Discovery

Comparing the rate of admission of students and their performances in the department of physics

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General Note

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ABSTRACT

This study compares the number of students admitted and their performances in the department of Physics, Adeyemi College of Education, Ondo for a period of ten sessions. The cumulative Grade Point Averages of the graduates and the number of students' admitted between the 1996/1997 and 2005/2006 academic sessions were collected from the departmental office. The null hypothesis that "there is no significant relationship between the rate of admission and students' academic performances" was analyzed using Pearson Product Moment Correlation. The result shows that the hypothesis was rejected. The study revealed that there is a very strong negative correlation relationship between the rate of admission and the performance of students in physics. This implies that as the number of students admitted increases, the mean cumulative grade point average (CGPA) decreases. It was

Nwankpa and Ojesina,
Comparing the rate of admission of students and their performances in the department of physics,
Discovery, 2017, 53(257), 315-320,

Page 315

recommended that the students' performance in Physics can be improved to a desirable standard if the number of students admitted is reduced by making sure that the students admitted into tertiary institutions to study Physics are admitted on merit.

1. INTRODUCTION

Higher education is very crucial for the socio-economic and technological development of any country. It provides the skilled manpower needed to transform the resources within that country into wealth. This is achieved when higher education provides the right quality of training and skills required at the right quantity. Over the years, the number of persons applying to enter universities in Nigeria has been on the increase. When Nigeria gained independence in 1960, the higher education enrollment was 2000 within a handful of institutions, including the University of Ibadan and the University of Nigeria, Nsukka. By 2010, the number of universities had risen to 104, with a 1.5 million student enrollment (Okebukola, 2010).The increase in the rate of admission which invariably led to large class size can be said to have contributed to the poor quality of students produced over the years.

A decline in graduate students' performances has been registered over the years (KNEC 2002-2011). Decline in the performance of the graduate Physics students' in Nigeria and other countries has been previously reported by several authors (Olaleye and Salami 1997, Barbara and Syhia 2002, Adegoke and Moronha 2002). It has been perceived that the large number of students and the young age of the students are the major contributing factors to this high failure rate (Oyebola et al, 1997).Gibbs (1996) investigated the effect of the class size on the performances of the students in a University within a period of ten years. It was observed that student's performance was inversely proportional to class size. This is one of the problems faced by the Universities, Colleges of Education and Polytechnics in Nigeria where class size has multiplied many fold in the recent years. This makes the admission process an important factor in student performance (Bamgboye et al, 2001; Grey et al, 2001).

2. RESEARCH METHOD

This section is concerned with the description of method adopted for this research which includes research design, population, research instrument and its validation and procedures for data collection and analysis.

2.1. Research Design

The design employed for this study was Ex-post Facto. Ex-post facto research design was defined by Kpolovie (2010) as a methodological approach for eliciting possible or probable antecedents of events that have occurred already and which cannot be subjected to the direct rigorous manipulation and control by the researcher. The design was most suitable and appropriate for the study since the past records and results of the students were used in reaching conclusions about the students' learning outcome and the number of students admitted.

2.2. Population of the Study

The target population for this study consists of all academic data of graduate students in the Department of Physics, Adeyemi College of Education, Ondo between the 1996/1997 to 2005/2006 academic sessions which stood at three hundred and sixty-three. This study aim at correlating the Mean Cumulative Grade Point Average of these students to the number of students admitted into the Department within the years stated above.

2.3. Research Instrument

Two instruments were mainly used for the study. The first is the past admission lists consisting of the names of students admitted for the programme in a particular year. The second instrument is the Students' Academic Record data. The students' academic record data were kept by department. No validation of any instrument was carried out. This was because the two instruments used for data collection were original   records and all information collected from them are from the original sources and thus adjudged to be correct, authentic and reliable. This agrees with the recommendations of (Wiseman 1999; Johnson and Christensen 2000; Borich 2004).

2.4. Research Hypothesis

The following hypothesis was generated for the study.

H_{o-} There is no significance relationship between the rate of admission of students and their performances in Physics.

3. PRESENTATION AND DISCUSSION OF RESULTS

Table 1 The Number of Students Admitted Into the Department of Physics Between The Years 1996/1997 To 2005/2006 Academic Sessions.

Year of admission	Number of students admitted
1996/1997	12
1997/1998	08
1998/1999	06
1999/2000	08
2000/2001	15
2001/2002	22
2002/2003	85
2003/2004	71
2004/2005	90
2005/2006	46
	Total: 363

Table 1 above revealed that from 1996/1997 academic session to 2001/2002 academic session, the department of physics admitted a total of 71 students, that is, 12, 08, 06, 08, 15 and 22 students were admitted in the 1996/1997, 1997/1998, 1998/1999, 1999/2000, 2000/2001 and 2001/2002 academic sessions respectively. The population increased significantly in the year 2002/2003 academic session when the department admitted a total of 85 students followed by a little reduction in the following academic year where 71 students were admitted. A total of 90 students were admitted in the year 2004/2005 academic session and 46 admitted in the year 2005/2006 academic session. The table further revealed that a total number of 363 students were admitted between the 1996/1997 to 2005/2006 academic session.

Table 2 The Results of Graduating Students in The Department of Physics Between 1996/1997 and 2005/2006 Academic Sessions

Year of admission (Session)	Number of students admitted	Year of graduation (Session)	Graduation Grades (Class of honours)			
			First Class	Second Class Upper Division	Second Class Lower Division	Third Class
1996/1997	12	2000/2001	0	3	3	0
1997/1998	08	2001/2002	2	2	3	2
1998/1999	06	2002/2003	0	0	1	0
1999/2000	08	2003/2004	2	4	2	2
2000/2001	15	2004/2005	1	5	7	6
2001/2002	22	2005/2006	0	9	28	9
2002/2003	85	2006/2007	0	14	19	10
2003/2004	71	2007/2008	0	11	16	8
2004/2005	90	2008/2009	0	17	13	26
2005/2006	46	2009/2010	0	10	18	11

Table 3 The Number of Students Admitted And Their Mean CGPA

Session	Number of student admitted (X)	Mean CGPA (Y)	XY	X²	Y²
1996/1997	12	3.63	43.56	144	13.18
1997/1998	08	3.90	31.20	64	15.21
1998/1999	06	3.73	22.38	36	13.91
1999/2000	08	3.91	31.28	64	15.29
2000/2001	15	3.49	52.25	225	12.18
2001/2002	22	3.03	66.66	484	9.18
2002/2003	85	2.54	215.90	7225	6.45
2003/2004	71	2.72	193.12	5041	7.39
2004/2005	90	2.41	216.90	8100	5.81
2005/2006	46	2.98	137.08	2116	8.88
	∑X = 363	∑Y = 32.34	∑XY = 1010.33	∑X²= 23499	∑Y²= 107.48

The statistical method used in the analysis and interpretation of result is the Pearson Product Moment Correlation.

$$r = \frac{(N\sum XY)-(\sum X)(\sum Y)}{\sqrt{[N\sum X^2-(\sum X)^2][N\sum Y^2-(\sum Y)^2]}}$$

Using is the Pearson Product Moment Correlation.

$$r = \frac{(10 \times 1010.33) - (363)(32.34)}{\sqrt{((10 \times 23499) - (363)^2)((10 \times 107.48) - (32.34)^2)}}$$

$$r = \frac{10103.3 - 11739.42}{\sqrt{(234990 - 131769)(1074.80 - 1045.87)}}$$

$$r = \frac{10103.3 - 11739.42}{\sqrt{(103221)(28.93)}}$$

$$r = \frac{-1639.12}{\sqrt{2986183.53}}$$

$$r = \frac{-1639.12}{1728.05}$$

$$r = -0.94$$

The findings of the study show that there is a very strong negative correlation relationship of -0.94 (r = - 0.94) between the rate of admission to mean students' academic performance. When two variables have a negative correlation, they have an inverse relationship. This means that as one variable increases, the other decreases, and vice-versa. The hypothesis that "there is no significant relationship between the rate of admission and students' academic performance" was rejected. This implies that there is a significant relationship between the rate of admission and the students' academic performances. From table 3, we noted that the higher the number of students admitted the lower their mean cumulative grade point average (CGPA) and this shows that the rate of admission influence the students' academic performance in Physics.

This implies that the size of the class has an impact on the performance of the students. This finding is in line with that of Oderinde (2003) which studied examinations and students' performance. He discovered that the classrooms, laboratories and other facilities in schools are often few for the large number of students admitted thereby affecting their achievement level. Alebiosu (2000), in a study on the effects of instructional methods on students' perception of the difficulty in learning science, found that students in small classes (i.e. low in number) consistently make significant achievement gains than their counterparts in large classes (i.e. large in number). Adeyemi (2008) which studied the influence of class-size on the quality of output in schools in Ekiti State, Nigeria, discovered that class size is significantly related with output from schools in Ekiti State. United States Department of Education (2003) submitted that studies from Tennessee, Wisconsin, and elsewhere demonstrate that students who are assigned to smaller classes do better in every way that can be measured: they score higher on tests, receive better grades, and exhibit improved attendance. Such syntheses generally conclude that there is some evidence of a positive relationship between small class-size and student achievement and negative relationship between large class-size and student achievement (Finn and Achilles, 1999) Students assigned to smaller classes performed better than students in larger classes on all achievement tests in all subject areas in every grade (Barnett, et al 2004). It can therefore be concluded that increase in the number of students enrolled leads to deterioration of students' academic performance in Physics.

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