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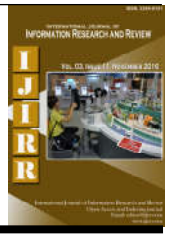

Research Article

GOAL ORIENTATIONS AND MOTIVATION TO LEARN AS FACTORS OF MATHEMATICS PERFORMANCE OF BACHELOR OF SCIENCE IN MATHEMATICS STUDENTS

***Avelino G. Ignacio Jr.**

Department of Mathematics and Physics, Adamson University, Manila, Philippines

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ABSTRACT

The descriptive - correlational method was used to determine whether 2 GO and MTL affect mathematics performance. A sample of 96 third year BS Mathematics studentsof PUPenrolled in 1st semester of S.Y. 2008 - 2009 was obtained through random sampling. Based on findings, the study found out that the level of the respondents in LGO, PGO and MTL are all high. The performance of students in DE, LP, OR and PTwhen combined together is fair. Only DE alone got poormathematics performance. Both LGO and PGO have significant relationship with mathematics performance while MTL alone has no significant relationship with mathematics performance. Generally, when three factors are taken together, there is asignificant relationship in mathematics performance.In coordination with the findings holding MTLalone is not a good predictor of mathematics performance. Future studies involving other factors should be considered to understand poor performance in differential equations.

INTRODUCTION

Every education process is based on certain concept, whether or not the educator is conscious of what this concept is. In most circumstances, the educator acts freely without questioning his grounds. Thisbehavior, which is hard-pressed by some concept, is usually accepted by those who share the same concept. Thus, education is based on convictions, either by tradition, cultural influences, personal choice or association (Dreikurs *et al*., 2013). Teachers and parents may feel confused these days over the great variety of opinion on the subject of education. Education plays an important role in man's life. A basic understanding is needed to cope with today's quick changing world. In response to this, there are many opportunities for the students to secure and gain knowledge that will enable them to line intelligently in the world. Advances in technology and industry stresses further the need to strengthen the students' knowledge. However, despite of all efforts to improve education, there are still reasons why students performed poorly in their subjects.Of the factors that influence students' learning; motivation and proper goal orientation are sure two of the most potent. The rapidly changing conditions of life require individuals to solve a wide range of problems and to adopt the challenges of life; they need to be goal-oriented and motivated.

****Corresponding author: Avelino G. Ignacio Jr,***
Department of Mathematics and Physics, Adamson University, Manila, Philippines.

Accordingly, goal-orientation and motivation should be related to academic performance. The researcher had plenty of occasions with student's performance and related literatures. Based on observations, there is a merit to study the student's goal orientation and motivation to learn. This study is the outcome of a desire to improve performance in mathematics. Education attempts to promote wise, intelligent behavior that would provide a satisfactory situation. As far as mathematics is concern (Capacite, Jeffrey, 2003), it is a language that every educated person should understand.Deci and Ryan (Deci *et al*., 1991) supposed that the frustrations that many teachers feel in trying to motivate hard-to-reach students come from the realities of time pressure, the large number of students with learning and emotional needs, heavy accountability demands from administers and parents, and other stress producing situations that exist in many schools. Students react to who teachers are, what they do, and how comfortable they feel in the classroom. Weiner (Weiner, ?) defines achievement goal orientation as an integral pattern of beliefs, which produces the intentions of behavior, represented by different ways of approaching, engaging and responding to achievement-type activities. Middleton and Midley (Middleton, 1997) notes that performance goal orientationtook the drive to appear competent and feel it in a positive light. Individuals with a performance approach orientation want to be best to appear to be most competent. As a result, they will work hard and put in a lot of effort in order to surpass their peers.

They don't have learning pursue as a good, but they will work to learn, just for the wrong reason. Nicholls and Patashnick (Nicholls *et al*., ?) describe two similar achievement goal orientations. They used the terms 'ego-involved goals' and 'task-involved goals'. They have demonstrated that children who have learning goals are more likely to maintain, positive motivation. Wlodkowski andJaynes (Wlodkowski *et al*., 1990) said that if love for learning has not taken hold within most children by the time of high school graduation, it is very unlikely that it will never be. People who do not like learning can be professionally successful but when it comes to reading, writing, and computing, they have to push and force themselves because motivation to learn is an enduring trait, moreover, the growth of motivation to learn is sometimes unseen or appears inactive for prolonged periods of time. Shraw and Brooks (Schraw *et al*., 1999) said that the role of motivation has mushroomed over the past decade. Researchers once believed that motivation had little impact on how students learned. But now, motivation not only prepares students to learn but also changes the learning process itself.

Ames and Archer's (Ames and Archer, 1988) findings on mastery and performance orientations were shown to be independent dimensions of how students perceived the learning environment. Mastery goal orientation may encourage a way of thinking that is necessary to sustain student involvement in learning as well as increase the engagement of students will pursue task that foster growths in learning. The degree to which a mastery orientation characterizes the classroom learning environment was a critical factor predicting students' use of those strategies that guide and regulate learning activities. Moss (Moss and Ritossa, 2007) examines whether goal orientations-which refers to whether individual strive to learn new skills, attract favorable evaluations, or minimize unfavorable judgments-influences whether transformational leadership improves employee performance, creativity and work attitudes. His findings revealed that learning orientation magnified the benefits of dependent reward-in which leaders provide clear incentives to motivate employees on normative commitment. Also, when employees attempted to attract favorable evaluation, intellectual stimulation was more likely to foster normative commitment. Finally, when employees endeavored to minimized unfavorable judgment, inspirational motivation diminished affective commitment to the organization. These findings suggest the goal orientation of employees should be optimized for plans to encourage transformational leadership and institute. Ablard and Lipschultz (1998) study the correlation of self-regulated learning in high achieving students in advanced reasoning and achievement goals and gender. Performance goal orientation was related to self-regulated learning only in conjunction with mastery goal orientation. Mastery goal orientation and gender were significantly related to self-regulated lerning. Cropanzano and Citera (1993) stated that mastery goal orientation represents desire to achieve outcomes derived from the actual process of learning such as feelings of satisfaction and competence, or actual intellectual development. Performance goal orientations represent desires to achieve outcomes derived from expectations or values associated with the consequences of engaging in academic tasks. From a goal content perspective, three orientations represent only two of the multiple goals that students might pursue at school.

A mastery orientation would be conceptualized as a cognitive goal to learn or master intellectual challenges associated with academic tasks. A performance goal orientation would represent a unique hierarchical system of multiple goals where task-related or cognitive goals are pursued to achieved goals. Coagdan (Coagdan Melba, 2000) studied high school students' mathematics self-concept achievement motivation and mathematics anxiety and her relationship of these affective factors to achievement in mathematics. Her findings revealed that the students had low level of achievement in mathematics, average to high achievement motivation, and average mathematics anxiety. There was a significantly positive correlation between achievement in mathematics and mathematics self-concept and achievement motivation and a significant negative correlation with mathematics anxiety.

STUDY FRAMEWORK

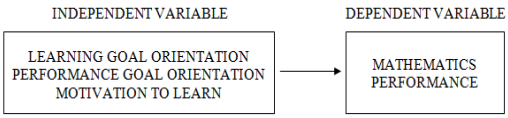

Fig. 1. Paradign of the study

This study is focus on the performance of the Bachelor of Science in Mathematics students of Polytechnic University of the Philippines, Sta. Mesa, Manila in selected mathematics subjects and its correlation to Learning Goal Orientation, Performance Goal Orientation or Motivation to Learn.As illustrated in the model above, the variables to use are Goal Orientation and Motivation to Learn, which will be measured by means of questionnaire; and Mathematics Performance that is measured by their grades in Differential Equations, Linear Programming, Operations Research and Probability Theory.

Objectives of the study

The general objective of this study was to examine the relationship of mathematics performance in selected mathematics subjects to the learning goal orientation, performance goal orientation and motivation to learn of third year Bachelor of Science in Mathematics students in Polytechnic University of the Philippines for the school year 2008 - 2009.

Specifically, it attempts to answer the following:

What is the level of the respondents in terms of

- Learning Goal Orientation
- Performance Goal Orientation
- Motivation to Learn?

What is the mathematics performance of the respondents?

Is there a significant relationship between the students' mathematical performance and the following

- Learning Goal Orientation
- Performance Goal Orientation
- Motivation to Learn

HYPOTHESIS

On the basis of the study framework presented and the preceding review of literature, the following hypothesis is formulated:

There is no significant relationship between the students' mathematics performance and the following attributes:

- Learning Goal Orientation
- Performance Goal Orientation
- Motivation to Learn
- When three factors were taken together

MATERIALS AND METHODS

The research study used descriptive-correlational method. It is also known as relationship studies to determine relationships between goal orientation and motivation to learn; and mathematics performance. When a relationship is found to exist between two variables, it means that scores within a certain range on one variable are associated with scores within certain range on the other variable. This type of research can help in making more intelligent suggestion. From the population of 126, the researcher identified the sample number of 96 throughSlovin's formula. To get the names of the respondents, the random sampling through lottery method was applied to third year Bachelor of Science in Mathematics, specifically, from sections 3–1, 3–2, 3–3 and 3–4., in which the researcher picked names written in separate rolled pieces of papers. Records of the names and grades of students are obtained from the office of the Dean of the College of Science of PUP after the approval.

Guided by numerous literatures, the instrument was developed and approved by 3 experts with minor revisions. It is a 30 – item questionnaire reflecting learning goal orientation, performance goal orientation and motivation to learn. Each factor includes 10 items. The format of all items is a 5-point Likert scale type, ranging from 1 (strongly disagree) through 5 (strongly agree). Three factors were described using the following:

Score	Interpretion
1.00 – 2.32	Low level
2.33 – 3.65	Average level
3.66 – 5.00	High level

The mathematics performance of third year students of Bachelor of Science in Mathematics was categorized using the following scale based on standard range in Polytechnic University of the Philippines.

Table 1.Grade Scale at Polytechnic University of the Philippines

Grade	Grade Interval	Equivalent
1.00	1.00 – 1.24	Excellent
1.25		
1.50	1.25 – 1.74	Very Good
1.75		
2.00	1.75 – 2.24	Good
2.25		
2.50	2.25 – 2.74	Fair
2.75		
3.00	2.75 – 3.00	Poor
5.00	3.01 – 5.00	Failed

PROCEDURES

The data to be used in the study were collected in the following manner. The researcher first secured permission from the dean of College of Science in order to administer the research instrument to the students along with request of grades. After approval, the researcher went to rooms and asked therespondents to answer questionnaires. The researcher explained that it is for research purposes. The researcher checked whether no questions were left unanswered. After checking the questionnaires, data will be subjected for the treatments needed.

STATISTICAL TREATMENT

- *Frequency Count and Percentage* was used to determine the frequency of the responses in each of the categories necessary in the study.
- *Mean* was used to determine the mathematics performance of the respondents.
- *Pearson Product Moment Correlation Coefficient (Pearson r)* was used to test the degree of relationship between variables.
- *t-test for the significance of r* was used to determine the significance of the relationship between two variables.
- *t-test* was used to test the significant difference of variables

RESULTS AND DISCUSSION

Based on data obtained from the research findings, 5 (five) tables were presented. The results are organized and presented relative to the specific problem posed by the researcher.

Table 2.Level of Performance of the Respondents in terms of Learning Goal Orientation, Performance Goal Orientation and Motivation to Learn

Factors	GWA	Interpretation
LGO	3.90	High Level
PGO	3.84	High Level
MTL	3.93	High Level

Table 2 shows that the level of performance of the respondents in Learning Goal Orientation, Performance Goal Orientation and Motivation to Learn is interpreted to be high**,** and computed General Weighted Average are 3.90, 3.84 and 3.93, respectively.

Table 3 shows that the mathematics performance of the respondents in selected mathematics subjects is computed 2.57 which interpreted to be fair. Only 3 or 3.12% of the total respondents got a mathematics performance between 1.25 to 1.74 and 18 or 18.75% of the total respondents got a failed remarks or a grade between 3.01 to 5.00. Only 3 or 3.12% of the total respondents got a mathematics performance between 1.25 to 1.74 and 18 or 18.75% of the total respondents got a failed remarks or a grade between 3.01 to 5.00. Specifically, the mathematics performance of students in Differential

Equations, Operations Research, Probability Theory and Linear Programming are 3.18, 2.03, 2.73 and 2.35 respectively.

Table 3.Mathematics Performance Based on Grade Interval

Grade Interval	Frequency	Percentage	Interpretation
1.25 – 1.74	3	3.12	Very Good
1.75 – 2.24	19	19.79	Good
2.25 – 2.74	49	51.04	Fair
2.75 – 3.00	7	7.29	Poor
3.01 – 5.00	18	18.75	Failed
Total	96	100.00	
GWA = 2.57		Verbal Interpretation: Fair	

Table 4.Mathematics Performance Based on Subjects

Mathematics Subject	Average	Interpretation
Differential Equations	3.18	Poor
Operations Research	2.03	Fair
Probability Theory	2.73	Fair
Linear Programming	2.35	Fair
GWA	**2.57**	**Fair**

Table 4 suggests that the most number of students who failed come from the subject Differential Equations. Specifically, the mathematics performance of students in Differential Equations, Operations Research, Probability Theory and Linear Programming are 3.18, 2.03, 2.73 and 2.35 respectively.

Table 5. Relationship between Mathematics Performance of the Respondents in terms of LGO, PGO, MTL and Three Factors taken Together

Variables	Computed r	Interpretation
LGO	-0.25	Low or Slight Relationship
PGO	-0.40	Low or Slight Relationship
MTL	-0.14	Negligible Relationship
Three Factors	-0.33	Low or Slight Relationship

Table 5 shows the relationship between mathematics performance of the respondents in terms of Learning Goal Orientation, Performance Goal Orientation, Motivation to Learn and three Factors taken together. The value of Pearson r between mathematics performance of the respondents and Learning Goal Orientation is -0.25 which interpreted to be low or slight relationship. The value of Pearson r between mathematics performance of the respondents and Performance Goal Orientation is -0.40 which interpreted to be low or slight relationship. The value of Pearson r between mathematics performance of the respondents and Motivation to Learn is -0.14 which interpreted to be negligible relationship. The value of Pearson r between mathematics performance of the respondents and three factors taken together is -0.33 which interpreted to be low or slight relationship.

Table 6. Significant Relationship between Mathematics Performance of the Respondents in terms of LGO, PGO, MTL and Three Factors taken Together

Variables	Computed t-value	Tabular t-value	Decision	Interpretation
LGO	-2.50	1.96	Reject H_o	Significant
PGO	-4.23	1.96	Reject H_o	Significant
MTL	-1.37	1.96	Accept H_o	Not significant
Three Factors taken Together	-3.39	1.96	Reject H_o	Significant

Table 6 shows the significant relationship between mathematics performance of the respondents in terms of Learning Goal Orientation, Performance Goal Orientation, Motivation to Learn and three Factors taken together. The computed t-value for t between mathematics performance of the respondents and Learning Goal Orientation is -2.50 which lie on the rejection region and does reject the null hypothesis that there is a significant relationship between students' mathematics performance and Learning Goal Orientation. The computed t-value for t between mathematics performance of the respondents and Performance Goal Orientation is -4.23 which lie on the rejection region and does reject the null hypothesis that there is a significant relationship between students' mathematics performance and Performance Goal Orientation.

The computed t-value for t between mathematics performance of the respondents and Motivation to Learn is -1.37 which does not lie on the rejection region and does accept the null hypothesis that there is no significant relationship between students' mathematics performance and Motivation to Learn. The computed t-value for t between mathematics performance of the respondents and three factors taken together is -3.39 which lie on the rejection region and does reject the null hypothesis that there is a significant relationship between students' mathematics performance and three factors taken together.

Conclusion

The following conclusions were drawn from the findings:

- The study found out that the level of the respondents in learning Goal Orientation, Performance Goal Orientation and Motivation to Learn are all high.
- The performance of the third year BS Mathematics students in Differential Equation, Linear Programming, Operations Research and Probability Theory is fair. Moreover, poor mathematics performance only occurs at Differential Equations
- Both Learning Goal Orientation and Performance Goal Orientation have a significant relationship with mathematics performance of the respondents while Motivation to Learn has no significant relationship with mathematics of the respondents. Generally, by taking three factors together, there is a significant relationship between mathematics performance of the respondents in levels mentioned above. Moreover, holding high motivation to learn alone is not a good predictor of mathematics performance most especially in Differential Equations.

Recommendation

Based on the findings and conclusions of this study the following recommendations are proposed:

- To help the students overcome their mathematical difficulties, they should not only continue being learning goal oriented, performance oriented and motivated in learning but also be aware and prepared of the appropriate pre-requisite knowledge needed especially in Differential Equations which presupposes that mathematical readiness in Differential matters.
- Future studies involving other variables should be considered to understand poor performance in Differential Equations.
- An explanatory research design is suggested to understand the negligible relationship of motivation to learn and mathematics performance, especially in Differential Equation which contradicts numerous literatures (8).

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