

Students' Motivation, Self-Determination, Test Anxiety and Academic Engagement

Shakirat Abimbola Adesola, Shuaib Akintunde Asifat, Jelili Olalekan Amoo

Abstract—This paper presented the impact of students' emotions on learning when receiving lectures and when taking tests. It was observed during the study that students experience different types of emotions, and this was found to have a significant effect on their academic performance. A total of 1675 students from the department of Computer Science in two Colleges of Education in South-West Nigeria took part in this study. The students were randomly selected for the research. The sample comprises of 968 males representing 58%, and 707 females representing 42%. A structured questionnaire, of Motivated Strategies for Learning Questionnaire (MSLQ) was distributed to the participants to obtain their opinions. Data gathered were analyzed using the IBM SPSS 20 to obtain ANOVA, descriptive analysis, stepwise regression, and reliability tests. The results revealed that emotion moderately shape students' motivation and engagement in learning; and that self-regulation and self-determination do have significant impact on academic performance. It was further revealed that test anxiety has a significant correlation with academic performance.

Keywords—Motivation, self-determination, test anxiety, academic performance, academic engagement.

I. INTRODUCTION

EMOTION is a feeling experienced because of reaction to certain situations. A person can experience joy, sadness, boredom, hopeless, anger, enjoyment, and pride. In the classroom setting however, students experience different emotions associated with learning and with effects not relating to classroom or even school environment. There are four basic types of emotions in academic that has influence on performance namely positive activating, positive deactivating, negative activating and lastly, negative deactivating [1].

II. BACKGROUND

A. Students' Motivation and Self-Determination

Students' motivation is a concept of using rewards to induce performance. A learner who scored high mark in an examination is motivated to get better mark in subsequent one, while a learner that scored low mark in an examination might not be really motivated to work harder. Theories of motivation in education examine affective, social, cognitive, behavioral, and self-regulation options; and self-determination theory [2]. Expectancy-value theories and self-determination theory are appropriate for evaluating motivation in learning. Considerations in expectancy-value theory in education are engagement and academic outcomes. These are thus affected by the type of activities engaged in, academic achievement, and

self-determination to excel [3]. Academic motivation is an aspiration to perform well in learning and other related activities [4].

According to [5], there are two basic types of motivation, namely intrinsic and extrinsic motivation. Intrinsic motivation derives enjoyment and fulfilment while taking part in activities, while activities are defined to get result in extrinsic motivation. Self-determination theory assumes that students' intrinsic motivation is derived from fulfilments from of basic emotional desires.

B. Test Anxiety

Test anxiety is the emotion students experience before and during test. This is caused by panic or stress in students because of tension in preparing for the test. A learner may experience test anxiety because of inadequate preparation for the test, having complex or social issues like shame and pride, and it might be due to situations or events outside the classroom. Test anxiety has been found to impact negatively on learners' outcome or performance. Learners with high level of test anxiety have low academic performance, while learners with low test anxiety have high academic performance. Thus, test anxiety is negatively correlated to academic performance.

The result of the study also revealed that there is high correlation between test anxiety and academic outcomes. This shows that students who have high test anxiety are likely to perform poorly in their examinations. This revealed that students low in self-regulation were more likely to report test anxiety [8].

C. Academic Engagement

Engagement in school is students' involvement in learning and taking part in other related academic activities in school. The study of academic engagement had grown over the years because of the increase in students losing interest in academic work and dropout rates [6]. This comprises of three components namely affective, cognitive and behavior [7]. According to [8], engagement comprises of both behavior and emotion. Research had shown that students that show academic engagement [7], [8], self-regulation [8] perform better than their peers who show less engagement in their academic work. However, attending school is not sufficient as a student may attend school regular and take part in all activities, yet record low performance [6]. This can be just memorizing or using learning strategies such as self-regulation to really understand a concept [9].

S.A. Adesola, S.A. Asifat, and J.O. Amoo are with the Department of Computer Science, Federal College of Education (Special), Oyo, Nigeria (e-

mail: adesola.shakirat1084@fcesoyo.edu.ng, adesola.shakirat1084@fcesoyo.edu.ng, Nigeriaamoo.jelili1247@fcesoyo.edu.ng).

III. RESEARCH QUESTION

Several researches [1], [6], [8], [10]-[12] have been conducted to find out the impact of emotions on learning. Researchers [8], [11] have found out that emotions experienced by students in the academic environment has an impact on their learning and outcome of learning, mainly academic performances. This is because the effect of emotions on academic performance has been found to impact how students learn and its influence on their performances. Many of such studies [8], [10], [11] have investigated the effect of emotions on academic performances and some other variables or activities concepts such as self-regulation, academic engagement, motivation, and self-determination. Some of these had studied concepts and emotions together especially as relate to Computer Science. The aim of this research is to further investigate their findings based on our samples.

This research therefore intends to fill that gap by finding the relationship between emotions in this case test anxiety, self-regulation, academic engagement, motivation, and self-determination while attempting to find answers to the following research questions:

- i. Emotions do not significantly shape students' learning motivation and engagement in learning.
- ii. There is no significant relationship between students' self-regulation, self-determination, and academic performance.
- iii. Test anxiety does not correlate significantly with academic performance.

IV. METHODS

A. Participants

1675 students from department of Computer Science in two Colleges of Education in South-West Nigeria took part in this study. The students were randomly selected for the research. The sample comprises of 968 males representing 58% and 707 females representing 42% and aged between 18 and 24 years with mean age of 21 years. The participant's consent was sought before the commencement of the research, and they all agreed to take part in the study.

B. Measures

Self-regulation was measured using seven question items of metacognitive self-regulation from MSLQ; Cronbach's alpha for standardized items is .79; Cronbach's alpha obtained for this research was .93 for seven items.

Academic Engagement was measured using four question items of extrinsic goal orientation from the MSLQ; Cronbach's alpha for standardized items is .62; Cronbach's alpha obtained for this research was .78 for four items.

Motivation was measured using six question items of task value from MSLQ; Cronbach's alpha for standardized items is .90; Cronbach's alpha obtained for this research was .78 for six items.

Self-determination was measured using four question items using effort regulation items from MSLQ Cronbach Alpha for standardized items is .69; Cronbach's alpha obtained for this research was .92 for four items.

Test anxiety was measured using five question items from test anxiety of the MSLQ; Cronbach's alpha of standardized items is .80 Cronbach's alpha obtained for this research was .68 for five items.

V. MEASURES AND ANALYSIS ACHIEVEMENT

The analysis for this study was carried out using the IBM SPSS 20. The tests ran were ANOVA, descriptive analysis, stepwise regression, and reliability test were used to measure the factors/variables. Pearson's correlation was performed to obtain the directional relationship within setting for each the learning strategies.

A. Results

Results from the descriptive analysis in Table I revealed that academic engagement and motivation had the highest mean intensity at 4.29 and 4.21 respectively; while self-regulation, self-determination and test anxiety had mean intensity of 3.83, 3.75 and 3.25 respectively.

TABLE I
DESCRIPTIVE ANALYSIS

Variable	Min	Max	Mean	Std. Dev.
Self-Regulation	1	5	3.83	1.191
Self-/Determination	1	5	3.75	1.189
Academic Engagement	1	5	4.29	1.160
Motivation	1	5	4.21	1.511
Test Anxiety	1	5	3.23	1.373

TABLE II
CORRELATION

Variable	1	2	3	4	5
Self-Regulation	-	.86	.79	.78	.43
Self-Determination	-	-	.72	.67	.50
Academic Engagement	-	-	-	.64	.48
Motivation	-	-	-	-	.49
Test Anxiety	-	-	-	-	-

TABLE III
COEFFICIENT

Model	B	SE B	B	t	Sig.
Test Anxiety/Self-Regulation	.748	.077	.892	9.677	.000
Test Anxiety/Academic Performance	.053	.005	.917	11.007	.000
Test Anxiety/Self-Regulation	.971	.084	.924	11.606	.000
Academic Engagement/Motivation	.925	.47	.972	19.881	.000
Academic Performance/Self-Regulation	14.637	1.083	.942	13.518	.000
Academic Performance/Self-Determination	14.111	1.124	.934	12.554	.000

Pearson's two-tailed bivariate was performed to obtain the correlations within settings. In Table II, self-regulation was found to be highly correlated to self-determination at .86, with academic engagement at .79 and with motivation at .78. However, there was low correlation between self-regulation and test anxiety at .43. Self-determination recorded a high correlation with both academic engagement and motivation at .72 and .67 respectively; but low with test anxiety at .50. On the other hand, academic engagement recorded a moderate correlation with motivation, but low correlation with test

anxiety. Lastly, there was low correlation between motivation and test anxiety.

TABLE IV
ANOVA OF MOTIVATIONAL COMPONENTS AGAINST ACADEMIC PERFORMANCE

Model	Sum of Squares	df	Mean Square	f	Sig.
regression/1	242.433	1	242.433	134.144	.000
residual	41.567	1674	1.807		
total	282.000	1675			
regression/2	385.563	1	385.563	395.241	.000
residual	22.437	1674	.976		
total	408.00	1675			
regression/3	74986.083	1	74986.083	182.739	.000
residual	9437.917	1674	410.344		
total	84424.000	1675			
regression/4	73672.543	1	73672.543	157.604	.000
residual	10751	1674	467.455		
total	84424.000	1675			

** Test Anxiety = 1; Motivation = 2; Self-Regulation = 3; Self-Determination = 4.

The F-test (check) is statistically significantly, p-value < 0.005, thus there is significant differences among test anxiety, academic performances and learning strategies.

The result shows that test anxiety has significant effects on academic performances and all elements learning strategies, Levene's test $F(1,24) = 134.144, p = 0.00$.

After detecting the presence of an association between the variables through correlation, we perform regression analysis to predict the outcome of the result or dependent variable from the explanatory or independent variables.

To test the effect of each of these concepts on one another, a stepwise regression analysis was conducted. This method was chosen because there are many question items for each of the learning strategies. Stepwise regression analysis revealed a significant impact of test anxiety on self-regulation, academic performance, and self-determination.

TABLE V
STANDARD MULTIPLE REGRESSION ANALYSIS

Variable/Academic Performance	B	SE B	B	t	Sig.
Test Anxiety	.053	.005	.917	11.007	.000
Motivation	.925	.047	.972	19.881	.000
Self-Regulation	14.637	1.083	.942	13.518	.000
Self-Determination	14.111	1.124	.934	12.554	.000

TABLE VI
STANDARD MULTIPLE REGRESSION ANALYSIS MODEL SUMMARY

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate
Test Anxiety	.36	.13	-.11	13.374
Motivation	.47	.22	.06	12.317
Self-Regulation	.38	.15	-.03	13.939
Self-Determination	.44	.19	.15	12.633

B. Standard Multiple Regression Analyses

After detecting presence of association between the variables through correlation, regression analysis was performed to predict the outcome of academic performance on dependent variables from explanatory or independent variables. This method was chosen because there are many question items for each of the learning strategies. Standard multiple regression

analysis revealed a significant impact of test anxiety on self-regulation, academic performance and self-determination as shown in Tables V and VI.

Regression of the components of the motivations revealed that test anxiety accounted for 13% of the variance, while motivation accounted for 22%. Self-regulation regressed to academic performance accounted for 15% and self-determination accounted for 19% of the variance.

VI. DISCUSSION AND CONCLUSION

Results of the analyzed data revealed that emotions, in this case test anxiety, do significantly shape students' learning motivation and engagement in learning. This was due to a low correlation between test anxiety and components of motivation. This suggests that when students have high test anxiety, they are not able to regulate themselves and are not motivated. It was revealed that emotion does have significant impact on student motivation and engagement in learning. This was revealed through correlation of bivariate of test anxiety that was used to measure emotion for this case, having recorded low correlation with both motivation and academic engagement. The values of level of correlation for the two items were found to be near equal and were both low. This suggests that students that experience test anxiety are less motivated and engage less in their academic work. Findings from this study revealed that students' motivation and action are settings to consider when investigating the different types of emotions students experience while in class and while doing tests.

The null hypothesis that stated that, "Emotion does not significantly shape students' motivation and engagement in learning", is hereby rejected. It can therefore be concluded that emotion does moderately shape students' motivation and engagement in learning.

It was also revealed that students that show self-determination and academic engagement achieve better in their academic performance. This agrees with [8], which stated that students that show academic engagement perform better than their peers who show less engagement in their academic work. Thus, for students to excel in academic outcomes, such a student should engage in self-determination, self-regulation and be motivated. This is in line with the observation of [10], that academic motivation is an aspiration to perform well in learning and other related activities. The result is also in line with the considerations in expectancy-value theory in education which are engagement and academic outcomes, which are thus affected by the type of activities engaged in, academic achievement, and self-determination to excel [3].

The null hypothesis that stated that, "There is no significant relationship between students' self-regulation, self-determination, and academic performance" is hereby rejected. It can therefore be concluded that components of motivational beliefs in this case self-regulation and self-determination have significant impact on academic performance.

However, the study shows that there is correlation between test anxiety and academic performance. This was revealed through test anxiety recording low correlation with all the other components of motivation and academic performance. The test

for AVOVA revealed that test anxiety has a significant impact on academic performance, as students with high test anxiety perform low in their academic performances. This agrees with [11]. This might be due to such students not preparing well for the test and thus experiencing increasing levels of worry. This agreed with [12], that too much worry leads to low academic performance.

In conclusion, the null hypotheses which stated that, “test anxiety does not correlate significantly with academic performance” is hereby rejected.

The results from the stepwise regression analysis also revealed that there were significant impacts of the motivational components on academic performance. This was revealed with result of academic performance against test anxiety recording a significant impact; academic performance against motivation recorded a high significant value; academic performance against self-regulation recorded a high significant value; and lastly, academic performance against self-determination also recorded a high significant value.

REFERENCES

- [1] Pekrun, R., Goetz, T., Wolfram, T. and Perry, R. P., “Academic Emotions in Students' Self-Regulated Learning and Achievement”: A Program of Qualitative and Quantitative Research, *Educational Psychologist*, 37:2, 91-105, & C. Wylie. Springer, 2002. pp. 97 – 131.
- [2] Ryan, R. M., “The Oxford handbook of human motivation” Oxford: Oxford University Press 2012.
- [3] Eccles, J.S. and A. Wigfield, “Motivational beliefs, values, and goal” *Annual review psychology* 2002, 53:109-32.
- [4] Newmann, F. M., Wehlage, G. G., and Lamborn, S. D., “The significance and sources of student engagement”. In F. M. Newmann (Ed.), *Student engagement and achievement in American secondary schools* New York: Teachers College Press. 1992, (pp. 11–30).
- [5] Ryan, M.R., G.C. Williams, H. Patrick, and E.L., Deci, “Self-determination theory and physical activity: the dynamic of motivation in development and wellness”. *Hellenic journal of psychology*, 2009. Vol. 6, pp. 107-124.
- [6] National Research Council& Institute of Medicine, *Engaging schools: Fostering high school students' motivation to learn*. Washington, DC: National Academy Press 2004.
- [7] Finn, J.D. and Zimmer, K.S., *Student engagement: what is it? Why does it Matter?* In *Handbook of Research on Student Engagement*. Edited by Christenson, S.L., A.L., Reschly 2012.
- [8] Adesola, S.A. and Li, Y., “The Relationship between Self-regulation, Self-efficacy, Test Anxiety and Motivation”. *International Journal of Information and Education Technology* 2018, 8(10):759-763. DOI:10.18178/ijiet.2018.8.10.1135
- [9] Fredricks, J. A., Blumenfeld, P. C., and Paris, A. H., “School engagement: Potential of the concept, state of the evidence”. *Review of Educational Research*, 2004. 74, 59–109.
- [10] Newmann, F. M., *Student engagement and achievement in American secondary schools*. New York: Teachers College Press 1992.
- [11] Adesola, S.A. and Li, Y. (2018). Investigating the Impact of Learners Emotions on Academic Performance and Motivation Using Ethnography. *International Journal of Information and Education Technology* 8(10):730-735. DOI:10.18178/ijiet.2018.8.10.1130
- [12] Schwarzer, R., “Worry and emotionality as separate components in test anxiety”. *Applied Psychology*, vol. 33 no. 2, pp. 205-220 1984).