

Performance Approach, Mastery Approach, Performance Avoidance and Mastery Avoidance as Predictors of Students' Academic Achievement in English, Mathematics and Science Subjects

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Abstract

This study shows the role of achievement goal as predictors on students' academic achievement for three subjects: English, Mathematics, and Science. Achievement goal concern with what, why and how the students are motivated in different learning situation. Four dimensions of achievement goal were being investigated; performance approach, mastery approach, mastery avoidance and performance avoidance. The sample comprised of 400 secondary school students from ordinary high school in Selangor state. The correlation results showed that performance avoidance had small correlation and significant relationship with academic achievement for all three subjects. However, regression analysis shows that performance avoidance only predicted achievement in English subject. Meanwhile, mastery avoidance predicted students' academic achievement for all three subjects. It can be concluded that students are more inclined towards the avoidance goals where they tend to feel fear of the negative outcome.

Keywords: Achievement Goal, Academic Achievement, English, Mathematics, Science.

Introduction

Students' academic achievement has often been measured through their performance in examinations and this has become a significant measure of success in the field of education (Senko, Hulleman and Harackiewicz, 2011). Examinations are important aspects of the education system because, without which, we cannot measure the student's achievement in school (King and McInerney, 2014). The Malaysian Ministry in Malaysia has continuously monitored the performance of students through important examinations such as *Ujian*

Penilaian Sekolah Rendah (UPSR), Pentaksiran Tingkatan 3 (PT3), and Sijil Pelajaran Malaysia (SPM). These important examinations are evidence of students' performance in school.

Three core subjects that have been the main focus in the Malaysian education system are English, Mathematics, and Science. Based on the Malaysian Blue Print 2013-2025, one of the transformations included is to develop students who are proficient in the English language so that they are equipped to advance in a globalized economy. Besides that, Mathematics and Science subjects have been the recent main focus in Malaysia education system. This is due to the government's aim to produce more innovative students for further development in many aspects. However, students find that the three core subjects emphasized by the schools are those more difficult compared to other subjects. Mathematics and Science subjects require students to be more practical and applicable. From the examination results, it can be seen that the students can perform by getting a good grade. Even though the subjects are difficult, students do their best to obtain good grades. The motivation forces them to do well in the examination. Hence, the present study will look at achievement goal as a predictor on students' academic achievement for three different subjects: English, Mathematics, and Science.

Achievement Goal

The achievement goal theory has been one of the most prominent theories of motivation in educational research for more than 25 years. Achievement motivation is concerned with what, why, and how students are motivated in different learning situations Senko, Hulleman and Harackiewicz (2011). Most of the research for achievement goal theory focused on two primary goals which are mastery and performance goals (Ames, 1992). This is known as a trichotomous model where it differentiates between a mastery (approach) goal and the two types of performance goals: performance approach and performance avoidance. Students whose goal is mastery goal will be likely to focus on the importance of developing new skills and value the process of learning (Ames and Archer, 1988; Elliot, 2005). Meanwhile, students whose goal is performance-based focus on the demonstration of competence among others. There are several definitions that define the achievement goal. Elliot and Church (1997) identified that achievement goal is a competence-relevant motive where a person has the need to achieve a standard and the need to avoid failure. Meanwhile, Pintrich, Conley and Kempler (2003) considered the achievement goal as a construct that fulfils the space between specific target goals and general life goals.

Achievement Goal and Academic Achievement

Many psychologists and educators have considered students' motivation as an important factor for successful school learning. Achievement goals are one of the prominent constructs of achievement motivation in the last three decades Wirthwein et al., (2013). It is considered to be relevant to students' behavior in achievement because these goals determine their approach to, engagement in, and evaluation of performance in school learning Fadlemula, 2010). Recent literature reviews indicated that the evidence for the relationship between the goal orientations and academic achievement is mixed (Huang, 2012; Wirthwein et al., 2013). The different outcomes of students who hold different goals can be seen from the earlier study conducted by Dweck (1986); Tsai (2013) and Dweck and Leggett (1988). Children who do not identify a mastery goal orientation has the intention to develop and enhance their competencies in the achievement-related situation and are able to cope with any difficulties.

Contrary to children with performance goal orientation, they strive to be better than others and want to show their ability or strive to hide their incompetence.

In details, there are some studies that have presented different outcomes for the same goal achievement dimensions. The study on the mastery-approach goal and achievement shows a positive relationship (Keys et al., 2012), in contrast to the study by Bipp and Van Dam (2014) and King and McInerney (2014) where they found that mastery-approach goals were not linked to achievement. Different goal achievement is based on students' approach, engagement and response in different achievement task and situation in specific ways. Richardson, M., Abraham, C., & Bond (2012) examined the university students' GPA and found a small correlation between achievement goals and GPA. Specifically, Harackiewicz et al. (2002b) found no association between GPA and the mastery-approach goals. Differently with the study conducted on high school students where Wolters (2004) found a correlation between mastery-approach goals in Mathematics. Different goal achievement by university students and high school students are due to the different context of demand; university contexts focus on normative evaluations (performance-oriented) whereas school contexts are probably more supportive and focus on helping students developing new skills (mastery-oriented) (Linnenbrink-Garcia, Tyson, and Patall, 2008; Wirthwein et al., 2013). This indicates that the association between achievement goals and academic achievement might depend on the specific achievement criteria investigated by the researcher. This has led to the prediction and understanding of different students' learning outcomes including learning strategies and engagement (Senko, Hulleman and Harackiewicz, 2011; Wigfield and Camvria, 2010).

Current Research

The present study aims to identify the predictor of students' academic achievement for three different subjects: English, Mathematics, and Science. Four research questions were answered in this study. The questions are:

1. Can performance approach predict academic achievement for the three different subjects?
2. Can a mastery approach predict academic achievement for the three different subjects?
3. Can mastery avoidance predict academic achievement for the three different subjects?
4. Can performance avoidance predict academic achievement for the three different subjects?

Methods

Participants and Procedures

The sample comprised of 400 students (153 male, 247 female) from 8 secondary schools in Selangor state. The chosen schools were from urban and rural areas. Form Four students of the respective schools participated in this study in order to measure their achievement goal for three subjects: English, Mathematics, and Science.

A total of 8 schools were contacted via phone calls to request for participation. Students' final examination date was identified to ensure that the students were still highly motivated to perform well in their final examination. The final year examination was deemed as the best choice as students take it more seriously compared to the monthly tests which students deal with less seriousness and more relaxed (Senko, Hulleman and Harackiewicz, 2011). There were two phases of data collection. The first phase required the students to answer the

questionnaire before they sat for the final examination. The second phase of data collection was held after the students had finished their final examination. Students' final examination results for English, Mathematics, and Science were obtained from the teachers during the second phase of data collection.

The students were given the questionnaire during a regular lesson. Before answering the questionnaire, students were asked to respond to the questionnaire with respect to their English, Mathematics and Science teachers. They also need to rate their level of motivation for the final examination.

Measure

Scales of all items required responses on 5-point rating scales ranging from 1 (strongly not true) to 5 (strongly true). All items were coded with a high score indicating a high level of the given construct.

- **Students' Achievement Goal**

Student's achievement goal was adapted from Achievement Goal Questionnaire (AGQ) (Elliot & McGroger, 2001). The AGQ involves four subscales: performance approach (4 items; e.g. "It is important for me to be better than other students"; "My goal in this class is to get a better grade than most of the other students"), mastery approach (4 items; e.g. "I am afraid to ask teachers if I do not understand what we have learned in the classroom"; "I am often concerned that I may not learn all there is to learn in this class"), mastery approach (4 items; e.g. "I will read the objectives for each chapter in order for me to understand what we will learn in that chapter"; "I will read reference book related to the chapter in order to understand better about it"), and performance avoidance (8 items; e.g. "I just want to avoid doing poorly in this class"; "I feel embarrassed when I get the lowest mark in the classroom").

- **Students' Academic Achievement**

Students' academic achievement was identified by their scores in the final examination. It refers to the total percentage of the total marks students obtained in English, Mathematics and Science subjects. The total percentage ranging from 0 to 100, with larger numbers indicating higher achievement.

Statistical Analysis

Correlation and multiple regression analysis were applied in order to measure the correlation between two variables and to interpret the amount of variance in the dependent variable accounted for a set of independent variables. For this study, multiple regression is used to investigate students' academic achievement for English, Mathematics and Science subjects and the independent variables: performance approach, mastery approach, performance avoidance, and mastery avoidance. It may help to explain the magnitude of the variance in the dependent variable tested simultaneously with the best combination of four independent variables. The regression result is an equation that represents the best prediction of a dependent variable from several independent variables (Elliot & Woodward, 2014).

Results

Descriptive Statistics

The total percentage of exam scores for three subjects which are English, Mathematics, and Science is presented in Table I. The examination score was taken from the final examination scores of Form four students. The total percentage of exam score for English subject had a wide range of 88.00; the lowest score was 3.00 and the highest was 91.00. The mean score

was 55.75 with a standard deviation of 15.81. Meanwhile, the total percentage of exam score for Mathematics shows a wide range of 89.00; the lowest score was 7.00 and the highest score was 96.00. The mean score shows 52.67 and the standard deviation was 18.16. For Science subject, the total percentage of exam score shows a wide range of 74.00; 14.00 is the lowest score and 88.00 is the highest score. The mean score was 53.15 and the standard deviation is 15.14.

TABLE I.

DESCRIPTIVE STATISTIC FOR EXAMINATION SCORE

Subjects	Descriptive				
	Minimum	Maximum	Range	Mean	SD
English	3.00	91.00	88.00	55.75	15.81
Mathematics	7.00	96.00	89.00	52.67	18.16
Science	14.00	88.00	74.00	53.15	15.14

Mean values and standard deviation of students' achievement goal for three subjects are shown in Table II. The finding displays students are relatively showing a high level of performance-avoidance for three different subjects. The highest mean score for all subjects is 4.33 for English, 4.40 for Mathematics and 4.41 for Science. "I just want to avoid doing poorly in this class" is reflected with the highest mean score for the items in the performance avoidance. Meanwhile, mastery avoidance shows the lowest level; the total mean score is 3.21 for English, 3.33 for Mathematics and 3.32 for Science. "I am often concerned that I may not learn all that there is to learn in this class" reflects the highest mean score for mastery avoidance.

TABLE II.

DESCRIPTIVE STATISTIC FOR STUDENTS' ACHIEVEMENT GOAL FOR THREE DIFFERENT SUBJECTS

Variables	Subjects					
	English		Mathematics		Science	
	Mean	SD	Mean	SD	Mean	SD
Performance Approach	4.22	0.73	4.25	0.67	4.26	0.69
Mastery Approach	3.43	0.84	3.58	0.78	3.69	0.76
Mastery Avoidance	3.21	0.81	3.33	0.82	3.32	0.79
Performance Avoidance	4.33	0.60	4.40	0.53	4.41	0.54

Correlation Between Achievement Goal and Academic Achievement

The correlation between achievement goal and academic achievement is presented in Table III. Specifically, the findings show that only performance avoidance was negatively correlated with English ($r=-.241$, $p=.000$), Mathematics ($r=-.209$, $p=.000$) and Science ($r=-.169$, $p=.001$) subjects whereas mastery avoidance only shows a positive correlation with English subject ($r=.114$, $p=.022$). However, performance approach and mastery approach does not portray any correlation between all three subjects. Regression analysis was conducted to predict achievement goal on students' academic achievement for three different subjects.

TABLE III.

CORRELATION BETWEEN ACHIEVEMENT GOAL AND ACADEMIC ACHIEVEMENT

Subjects	Variables			
	<i>P-App^a</i>	<i>M-App</i>	<i>P-Av</i>	<i>M-Av</i>
English	.097	-.050	-.241**	.114*
Mathematics	.062	-.044	-.209**	.052
Science	-.009	-.058	-.169**	.011

a. Performance Approach

b. Mastery Approach

c. Performance Avoidance

d. Mastery Avoidance

e. * $p < 0.05$ f. ** $p < 0.01$

Prediction of Students' Achievement Goal on Academic Achievement

The correlation between achievement goal and academic achievement shows that performance avoidance had small correlation yet a significant relationship for all three subjects. The mean scores of achievement goal for English, Science, and Mathematics reflects that performance avoidance produced the highest mean score compared to another construct of achievement goals.

Regression analysis was conducted to identify the predictor of students' achievement goal on academic achievement. As displayed in Table IV, the model predicted 10.2% of the variance in English, 6.1% of the variance in Mathematics and 3.6% in Science from the variables of performance approach, mastery approach, mastery avoidance, and performance avoidance. The largest beta coefficient for all three subjects was mastery avoidance. This indicates that mastery avoidance makes the strongest unique contribution to students' academic achievement for all of the subjects. The significant value also shows that mastery avoidance is statistically significant and contributes to the prediction of students' academic achievement for all three subjects. Meanwhile, for performance avoidance only English subject is significant.

TABLE IV.

PREDICTION OF ACHIEVEMENT GOAL ON ACADEMIC ACHIEVEMENT FOR THREE SUBJECTS

Predictor	Academic Achievement		
	<i>English</i>	<i>Mathematics</i>	<i>Science</i>
Performance Approach	.058	.050	-.021
Master Approach	-.100	-.078	-.063
Mastery Avoidance	-.286**	-.234**	-.184**
Performance Avoidance	.193*	.103	.083
R ²	.102	.061	.036

a. p<0.05 b.**p<0.01*

Discussion

The findings of this study suggested that mastery avoidance is the predictor of academic achievement for all three subjects: English, Mathematics, and Science. Meanwhile, performance avoidance is the predictor of academic achievement for English subject only. This finding indicates that students are avoiding to fail academically at school regardless of the subjects that they are taking as they do not want to appear incompetent at school.

Specifically, students with mastery avoidance will strive to avoid the inability to master a task or activity and failing to learn or develop skills (Hulleman et al., 2010). The finding of this study shows that students with mastery avoidance are more concerned that they could not learn well in what they should learn in the classroom. They are more worried if they could not understand the lesson in the classroom and it could affect their performance at school. According to Ypren et al., (2009), mastery avoidance has increased students' anxiety in learning where they face the possibility that they could not perform accordingly and not learn well in the classroom.

Performance avoidance is another predictor found in this study where it influences on academic achievement. Students with performance avoidance will try to obtain good social judgments in order to avoid punishment (Zare, H., Rastegar, A., & Davood Hosseini, 2011). They are more likely to avoid performing worse than others which show incompetence among other students. This study shows that only performance avoidance predicts the English subject. The finding also shows that mastery avoidance predicted students' English achievement. This indicates that students are more worried about not performing well in the English subject compared to other subjects. This is due to their view where English subject is more important compared to other students. Hence, they will do their best to perform well in their examination.

Rational

From the results of the study, the investigation on the relationship among achievement goal and academic achievement has been specified specifically to the targeted population of Malaysian school students. Achievement goal has been identified as a predictor on students' academic achievement. This indicates that the students' motivation level in learning give an impactful outcome to the students' achievement. It is important to note that different students' will have different motivation level. Hence, by knowing the students' motivation level, it could help the teachers to know their students' well. This could help the teacher to approach their students which is suits with their motivation and interest.

Conclusion

The present findings suggest several relevant conclusions. First, the findings show that students are more likely to show that they can perform well in the examination. They will avoid the inability to master the task and being incompetent among their friends. Due to which, they will do well in the examination so that they could score the subject. Secondly, the findings exhibit that the students possess the motivation within themselves for all three subjects: English, Mathematics, and Science. This indicates that no matter what subjects they are learning, their main goal to succeed in the subjects is because they want to avoid being embarrassed at school. Further research can be conducted by including mediator. According to Wirthwein et al., (2013), further research can be conducted by examine the influence of

the specific classroom environment on the association between individual achievement goals and individual achievement.

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