PUPILS' ACADEMIC SELF-CONCEPT AND THEIR ACHIEVEMENT IN MATHEMATICS

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ABSTRACT

Pupil's academic achievement is affected by various factors including the multi-dimensional self-concept. Although scientific and technological developments are mathematics-based, many students continue to perform poorly in mathematics. Mathematics program is always an integral part in all learning in the Philippine educational system. As soon as a child begins his schooling, the child is introduced to mathematical terms and concepts. This study aimed to examine pupils' academic self-concept and their achievement in Mathematics. Forty-one pupils of a primary school in Iguig, Cagayan were considered. A descriptive correlational method was used to measure the significant relationship between the pupils' academic self-concept and their achievement in Mathematics. The results revealed that the majority of the pupils are low achievers in Mathematics. Moreover, respondents' academic self-concept is moderate in level. In addition, male has higher academic self-concept compared to female. Finally, the pupils' academic self-concept and their achievement in Mathematics have a significant relationship.

Keywords: *Academic self-concept, Mathematics achievement, Gender, Confidence, Effort*

INTRODUCTION

Academic self-concept (ASC) is a sub-domain of general self-concept which measures students' perceptions of their academic ability formed in conjunction with peers, teachers and parents (Marsh &Hau, 2003; Liu & Wang, 2008). Academic self-concept has relevance for educational policy throughout the world and may have a role in addressing educational inequalities experienced by disadvantaged groups (Marsh & Hau, 2003, 2004). Academic self-concept can be defined as the way a student views his or her academic ability when compared with other students (Cokley, 2000) and consists of attitudes, feelings, and perceptions about one's academic skills (Lent, Brown, & Gore, 2000). Marsh and Craven (2001) emphasized that enhancing a child's academic self-concept is not only a desirable goal but is likely to result in improved academic achievement as well. The anticipated improvement of student performance is based on the existence of a reciprocal relationship between self-concept and academic achievement (Marsh, Trautwein, Ludtke, Koller, & Baumert, 2005).

In all levels of learning in the Philippine Educational System, the Mathematics program is always an integral part. As soon as a child begins his schooling, the child is introduced to mathematical terms and concepts. A substantial number of studies revealed that Mathematics is the most difficult subject from elementary to tertiary level (Tella, 2015; Aldosarry, 2002; Zahra, 2010) Some find it enjoyable, others find it boring. Some have strong self-confidence in Mathematics undertakings while others look down upon themselves and feel demoralized by their own impression on their capabilities.

Academic achievement is a key mechanism through which adolescents learn about their talents, abilities and competencies which are an important part of developing career aspirations (Lent, et.al. 2000). Leongson (2003) found out that Filipino students excel in knowledge acquisition but fare considerably low in lessons requiring higher order thinking skills. This disappointing condition is evident in the performance of students in national and international surveys on mathematics and science competencies

Shafiq (2002) indicated that students with high academic self-concept differ significantly on achievement from those who had low academic self-concept. In terms of gender, Pehlivan (2010) found out that the academic self-concepts of female students were stronger than those of the male students. However, in the study of Çakır, Şahin and Şahin (2000), It was found out that the variable of gender did not influence science academic self-concept. The results of studies revealed no specific finding regarding the difference between academic self-concepts in terms of gender.

With the above claims, this study is interested to find out the relationship between the self-concept and academic performance of pupils in mathematics subject. It further aimed to determine if the gender of pupils affect their mathematics performance.

Research Objectives

The study was conducted with the following objectives: (a) to determine the pupils' achievement in Mathematics, (b) to determine the academic self-concept of the pupils; and (c) to determine the significant difference on pupils self-concept when grouped according to gender; and (d) to determine the relationship between pupils academic self-concept and academic achievement in Mathematics.

METHODS

The study employed the descriptive-correlational method to determine the relationship between pupils' academic self-concept and academic achievement in Mathematics. The respondents of this study were the Grade 5 pupils of a public elementary school in Iguig, Cagayan. Total enumeration was utilized for the study. A twenty-item academic self-concept questionnaire designed and validated by Liu, Wang and Parkins (2005) was used in the study. The said questionnaire is divided into two parts: first is confident (odd) and second is effort (even). To analyze the data in the study, frequency count and percentage, mean, and Pearson-r correlation were used.

RESULTS

Table 1: Profile of the Pupils

Gender	Frequency	Percentage
Male	24	58.50
Female	17	41.50
Total	41	100.00

Table 1 presents the profile of the pupils in terms of gender. It can be gleaned on the result that there are more male than female pupils.

Table 2: Pupils' Achievement in Mathematics

Grade	Frequency	Percentage
95-99	0	0.00
90-94	1	2.44
85-89	4	9.76
80-84	7	17.07
75-79	29	70.73
Total	41	100.00

Table 2 presents the pupils' achievement in mathematics. It can be gleaned on the table that most of the pupils are low performers in Mathematics with an average grade ranging from 75-79.

Table 3: Pupils' Academic Self-Concept

Academic Self-Concept	Mean	Standard Deviation	Qualitative Description
Confidence	2.69	.25238	Moderate
Effort	2.61	.34986	Moderate
Overall Mean	2.65	.27260	Moderate

Table 3 shows the academic self-concept of Grade 5 pupils. As shown in the table, the pupils have moderate level of self-concept. Both confidence and effort which are components of self-concept have moderate level.

Table 4: Significant Difference on Pupil's Academic Self-Concept when Grouped According to their Gender

Gender	N	Mean	T-value	P-value	Decision
Male	24	2.98	1.501	0.04	Reject Ho
Female	17	2.32			

Table 4 shows the significant difference on pupil's academic self-concept when grouped according to their gender. The result shows that there is a significant difference on the academic self concept of pupils when grouped according to gender ($p<.05$). This implies that the academic self-concept of males differ from that of females.

Table 5: Relationship between the Pupils' Academic Self-Concept and Mathematics Achievement

Variables	Pearson R	P-value	Decision
Mathematics Achievement Academic Self-Concept	0.922	0.016	Reject Ho

Table 5 shows the relationship between the pupils' academic self-concept and their achievement in Mathematics. As gleaned from the table, there is a significant relationship between mathematics achievement and academic self-concept ($p<.05$). The results suggest a strong positive relationship between mathematics achievement and academic self-concept of pupils.

DISCUSSION

This study aimed to determine the relationship between pupils' academic self-concept and achievement in mathematics of one public elementary school in Iguig, Cagayan. It is revealed on the results that majority of the pupils are male. In terms of their academic achievement in mathematics, majority of the pupils are low achievers. Aldosarry (2002) evaluated mathematics curriculum to identify the reasons of low achievements. Result of this evaluation proved a significant low achievement among first grade students of the secondary education due to number of subjects, intensity, psychological changes, less memorization, and wrong perception about the difficulty of mathematics and lack of parents' follow-up.

As revealed in the study, pupils' level of academic self-concept in terms of confidence and effort tends to be moderate. This implies that the fifth grade pupils have a good academic self concept. The findings affirmed the study of Yazon et., al. (2015) where it was revealed that there is a moderate positive correlation between academic achievement and academic effort. Moderate can be described as pupils that exert effort in solving problems and try to analyze it to come up with the correct answer. Meanwhile, confidence can be showed when pupils boost their confidence to present their ideas in solving the problem. According to Wang and Lin (2008) self-concept was seen as the general confidence that individuals felt about themselves and the levels of an individual's self-concept predict whether or the extent to which he or she was able to accomplish academic tasks successfully or unsuccessfully. Coover and Murphy (2000) conducted a study that examined the relationship between self-identity and academic persistence and achievement in a counter stereotypical domain. The study revealed that the higher the self-concept and self-schema, the more positive the self-descriptions, the better the academic achievement at 18. The study also showed that self-identity improves through social interaction and communication with others, which would enhance achievement. Students who have confidence and belief in their ability to control their engagement and learning activities achieve more (Singh et al., 2002; Winheller et al., 2013).

Moreover, this study found out that there is a significant difference on pupils academic self-concept when grouped according to their gender. This means that the academic self-concept of pupils is different for males and females. Furthermore, it is revealed that male pupils have higher level of academic self-concept compared to female pupils. The study affirms the result of the study conducted by Patwardhan (2002) that indeed, there is a significant difference on the academic self-concept of pupils along gender due to the fact that most of previous literature claim that males have a higher tendency to excel in mathematics subject.

Lastly, the result of the study shows that there is a significant relationship between the pupils' academic self-concept and achievement in Mathematics. This implies that academic self concept strongly correlate with their achievement in mathematics. This suggests that pupils with higher academic self-concept have higher academic achievement in mathematics. Zahra, Asma-tuzet. al. (2010) investigated relationship between self-concept and academic achievement of bachelor degree students and found out that achievement motivation and self-concept are significantly related to academic achievement. Awan, et. al. (2011) also examined the achievement and its relationship with achievement motivation and self concept. The results revealed that achievement motivation and self concept are significantly related to academic achievement.

Other researches and studies seem to confirm the perspective that self-concept has a direct effect on academic performance (Steinmayr & Spinath, 2009; Thomas & Gadbois, 2007).

CONCLUSION

There is a strong relationship between the pupils' academic self-concept and achievement in Mathematics. The higher the academic self-concept, the higher their achievement in mathematics. Moreover, pupils' are low performers in their Mathematics subject. Also, male pupils have higher self-concept than female. And finally, the academic self-concept of grade 5 pupils is moderate.

RECOMMENDATIONS AND IMPLICATIONS FOR FURTHER RESEARCH

While the results of this study clearly shows that there is a significant relationship between the 5th grade pupils' academic self- concept and their achievement in mathematics, more researches should be conducted covering all grade levels.

The study was conducted in a public school, thereby, making use of respondents from private schools is recommended. The researchers also recommend incorporating other variables to really capsulate the factors affecting Mathematics achievement.

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