



Discriminant study of self-concept, self-efficacy and interest in research skills among students in the universities cross river state, Nigeria

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Abstract

This study investigated self-concept, self-efficacy and interest in research skills among students in the universities Cross River State, Nigeria. To achieve the purpose of this study, two hypothesis was formulated to guide the study. Literature related to the variables under this study is reviewed accordingly. Survey research design was adopted for the study. A sample of 709 students were randomly selected for the study. The selection was done through the stratified random sampling technique. The questionnaire was the instrument used for data collection. To test the hypotheses simple linear regression analysis statistical technique was adopted. The.05 level of significance was used for the statistical testing of the hypothesis. The result of the analysis revealed that, self-concept and self-efficacy significantly influence interest in research skills among students in the universities. Based on the findings of the study, it was recommended that students should develop positive self-concept and self-efficacy towards interest in research skill.

Keywords: discriminant, self-concept, self-efficacy, interest

Introduction

Research skills according to Thomas (2014) ^[17] is the ability to search for, locate, extract, organize, evaluate and present information that is relevant to a particular topic. Research skills according to Ojini and Otu (2018) ^[13] are particular abilities to locate, organize, and explain purpose of the study, research questions, research hypotheses, significance of the study, scope of the study, background to the study, and statement of the problem. There is no doubt that the interest of research is declining among university students. Students even feel that research work is just a normal routine process to graduate without giving it much time and thought in observing the whole research process that are involved. The differences in individuals' personality traits also determine how research work is being managed. Any successful research has to consider both the level of interest of the individual towards research and totality of the person's behavior towards research work.

There is no doubt that some students cannot perform in research work because they did not learn or cultivate the habit of studying or being independent in academic work. They put on different kinds of fashions and roam the street and university environment instead of studying harder. This research topic discriminant study of personality traits and students' interest in research skills among Universities in Cross River State Nigeria should be applied as a remedy towards improving empirical study. Therefore, statement of the problem of this study poses a question: "to what extent does self-concept and self-efficacy influence students' interest in research skills among Universities?"

Self-concept and students interest in research skills

Balogun, Akingbade and Oguntunde (2016) ^[7]; Conducted a study on the topic: An Assessment of the Performance of Discriminant Analysis and the Logistic Regression methods in classification of mode of Delivery of an expectant mother

in Adamawa, Kogi and Ogun states of Nigeria. Findings from the study revealed that discriminant analysis classified the Natural birth correctly (64.6%) while it recorded (64.7%) success rate in classifying the caesarian section. In the case of the logistic regression, it recorded (76.8%) and (52.9%) success rate in classifying the Natural birth and caesarian section respectively. The overall predictive performance of the two models was high with the logistic regression having the highest values (65.8%) and (64.7%) for Discriminant Analysis.

Adebayo (2015) ^[2] carried out a study in Bayelsa state on the topic titled; the impact of discriminant analysis on the quality and performance of teachers in Upper Base Education. The main purpose of the study was to find-out the quality of teachers that is; skills and qualification of teachers and the impact on students' achievement. Correlational research design was used. Fifty-six public and private secondary schools that made up three thousand and two (3020) teachers participated in the study. Two hundred and eighty teachers were sampled for the study. The main instrument used was Questionnaire. Simple percentages and means were used to analyze the data. Two research questions and hypotheses were answered and tested in the study. This study is similar to the present study in terms of instrument used for data collection and method of classification (discriminant) but differs with the present study in terms of research design and area of study.

Erimafa, Iduseri and Edokpa (2018) ^[10] investigated the application of discriminant analysis to predict the class of degree for graduating students in a University system. The purpose of the study was to predict the final-result which a University student will obtain when he graduates using discriminant analysis. The causal comparative research design was used. The population comprises the total numbers of 100 level and 200 level students of 2018 and made up of three hundred and eighty four (384). The sample

was three hundred and five (305) that participated in the study. The instruments used for data collection were questionnaire and rating scale. Simple percentage was used for data analysis. This study is similar to the present study in terms of method of classification, research design and instrument used for data collection but differs with the present study in terms of purpose of study and location.

Stevens (2017) ^[16] in his study discriminant study of demographic characteristics and students language performance in Cross River State. Findings revealed that the examinations questions lacked comprehensiveness and did not possess any positive backwash on active students' language performance. This incomprehensiveness and lack of students' active language performance yielded very poor educational practices in terms of active language performance in Cross River State. This study is similar to the present one in terms of research design but differs with the present study in instrument used for data collection and area of study.

Alayande and Bashiru (2016) ^[3] carried out a study in Ogun and Osun states of Nigeria to investigate an Overview and Application of discriminant analysis in data analysis. The purpose of this study was to show that discriminant analysis as a general research technique can be very useful in the investigation of various aspects of a multivariate research problem. The ex-post facto research design was used. The results from the study indicated that the derived model appeared outperform previous model build since the model can exhibit true ex ante predictive ability for a period of about three years subsequent. The similarity of this study, and the present study is in terms of instrument used for data collection and research design. The difference of this study and the present study is area of study. Asare (2017) ^[4] carried out a study to examine the discriminant study of cognitive ability and research skills of students in University of Calabar, Cross River State. Findings from the study revealed that understanding and applicability strength is very important in research work. The similarity of this study and the present one is in terms of research design, instrument for data collection but they differ in location and method of data analysis.

Ganga, Esposto and Braatz (2018) ^[11] investigated the application of discriminant analysis-based model for prediction of risk of low back disorders due to workplace design in industrial jobs. The purpose of the study was to develop a comparative study between predictions based on the neural network-based model proposed by Owan, Johnson, Osim, Anagogu, Otu, Undie, Ogor, Apie & Ekere (2023) and a linear discriminant analysis model, for making predictions about industrial jobs according to their potential risk of low back disorders due to workplace design. The main instrument used was questionnaire and source of data was industrial workers. Causal comparative research design was used. The results obtained through applying the discriminant analysis-based model proved that it is as effective as the neural network-based model. Moreover, the discriminant analysis-based model proved to be more advantageous regarding cost and time savings for future data gathering. Simple percentage was used for data analysis. The similarity of this study and the present study is in terms of research design and instrument for data collection while the difference of this study and the present one is in area of study. Ayogu, Madukwe and Yekinni (2017) ^[6] carried out a study titled: application of

discriminant function analysis in Agricultural extension research. The purpose of the study was to distinguish early adopters and late adopters of a particular agro-technology. The descriptive survey research design was used. Sources of data for the research was farmers. The population of one thousand six hundred (1600) farmers was recorded and the same number was sampled to participate in the study due to limited number of farmers. Questionnaire and inventory list were used for data collection. Findings revealed that the ratio of early adopters are equivalent to late adopters of a particular agro-technology. The data was analyzed using percentage and mean. The similarity of this study and the present study is in terms of instruments for data collection while the differences are in purpose of study, research design and area of study.

Biernacki and Govaert (2016) ^[8] carried out a study on the topic: Discriminant study on the teachers' competence in tests construction within Bloom's taxonomy for effective learning assessment. A case of Kikuyu District, Kiambu country. The purpose of the study was to investigate the discriminant competence of secondary school teachers in assessing their students by finding out whether when constructing test they are guided by Bloom's level of cognitive objectives. The study adopts cross-sectional survey where a sample was selected from the target population of all the public secondary schools within Kikuyu District. A total of fourteen schools were included in the study. The main instrument used for data collection was the questionnaire. Discriminant study of each of the teachers competence in test construction involved in the study were also used to get information from the teachers to establish their extent of competence in test construction. Frequency tables, percentages, histogram, bar charts and mean were used to help in answering research question. Findings revealed that secondary school teachers do not adequately employ the Bloom's cognitive level objectives in constructing their test items. It also reveals that teachers do not adequately make use of the action verbs in constructing test items. This study is similar to the present study in terms of discriminant analysis but differs in location.

Self-efficacy and students interest in research skills

Abubakar (2018) ^[1] investigated a study on the discriminant study of teachers' competence in tests construction and content validity of teacher made examination questions. The purpose of this study was to discriminate the area of competence of senior secondary school teachers in constructing examination questions. Two research questions were answered and one null hypothesis tested. The population of the study was seventy-eight (78) teachers of Marketing as a subject in Borno State. The study adopts survey design. Forty-two items questionnaires were administered to the sampled teachers. Findings revealed that there is no significant discriminant relationship between teachers' competence and content validity of examination questions. This study is similar to the present one in terms of discriminant study but differs in terms of instrument for data collection, research design and location.

Mozenda (2018) ^[12] investigated a study titled: Discriminant study of effectiveness of teacher-made-tests in Goromonzi District Upper Primary Schools in Zimbabwe. This study sought to establish the discriminant effectiveness of teacher-made-tests on the performance of pupils in Goromonzi Districts in Mashona Land, east province of Zimbabwe.

This study adopted descriptive survey design. The population comprised of all Upper Primary Schools in Goromonzi District. The sample consists of two hundred and sixty teachers from forty schools, randomly selected. Each school province provided nine teachers for the study. One hundred and forty were female and one hundred and twenty male. All the information were collected through a questionnaire which had both closed-ended and open-ended questions. Descriptive statistical analysis was used to interpret the data. The result of the study indicates that discriminant study of teacher-made-tests was used and there was overwhelming acceptance by the respondents that these tests helped to improve the academic performance of pupils. It was found that most teachers did not have knowledge about the standard procedures of constructing, marking, scoring and grading of test. This study is similar to the present one in terms of discriminant study but differs in terms of research design, purpose and location.

Atanda (2018) ^[5] investigated the discriminant study of teacher qualities and students' moral standard in secondary schools in south-south Nigeria. This reviewed study, adopted the descriptive survey research design of ex-post factor type. Two thousand and forty teachers, principals and students were selected through a multistage sampling procedure. Two instruments were used for data collection – questionnaire and inventory list. Data collected were analyzed using mean, standard deviation and frequency. Findings revealed that the discriminant study of honesty, sincerity and experience of teachers contributed immensely to students' positive moral standard in secondary schools. This study differs from the present study in terms of purpose and area of study. This study is similar to the present study in terms of discriminant classification and research design.

Yusuf and Dada (2019) ^[19] investigated the discriminant analysis of teachers' qualification and experience on the performance of students in Kaduna State. The aim of this study is to investigate the discriminant analysis of teachers' qualification and experience on students' performance. A total of twenty teachers and one hundred students were randomly selected from two secondary schools.

The data was collected using questionnaire and students tests scores. Data was analyzed using frequency counts and percentages. The result revealed that a significant difference existed in the performance of students taught by professional and experienced teachers. This reviewed study is similar to the present one in terms of discriminant analysis but differs from the present study in area of study and research design.

Ramayah and Ahmad (2019) ^[15] investigated a study titled: Discriminant analysis: an illustrated example in Malaysia. The purpose of this study was to help novice researchers as well as seasoned researchers on how best the output from SPSS can be interpreted and presented in standard table forms. The population were twenty SPSS output data and all of them were equally sampled due to their limited number. The research design was causal comparative or ex-post facto research design. Inventory and check list were the major instruments used for data collection. The data were analyzed using mean and frequency tables. The similarity of this study and the present study are in discriminant analysis and research design while their differences are in terms of purpose and area of study. Findings revealed that most novice and seasoned researchers were able to interpret the output SPSS data.

Ojini and Otu (2018) ^[13] in their study to find out the influence of research capacity building and cultivation of application of research skills literacy among university lecturers in Akwa Ibom and Cross River States, Nigeria. The dependent variables was cultivation of application of research skills literacy (sub-divided into problem identification skill, research question/hypothesis formulation skill, literature review skill, sampling skill, and instrumentation skill, use of statistical tool skill, computer application in data analysis skill, referencing skills, report writing skill and overall application of research skill). Ex-post facto design was used, while stratified sampling technique was deployed to select 550 lecturers in three universities. Data was collected using Research Capacity Building and cultivation of application of research skills literacy Questionnaire (RCBCRLARSQ). The two hypotheses were tested at.05 alpha level using One Way Analysis of Variance (ANOVA) and Fisher's least significant difference t-test where appropriate. The result revealed that collaborative research and not conference training for research attended significantly influence lecturers' research literacy in application of research skills.

Methodology

The research design adopted for this study is ex-post facto design. The design, ex-post facto is suitable for this study because the researcher has no control over the independent variables since they have already occurred in the population. The study area is the Calabar Education Zone of Cross River State. The Calabar Education Zone is located between Latitudes 4°28' and 6°31' North of the Equator, and Longitudes 7°50' and 9°28' East of the Greenwich Meridian. The population for the study consists of all the 7074 students in Calabar Education Zone. The sampling technique used in this study is the purposive (census) sampling technique this was because the population was not large enough. The sample is made up of all 709 students in the Education Zone.

The instrument used for the study is titled Self-Concept, Self-Efficacy and Interest in Research Skills Questionnaire (SSIRSQ). To determine the validity of the instrument was given to three different experts in the Faculty of Education who vetted the items. To ascertain the reliability of the research instrument, a trial test was conducted using 50 respondents who were not part of the real study. Cronbach Alpha method of reliability was used to determine the reliability estimate of the instrument. The reliability coefficient ranges from .78 to .85 which considered high. The copies of the questionnaire were administered with the help of two research assistants.

Presentation of result

In this section each hypothesis is re-stated, and the result of data analysis carried out to test it is presented. Each hypothesis of the study was tested at .05 level of significance.

Hypothesis one: Self-concept does not significantly predict students' interest in research skills. The independent variable in this hypothesis is self-efficacy; while the dependent variable is students' interest in research skills. Simple regression analysis was employed to test this hypothesis. The result of the analysis is presented in Table 1

Table 1: Simple regression result of the prediction of self concept on students’ interest in research skills

Model	R	R. square	Adjusted R. square	Std error of the estimate	
1	.261(a)	.068	.065	7.06308	
Model	Sum of square	df	Mean square	F	p-value
Regression	1105.392	1	1105.392	22.108	.000(a)
Residual	15149.638	707	49.999		
Total	16255.030	708			

* Significant at.05 level. df= 1, 707

Table 1 shows that the simple regression analysis of the prediction of self-concept on the students’ interest in research skills produced an adjusted R² of 310. This indicated that the self-concept accounted for 31.0% of the determinant students’ interest in research skills in the study area. This finding is a critical indication that Self-efficacy is relatively high in the area of the study. The F-value of the Analysis of Variance (ANOVA) obtained from the regression table was F = 157.030 and the sig. value of.000 (or p<.05) at the degree of freedom (df) 1 and 707.

The implication of this result is that self-concept is significant predictor of students’ interest in research skills. Hypothesis two: Self-efficacy do not significantly predict Students’ interest in research skills. The independent variable in this hypothesis is self-efficacy; while the dependent variable is students’ interest in research skills. Simple regression analysis was employed to test this hypothesis. The result of the analysis is presented in Table 2.

Table 2: Simple regression result of the prediction of self-efficacy on students’ interest in research skills

Model	R	R. square	Adjusted R. Square	Std error of the estimate	
1	.202(a)	.041	.037	7.17409	
Model	Sum of square	df	Mean square	F	p-value
Regression	660.368	1	660.368	12.831	.000(a)
Residual	15594.661	707	51.468		
Total	16255.030	708			

* Significant at.05 level.

Table 2 shows that the simple regression analysis of the prediction of self-efficacy on the students’ interest in research skills produced an adjusted R² of.128. This indicated that the self-efficacy accounted for 12.8% of the determinant students’ interest in research skills in the study area. This finding is a critical indication that Principals’ directive leadership behaviour is relatively high in the area of the study. The F-value of the Analysis of Variance (ANOVA) obtained from the regression table was F = 52.118 and the sig. value of.000 (or p<.05) at the degree of freedom (df) 1 and 707. The implication of this result is that self-efficacy is a significant predictor of students’ interest in research skills.

Nigeria. The finding of this hypothesis is in agreement with the view of Okon and Archibong (2019) ^[14] who affirmed that students taught and assessed by Basic Technology teachers in private schools performed better than the students taught and assessed by Basic Technology teachers in public secondary schools. The findings also posted that private schools have high supervision and teachers concentrate on their subject areas as against public schools where teachers could teach other subjects outside their area of specialization. The high degree of supervision of private schools over public schools is also responsible for the significance differences in their performance and dedication to duty of the staff.

Discussion of findings

This section is devoted to the discussion of findings of the hypotheses formulated to direct the study. This discussion is done hypothesis by hypothesis.

The result of the first hypothesis revealed that there is a significant relationship between self-concept and students’ interest in research skills among Universities in Cross River State Nigeria. The finding of this hypothesis is in line with the view of Erimafa, Iduseri and Edokpa (2018) ^[10] who revealed that the examinations questions lacked comprehensiveness and did not possess any positive backwash on active students’ language performance. This incomprehensiveness and lack of students’ active language performance yielded very poor educational practices in terms of active language performance in Cross River State. This study is similar to the present one in terms of research design but differs with the present study in instrument used for data collection and area of study.

The result of the second hypothesis indicated that there is a relationship between self-efficacy and students’ interest in research skills among Universities in Cross River State

Conclusion/ recommendations

Based on the results and findings of the study it was concluded that self-concept and self-efficacy significantly predict students’ interest in research skill. Based on the findings of the study, it was recommended that students’ should develop positive self-concept and self-efficacy towards interest in research skill.

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