



Relationship between College Number and Academic Performance of Students in Computer Science Education Department of the College of Education Katsina-Ala

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Abstract The study set out to find the relationship between college numbers and academic performance of students in computer science department of College of Education Katsina-Ala. The aim of study was to see if college numbers can be used as a predictor variable for academic performance. It reviewed literature pointing to the fact that attendance to classes is actually such a predictor variable. Six research questions and six hypotheses guided the study. It employed ex post facto primary data. Five courses were chosen from NCE II, and 197 students were respondents of the study. Their college numbers were tabulated against their scores in the five selected courses. The data was analysed for correlation using SPSS application. The means of scores was also correlated against college numbers. It was found that college numbers and academic performance were negatively correlated, implying that the smaller the College Number (which the researchers thought indicates early resumption and hence should be related to attendance) of a candidate, the better the chances for him/her to score higher in assessments. Correlation coefficients were higher for some courses than others. However, the correlation was too weak to allow college numbers to serve as a variable for predicting academic performance.

Keywords College Number, Academic Performance, Computer Science

1. Introduction

Educators and researchers have always been interested in identifying and understanding the variables that contribute to academic performance. According to Jayanthi, Balakrishnan, Ching, Latiff and Nasirudeen [1], factors such as gender, nationality, co-curricular activities and interest in pursuing higher degrees affected students' academic performance. Borde in [1] excludes gender from the list, but Includes attendance as a factor. Attendance may be defined as the physical presentation (as opposed to presence by proxy) of the student for instruction. According to Fabgenle and Elegbeleye [2], attendance is the physical presence of the students in schools/classes. It is itself affected by factors such as poverty level of parents/guardians, unbearable extra fees imposed on students by school authorities, and high cost of instructional materials e.g. books, handouts, lab coats, e.t.c. [2]. These factors can all be associated with early or late resumption of students to schools, both as returning students and as fresh intakes.

Fresh intakes are the level at which College Numbers are allocated to students. Since the College Registry Department allocates College Numbers on first come, first serve basis (Damhindi, 22nd November, 2016: private interview), it follows that students who resumed early for classes have smaller College Numbers (implying the possibility of higher attendance) than those who resumed late (implying the possibility of lower attendance). Late resumption is itself a part of absenteeism which is influenced by same factors listed by [2]. This paper focuses on researching College Numbers as a measure of late or early resumption as a factor affecting



attendance to lectures and hence academic performance by students of Computer Science Department at the College of Education Katsina-Ala.

Purpose of Study

The purpose of this study is to investigate the correlation between college numbers and academic performance of students in Computer Science Education Department in College of Education Katsina-Ala. Specifically, the study seeks to discover if:

- i. Any correlation exists between college numbers of the target students and their academic performance in csc 212.
- ii. Any correlation exists between college numbers of the target students and their academic performance in csc 213
- iii. Any correlation exists between college numbers of the target students and their academic performance in csc 214
- iv. Any correlation exists between college numbers of the target students and their academic performance in csc 215.
- v. Any correlation exists between college numbers of the target students and their academic performance in csc 216.
- vi. Any correlation exists between the college numbers of the target students and their academic performance in their mean scores in the five study courses?

Research Questions

Six research questions were formulated to guide the study:

- i. Is there any correlation between college numbers of the target students and their academic performance in csc 212?
- ii. Is there any correlation between college numbers of the target students and their academic performance in csc 213?
- iii. Is there any correlation between college numbers of the target students and their academic performance in csc 214?
- iv. Is there any correlation between college numbers of the target students and their academic performance in csc 215?
- v. Is there any correlation between college numbers of the target students and their academic performance in csc 216?
- vi. Is there any correlation between the college numbers of the target students and their mean scores in the five study courses?

Hypotheses

Six null hypotheses were formulated for the study:

- i. H_0 : There is no significant correlation between the academic performance of the students and their college numbers in csc 212.
- ii. H_0 : There is no significant correlation between the college of the students and their academic performance in csc 213.
- iii. H_0 : There is no significant correlation between the college numbers of the students and their academic performance in csc 214.
- iv. H_0 : There is no significant correlation between the college numbers of the students and their academic performance in csc 215.
- v. H_0 : There is no significant correlation between the college numbers of the students and their academic performance in csc 216.
- vi. H_0 : There is no significant correlation between the college numbers of the students and their academic performance in csc 212.



Literature Review

Attendance has been widely researched and accepted as an important factor affecting academic performance. Fabgenle and Elegbeleye [2] carried out a study in Delta state, Nigeria in secondary schools. The aim of the study was to determine the effects of attendance on academic performance of secondary school students in Osun state. The results indicated that the average attendance scores of students across the ten constituencies in the state are proportional to their examination scores.

Another research was carried out by Deane and Murphy [3] in Dublin, Ireland. It sought to investigate Student Attendance and Academic Performance in Undergraduate Obstetrics/Gynecology Clinical Rotations. The results showed a positive correlation between attendance and overall examination score. The associations persisted after controlling for confounding factors of student sex, age, country of origin, previous failure in an end-of-year examination, and the timing of the rotation during the academic year. Distinction grades were present only among students with attendance rates of 80% or higher. The odds of a distinction grade increased with each 10% increase in attendance. The majority of failure grades occurred in students with attendance rates lower than 80%. An investigation of Factors Contributing to Academic Performance of Students in a Tertiary Institution in Singapore was carried out by Jayanthi et al [1]. Even though the investigators did not mention attendance in particular, they touched on factors like demographic, socio-economic, family and school factors as variables contributing to students' academic performance. These variables have already been identified by Stanca [4] as affecting attendance.

Attendance has also been found as a factor affecting academic performance among Computer Science students elsewhere. Pudaruth, Nagowah, Sungkur, Moloo and Chiniah [5] researched on The Effect of Class Attendance on the Performance of Computer Science Students in Kaula Lumpur, Malaysia. The aim of the study was to assess the impact of lecture attendance on the academic performance of Computer Science students at the University of Mauritius. A linear regression analysis of the data showed a correlation between attendance of lectures and academic performance of Computer Science students. The correlation however varied greatly across the different courses.

Courses in computer science differ according to the level of the students' progress in their particular program. In the three year National Certificate in Education (N.C.E.) program, the National Commission for College of Education [6] approves 11 courses for N.C.E. I, 13 courses for N.C.E. II, and 9 courses for N.C.E. III. This research will sample exam scores from among these approved courses.

Research Design and Methodology

The research is an ex-post facto survey design. A convenient sample of 198 students from the Computer Education Department of College of Education Katsina-Ala was taken. Their college numbers were obtained and tabulated against their scores in five courses of one semester chosen at random. Then the degree of correlation between college numbers and marks obtained for each exam was determined. Marks and college numbers were the two variables considered and the correlation between them was determined by identifying the degree to which there is a 'linear relationship' between them and the correlation coefficient was identified. Data was analysed using the Statistical Package for Social Sciences (SPSS) application. Decision was made on the value of correlation according to the following table:

Table 1: Significance of correlation coefficient

± 0.0 – 0.2	Very weak/negligible correlation
± 0.2 – 0.4	Weak correlation (not very significant)
± 0.4 -0.6	Moderate correlation
± 0.6 – 0.8	Strong correlation
± 0.8 – 1.0	Very strong correlation

The null hypotheses were tested at 0.05 level of significance.

Decision Rule: Accept H_0 whenever $F \geq 0.05$. Reject otherwise.



Limitations of the Study

The study employs convenient sampling both in choice of courses to be sampled, and the students to be included. It may therefore be subject to bias and a large experimental error.

Results and Discussion

Research question i: Is there any correlation between college numbers of the target students and their academic performance in csc 212?

Descriptive Statistics			
	Mean	Std. Deviation	N.K.S.T.
CSC212	49.4899	15.31190	198
COLLNO	460.1919	270.48479	198

Correlations			
		CSC212	COLLNO
Pearson Correlation	CSC212	1.000	-0.223
	COLLNO	-0.223	1.000
Sig. (1-tailed)	CSC212	.	0.001
	COLLNO	0.001	.
N	CSC212	198	198
	COLLNO	198	198

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	COLLNO ^b	.	Enter

a. Dependent Variable: CSC212
 b. All requested variables entered.

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	55.295	2.103		26.297	0.000
	COLLNO	-0.013	0.004	-0.223	-3.200	0.002

a. Dependent Variable: CSC212

From the standardized coefficients of beta, it can be seen that there is a negative correlation of -0.223 between college numbers of the students and their academic performance in csc212. The negative sign implies inverse correlation, which means, the smaller a student’s College Number, the higher his/her academic performance. However, following table 1 on page4, the correlation is regarded as weak.

Hypothesis i:

H₀: There is no significant correlation between the academic performance of the students and their college numbers in csc 212.

H₁: Significant correlation exists between college numbers of the students and their academic performance in csc 212.

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.223 ^a	0.050	0.045	14.96487	0.050	10.243	1	196	0.002

a. Predictors: (Constant), COLLNO

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2293.789	1	2293.789	10.243	0.002 ^b
	Residual	43893.691	196	223.947		
	Total	46187.480	197			

a. Dependent Variable: CSC212
b. Predictors: (Constant), COLLNO

The value of F in the model summary table shows 0.002. This value is less than 0.05, the significance level at which the hypothesis is tested. Following the decision rule on Page 5 therefore, we cannot reject Ho. We therefore conclude that there is no significant correlation between the college numbers of the students and their academic performance in csc 212.

Research question ii: Is there any correlation between college numbers of the target students and their academic performance in csc 213?

Descriptive Statistics			
	Mean	Std. Deviation	N.K.S.T.
CSC213	46.4798	10.91951	198
COLLNO	460.1919	270.48479	198

Correlations			
		CSC2013	COLLNO
Pearson Correlation	CSC213	1.000	-0.161
	COLLNO	-0.161	1.000
Sig. (1-tailed)	CSC213	.	0.012
	COLLNO	0.012	.
N	CSC213	198	198
	COLLNO	198	198

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	COLLNO ^b	.	Enter

a. Dependent Variable: CSC213
b. All requested variables entered.

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	49.467	1.518		32.582	0.000
	COLLNO	-0.006	0.003	-0.161	-2.281	0.024

a. Dependent Variable: CSC213



From the standardized coefficients of beta, it can be seen that there is a negative correlation of -0.161 between college numbers of the students and their academic performance in csc213. The negative sign implies inverse correlation, which means, the smaller a student’s College Number, the higher his/her academic performance. However, following table 1 on page4, the correlation is regarded as very weak.

Hypothesis ii

H₀: There is no significant correlation between the academic performance of the students and their college numbers in csc 213.

H₁: Significant correlation exists between college numbers of the students and their academic performance in csc 213.

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.161 ^a	0.026	0.021	10.80484	0.026	5.204	1	196	0.024

a. Predictors: (Constant), COLLNO

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	607.481	1	607.481	5.204	0.024 ^b
	Residual	22881.938	196	116.745		
	Total	23489.419	197			

a. Dependent Variable: CSC213
b. Predictors: (Constant), COLLNO

The value of F in the model summary table shows 0.024. This value is less than 0.05, the significance level at which the hypothesis is tested. Following the decision rule on Page 5 therefore, we cannot reject H₀. We therefore conclude that there is no significant correlation between the college numbers of the students and their academic performance in csc 213.

Research question iii: Is there any correlation between college numbers of the target students and their academic performance in csc 214?

Descriptive Statistics			
	Mean	Std. Deviation	N.K.S.T.
CSC214	55.3030	9.32706	198
COLLNO	460.1919	270.48479	198

Correlations			
		CSC2014	COLLNO
Pearson Correlation	CSC214	1.000	-0.277
	COLLNO	-0.277	1.000
Sig. (1-tailed)	CSC214	.	0.000
	COLLNO	0.000	.
N	CSC214	198	198
	COLLNO	198	198

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	COLLNO ^b	.	Enter

a. Dependent Variable: CSC214
 b. All requested variables entered.

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	59.698	1.263		47.285	0.000
	COLLNO	-0.010	0.002	-0.277	-4.036	0.000

a. Dependent Variable: CSC214

From the standardized coefficients of beta, it can be seen that there is a negative correlation of -0.277 between college numbers of the students and their academic performance in csc214. The negative sign implies inverse correlation, which means, the smaller a student’s College Number, the higher his/her academic performance. However, following table 1 on page4, the correlation is regarded as weak.

Hypothesis iii

H₀: There is no significant correlation between the academic performance of the students and their college numbers in csc 214.

H₁: Significant correlation exists between college numbers of the students and their academic performance in csc 214.

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.277 ^a	0.077	0.072	8.98498	0.077	16.286	1	196	0.000

a. Predictors: (Constant), COLLNO

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1314.764	1	1314.764	16.286	0.000 ^b
	Residual	15823.054	196	80.730		
	Total	17137.818	197			

a. Dependent Variable: CSC214
 b. Predictors: (Constant), COLLNO

The value of F in the model summary table shows 0.000. This value is far less than 0.05, the significance level at which the hypothesis is tested. Following the decision rule on Page 5 therefore, we cannot reject H₀. We therefore conclude that there is no significant correlation between the college numbers of the students and their academic performance in csc 214.

Research question iv: Is there any correlation between college numbers of the target students and their academic performance in csc 215?

Descriptive Statistics			
	Mean	Std. Deviation	N.K.S.T.
CSC215	49.2576	15.44367	198
COLLNO	460.1919	270.48479	198

Correlations			
		CSC2015	COLLNO
Pearson Correlation	CSC215	1.000	-0.222
	COLLNO	-0.222	1.000
Sig. (1-tailed)	CSC215	.	0.001
	COLLNO	0.001	.
N	CSC215	198	198
	COLLNO	198	198

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	COLLNO ^b	.	Enter
a. Dependent Variable: CSC215			
b. All requested variables entered.			

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	55.096	2.121		25.974	0.000
	COLLNO	-0.013	0.004	-0.222	-3.191	0.002

a. Dependent Variable: CSC215

From the standardized coefficients of beta, it can be seen that there is a negative correlation of -0.222 between college numbers of the students and their academic performance in csc215. The negative sign implies inverse correlation, which means, the smaller a student’s College Number, the higher his/her academic performance. However, following table 1 on page4, the correlation is regarded as weak.

Hypothesis iv:

H₀: There is no significant correlation between the academic performance of the students and their college numbers in csc 215.

H₁: Significant correlation exists between college numbers of the students and their academic performance in csc 215.

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.222 ^a	0.049	0.045	15.09596	0.049	10.180	1	196	0.002

a. Predictors: (Constant), COLLNO

ANOVA ^a						
Model		Sum of Squares	Therefore	Mean Square	F	Sig.
1	Regression	2319.829	1	2319.829	10.180	0.002 ^b

Residual	44666.035	196	227.888		
Total	46985.864	197			
a. Dependent Variable: CSC215					
b. Predictors: (Constant), COLLNO					

The value of F in the model summary table shows 0.002. This value is less than 0.05, the significance level at which the hypothesis is tested. Following the decision rule on Page 5 therefore, we cannot reject Ho. We therefore conclude that there is no significant correlation between the college numbers of the students and their academic performance in csc 215.

Research question v: Is there any correlation between college numbers of the target students and their academic performance in csc 216?

Descriptive Statistics			
	Mean	Std. Deviation	N
CSC2016	52.6616	17.22387	198
COLLNO	460.1919	270.48479	198

Correlations			
		CSC2016	COLLNO
Pearson Correlation	CSC216	1.000	-0.215
	COLLNO	-0.215	1.000
Sig. (1-tailed)	CSC216	.	0.001
	COLLNO	0.001	.
N	CSC216	198	198
	COLLNO	198	198

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	COLLNO ^b	.	Enter
a. Dependent Variable: CSC216			
b. All requested variables entered.			

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	58.972	2.369		24.889	0.000
	COLLNO	-0.014	0.004	-0.215	-3.087	0.002
a. Dependent Variable: CSC216						

From the standardized coefficients of beta, it can be seen that there is a negative correlation of -0.216 between college numbers of the students and their academic performance in csc216. The negative sign implies inverse correlation, which means, the smaller a student’s College Number, the higher his/her academic performance. However, following table 1 on page4, the correlation is regarded as weak.

Hypothesis v:

H₀: There is no significant correlation between the academic performance of the students and their college numbers in csc 216.

H₁: Significant correlation exists between college numbers of the students and their academic performance in csc 216.

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.215 ^a	0.046	0.042	16.86262	0.046	9.531	1	196	0.002

a. Predictors: (Constant), COLLNO

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2710.099	1	2710.099	9.531	0.002 ^b
	Residual	55732.229	196	284.348		
	Total	58442.328	197			

a. Dependent Variable: CSC216
b. Predictors: (Constant), COLLNO

The value of F in the model summary table shows 0.002. This value is less than 0.05, the significance level at which the hypothesis is tested. Following the decision rule on Page 5 therefore, we cannot reject Ho. We therefore conclude that there is no significant correlation between the college numbers of the students and their academic performance in csc 216.

Research question vi: Is there any correlation between the college numbers of the target students and their mean scores in the five study courses?

AVERAGE SCORE

Descriptive Statistics			
	Mean	Std. Deviation	N.K.S.T.
Average	50.6384	10.93683	198
COLLNO	460.1919	270.48479	198

Correlations			
		Average	COLLNO
Pearson Correlation	Average	1.000	-0.272
	COLLNO	-0.272	1.000
Sig. (1-tailed)	Average	.	0.000
	COLLNO	0.000	.
N	Average	198	198
	COLLNO	198	198

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	COLLNO ^b	.	Enter

a. Dependent Variable: Average
b. All requested variables entered.

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	55.706	1.482		37.577	0.000
	COLLNO	-0.011	0.003	-0.272	-3.962	0.000

a. Dependent Variable: Average



From the standardized coefficients of beta, it can be seen that there is a negative correlation of -0.272 between college numbers of the students and their attendance in the five courses under study. The negative sign implies inverse correlation, which means, the smaller a student's College Number, the higher his/her academic performance. However, following table 1 on page4, the correlation is regarded as weak.

Summary of Findings

The major findings of the study are summarised as follows:

1. The findings of the study showed that college numbers and academic performance of students in CSC 212 in Computer Science Education Department of the College of Education Katsina-Ala are not correlated. The result from the test of hypothesis one revealed that there is no significant correlation between academic performance of the students in CSC 212 and their college numbers.
2. The results of the study showed that academic performance of students in CSC213 in Computer Science Education Department of the College of Education Katsina-Ala are not correlated. Results from the test of hypothesis two revealed that there is no significant correlation between academic performance of students in CSC 213 and their college numbers.
3. The findings of the study showed that college numbers and academic performance of students in CSC 214 in Computer Science Education Department of College of Education Katsina-Ala are not correlated. Results from the test of hypothesis three revealed that there is no significant correlation between academic performance of students in CSC 214 and their college numbers.
4. The findings of the study showed that college numbers and academic performance of students in CSC 215 in Computer Science Education Department of College of Education Katsina-Ala are not correlated. Results from the test of hypothesis four revealed that there is no significant correlation between academic performance of students in CSC 215 and their college numbers.
5. The results of the study showed that academic performance of students in CSC216 in Computer Science Education Department of the College of Education Katsina-Ala are not correlated. Results from the test of hypothesis two revealed that there is no significant correlation between academic performance of students in CSC 216 and their college numbers.
6. The findings of the study also showed that there is no correlation between the college numbers of students in Computer Science Education Department in College of Education Katsina-Ala and their mean scores in the five selected courses. Results from the test of hypothesis six revealed that there is no significant correlation between the mean scores of the students and their college numbers.

Conclusions

The general conclusion is that there exists a negative correlation between college numbers of students in Computer Science Department of College of Education Katsina-Ala and their academic performance. The correlation is too weak and considered insignificant. College numbers therefore cannot be used to predict students' academic performance in the department.

Recommendations

1. Parents should endeavour to send their wards back to school early on resumption so that the wards will not miss out of the early classes which often serve as revision of knowledge gained in previous level, or establishment of first principles upon which the rest of the course is built. This is quite necessary especially in the sciences where one principle builds on the previous one established.
2. During revisions at the end of the course, Lecturers should remember to re-establish the first principles upon which their courses are based so that those who could not resume early due to financial or other constraints will catch up with their more fortunate peers.

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