

RELATIONSHIP BETWEEN CREATIVITY, INTELLIGENCE AND ACADEMIC PERFORMANCE OF SECONDARY SCHOOLS STUDENTS IN SOKOTO METROPOLIS

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ABSTRACT

This study examines the Relationship between Creativity, Intelligence and Academic Performance of Secondary Schools Students in Sokoto Metropolis. A sample of 335 was drawn from the population of Students of SSIII. Three Instruments used in obtaining the data for the study were, Adopted version of Ibadan creativity scale (ICAS) to measure Creativity, Adapted version of AH3 Intelligence Test (AH3) to measure intelligence and Academic performance Test (APT) to measure Academic Performance. Three null hypotheses were raised and tested; the result obtained shows that, there is significant Relationship between Creativity and Academic Performance of Secondary Schools Students in Sokoto metropolis. There is significant relationship between Intelligence and Academic Performance of Secondary Schools Students in Sokoto Metropolis and there is strong evidence to support the assertion that creativity is a better predictor of Secondary Schools Students Academic Performance than their Intelligence in Sokoto Metropolis. Based on these findings, it was recommended that Teachers should orient classroom interactions toward creative productions. Intelligence scales should be adopted and used to measure intellectual level of students for proper placement into areas of specializations. Government should provide all learning materials in schools to boost intelligence, academic performance and creativity by providing workshops and laboratories, vocational skills acquisition, entrepreneurship in our secondary schools. Students who demonstrate outstanding performances in academic, intelligence and creativity should be rewarded handsomely.

Background to the Study

It is obvious that the development of a nation depends much on the quality of education it provides its citizens. The attention our education system fail to give to creativity and intelligence among secondary schools students in Nigeria, has led to the production of students who hardly could make any meaningful input to the development of the nation either creatively by inventions or creating new ideas or intelligently by providing solutions to problems in our society. Experts like Rhode and Thomson (2007) indicated that success and performance of a student depends on his/her creativity and intelligence. Furthermore, it is known that academic activity require a maximum intelligent and reasoning thinking ability (Balg, 2014). In Nigeria system of education, those who excel through examination are considered to be intelligent or creative without actually identifying the actual talents. A child in school may have creative potentials but he will go unnoticed throughout his academic career because emphasis is given to only his performance as shown on the examination results, ignoring other creative abilities he/she may possess. However, literature available such as Luo, Thompson and Detterman (2003) indicated that creativity and intelligence are related and when properly harnessed can enhance better academic performance. Actually, issue of relationship between intelligence and creativity has been subject to empirical research for decades. Nevertheless, there is yet no consensus on how these constructs are related. One of the most prominent notions concerning the interplay between intelligence and creativity is the threshold hypothesis, which assumes that above-average intelligence represents a necessary condition for high level creativity (Batey, Furnham and Safiullina, 2010; Olutaye and Ogundoyin, 2004). In same vein, research findings by Nakano (2015) showed that there is positive correlation between creativity and intelligence. While Palaniappan (2007) found that students that score high in creativity test perform better than students that score high in intelligence test academically. On relationship between intelligence and academic performance, Rhode and Thomson (2007) indicated that there is empirical evidence for a strong association between general intelligence and academic performance. They believe that academic ability strongly rely on intelligence ability, on the other hand one requires high level of intelligence to be creative. The assertion is that all creative people are intelligent but not all intelligent people are creative. Akinboye (1985) understood the importance of creativity when he challenged Africans to foster creativity and inventiveness in children for survival. He noted that intelligence and creativity are necessary ingredient for innovation, invention, productivity in divers areas of human endeavor. He stated that the survival of the African race depends to a large extent on the ability of her children to utilize creatively available resources to meet the complex demands of contemporary world of high technology as applied to all facet of life (in agriculture, industries, health, transport, communication, social life, political and economic life). Creativity is relevant to all aspect of life. Research by Rhode and Thompson, (2007) provided empirical evidence for a strong association between general cognitive ability and academic performance; there is still anywhere from 51% to 45% of the variance in academic performance that is unaccounted for by measures of general cognitive ability alone. Additionally, understanding the nature of the relationship between general cognitive ability and academic performance has widespread implication for both theories and practices.

Habibollah, Abdullah, Aizan, Sharir and Kumar (2010) research examine the relationship between creativity and academic achievement of students and if the relationship differs between male and females. They used 153 samples comprising 105 males and 48 females. Cumulative grade point average (CPGA) was used to select participants and Khatena-Torrance Creative Perception Inventory (KTCPI) was used to measure creativity. Pearson Product Moment Correlation was used for analysis. The result shows that aspects of creativity are related to academic achievements of both males and females. Balgu (2014) research result showed existence of relationship between creativity tasks and academic achievement. This corroborates with earlier findings. Jabeen and Khan (2013) conducted a similar research in India to study the creative and intelligence thinking ability of high and low achievers in relation to their academic performance of 9th grade students. The sample for the study was high achievers 300 and low achievers 300 selected randomly from two educational zones (budgam and soibugh) of India. Test for verbal creative thinking ability and Heim (1970) intelligence thinking ability tests were administered for the collection of data. The result of the study highlights that in comparison to low achievers, high achievers possess significant creative and intelligence potentials and the study reveals that there is significant relationship between creativity and intelligence of high achievers and low achievers in school.

Furthermore, Ali and Iqbal (2012) conducted a research on the role of intelligence and creativity in the academic performance of business education students in the University of Lahore in Pakistan using ex-post facto research design. A total of 235 students purposely selected from four colleges of education participated in the study. Three research questions were raised and answered in the study. Three instruments: Student Cumulative Grade Point (CGPA) Information Format (SLIF); Wong and Law Intelligence Test (NHCT) were used for data collection. The multiple regression analysis and ANOVA were the major statistical tools used for data analysis. Findings from the study reveal that creativity and intelligence when combined jointly predict the performance of business education students. It recommended among others that intelligence and creativity should be taught as a separate course with the aim to enhance students' performance and positive attitude towards learning.

Similarly, Ademola, Akintunde and Yakasai (2010) conducted a research to ascertain the extent to which creativity and emotional intelligence relate to the academic performance of Higher National Diploma (HND) of polytechnics in the south western state of Nigeria. Three instruments: Student Cumulative Grade Point (CGPA) Information Format (SLIF); Wong and Law Intelligence Test (NHCT) were used for data collection from 235 students sampled. The findings show that there is very low negative, no significant relationship between creativity and CGPA scores ($r=.004$ $p>.05$). There is also no significant difference between male and female students' academic performance, creativity and emotional intelligence. The fact is most of the studies corroborated in their finding, but the issue of inter-relationship between intelligence, creativity and academic performance has not been well researched in Nigeria, this suggests the need for further studies. More so, as our educational processes and activities seem to be tailored more to academics than creativity.

Craft (2000) suggested that creativity and intelligence are as important as literacy and should be treated with same status. Researchers, educators and policy makers describe them (creativity and intelligence) as significant part of education. Similarly, Olutaye and Ogundoyin (2004) describe creativity as a basic tool for progress in any society or community. It is so important that any society that wants to make headway in any area of development must not lose sight of it. Therefore, an investigation into the nature of these two abilities (i.e. intelligence and creativity on the academic performance of student) may help not only to know the extent to which they relate but also to indicate whether the two abilities are predictors of academic performance among secondary students in Sokoto state.

Statement of the Problem

In Nigerian education, little or no attention is paid to creativity and intelligence of students in secondary schools. When one considers the nature of examinations in our schools where ambition for a certificate, sheer luck, interest or prejudice rather than objectivity have become the main criteria for placement in classes, courses or programs. Consequently, secondary schools leavers could not express themselves intelligently. As a result of that, majority of students end up with examination results they can neither defend nor put into actual practice the knowledge and skills acquired in the school. Furthermore, they cannot indulge in any trade or occupation that requires creativity, such as vocational skills like carpentry, tailoring, knitting, fine art etc. which could make them to be self-reliant during and after leaving the school. This has resulted in our secondary schools graduates becoming unemployable youth, hoodlums, maladjusted youth that are rampant in the society. They become nuisance and social menace easy recruits for criminal activities, which is a threat to the peace and stability of immediate society and Nigeria at large. In this era of high scientific and technology and economic advancement virtually driven by high level intelligence and creative manpower, the need for creativity becomes more relevant. Currently, Nigerian students are only prepared for achievement in rote memory examination as measured in West African Examination Council (WAEC), National Examination Council (NECO), Joint Admission and Matriculation Board (JAMB) and even National Business and Technical Examination Board (NABTEB) are not showing or fostering outcome in intelligence and creativity. The source of concern is that Nigeria cannot become among the advanced nations of the world without intelligent and creative productions. No doubt we have intelligent and creative potentials among our students who need to be identified and promoted. This problem motivated the researchers to study the relationship that exists between creativity, intelligence and academic performance of secondary school students in Sokoto metropolis.

Objectives of the Study

The objectives of this study are to find out whether there is:

1. Relationship between Creativity and academic performance of secondary schools students in Sokoto Metropolis.
2. Relationship between Intelligence and academic performance of secondary schools students in Sokoto Metropolis.

3. Evidence to prove that creativity is a better predictor among academic performance than intelligence of secondary school students in Sokoto Metropolis.

Research Questions

The following questions were raised to guide the study:

- (1) Is there relationship between creativity and academic performance of secondary schools students in Sokoto Metropolis?
- (2) Is there relationship between intelligence and academic performance of secondary schools students in Sokoto Metropolis?
- (3) Is there any significant evidence to prove that creativity is a better predictor of academic performance than intelligence of secondary school students in Sokoto Metropolis?

Research Null Hypotheses

Based on the research questions posed above, the following null hypotheses were generated by the researcher:-

Ho1: There is no significant relationship between creativity and academic performance of secondary schools students in Sokoto Metropolis.

Ho2: There is no significant relationship between intelligence and academic performance of secondary schools students in Sokoto Metropolis.

Ho3: There is no significant evidence that creativity is a better predictor of academic performance than intelligence among secondary school students in Sokoto Metropolis.

RESEARCH METHODOLOGY

Research Methodology

Descriptive correlational design and ex-post-facto design were used by the researcher in this study. A correlational design is a type of research that is concerned with determining or measuring the degree of relationship between two or more variables for the purpose of making prediction about such relationship. While an ex-post-facto design is a type of research concerned with measuring of difference, causes or effect of phenomena on two or more groups and the influence of already occurred event on certain group of individuals. In other words, it allows the researcher to study how several variables singly or in combination might affect a particular pattern of behavior. While ex-post-facto study allows the researchers to establish the difference, causes or effect that occurs in the behavior of a certain group.

In this study, the independent variables to be measured are creativity and intelligence while the dependent variable is academic performance. The population for this study consists

of all the 30 senior secondary schools in Sokoto Metropolis with total population of Nine Thousand Nine Hundred and Sixty Seven (9,967). While the target populations are the SSIII students of 8 secondary schools with total population of Two Thousand Five Hundred and Eighty Two (2,582) they were selected because of their level of maturity and exposure to respond to the instrument that was presented to them. Research Advisers (2004) was used to determine the sample size of 335. Purposive sampling was used in selecting eight schools. To obtain the sample size, students were proportionately determined across the eight schools. Therefore approximately, 13% of students in each of the selected school were randomly drawn to represent their respective school using proportionate sampling. In selecting the students to represent the sample, researchers used random sampling (lucky dip) by writing 'YES' and 'NO' on a folded piece of papers. All the students that picked 'YES' were selected to represent students' sample of the population while all the students that picked 'NO' were not selected to represent students which indicate that all the students have equal chance of being selected. Three instruments were used to find out the relationship between creativity, intelligence and academic performance of secondary schools students in Sokoto Metropolis. The instruments used are:-

1. Adopted Ibadan Creativity Assessment Scale by Akinboye (1985) to measure creativity (ICAS).
2. Adapted AH3 Intelligence Test devised by Heim (1970) to measure intelligence (AH3).
3. Academic Performance Test (APT).

Relevant procedures were followed to ensure the validity and reliability of the three instruments and were certified for the conduct of this study. Pearson moment correlation coefficient 'r' was used to measure null hypotheses one and two, while multiple regression analysis was employed to measure hypothesis three at level of significance 0.05.

Table 1: Population and Sample Size of the Selected Schools

S/no	Name of School	SSII Student population	Sample Size
1.	Government Technical College Farfaru, Sokoto	350	45
2.	Government Technical College Runjin Sambo, Sokoto	360	47
3.	Government Day Secondary School Arkilla, Sokoto	355	46
4.	Women Center for Continuous Education, Sokoto	200	26
5.	Government Girl College, Sokoto	369	48
6.	Nagarta College, Sokoto	304	39
7.	Sani Dingyadi Unity Secondary School, Sokoto	327	43
8.	Nana Girls Secondary School, Sokoto	317	41
	TOTAL	12582	335

Table 1: shows population of senior secondary schools (SSII) students, and samples drawn from the selected schools based on the sample size for the study.

Data Presentations: Based on the instruments used for the study, data collected were collated, analyzed and presented in relevant tables to answer the three hypotheses raised by the study.

Ho1: There is no significant relationship between creativity and academic performance of secondary schools students in Sokoto Metropolis.

Table 2: Relationship between creativity and academic performance of secondary schools students in Sokoto Metropolis.

Variables	N	Mean	Std. Deviation	r-Cal	P-val	Decision
Creativity	335	59.71	18.699	.499	.000	Rejected
Academic Performance	335	61.62	19.399			

Pearson's r (r=.449, n= 335, p= .000< .05).

From the result of table 2, secondary schools students creativity and academic performance were positively related and significant, Pearson's r = .499, p = .000<.05. This indicates that there is significant relationship between creativity and academic performance of secondary schools students in Sokoto Metropolis because the p-value of .000 is less than the .05 level of significance. Therefore, hypothesis which states there is no significant relationship between creativity and academic performance of secondary schools students in Sokoto Metropolis was rejected. This means that those that score high in creativity test also score high in academic performance test likewise those who score low in academic performance test are likely to score low in creativity test.

Ho2: There is no significant relationship between intelligence and academic performance of secondary schools students in Sokoto Metropolis.

Table 3: Relationship between intelligence and academic performance of secondary schools students in Sokoto Metropolis

Variables	N	Mean	Std. Deviation	r-Cal	P-val	Decision
Intelligence	335	91.40	22.769	.485	.000	Rejected
Academic Performance	335	61.62	19.399			

Pearson's r (r=.485, n= 335, p= .000< .05)

From the result of the table 3, secondary schools students intelligence and academic performance were positively related and significant, Pearson's r = .485, p = .000<.05. This indicates that there is significant relationship between intelligence and academic performance of secondary schools students in Sokoto Metropolis because the p-value of .000 is less than the .05 level of significance. Therefore, hypothesis which states there is no significant relationship between creativity and academic performance of secondary schools students in Sokoto Metropolis was rejected. This means that those that score high in intelligence test also score high in academic performance test likewise those who score low in academic performance test are likely to score low in intelligence test.

H₀₃: There is no significant evidence to prove that creativity is a better predictor of academic performance than intelligence of secondary schools students in Sokoto metropolis.

Table 4: Creativity and Intelligence Prediction to Academic Performance

Variables	B	T	P-Value	Decision
Creativity	.331	6.009	.000	Rejected
Intelligence	.299	5.433	.000	

Dependent Variable: Academic Performance

R=.557, R²=.310, Adj. R²=.306, SE=16.158, F=74.522, P-value = .000

The data in table four represent the squared part correlations and it revealed that creativity accounted for 0.31% of the variance in academic performance R² adj = .306, F (1, 342) = 74.522, p < .05. While intelligence also accounted for 0.31% of the variance in academic performance R² adj = .306, F (2, 341) = 74.522, p < .05. Thus, the significant results of the procedure indicated that creativity and intelligence were able to account for significant amount of variance in the dependent variable (academic performance). Although both creativity and intelligence are predicting variables for academic performance, analysis of regression coefficients indicated that creativity $\beta = .331$, t = 6.009, p < .05 emerged as the better predictor of the secondary schools students academic performance than their intelligence. Therefore, the null-hypothesis that says there is no significant evidence to prove that creativity is a better predictor of academic performance than intelligence of secondary school students in Sokoto Metropolis was rejected. This means that there is a significant evidence to prove that creativity is a better predictor of academic performance of secondary schools students in Sokoto Metropolis than their intelligence.

Summary of the Major Findings

The following are the summary of the major findings based on the five hypotheses tested:

1. There is significant relationship between creativity and academic performance of secondary schools students in Sokoto Metropolis.
2. There is significant relationship between intelligence and academic performance of secondary schools students in Sokoto Metropolis.
3. Creativity is a better predictor of secondary schools students academic performance than their intelligence in Sokoto Metropolis.

Discussion of Findings

Based on the results of hypotheses analyzed, **hypothesis one** found a significant relationship between creativity and academic performance of secondary schools students in Sokoto metropolis. The result of the finding which indicates Pearson's r = .499 and p value = .000 shows a significant relationship of creativity and academic performance of secondary schools students in Sokoto metropolis because the p value of .000 is less than level of

significance at 0.05. This is in agreement with the findings of Rhode et al. (2007), Olutoye and Ogundoyin (2004) and Habibollah et al. (2010), which revealed that creativity is positively related to academic performance. This shows that creativity is highly correlated to academic performance and creativity can be used as basic tool for progress in any society, especially Nigeria with its abundant human and materials resources which if properly harnessed can lead it to become among the high technological societies and strong economies in the world.

Therefore, rather than emphasis on academic performance of secondary schools students as commonly practiced in Nigeria, it is necessary that government, educational authorities, teachers and parents to make effort towards developing creative ability in school children by providing necessary learning materials and introducing vocational, technical and skills acquisition subjects in secondary schools thereby creating conducive atmosphere for creativity and academic performance to flourish.

Hypothesis two: The result of the study shows a strong and positive relation of intelligence and academic performance of secondary schools students in Sokoto metropolis because the result of the finding indicates that Pearson's $r = .485$. And p value = .000 which is less than the level of significance at 0.05, therefore rejected the hypothesis that says there is no relationship between intelligence and academic performance of secondary schools students in Sokoto metropolis. This is in support of Rohde and Thompson (2007), Palaniappan (2007) and Balgu (2014) which show that intelligence and academic performance are highly correlated among school children. The association between intelligence ability and academic performance is very strong, indicating that academic performance relies much on intelligence ability of an individual. So school children who perform very well academically, possess certain degree of intelligence ability. This draws the need for parents, guardians, caregivers, health and educational practitioners to identify, tap and nurture children's intelligence from grass root, so that children can reach the peak or maximum of their potentials.

Lastly, **hypothesis Three** shows that creativity is better predictor of secondary schools students' academic performance than their intelligence in Sokoto metropolis because the result of the finding revealed that creativity accounted for 0.31% of the variance in academic performance R^2 adj = .306, $F(1, 342) = 74.522$, $p < .05$. While intelligence also accounted for 0.31% of the variance in academic performance R^2 adj = .306, $F(2, 341) = 74.522$, $p < .05$. Thus, the significant results of the procedure indicated that creativity and intelligence were able to account for significant amount of variance in the dependent variable (academic performance). Although both creativity and intelligence are predicting variables for academic performance, analysis of regression coefficients indicated that creativity $\beta = .331$, $t = 6.009$, $p < .05$ emerged as the better predictor of the secondary schools students academic performance than their intelligence. Therefore, the hypothesis that says there is no significant evidence to prove that creativity is a better predictor of academic performance than intelligence of secondary school students in Sokoto metropolis was rejected. This means that there is a significant evidence to prove that creativity is a better predictor of academic performance of secondary schools students in Sokoto metropolis than their intelligence. Similarly, this was supported by the work of AliIqbal (2012) which shows that creativity is

the major predictor of academic performance of Business Education Students in University of Lahore in India where he recommended among others that creativity should be thought in schools as separate subject with the aim of enhancing students' academic performance and positive attitude towards learning. The importance of creativity on academic performance is further buttressed by the findings of the current study. This signifies the need to make our educational system more practical, action oriented so that students can equally claim creative ideas and products as they claim certificates, as it is now graduates of school of technologies and polytechnics are among our unemployed youth roaming the street with certificates looking for office work.

Conclusion

Based on the findings of this study, it could be concluded that significant relationship exists between creativity and academic performance of secondary schools students in Sokoto Metropolis since those who score high in creativity test also score high in academic performance test and those who score low in creativity test score low in academic performance. Also, significance relationship exists between intelligence and academic performance of secondary schools students in Sokoto Metropolis, while creativity is better predictor of students' academic performance in secondary schools of Sokoto Metropolis than their intelligence. The conclusion is that, there is need to ensure intelligence and creative potentials of students are properly harnessed to boost academic performance of students for realization of maximum potentials in students for the betterment of Nigerian society and world in general

Recommendations

The following recommendations are put forward in line with the major findings:

1. Students should be exposed to creative teaching and learning process. Identification and boosting creativity through proper curriculum content that is more tailored toward divergent thinking and productivity rather than rote memory and acquiring just certificates.
2. Teachers and schools authority should try and explore the intelligence ability possessed by each child in order to enhance those abilities since intellectual ability is accompanied by certain level of intelligence reasoning ability. And high level intelligence students are more likely to be creative.
3. Nigerian education and examination bodies should lay more emphasis on the interplay between intelligence, creativity and academic performance. As such, more emphasis to technical, entrepreneurship and skills oriented subjects in secondary schools to go along with individual potentials so that students can discover and achieve their maximum potentials. Intelligence boost creativity and creativity boost performances in diverse areas.

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