HIERARCHICAL MODEL ON PERFORMANCE IN ECONOMICS AMONG FIRST YEAR STUDENTS IN TERTIARY INSTITUTIONS

Ogundokun, M. O.
Department of Guidance and Counselling
Faculty of Education
University of Ibadan, Ibadan
femtopng@gmail.com

Abstract

Poor performance in examinations among the university freshmen has long been a major source of concern to stakeholders in the education industry. In spite of the numerous efforts made by the researchers, educators and policy makers in tackling this problem, the performance of students does not seem to have improved. Therefore, the study investigated the effect of hierarchical model on performance in Economics among First students in Tertiary Institutions. Sixty First students in the Department of Economics were used for the study. The research adopted a pro-test - post-test and control group quasi experimental design with a 2x2 factorial matrix. Two schools were randomly selected from two tertiary institutions in Lagos State. 30 participants each were randomly selected for the treatment and control group from the two selected schools. The major instruments used for the study were Learning Readiness Scale (r =.88); for screening of participants who had low performance in Economics in their first semester examination, Self-Concept Scale (r =.85) and Economics Achievement Test. The data were analysed with the aid of Analysis of Covariance (ANCOVA) tested at the 0.05 level of significance. The finding indicates that the participants exposed to hierarchical model showed a significant improvement in their performance in Economics than those in control group ($F_{(1, 53)} = 6.008$, $p < 0.05$, $\eta^2 = 0.068$). *Also, it was evidence that preventing poor performance in Economics can be explained by students' ability to integrate acquired skills against constant failure in the subject every year. It is recommended that hierarchical model should be used by the Counselling Psychologists to intensify their effort to make use of the intervention in their strategies for counselling.*

Keywords*:* Hierarchical model, Economics performance, First year students, Tertiary institutions

Introduction

Economics as a course, is a discipline offered in major institutions of learning like secondary schools and tertiary institution, it is taught not only as a preparatory ground but also to give every younger ones tips of the working of the economy. This is anchored on the understanding that the knowledge of the working of country's economy and its indicators is an important pointer of a good citizenry (Adu and Oshati, 2014). Basically, important foundational topics like Production, Population, Business Organizations, Labour Market are introduced to students at the secondary level of education; these topics are seen as germane to their understanding of the society in terms of needs and problems. At the University, it is taught to understand world issues, improved decision making and enhance career prospects (Mearman, Aspasia and Webber, 2014). This stage allows topical issues in Microeconomic, Macroeconomic, and financial management, among others to be explored by students.

There is general consensus that the standard in performance at all levels of education is falling (Onah, 2012; Emaikwu 2012), standard of achievement in Economics as a discipline is not exempted from this (Amazigo, 2000). In most Nigerian institutions, credit passes in Mathematics and English language are required in Senior Secondary Certificate Examination to get into higher institutions of learning. Various factors have been identified as constituting to poor performance in the subject; Betiku (2002) listed some of them in the curriculum content, Government policies, teachers' factor, teaching methodology. Other factors include instructional facilities, lack of relevant text books or materials in the library among others. Aprebo (2002) singled out phobia for the subject as a barrier to performing in the subject. This phobia emanates from the subject/course inclination to theories and abstraction which conflicts too strongly with the usefulness of the subject (Mearman, Aspasia and Webber, 2014). This means that learners refuse to improve their interest in learning and understanding various concepts.

The trend of poor performances in Economics in public examination constitutes a problem to the understanding of countries

challenges (Emaikwu and Nworgu, 2005; Emaikwu, 2012). For example, averagely about 20% of students that sat for WAEC between year 2009 and 2013 had below credit pass in Economics, while majority of students only mustered credit pass in the subject but there was an improvement from the 29.37 per cent and 20.59 per cent recorded in 2014 and 2015 (West Africa Examination Council Statistic Report, 2016). It is against this backdrop that people have called for proper orientation for students transiting to higher institution and particularly those aspiring to study Economics and Management related courses. However, despite all efforts, it is regrettable that the problem persists and festers among students of higher institutions. Seidman (2005) reported that 45% of all admitted students into the Faculty of the Social Sciences have second class lower division and in furtherance, 15% of them are from the Department of Economics. One explicit implication of this is found in the stuttering economy of the nation that lacks substantive model for its management.

Many researchers seem perplexed as to what factors are actually responsible for the fall in standard of students' achievement in Nigeria tertiary institutions (Emaikwu and Nworgu, 2005; Emaikwu, 2012). This has eventually led many to attribute this poor performance to: poor condition of service for lecturers; inadequate supply of facilities and equipment; lack of motivation; wrong method of teaching and admission of incompetent candidates into university (Emakwu, 2012). These existing challenges cannot be eradicated within a short period; this is because the cost of improving the system hinges on the wealth of the country itself. This put students' performance management as the main target to improving the overall quality performance in Economics as a subject. One important treatment and management tools in the remediation of poor achievement is identifiable in Hierarchical Model.

The Hierarchical Model is based on learning process presented in detail and implemented in the classroom learning activities process for teaching a course of Economic nature. The hierarchical model has broad applicability in social and psychological research. It can be used in studies of individual growth (Laird and Ware, 1982; Strenio, Weisberg and Bryk, 1983; Bock, 1983) in the measurement of change (Bryk and Raudenbush, 1994) in studies of conceptual effects in cross national fertility data (Mason, Wong and Ertwisle, 1983) in research or teaching

styles (Aitkin, Anderson and Hinde, 1981) and research synthesis or meta-analysis (Raudenbush and Bryk, 1985). Hierarchical model as one of the most efficient techniques and a comprehensive system designed to the multi-criteria decisions possibility of formulating provides natural complex to hierarchy. This model is a simple calculation on the matrix that begins for identifying goals, choosing content, teaching, and learning strategies. The hierarchical model is a decision-making methodology for ranking and selecting decision alternatives when multiple decision making criteria must be taken into consideration. It makes it possible to rank alternative courses of actions based on the decision maker's objective and subjective judgments concerning the importance of the criteria.

Hierarchical model was developed by IBM in the 1960s that enables us to conceptualize in terms of multiple levels. The school is the key sociological unit of interest and the basic design involves students nested within schools. Since Economics as a course deals with abstraction and rationalization, hierarchical model appears as a viable means of fostering students' decision making. It is a methodology proven to solve complex problems in areas of business management, manufacturing, engineering, education, politics and social applications. Saaty (2008) identified areas Hierarchical Model helps to correct; where choices are necessary from a given group of alternatives; where there are multiple decision criteria involved; ranking as ordering a set of alternatives from most to least desirable; prioritization in determining the relative advantages of members of a set of alternatives; resource allocation as distributing resources among sets of alternatives; quality management which deals with the different points of view of quality of improvement.

There are some personality factors that moderate academic performance in Economics among which is the Self-concept. Srivastava (2014) defined Self-concept as an organized configuration of perceptions of self which are admissible to awareness. Self- concept is said to be the most important part of an individual's personality that influences students' learning. Self-concept is valued as a desirable outcome in many educational and psychological situations. Most past research studies showed relentless support toward believe that there is a significant relationship between self-concept and academic achievement in secondary and post-secondary students (Cokley and

Patel, 2007; Gordon, 1995). Kraebber and Greenan (2012) found a significant relationship between self-concept and performance in Economics that instructors cannot and should not ignore the self-concept of the student. Accurate assessments of students' performance and self-concept are essential for appropriate placement, individualized planning, curriculum development and revision and instructional decisions. (Kraebber and Greenan, 2012)

The objective of the study is to use Hierarchical Model to enhance Economics performance among First Year students in tertiary institutions. The study also examined the moderating effect of self-concept as a causal link between Hierarchical model and Economics performance of First year students in tertiary institutions.

Hypotheses

Based on the articulated objectives of the study, it was hypothesized that:

- **Ho1:** There is no significant main effect of treatment (hierarchical model) on the measure of performance in Economics among First year students in tertiary institutions.
- **Ho2:** There is no significant main effect of self-concept on the performance in Economics among First year students in tertiary institutions.
- **Ho3:** There is no significant interaction effect of treatment and self-concept on the performance in Economics among First year students in tertiary institutions.

Methods

The study used a pretest-posttest and control group quasi-experimental design with 2×2 factorial matrix. The row consisted of Hierarchical Model and Control group. The row was crossed with self-concept varied at two levels (High and Low).

Participants

Participants were 60 First year students screened and randomly selected from two tertiary institutions in Lagos State. 38 (63.3%) participants were male while 22 (36.7%) participants were female. Their age range from 16-19years with mean age of ±17.4; SD = 2.1 years. The participants were First year students in the Department of

Economics who had low performance in Economics in their first semester examination.

Measures

Learning Readiness Scale (LRS)
The instrument was adapted from Learning Readiness Scale developed by Bernerd and John (2003) as a screening instrument. The scale consists of 28 items instrument rated on a 4-point Likert type ranging from 4= Strongly Agree to 1= Strongly Disagree. The internal consistency of this scale was established and found to be .89 and .91. the test-retest reliability was found to be .88 after pilot study of three weeks.

Self-Concept Scale (SCS)
The instrument was adapted from Economics Self-Concept Scale developed by Liu and Wang (2005). This scale consists of a twenty item instrument rated on a 4-point Likert type ranging from 4 = Strongly Agree to 1 = Strongly Disagree (SD). The internal consistency of this scale was established and found to be .76 and .81. The test-retest reliability was found to be .85 after pilot study of three weeks.

Economics Achievement Test (EAT)
Forty (40) Multiple Choice Items with four options ranges from A - D was developed by the researcher. All the questions are to be answered by the participants within in an hour. Item analysis was also used to carry out for the difficulty index.

a) Discriminatory power; b) chance guessing (c) (parameter) of the test using students Item Response Theory Professional 3 (IRT PRO3). The goodness fitted items were administered on thirty students.

Table 1: Goodness Fitted Item Distribution of Economics Performance Test in Table of Specification

Content Area of Economics	Total Weight	Knowledge	Comprehension	Analysis	Application	Synthesis	Evaluation	Total
Fundamental Economic Problems	20%	3	2	1	1	-	1	8
Tool For Economic Analysis	15%	1	2	2	-	1	-	6
Production	20%	3	1	1	2	-	1	8
Business Enterprises	25%	2	4	1	2	1		10
Population	20%	2	3	-	1	-	2	8
Total	100	11	12	5	6	2	4	40

Procedure

The training programme was conducted in the second semester of 2015/2016 academic session among the First year students offering Economics as a course in selected tertiary institution. The treatment programme lasted for a period of eight weeks of eight sessions; a session was assigned to a week which spanned the duration of 60 minutes. The study was done in five phases which include the screening of the participants, pre-sessional activities, pretest, treatment and post-test. Pre-sessional activities include the recruitment and random assignment of participant to experimental and control group. At the pre-test stage, Self-concept scale and Economics performance test were administered to the participants. The post- test was administered following the conclusion of the training programme. The participants in the experimental group were exposed to 5 weeks of treatment. Though the control group was not treated, they were given lecture on study skill technique after the post-test. Economics Performance Test was administered to the experimental and control groups as criterion measure.

Control of Extraneous Variables

The researcher guided against the effect of such variables through the following: Appropriate randomization of participants into the intervention and control group; adherence to inclusion criteria; effective use of the 2×2 factorial matrix designed and the Analysis of Covariance (ANCOVA). Statistical tools used equally took care of extraneous variables.

Data Analysis

Analysis of Covariance (ANCOVA) was the statistical tool employed in the study. ANCOVA was used to establish initial differences between the participants in the experimental and control group at 0.05 level of significance; while Duncan Post-Hoc analysis was used to determine the direction of differences.

Results

The results, based on the hypotheses tested in the study are presented below:

Table 2: Summary of 2x2 Analysis of on participants' Economic performance and control group with Self-concept as covariate

Source	Type III sum of squares	df	Mean square	F	Sig.	Partial Eta Squared
Corrected model	21524.216	6	3074.888	16.950	.000	.420
Intercept	497.380	1	497.380	2.742	.100	.016
Pre-score (Covariate)	4238.488	1	4238.488	28.993	.004*	.149
Treatment (group)	2179.797	1	1089.899	6.008	.003*	.068
Self-concept	3712.743	1	3712.743	20.446	.003*	.111
Treatments*Self-Concept	304.252	2	152.126	.734	.482	.029
Error	29750.685	53	201.018			
Total	825931.000	60				
Corrected Total	51274.901	59				
Corrected Total	51274.901	59				

R Squared = .420 (Adjusted R Squared = .395) ** Significant at <.05

From the table 2, it was revealed that there was significant main effect treatment on the students' performance in Economics among participants ($F_{(1, 53)} = 6.008$, $p < 0.05$, $\eta^2 = 0.068$). Therefore, the hypothesis was rejected; the table also showed the contributing effect size of 6.8%. This implies that there is a significant effect of hierarchical model on the performance in Economics among First year students in tertiary institutions. It was also revealed that there was significant main effect of self-concept on students' performance in Economics among participants ($F_{(1, 53)} = 20.466$, $p < 0.05$, $\eta^2 = 0.111$). Therefore, the hypothesis was rejected; the table also showed the contributing effect size of 11.1%. This means that there is a significant effect of self-concept on the performance in Economics among First year students in tertiary institutions. On the interaction effect of treatment and self-concept of students' performance in Economics among the participants, the hypothesis was accepted, ($F_{(2, 53)} = .734$, $p > 0.05$, $\eta^2 = 0.029$). This implies that there is no significant interaction effect of treatment and self-concept on the performance in Economics among First year students in tertiary institutions.

Table 3: Summary of Significant Differences in the Hierarchical Model and Control Group

Treatment	N	Subset for alpha = 0.05	
		1	2
Control Group	30	41.5556	
Hierarchical Model	30		48.5938

The table showed hierarchical model ($\overline{X}$ = 48.59) is higher than the control ($\overline{X}$ = 41.55). By implication, hierarchical model is more potent in increasing the performance of students in Economics. The coefficient of determination (Adjusted R^2 = .395). Overall indicates that the differences that exist in the group account for 39.5% in the variation of performance.

Table 4: Estimated marginal means of the treatment and self-concept on students' performance in Economics

Treatment group	Self-concept	Mean	Standard error
Hierarchical model	High	59.200	1.985
	Low	30.905	2.140
Control group	High	61.250	2.455
	Low	33.214	2.947

The table showed further clarification on the estimated marginal means of the treatment and self-concept. The treatment group with high self-concept ($\overline{X}$ = 59.2) is higher than those with low self-concept ($\overline{X}$ = 30.9). The control group with high self-concept ($\overline{X}$ = 61.3) is also higher than those with low self-concept ($\overline{X}$ = 33.2). This implies that there is no significant interaction effect of treatment and self-concept on the performance in Economics among First year students in tertiary institutions.

Discussion

The findings of this study established the effectiveness of hierarchical model in enhancing the performance of the students in Economics. These findings are in consonance with previous studies (Wenglinsky, 2001; Bryk, and Raudenbush, 1992; Zahedi, 1986) who found a significant positive relationship between hierarchical model and academic performance, indicating that students who had high hierarchical model performed significantly better than their counterparts who had low hierarchical model on academic performance, as measured by the averages of the term examination grades. Turner, Chandler and Heffer (2009); Turner and Heffer (2005) also found that hierarchical model plays a vital role in affecting the academic performance of university students. The probable explanation for this result could be due to the fact that Economics as a discipline deals with abstraction and rationalization that necessitate a stepwise process in teaching its concepts. This underlines the strong point for the use of Hierarchical Model as an effective methodology to grooming students in Economics, especially as it is anchored on examples citations and scenarios that is capable of expanding and open to new learning experiences for learning Economics and making uses of

this model will help students in learning and perform better in their various examinations.

Self-concept was found to be a significant contributor to academic performance of the students. This lends a credence to several studies which have shown positive correlations between self-concept and academic performance (e.g. Cokley and Patel, 2007; Gordon, 1995). Suggesting that Self-concept might be stronger for school based performance measures when compared to standardized achievement measures. Boulter (2002); Villarroel (2001) and Castor (1997) found self-concept proves itself favourable associated with academic performance. This result is easily explainable bearing in mind that self-concept is what determines the goals, attitudes, behaviour and responses that one makes, furthermore, instructors should not ignore the self-concept of the students, accurate assessments of students learning for appropriate placement, individualized planning, curriculum development, revision and instructional decisions.

However, no significant interaction effect was found between hierarchical model and self-concept in enhancing the performance of students. This finding is in consonance with previous research works (Exenwa, 1999; Guay, Marsh and Boivin, 2003; Danwole and Adeoye, 2004; Awofolaju, 2006) who deduced no significant effect in hierarchical model and performance. There are many factors that could account for poor performance in Economics among students, such factors include: anxiety, self-concept, self-efficacy, emotional intelligence among others.

As self-concept has been identified as a core issue in students' performance, this performance would be improved if appropriate methods such as hierarchical model is applied, this is in line with the result of Reynolds (1998) who found that students with strong attitudes toward their ability had high overall academic performance. The relationship between academic measures and self-concept was not influence by the amount of time a student was enrolled in a school. This outcome was unexpected because new students tend to require time to adjust to a new school environment.

Implication for Counselling

This study has implications for all stakeholders, Counseling Psychologists, curriculum planners and institutions of learning. This

study provides empirical support for the hierarchical model in enhancing students' performance in Economics of higher institutions of learning.

The results found evidence that preventing poor performance in Economics can be explained by students' ability to integrate acquired skills against constant failure in the subject every year.

Counselling Psychologists should provide assistance for freshmen who are confronted by the challenges of the new learning environment to develop optimistic learning which is necessary for their achievement on campus and self-actualization of their expected life value.

Recommendations

Government should endeavor provides conductive environment, adequate learning facilities etc. for effective teaching and learning Economics in schools. Students should be encouraged and trained on the effective usage of the self-concept and intervention that is capable of expanding and open to new learning experiences and making uses of this model will help students in learning and perform better in their various examinations.

Therefore this study recommends that Economics teachers should play a significant role in shaping students' perceptions and attitudes towards the subject and also incorporate this technique in teaching Economics in classrooms in the tertiary institutions.

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