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**| RESEARCH ARTICLE**

# Self-Efficacy as a Mediator between Motivation and Engagement and Academic Performance

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**| ABSTRACT**
This study aims to determine the relationship of Self Efficacy as a mediator between Motivation and Engagement and Academic Performance in Mathematics. In order to determine the students' assessment of their self-efficacy, motivation, and engagement, the researcher used the survey method. The researcher utilized The Revised Study Process Questionnaire developed by Biggs et al. (2001), and the grades the students got from their most recent Mathematics course were used. The data were analyzed using SPSS 20.0 software program using Andrew Haye's Model 4. Based on the results, it is revealed that: 1) motivation influences students' academic performance, 2) self-efficacy also influences students' academic performance, and 3) self–efficacy is not a mediating factor between motivation and academic performance.

**| KEYWORDS**

Motivation, Engagement, Self Efficacy, Academic Performance.

**| ARTICLE INFORMATION**

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## 1. Introduction

There are various studies about motivation and academic performance, and they all break down to a singular result that motivation influence academic performance (Vansteenkiste et al., 2005; Kusurkar, 2011; Martin et al., 2016). Motivation plays a major role in students' academic work and in their achievement. It reflects in students' choices of learning tasks, in the time and effort they devote to them, in their persistence in learning tasks, and in their coping with the obstacles they encounter in the learning process (Peklaj & Luvpuscek, 2006). Previous research (Bandalos, Geske & Finney, 2005; Chemers, Hu & Garcia, 2005; Senko & Harackiewicz, 2005; Wiegfield et al., 1997; Zohar, 1998) showed that students' achievement goals, their interest in courses and their success expectancies were positively related to their final course grade. Thus, further study about motivation and academic performance in the Philippine context would be timely and relevant. There are many reasons why Filipinos are motivated to pursue studies; among these reasons are: 1. They regard education as an unqualified good or regard learning as having an intrinsic value 2. Education develops self and character 3. They believe that education is a solution to poverty and ignorance (Reyes & Galang, 2009). However, though Filipinos are said to be motivated, most normative scores from the cumulative percentage of the students as compared to other countries and our previous performances are considered low. With this status, we theorize that there is an underlying factor in the relationship between motivation and academic performance. Pintrich (2003) emphasized the importance of considering and conceptualizing motivation in terms of salient and seminal theorizing related to: self-efficacy, valuing, need achievement, self-worth, attribution control, goal orientation, self-regulation and self-determination. Although it is note-worthy that all of these factors are relevant to motivation, we chose self-efficacy as the mediator between motivation and academic performance. Accordingly, we investigate students' self-efficacy as a mediating factor between academic performance and motivation.

### *1.1 Motivation*

As humans, motivation is a complex phenomenon involving a number of diverse sources and conditions; it has always been a matter of discussion (Dornyei & Csizer, 2002; Alci, 2015). The issues of motivation of students in education and the impact on academic performance are considered important aspects of effective learning (Tella, 2007). The impact of motivation on the education of mathematics of a child cannot be undermined. That is why Hall (1989) believes that there is a need to motivate pupils so as to arouse and sustain their interest in learning mathematics.

Bank and Finlapson (1980) found that successful students were found to have significantly higher motivation for achievement than unsuccessful students. Moreover, (Johnson, 1996; Broussard and Garrison, 2004; Skaalvik and Skaalvik, 2004; Skaalvik and Skaalvik, 2006; Sandra, 2002; Tella, 2007) revealed a significant relationship between academic performance and motivation.

### *1.2 Self-Efficacy*

Self-efficacy can be defined broadly as individuals' confidence in their capability to achieve particular goals (Hsieh, Sullivan & Guerra, 2007; Mbatha, 2015). Bandura's (1977) social learning theory, though renamed as a social cognitive theory in 1986, has given a path to self-efficacy. In his theory, it is stated that the way people think, feel, act and motivate themselves is affected by self-efficacy (Zulkosky, 2009; Alci, 2015). Moreover, self-efficacy is how well a person will act upon almost any challenge. A person's self-efficacy is a strong determinant of their effort, determination, strategizing as well as their following performance (Helsin & Klehe, 2006; Akram & Ghazanfar, 2014).

In the study conducted by Meral (2012), a significant relationship shows that self–efficacy is an important variable in students' academic performance and affects their achievement positively. Furthermore, Students who have firm self-efficacy beliefs showed better performance in learning and thinking and should also have better performance in evaluative level of learning (Meera, 2015).

This study, in particular, was designed to investigate the relationships between motivation and engagement and academic performance in Mathematics and self–efficacy and academic performance in Mathematics. It also aims to determine the relationship on how Self-Efficacy acts as a mediator between motivation and engagement and academic performance in mathematics of the students.

## 2. Purpose of the study

In the previous studies, it is considered that motivation and self–efficacy are affective factors which affect the students' academic performance significantly in the teaching and learning process. With this, the main purpose of this study is to find out the extent of how self–efficacy affects the motivation and engagement and academic performance in mathematics of the students. Eventually, by using the findings in this research, the researchers aim to provide recommendations for the teachers to increase the achievement of the students. On this account, the researchers answered the following questions:

1. What is the correlation between the motivation and engagement and the academic performance in mathematics of the students?
2. What is the correlation between self–efficacy and academic performance in mathematics for students?
3. What is the relationship of self-efficacy as a mediator between motivation and engagement and academic performance in mathematics of the students?

Figure 1 shows the relationship between the affective factors and the relationship of these factors to academic performance.

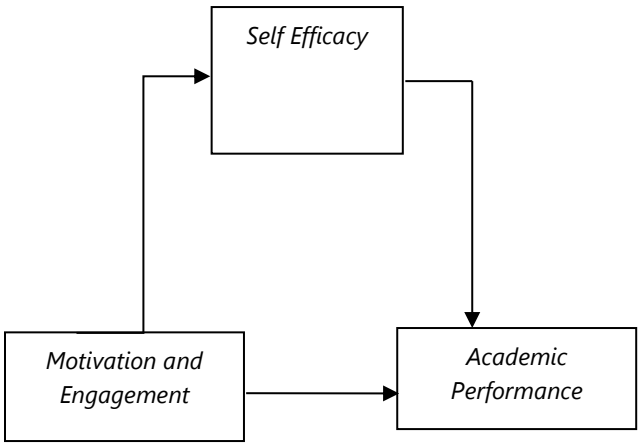


**Figure 1.** The research model

## 3. Methodology

### *3.1 Research Design*

This research employed a survey method. This method is usually used to reach a decision out of a large population. By using this method, it is possible to get a group or a sample which is considered to represent the general population (Karasar, 2004; Alci, 2015).

### *3.2 Participants*

The participants consist of 413 senior high school students of the University of Makati. Among the participants, 252 were females, and 161 were males. They were chosen purposely in relevance to the study. The participants participated in the research voluntarily, and prior to the study, they were informed about the purpose of the study. Furthermore, the parents of the respondents were also given consent to advise them about the students' activities.

**Table 1.** Descriptive statistics.

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Motivation and Engagement | 413 | 1.7 | 5 | 3.15 | .49 |
| Self-Efficacy | 413 | 2.3 | 4.9 | 3.42 | .46 |
| Academic Performance in Mathematics | 413 | 65 | 96 | 85.07 | 6.52 |

### *3.3 Data Collection/Instrument*

The data were collected through The Revised Study Process Questionnaire developed by Biggs et al. (2001). The students' academic grades, which they got from general mathematics courses, were obtained through the university registrar. This score is the weighted mean of their academic performance during the semester.

### *3.4 Reliability*

The questionnaire has 20 items and was divided into two parts. The first part contains 10 items which have the Deep Approach (DA) items, and the remaining 10 items contain the Surface Approach items. Biggs et al. (2001, 142) report the Cronbach Alpha values for the R-SPQ-2F for the DA with 0.73 and the SA with 0.64 for their sample.

### *3.5 Data analysis*

The data were analyzed using SPSS 20 software program. The researchers used Pearson's product-moment coefficients analysis and linear regression in answering the first two research questions to examine the relationships between Motivation and Engagement and Academic Performance and Self-efficacy and Academic Performance. Finally, the researcher used Haye's Model 4 in SPSS 20 to determine whether Academic Performance is affected by Motivation and Engagement through Self- Efficacy.

## 4. Results

The findings and results obtained in this research were presented and discussed in this part. Table 1 shows the Descriptive Statistics regarding the research variable presented.

Table 1 shows that while the minimum value for motivation and engagement is 1.7, the maximum value is 5, and the mean is 3.15; the minimum value for self-efficacy is 2.3, and the maximum value is 4.9, and the mean is 3.42. Finally, the minimum value for Mathematics Academic Performance is 65, whereas the maximum value is 97, and the mean is 85.07. The results of the correlation between the variables are shown in figure 2.

Table 2 shows the outcome using linear regression to determine if there is a significant relationship between the variables in the study. First, in finding the significant relationship between motivation and engagement and academic performance of the students and the data shows that $p$=.004 and it is significant at $p$ <.05; thus, as supported by the study of Amrai et al. (2011) agrees with the same result that academic motivation and academic achievement have a significant correlation and that student achievement requires coordination and interaction between different aspects of motivation. The results of the study conducted by Abdurrahman and Garba (2014) also agreed that highly motivated students perform better academically than lowly motivated students in secondary school mathematics. Self-Efficacy, on the other hand, as related to the Academic Performance of the students, shows a result of $p$=.045 significant at $p$<.05. Goulao's (2014) study shows that the relationship between self-efficacy and academic achievement is significant. According to Meral et al. (2012), the significant correlation may show self-efficacy as an important variable in students' academic performance and affects their achievement positively.

**Table 2.** Coefficients, standard error, t statistic, P- values of the variables in the model.

| | Coefficient | SE | t stat | P |
|---|---|---|---|---|
| Motivation and Engagement → Academic Performance | 1.88 | 0.65 | 2.90 | .004 |
| Self-Efficacy → Academic Performance | 1.40 | 0.69 | 2.01 | .045 |

*$p$>0.05

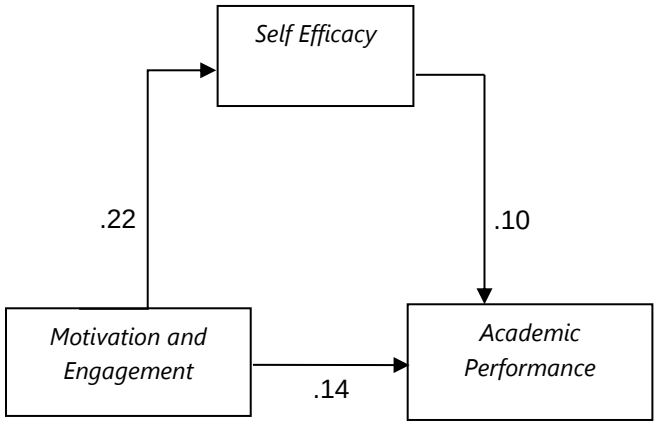


**Figure 2.** The research model with correlation of each variable**.**

**5. Discussion and Conclusion**

This research aims to know the relationship between motivation and academic performance in Mathematics with a mediating factor through self-efficacy of Grade 11 students of the University of Makati. The following results were obtained from the objectives below:

1) What is the correlation between the motivation and engagement and the academic performance in mathematics of the students?
2) What is the correlation between self–efficacy and academic performance in mathematics for students?
3) What is the relationship of self-efficacy as a mediator between motivation and engagement and academic performance in mathematics of the students?

The researchers first tested the effect of Motivation towards the mediating factor, which is Self-Efficacy. The results are significant, having a p-value of .0053 toward Academic Performance is also significant, having a p-value of .0041. However, Self- Efficacy and Academic Performance have no significant relationship. It was also found that Self Efficacy is not a mediating factor between Motivation and Academic Performance.

In line with these results, it can be concluded that both self-efficacy and motivation affect academic performance.

**Table 3.** Coefficients, standard error, t statistic, P- values using Haye's model 4.
*Outcome: Academic Performance*

| | Coefficient | SE | t stat | P | LLCI | ULCI |
|---|---|---|---|---|---|---|
| Self-Efficacy | .492 | 0.563 | .872 | .383 | -.616 | 1.60 |
| Motivation and Enggement | 1.13 | 0.561 | 2.02 | .044 | .300 | 2.23 |

*$p$>0.05

However, the effect of motivation towards academic performance cannot be explained through Self Efficacy. This is aligned with the study made by Mbatha (2015), wherein they also found that Self-Efficacy and Academic Motivations could not explain a significant amount of variance in Academic Performance. However, in his study, there will be no significant effect between Academic Motivation and Self-Efficacy which contradicts the study. A good area for further study is identifying other mediating factors that affect academic performance.

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