

Active Learning Strategies and Academic Achievement among Some Psychology Undergraduates in Barbados

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Abstract—This study investigated the relationships between the active learning strategies (discussion, video clips, game show, role-play, five minute paper, clarification pauses, and small group) and academic achievement among a sample of 158 undergraduate psychology students in The University of the West Indies (UWI), Barbados. Results revealed statistically significant positive correlations between active learning strategies and students' academic achievement; so also the active learning strategies contributed 22% ($Rsq=0.222$) to the variance being accounted for in academic achievement and this was found to be statistically significant ($F(7,150) = 6.12, p < .05$). Additionally, group work emerged as the best active learning strategy and had the highest correlation with the students' academic achievement. These results were discussed in the light of the importance of the active learning strategies promoting academic achievement among the university students.

Keywords—Academic achievement, active learning strategies, psychology, undergraduates.

I. INTRODUCTION

ACTIVE learning is vital to students' success; [3] affirmed that anything that involves students in doing things and thinking about the things they are doing may be referred to as active learning. Students who are actively engaged in lectures through dialogue, discussion, debate, role-plays, game show, critical analysis and other active learning strategies tend to retain more information than their counterparts who are passive learners [7]. Reference [5] posited that learning is not a spectator sport. Students do not learn much just by sitting in the classroom listening to teachers, memorizing prepackaged assignments, and spitting out answers. They must talk about what they are learning, write about it, relate it to past experiences, apply it to their daily lives thereby making it part of themselves. In active learning, the learner is deeply absorbed in the learning process and consequently has a deeper understanding of the subject matter.

Learning itself is an active process which calls for learner's active participation in the learning process. These ideas have interesting theoretical link to Operant Conditioning by [15] where by the learners are willing, active and functional during the teaching and learning process and are therefore instrumental to their reinforcement. Suffice to say that active

learners are self motivated and willing to learn; thus making the job of the instructor easy and contributing tremendously to smooth and effective teaching learning process.

Considering its importance, active learning captures the teaching technique promoted by learner-centered as opposed to content-centered instruction [8]. For well over a decade, the focus of the university classroom has steadily shifted from a teaching-centric approach to a learning-centric approach [2]. This shift calls for a rethinking of the traditional classroom, replacing the standard lecture with a blend of pedagogical approaches that more regularly involve the student in the learning process. The components of such pedagogical approaches or good active learning strategies (whether discussing or listening, writing, reading, reflecting) according to [13] are the same, whether presented in traditional or in online environments and activities should among other things have a definite beginning and ending; clear purpose or objective and a feedback mechanism. Similarly, [10] suggested that active participation strengthens learning regardless of the environment; requires "intellectual effort, encouraging higher-order thinking (analysis, synthesis, evaluation)" and provides a means for the learner to assimilate, apply, and retain learning [3], [10].

Additionally, strategies promoting active learning are superior to passive learning (lectures) in promoting the development of student's skills in thinking and writing [3]. Active learning accommodates a variety of learning styles, promotes student achievement, enhances learner motivation, changes student attitudes, and basically, causes learners to learn more [1], [7]. Reference [3] contended that from a preference perspective, students generally prefer strategies promoting active learning to traditional lectures and other passive methodologies.

The use of these techniques in the classroom is vital because of their powerful impact upon students' learning. Investigators evaluating students' achievement have demonstrated that many strategies promoting active learning are comparable to lectures in promoting the mastery of content but superior to lectures in promoting the development of students' skills in thinking and writing [10]. Furthermore, some psychology students exposed to active learning strategies also scored higher than their counterparts exposed to traditional method [11].

Therefore, a thoughtful and scholarly approach to skilful teaching requires that faculty become knowledgeable about

the many ways strategies promoting active learning have been successfully used across the disciplines. Furthermore, each faculty member should engage in self-reflection, exploring his or her personal willingness to experiment with alternative approaches to instruction. Investigators have categorized these strategies that one might use in an active learning classroom in various ways like: individual activities, paired activities, informal small groups, cooperative student projects depending on class size, physical space, objectives, the amount of time to devote to the activity, and comfort level with the strategy [4]; questioning technique, small groups, whole class involvement, reading and writing exercises and concluding thoughts [16]. These are broad categories which also have sub categories.

However, the focus of this study will be on the following strategies: small group, game show, discussion, role-play, clarification pauses, video, and five minute paper which were used to teach the students in a Psychology course and to facilitate learning in spite of their large number and late evening lecture.

Traditional teaching approaches have resulted in a mismatch between what is taught to the students and what the industry needs [6]. Hence the need to incorporate active learning strategies in both classroom and online environments to achieve learning outcomes in order to produce graduates who think critically and analytically and consequently match the society that is reshaping rapidly because of the emergence of new technologies.

This study therefore aims at exploring the relationships between active learning strategies (small group, game show, discussion, role-play, clarification pauses, video, and five minute paper) and the students' academic achievement. The researcher also wishes to find out whether the active learning strategies will predict the students' academic achievement. It is expected that the active learning components will predict academic achievement among the university students in Barbados.

II. METHOD

A. Participants

A total of 158 Psychology students who offered Learning Theory and Practice Course in 2011/2012 session at The University of the West Indies, Cave Hill Campus, Barbados participated in this study. Their age ranged between 18-60years (Mean age 39.0years, SD = 1.73years). There were 59 males and 99 females, 90 from the Faculty of Social Sciences; 68 from the Faculty of Humanities & Education; Pure and Applied Sciences; 107 were Barbadians while others were from other Caribbean Islands- St Vincent, Trinidad and Tobago, St Lucia, Jamaica, Dominica and Grenada.

B. Instruments

Two instruments were used for data collection in this study. The first one is *Active Learning Strategy Scale* which has three sections. Section A comprises of the demographic variables, Section B consists of 7 close and open ended

questions designed to find out whether the students have been participating in the different class activities involving active learning strategies. Section C consists of seven subscales with 42 items designed to measure the different active learning strategies (video, discussion, game show, clarification pauses, role play, five-minute-paper, small group). There are six items in each subscale which were generated during the review of literature and from classroom experiences. All items were measured by a modified 4-point Likert scale response anchors ranging from strongly agree to strongly disagree with corresponding scores 4, 3, 2, and 1. All the negative items were reversed during analysis. The reliability of the instrument was ascertained by carrying out a pilot study among psychology students who took PSYC 2009. The instrument yielded the following Cronbach's Alpha reliability coefficients: Video Clips 0.84; Discussions 0.83; Small Group 0.75; Role-play 0.77; Game Show 0.85; Five Minute Paper 0.70 and Clarification Pauses 0.81. These alpha reliability coefficients of the 7 subscales indicated that the instrument has a high internal consistency and the validity was ascertained by the choice of items which were subjected to internal consistency analysis (Cronbach's Alpha), which is an index of item homogeneity and an indication of construct validity. The items were also given to experts for suggestions and comments before coming up with the final version.

Academic Achievement Test is the second instrument and it has two components: Coursework (40 marks) and Examination (60 marks). Both assessed the students' knowledge of the topics covered in PSYC 2009: Learning Theory and Practice Course during the semester. The validity of this scale was ascertained by ensuring that the questions in the two components measured what they purport to measure which are the learning theories and their applications to different settings such as home, school and organizations. The initial version of the examination questions was given to the internal examiner who is an expert in the field to vet for suggestions and comments before coming up with the final version thereby ensuring that students' assessment corresponds with the type of academic learning behaviors being assessed as suggested by [14]. To further ensure the validity of the instrument, the examination scripts were also remarked by the second marker before the final submission of the grades thereby ascertaining the accuracy of the assessment and grading procedures as suggested by [9] and [12]. Although the academic achievement grades in this study were used for research purposes, they were also designed to monitor students' learning and to provide ongoing feedback for both the students and the lecturer as they engage in active learning during the lectures.

C. Procedure

Informed consent of the students to participate in the survey was obtained during the lectures prior to the administration of *Active Learning Strategy Scale*. The students were briefed of the purpose of the research and that they were free not to participate in the study if they so wished. The *Active Learning*

Strategies Scale was administered after eight weeks of exposing the students to the different strategies and the administration lasted for approximately 20 minutes. The students were surveyed in their lecture hall with the help of three research assistants who had been groomed in the administration of the instruments. The researchers took time to brief the participants on the process of answering the items in the questionnaires and that it was not for examination purpose but for research and they were also told that the information would remain confidential. The questionnaire was coded using the serial number that corresponds with the identification number of each student so as to be able to match their responses on the Active Learning Strategy Questionnaire with their examination grades during analysis. The researchers ensured that all the items in the instrument were properly filled and the questionnaires were collected immediately the participants had finished filling them.

D. Data Analysis

The data collected were entered into SPSS version 16, Descriptive Statistics, Pearson Product Moment Correlation Coefficient and Regression Analysis were conducted.

III. RESULT

Research Question I: Will there be significant relationships between the active learning strategies (video, discussion, game show, clarification pauses, role play, five-minute-paper, small group) and the students' academic achievement?

TABLE I
CORRELATIONS BETWEEN ACTIVE LEARNING STRATEGIES AND STUDENT LEARNING OUTCOMES

Variables	1	2	3	4	5	6	7	8
1 Academic Achievement	-							
2 Small Group	0.37**	-						
3 Game show	0.35**	0.29**	-					
4 Discussion	0.30**	0.32**	0.49**	-				
5 Role - Play	0.25**	0.34**	0.68**	0.48**	-			
6 Clarification Pauses	0.34**	0.20*	0.49**	0.43**	0.40**	-		
7 Video	0.24**	0.31**	0.60**	0.46**	0.60**	0.66**	-	
8 Five Minute Paper	0.18*	0.15	0.29**	0.29**	0.47**	0.40**	0.36**	-

Note: **Correlation is significant at the 0.05 level (2 tailed)

Table I reveals the statistically significant positive correlations between students' academic achievement and active learning strategies indicating that the strategies are important for effective learning and good academic performance. The significant positive interrelationships among the learning strategies suggested that they are interwoven and that more than one can be utilized in a leaning situation; as students engage in one strategy, they also engage in others; for instance, as they do their group activities, they also discuss, do video simulations, engage in game shows, make clarifications, role play etc.

Research Question II: Which active learning strategy will

have the highest correlation with students' academic achievement?

Again, Table I shows that small group has the highest correlation with academic achievement indicating that the strategy is pivotal to active learning and academic achievement.

Research Question III: What will be the relative contributions of the active learning strategies to academic achievement?

TABLE II
MULTIPLE REGRESSION TABLE SHOWING ACTIVE LEARNING STRATEGIES AS PREDICTORS OF ACADEMIC ACHIEVEMENT

Variables	B	SE (b)	B	t	Sig.(P)
1) Small Group	0.99	0.27	0.29	3.73	0.000*
2) Game show	1.25	0.47	0.28	2.64	0.009*
3) Discussion	0.51	0.37	0.12	1.36	0.177NS
4) Role play	-0.41	0.41	-0.11	-0.10	0.321NS
5) Clarification- pauses	0.37	0.46	0.08	0.81	0.422NS
6) Video	-0.46	0.46	-0.11	-0.10	0.322 NS
7) Five Minute paper	0.31	0.38	0.07	0.83	0.409NS

Rsqr = 0.222;
(F (7,150) = 6.12, p < .05)

Note: *sig p < .001; ns = not significant; p > .05

Se (b) (unstandardised coefficients showing the predicted increase in the value of the criterion variable)

B (the standardized beta coefficients, gives a measure of the contribution of each variable to the model)

T (gives a rough indication of the impact of each predictor variable, the bigger the t value, the larger the impact of the

Predictor variable on the criterion variable)

R-sq the square of the measure of correlation and an indication that the model is fit for future prediction of learning outcomes among the university students

Regarding the relative effects of the active learning strategies to academic achievement, Table II exemplifies the decreasing order of the contributions of the variables thus: small group > game show > discussion > video clips > role-play > clarification pauses > five minute paper. Interestingly, only small group and game show had significant relative contributions to academic achievement while the other five active learning strategies did not contribute significantly to academic achievement.

Research Question IV: What will be the joint contributions of the active learning strategies to academic achievement?

Again, the result on Table II illustrates that the combination of the seven Active Learning Strategies accounted for 22% (Rsqr=0.222) of the variance in academic achievement and this was found to be statistically significant (F(7,150) = 6.12, p < 0.05). Therefore, the Active Learning Strategies significantly predicted students' academic achievement among some psychology undergraduate students in UWI, Barbados.

IV. DISCUSSIONS

This study investigated the relationships between active learning strategies and students' academic achievement. The first major finding of this study was that the active learning strategies significantly correlated with the students' academic achievement. These significant positive correlations between

V. CONCLUSIONS

The findings reported in this study underscore the need for the faculty, secondary school teachers and all the people interested in solving the problem of underachievement and promoting learning in educational settings to incorporate active learning strategies especially small group activities and game show into their classroom practices and to use the seven active learning strategies (video clips simulation, discussion, game show, role-play, group work, clarification pauses, one or five minute paper) as predictor set in studying cognitive outcomes in their classroom practices.

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REFERENCES

- [1] Astin, A. (1993) *What Matters in College?; Four Critical Years Revisited*, Josey-Bass: San Francisco, CA.
- [2] Barr, R. B. & Tagg, J. (1995, November/December). From teaching to learning—a new paradigm for undergraduate education. *Change Magazine*, 27 (6): 12-25. Retrieved from: <http://www.ius.edu/ilte/pdf/BarrTagg.pdf>
- [3] Bonwell C.C., and J. A. Eison, (1991) *Active Learning: Creating Excitement in the Classroom*, ASHEERIC Higher Education Report No. 1. Retrieved from: http://www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/Prince_AL.pdf
- [4] Centre for Teaching and Learning, University of Minnesota, (2008). What is Active Learning? <http://www1.umn.edu/ohr/teachlearn/tutorials/active/what/index.html>
- [5] Chickering, A.W. and Gamson, Z.F. (1987). Seven principles for good for good practice. *AAHE Bulletin*, 39(7), 3-7.
- [6] Damodharan, V. S. and Rengarajan.V. (2007). Innovative Methods of Teaching; Paper presented during the Learning technologies & Maths Middle East Conference at Sultan Qaboos University, Oman. Retrieved from: http://math.arizona.edu/~atpmena/conference/proceedings/Damodharan_Innovative_Methods.pdf
- [7] Fayombo, G.A. (2012). Active learning strategies and student learning outcomes among some university students in Barbados. *Journal of Educational and Social Research*, Special Issue, (2)9, 79 – 90. Doi:10.5901/jesr.2012.v2n9p79. Available at: <http://www.mcser.org/images/stories/JESR-SpecialIssues/jesr%202012%20special%20issue%20vol%20%20no%209%202012.pdf>
- [8] Halonen, J. S., Brown-Anderson, F., & McKeachie, W. J. (2002). Teaching thinking. In W. J. McKeachie (Ed.), *McKeachie's teaching tips: Strategies, research and theory for college and university teachers* (11th ed., pp. 284–290). Boston: Houghton-Mifflin.
- [9] Gredler, M. E. 1999. *Classroom assessment and learning*. New York: Longman
- [10] Harasim, L., Starr, R. H., Teles, L. & Turnoff, M. (1997). *Learning networks: A field guide to teaching and learning online*. Cambridge, MA: Massachusetts Institute of Technology
- [11] Yoder, J. D. and Catherine M. Hochevar (2005). Encouraging active learning can improve students' performance on examinations. *Teaching of Psychology*, 32(2), 91- 95. Retrieved from: http://www.vcu.edu/cte/workshops/workshop_list/references/Yoder_%206_Hochevar.pdf
- [12] Linn, R. L., and N. E. Gronlund. 2000. *Measurement and assessment in teaching*. 8th ed. Englewood Cliffs, NJ: Merrill/Prentice Hall.
- [13] Mantyla, K. (1999). *Interactive distance learning exercises really work!* Alexandria, VA: American Society for Training and Development.
- [14] Ormrod, J. E. 2000. *Educational psychology: Developing Learners*. 3rd ed. Upper Saddle River, NJ: Merrill/Prentice Hall.

active learning strategies and academic achievement indicated that effective learning and academic achievement depend on the students' active involvement in the learning process. This result was expected because the learning strategies were utilized throughout the lecture and the sample of this study were usually actively engaged in lectures from the beginning to the end therefore they were able to acquire the necessary knowledge and skills through discussions, small group activities, role plays, video-clip simulations, etc. These findings are quite consistent with the extant of literature in this field that the strategies promoting active learning are superior to passive learning (lectures); promoting the development of student's skills in thinking and writing [3]; that active learning accommodates a variety of learning styles, promotes student achievement, enhances learner motivation, changes student attitudes, and basically, causes learners to learn more [1], [7].

Interestingly, small group has the highest correlation with academic achievement indicating that this strategy is pivotal to active learning and academic achievement in spite of many students' complaints about the uncooperative attitudes of their group members. A probable explanation for this finding may be due to the fact that the participants of this study presented their tutorial assignments in groups, they participated in class activities such as game shows and role plays, shared ideas, brainstormed and discussed in groups during the lecture throughout the semester thus achieving better than learners exposed to traditional method. Again, this finding corroborated the earlier finding by [11] who reported that some psychology students exposed to active learning strategies such as group discussions scored higher than their counterparts who were exposed to traditional method.

In terms of relative contributions however, the outcome of this study was quite surprising because only two (small group and game show) out of the seven active learning strategies significantly predicted academic achievement. This may be attributed to the fact that all the participants were involved in group activities for their presentations and they also enjoyed the game shows when compared with other strategies. Additionally, these strategies are also related to one another as shown in Table I indicating that they are interdependent and they complement one another in different learning situations for successful teaching learning process.

The final major finding of this study was that the active learning strategies jointly contributed 22% (R-square = 0.222); ($F(7,150) = 6.12, p < .05$) to the variance being accounted for in academic achievement. A probable reason for this outcome may be attributed to the fact that the active learning strategies are achievement-oriented when compared with traditional lecture method as earlier reported by [3] and that active learning requires "intellectual effort, encouraging higher-order thinking (analysis, synthesis, evaluation)" which consequently provides a means for the learner to assimilate, apply, and retain learning [10].

- [15] Skinner, B. F. (1948). 'Superstition' in the pigeon. *Journal of Experimental Psychology*, 38, 168-172. Retrieved from <http://psychclassics.yorku.ca/Skinner/Pigeon/>
- [16] UNC: Centre for Faculty Excellence, University of North Carolina (2009). Classroom Activities for Active Learning. Retrieved from: <http://cfe.unc.edu/publications/fyc2.html>.