMI). The instrument was composed of 40 items. The items were divided into four factors as patterned from Tapia and Marsh (2004), measuring the attitude towards Mathematics. These were the enjoyment; self-concept; motivation; and value. Furthermore, it was using a 5-point Likert scale.

Results and Discussion

This study revealed that out of the four factors of the ATMI, the Value of Mathematics has the highest mean score of 3.98 interpreted as positive. While the enjoyment, self-concept and motivation factors have the mean score of 3.32, 3.00 and 3.00, respectively, all interpreted as neutral. When taken as whole, the mean of the level of attitude towards Mathematics is 3.40 and was interpreted as neutral.

This implies that Grade 11 students do believe that Mathematics is an important subject and that we all need Mathematics in our lives, thus the value factor has the highest mean score. But they do not enjoy doing Mathematics, they do not possess the perception that they have the competence to do Mathematics and they do not have the motivation to do Mathematics.

Further, there exists a significant difference among the different factors of the ATMI using the One-way Analysis of Variance (ANOVA) with p-value <0.00001 at 0.05 level of significance. Using, Tukey Honestly Significant Different (HSD) Test, it shows that there is a significant difference when you compare Value of Mathematics to all the other factors of the

ATMI, namely, Self-concept, Enjoyment, and Motivation, with p-values <0.00001, 0.0001, and 0.0002, respectively.

From this, we can say that Grade 11 Senior High School students know the value of Mathematics, of how it could be used in everyday life and of how it could be a help in their future jobs. They understand that Mathematics is a very important subject but they do not have the enjoyment to do Mathematics, they do not have the perception that they have the competence to do Mathematics and they do not have the motivation to start learning and enjoying it.

Furthermore, the Pearson Product Moment Correlation Coefficient r, was used to determine the relationship of the factors of the Attitude towards Mathematics of Grade 11 students, and the study reveals that there is a significant relationship between the Self-Concept and Enjoyment factors of the Attitude towards Mathematics of Grade 11 students.

Meanwhile, there exists no significant relationship between the following pairs of factors of the Attitude towards Mathematics of Grade 11 students since the following pairs of factors have p-values more than 0.05. These are: Value and Self-Concept; Value and Enjoyment; Value and Motivation; Self-Concept and Motivation; and Enjoyment and Motivation.

For Pekrun & Perry (2014), students are likely to experience enjoyment when they feel that they can master the learning material in a lesson and believe that achievement in Mathematics is important. This is in conformity with the significant relationship established in this study.

Moreover, in the study of Götz, Crongjäger, et al. (2010), eleventh-grade students with higher academic self-concept experienced more enjoyment and pride visible in quantitative domains such as in Mathematics.

Recommendations

Since it is found out from the results of this study that students see and understand the importance of Mathematics as a subject, as seen that they can see the value of Mathematics. The challenge for teachers is to inspire students for them to enjoy Mathematics, acquire the self-concept and have the motivation to do Mathematics, these are the other three factors of the ATMI. The teacher should find ways, different strategies, unique techniques and start improving practices in their Mathematics class to heighten these attitude factors towards Mathematics.

Moreover, since students' enjoyment in Mathematics is related to their self-concept in the subject, this is a challenge to Math teachers to make the teaching-learning process as enjoyable as possible because it could influence their self-concept in the subject.

Corresponding Author: Chard Aye Reyes Alova, ca.alova@usls.edu.ph

References

Alova, C. A. R. (2019). Attitude towards Mathematics in relation to academic performance of Grade 11 students.

Akinsola, M. K. & Olowojaiye, F. B. (2008). Teacher instructional methods and student attitudes towards Mathematics. International Electronic Journal of Mathematics Education, 3(1), 60-73.

Götz, T., et al. (2010). Academic self-concept and emotion relations: Domain specificity and age effects. Contemporary Education Psychology.

Kowalczyk, D. (2015). Descriptive research design: Definition, examples & types. Retrieved July, 20, 2019.

Pekrun, R., et al. (2014). The power of anticipated feedback: Effects on students' achievement goals and achievement emotions. Learning and Instruction. 29(1), 115-124.

Sandman, R. S. (1980). The mathematics attitude inventory: Instrument and user's manual. Journal for Research in Mathematics Education, 11, 148–159.

Tapia, M., & Marsh II, G. E. (2004). An instrument to measure mathematics attitudes. Academic exchange quarterly, 8(2), 16-21.