A Comparative Analysis of 200 Level Science Students' Academic Performance Based on Mode of Entry – JUPEB/UTME

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Abstract

This study compared the academic performance of 200 level science students admitted through the Joint Universities Preliminary Examinations Board (JUPEB) and the Unified Tertiary Matriculation Examination (UTME) programs for the 2014/2015 session. An Expo-Facto descriptive survey design was employed. The study utilized 900 participants, which comprised 448 males and 452 female students as sample using convenience sampling technique. A secondary sourced data was used as instrument for data collection. It consisted of 200 level CGPA scores for 2014/2015 academic session. Seven research questions guided the study and tested using the mean, standard deviation, and independent t-test. Results obtained showed that there is no significant influence of mode of entry on the academic performance of 200 level science students; there is no significant gender influence on the academic performance of 200 level science students; there is no significant influence of school type on the academic performance of 200 level science students; there is no significant interaction influence of gender and mode of entry on the academic performance of students; there is no significant interaction influence of gender and school type on the academic performance of students; there is a significant interaction influence of school type and mode of entry on the academic performance of students; and there is no significant interaction influence of gender, mode of entry and school type on the academic performance of 200 level science students. Some recommendations made based on the findings include; both modes of entry should be encouraged for candidates seeking admission into universities of higher learning; equal admission opportunities should be given to both male and female entrants into science courses.

Keywords: Academic performance, Entry qualifications, Examination Board, IJMB, JUPEB, Student, University, UTME

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Background to the Study

Education is the act of systematic development or training of the mind, capabilities or character through instruction or study (National Open University of Nigeria, 2015). Education varies as widely in its forms, philosophy, contents, and methods as there are different societies in the world. It is also an instrument for national development (National Open University of Nigeria, 2015). There are three tiers of education in Nigeria, the primary, secondary and tertiary. The tertiary education is sometimes also termed higher education. The National Policy on Education (Federal Republic of Nigeria, 2004), defines higher education as the post-secondary section of the National education system, which is Universities, Polytechnics and Colleges of Technology and Colleges of Education. Correspondence Colleges and such Institutions as may be allied to them.

Different Examination Boards are set up to conduct examinations for students in order to secure admission into the University system. Some of the Examination Boards in Nigeria include, West African Examinations Council (WAEC), National Examinations Council (NECO), The Joint Admission and Matriculation Board (JAMB), Interim Joint Matriculation Board (IJMB) and Joint Universities Preliminary Examinations Board (JUPEB). WAEC conducts both the Senior Secondary Certificate Examination (SSCE) and General Certificate Examination (GCE). A maximum of nine and a minimum of eight subjects are registered for the examination by each student with Mathematics and English Language taken as compulsory in WAEC or NECO examinations (Nigerian Scholars, 2016).

JAMB is Nigeria's official entrance Examination Board for tertiary-level institutions. The examinations being administered are available for most students who choose to apply to Nigerian public and private monotechnics, polytechnics, and universities (Nigerian Scholars, 2016). JAMB was established in 1978 to help cater for the non-uniformity in admission procedures in Nigerian Universities. By 1974, there were seven Federal Universities in Nigeria with each of them prescribing dissimilar admission procedures and requirements, hence there were instances where a single student may be admitted in more than one University at the same time with such student limiting the chances of others, since the particular candidate can only attend one University at a time. Thus, the advent of JAMB to a large extent helped eliminate multiple admissions in Universities and other higher institutions by a single candidate. To reflect the yearnings of the society and to tackle the case of multiple admissions, JAMB reduced the number of institutions from the option of two to one. Hence, applicants now have to pick one university, one polytechnic, one college of education and one computer institute, while filling the JAMB registration form.

IJMB is an Advanced Level program supervised and moderated by Ahmadu Bello University. This programme allows successful students to gain admissions into 200 Level in any Nigerian university of their choice and the programme runs for the period of 9 months (IJMB, 2016). JUPEB is a national examinations body established in 2014 and saddled with the responsibility of conducting examinations for candidates, who have undergone approved courses at their ordinary level and are seeking Direct Entry admissions into Nigerian and Foreign Partnering Universities (Nigerian Scholars, 2016).

The Chairman of University of Lagos Management Committee (2012) Prof. Rahamon A. Bello stated that Federal Government had reportedly banned Pre-degree and Diploma programmes in all Universities in Nigeria, and will no longer allow Universities to admit students from these pragrammes without them sitting for a qualifying examination. This brought to the fore the necessity for establishing an Examination Body that will provide certificates for Direct Entry admissions in lieu of entry through these banned programmes in Universities, at least across the South-Western region comprising Lagos, Ogun, Oyo, Osun, Ondo, Ekiti, Edo and Delta States just like the IJMB does for many universities in the North (University of Lagos Management Committee on JUPEB, 2012). This laid the foundation for the establishment of JUPEB. Presently JUPEB Examination Body cuts across all the Universities in Nigeria and overseas so far they are affiliated to JUPEB.

Functions of JUPEB include: prescribing standards and conditions for affiliation of different Universities, soliciting qualified candidates who may want to seek Direct Entry admissions into the affiliate Universities; and conducting examinations leading to the award of JUPEB Certificate for Direct Entry Admission into 200 Level in affiliate Universities. JUPEB was established as a regional examination body that conducts examinations for qualified candidates, to enable them gain Direct Entry admission into the affiliated University institutions after a regime of intense preparatory coursework. As a respected examinations body, JUPEB has affiliations with other genuine and recognized examinations bodies, locally and abroad, with a view to partnering with them in training and conduct of examinations. Preparation of candidates for JUPEB examinations is done only in JUPEB affiliate Universities.

The future services of JUPEB include assisting Tertiary institutions, Government Ministries and Parastatals, Multi-national Corporations, Firms and other organisations in conducting job attitude tests, promotional examinations, selection examinations and other such examinations. Further, JUPEB, will provide any other services related to its mandate as may be approved from time to time by its Governing Board (University of Lagos Management Committee on JUPEB, 2013).

There are two categories of students being admitted into University undergraduate programmes in Nigeria and they include those that pass through the Unified Tertiary Matriculation Examination (UTME) conducted by Joint Admission and Matriculation Board (JAMB) and candidates that finished from Colleges of Education and Polytechnics and candidates with JUPEB certificate, whose examination is conducted by Joint Universities Preliminary Examinations Board (JUPEB). These groups have varying academic experiences and hence the basis for the study on Comparative Analysis of 200 Level Science students' Academic Performance Based on Mode of Entry to understand the differences in their modes of entry into the University. There are variations in the qualifications of the students who are admitted into Universities through the different modes of entry. Hence this could reflect in their academic achievement when admitted into the University programmes.

Statement of the Problem

In this study, the performances of 200level Science Students of 2014/2015 Academic sessions in 4 JUPEB affiliated universities were compared, with a view to determining the quality of students admitted via the two modes of entry; JUPEB and UTME. Contrary to expectation that all students admitted into the University irrespective of the mode of entry will be able to cope with the academic rigors, some students drop out on the way without graduating from the University. Many students change their courses, while others spend extra years before graduating; and more often some students end up with third class and pass degrees from many Universities in Nigeria thereby compounding their chances of gainful employment. The belief of people, over which mode of entry is better in terms of University academic performance of students is different from one group to another (Emaikwu, 2012).

Researches on mode of entry and students' academic performance are scanty in Nigeria and the few reported are contradictory. This study therefore becomes significant in filling this observed gap by investigating empirically the academic performance of students admitted through the Joint Universities Preliminary Examinations Board (JUPEB) and the Unified Tertiary Matriculation Examination (UTME).

Research Questions

- 1. To what extent will the mode of entry influence the academic performance of 200 level Science Students?
- 2. What is the main influence of gender on the academic performance of 200 level science students?
- 3. To what degree will school type influence the academic performance of 200 level science students?
- 4. Will the interaction of gender and mode of entry influence the academic performance of 200 level science students?
- 5. Will the interaction of gender and school type influence the academic performance of 200 level science students?
- 6. Will the interaction of mode of entry and school type influence the academic performance of 200 level science students?
- 7. Will the interaction of gender, mode of entry and school type influence the academic performance of 200 level science students?

Methodology

This study adopted the Ex-post Facto descriptive survey design. The population of the study consisted of all the second year (200 level) science students in JUPEB affiliated Universities. The sampling frame consists of BOWEN and UNILAG science students admitted through JUPEB and UTME examinations for 2014/2015 academic sessions. These include forty eight (48) BOWEN students and eight hundred and fifty six (856) UNILAG students. The convenience sampling technique was used to select the study participants. BOWEN and UNILAG science students admitted through JUPEB and UTME examinations who were in 200 level in 2014/2015 academic sessions were the available and accessible sample used for the study. A sample of nine hundred and four (904) students was used. The instrument used for the study was a secondary source data consisting of second year students' academic records in 200 level CGPA scores in 2014/2015 session. Information about each student was extracted from the records kept in their files at their various Faculties of their Universities, 200 level Students' CGPA, UTME and JUPEB results were collected directly from Academic and Records office in the sampled schools. Based on this reason, the instrument was valid hence does not need any further validation. The procedure for the data collection involves the letter of request sent to the Foundation Directors of BOWEN and UNILAG and copied to their various Vice Chancellors. The letter was sent alongside a format of the data, the Universities were expected to deliver it to the researcher. This was done to avoid the problems of missing data, variables and incorrect data placement. Mean and standard deviations were used for descriptive analysis while inferential statistics and independent sample t-test were used to test the hypotheses. The data analytical procedures were done using Statistical Package for Social Sciences (SPSS) version 20. This package was employed because it minimizes the chances of encountering error.

Results

Research Question 1: Will the mode of entry influence the academic performance of 200 level science students?

Table 1: The influence of mode of entry on the academic performance of 200 level science students

Mode of entry	N	Mean	SD	
JUPEB	271	2.78	1.02	
UTME	629	2.93	1.06	

Table 2: T-test Analysis on the influence of mode of entry on the academic performance of 200level science students

		Equal	Equal
		variances	variances not
		assumed	assumed
Levene's Test for	F	1.794	
Equality of Variances	Sig	.181	
t-test for Equality of	t	-1.980	-2.014
means	df	898	532.015
	Sig. (2-tailed)	.048	.045
	Mean Difference	15069	15069
	Std. Error Difference	.07609	.07483
	95% Confidence Interval	Lower30003	29770
	of the Difference	Upper00136	00368

Based on Table 1 and Table 2 above, the study found that students who were admitted through JUPEB had statistically significantly lower scores (2.78 \pm 1.02) at the end of the session compared to students who were admitted through UTME (2.93 ± 1.06), thus, the group means are statistically significantly different since t(898) = -1.980, $p = 0.048 < \alpha = 0.05$

Research Question 2: Does gender influence the academic performance of 200 level science students?

Table 3: The influence of gender on the academic performance of 200 level science students

Gender	N	Mean	SD	
Male	448	2.92	1.11	
Female	452	2.85	0.99	

Table 4: T-test Analysis on the influence of gender on the academic performance of 200 level science students

		Equal	Equal
		variances	variances not
		assumed	assumed
Levene's Test for	F	9.405	
Equality of Variances	Sig	.002	
T-test for Equality of	t	1.016	1.015
means	df	898	884.431
	Sig. (2-tailed)	.310	.310
	Mean Difference	.07103	.07103
	Std. Error Difference	.06992	.06996
	95% Confidence Interval	Lower06621	06628
	of the Difference	Upper .20826	.20834

From Table 3 and Table 4 above, the study found that female students had statistically significantly lower scores (2.85 ± 0.99) at the end of the session compared to male students (2.92 ± 1.11) , thus, the group means are not statistically significantly different since t(898) = $1.016, p = 0.310 > \alpha = 0.05$

Research Question 3: Will school type influence the academic performance of 200 level science students?

Table 5: The influence of school type on the academic performance of 200 level science

School type	N	Mean	SD	
Public	854	2.86	1.05	
Private	46	3.32	1.00	

Table 6: T-test Analysis on the influence of school type on the academic performance of 200 level science

		Equal	Equal
		variances	variances not
		assumed	assumed
Levene's Test for	F	.632	
Equality of Variances	Sig	.427	
t-test for Equality of	t	-2.930	-3.050
means	df	898	50.448
	Sig. (2-tailed)	.003	.004
	Mean Difference	46318	46318
	Std. Error Difference	.15809	.15186
	95% Confidence Interval	Lower77345	76814
	of the Difference	Upper15290	15822

From Table 5 and Table 6 above, the study found that public school students had statistically significantly lower scores (2.86± 1.05) at the end of the session compared to private school students (3.32 \pm 1.00), thus, the group means are statistically significantly different since $t(898) = -2.930, p = 0.003 < \alpha = 0.05$

Research Question 4: Will the interaction of gender and mode of entry influence the academic performance of 200 level science students?

Table 7: The interaction influence of gender and mode of entry on the academic performance of 200 level science students

		Male			Femal	e		Total	
Mode of Entry	N	Mean	SD	N	Mean	SD	N	Mean	SD
JUPEB	110	2.50	1.05	161	2.97	0.95	271	2.78	1.01
UTME	338	3.06	1.09	291	2.78	1.00	629	2.93	1.06
Total	448	2.92	1.11	452	2.85	0.99	900	2.88	1.05

Table 7 shows that 110 male students who were admitted through JUPEB had a mean of 2.50 and standard deviation 1.05; and 338 male students who were admitted through UTME had a mean of 3.06 and standard deviation 1.09. Female students admitted through JUPEB had a mean of 2.97 and standard deviation 0.95; and female students admitted through UTME had a mean of 2.78 and standard deviation 1.00. Male students admitted through UTME performed better than the male students through JUPEB with a mean margin of (0.56), which is high. In contrast, female JUPEB students performed better than female UTME with a mean margin of (0.09), which is low. Female students performed better in JUPEB than the male students with a mean margin of (0.47), which is high. In contrast, male students performed better in UTME than the female students with a mean margin of (0.29). Hence, the interaction of gender and mode of entry influenced the academic performance of the students.

Research Question 5: Will the interaction of gender and school type influence the academic performance of 200 level science students?

Table 8: The interaction influence of gender and school type on the academic performance of 200 level science students

		Male			Femal	e		Total	
Mode of Entry	N	Mean	SD	N	Mean	SD	N	Mean	SD
Public	422	2.89	1.10	432	2.83	0.99	854	2.86	1.05
Private	26	3.39	1.07	20	3.24	0.93	46	3.32	1.00
Total	448	2.92	1.11	452	2.85	0.99	900	2.88	1.05

Table 8 revealed that 422 male students in public schools had a mean of 2.89 and standard deviation 1.10; 26 male students in private schools had a mean of 3.39 and standard deviation 1.07. 432 female students in public schools had a mean of 2.83 and standard deviation 0.99; and 20 female students in private schools had a mean of 3.24 and standard deviation 0.93. That is, male students in private schools performed better than those in public schools with a mean margin of (0.5), which is high. Similarly, female students in private schools performed better than those in public schools with a mean margin of (0.41), which is high. Male students in public schools performed better than their female counterparts with a mean margin of (0.06), which is low. Also, male students in private schools performed better than their female counterparts with a mean margin of (0.15), which is low. Hence, the interaction of gender and school type influenced the academic performance of 200 level science students.

Research Question 6: Will the interaction of mode of entry and school type influence the academic performance of 200 level science students?

Table 9: The interaction influence of mode of entry and school type on the academic performance of 200 level science students

		Public			Private	2	Total		
Mode of Entry	N	Mean	SD	N	Mean	SD	N	Mean	SD
JUPEB	250	2.78	1.01	21	2.82	1.08	271	2.78	1.01
UTME	604	2.90	1.06	25	3.75	0.71	629	2.93	1.06
Total	854	2.86	1.05	46	3.32	1.00	900	2.88	1.05

Table 9 shows that 250 public school students admitted through JUPEB had a mean of 2.78 and standard deviation 1.01; and 604 public students admitted through UTME had a mean of 2.90 and standard deviation 1.06. Private school students admitted through JUPEB had a mean of 2.82 and standard deviation 1.08; and private school admitted through UTME had a mean of 3.75 and standard deviation 0.71. It shows that, public school students performed better in UTME than in JUPEB with a mean margin (0.12), which is fair. Similarly, private school students performed better in UTME than in JUPEB with a mean margin (0.93), which is very high. Moreover, private school students do better in UTME than public school students with a mean margin (0.85), which is very high. Also, private school students do better in JUPEB than public school students with a mean margin (0.04), which is low. Hence, the interaction of mode of entry and school type influenced the academic performance of 200 level science students.

Research Question 7: Will the interaction of gender, mode of entry and school type influence the academic performance of 200 level science students?

Table 10: The interaction influence of gender, mode of entry and school type on the academic performance of 200 level science students

Gender	School type	Mode of entry	Mean	SD	N
Male	Public	JUPEB	2.46	1.03	99
		UTME	3.02	1.09	323
		Total	2.89	1.10	422
	Private	JUPEB	2.92	1.24	11
		UTME	3.73	0.81	15
		Total	3.39	1.07	26
	Total	JUPEB	2.50	1.05	110
		UTME	3.06	1.09	338
		Total	2.92	1.112	448
Female	Public	JUPEB	2.98	0.95	151
		UTME	2.75	1.00	281
		Total	2.83	0.99	432
	Private	JUPEB	2.71	0.93	10
		UTME	3.77	0.57	10
		Total	3.24	0.93	20
	Total	JUPEB	2.97	0.95	161
		UTME	2.78	1.00	291
		Total	2.85	0.99	452
Total	Public	JUPEB	2.78	1.01	250
		UTME	2.90	1.06	604
		Total	2.86	1.05	854
	Private	JUPEB	2.82	1.08	21
		UTME	3.75	0.71	25
		Total	3.32	1.00	46
	Total	JUPEB	2.78	1.02	271
		UTME	2.93	1.06	629
		Total	2.88	1.05	900

As shown in Table 10 above, male public school students admitted through JUPEB had a mean of 2.46 and SDof 1.03; while male public school students admitted through UTME had a mean of 3.02 and of SD 1.09. Also, male private school students admitted through JUPEB had a mean of 2.92 and SDof 1.24; while male private school students admitted through UTME had a mean of 3.73 and SD of 1.07. Moreover, female public school students admitted through JUPEB had a mean of 2.98 and SD of 0.95; while female public school students

admitted through UTME had a mean of 2.75 and SD of 1.00. Also, female private school students admitted through JUPEB had a mean of 2.71 and SD of 93; while female private school students admitted through UTME had a mean of 3.77 and SD of 0.57. This implies that male private school students performed better in UTME than male public school students with a mean margin of (0.71), which is very high. Similarly, male private school students performed better in JUPEB than male public school students with a mean margin of (0.46), which is high. Female private school students performed better in UTME than female public school students with a mean margin of (1.02), which is very high. By contrast, female public school students performed better in JUPEB than female private school students with a mean margin of (0.27), which is high. Hence, the interaction of gender, mode of entry and school type influenced the academic performance of 200 level science students.

Discussion of Findings

This finding showed that the mode of entry into Universities does not determine the academic performance of students. These findings corresponds with the results of Emaikwu (2012) where it was revealed that there was no significant difference in the mean academic achievement of students who were admitted into the University through unified tertiary matriculation examination, remedial programme and direct entry admissions. However, this negates the findings of Olukanye and Fagbade (2015) on their study on Academic Performance, Relationship with Gender and Mode of Admission, wherein it was revealed that gender and mode of admission significantly affected the level of performance.

This study revealed that there were no statistical significant gender differences in the academic performance of 200 level science students. This agrees with the view of A. A. Arigbabu, and A. Mji, (2004) who found that there was no statistical significant difference in the mean academic achievement of male and female students' academic achievement. This finding supported the seemingly popular claim that the era of male dominance and supremacy in mathematics and science learning is fast disappearing. More so, the popularity of gender stereotyping in favour of the males as well as the view of science careers being for males are waning, considering the zero tolerance in gender difference and the comparable number of male and female students recorded in this study. It negates the work of Olukanye and Adeyemi (2015) agrees that male students are more likely to have a high performance compared to the female counterpart. This position is corroborated by the submission of Ogunleye, and Babajide (2011) that the trend of boys having greater natural aptitude in science than girls is not a truism.

The findings showed that there is no significant influence of school type on the academic performance of 200 level science students. This finding negates the result of Tooley and Dixon (2005) that as a result of poor performance of public schools, the demand for private schools in developing countries is rising rapidly, and private schools are seen to assume huge role in catering to the educational needs of the poor. The finding negates the view of Colombia and Kang (2007) that students who attended private schools experience a significant gain in achievement test scores. Tokman (2002) found that public schools produce better results among students from disadvantaged family backgrounds than private voucher schools. In contrast, Mizala and Romaguera (2000) argued that when sufficient control variables and the whole Universe of schools are taken into account, there are no consistent differences in achievement between public and private subsidized schools.

The finding showed that there is no significant interaction influence of gender and mode of entry on the academic performance of students. This finding negates the view of Alfred, Love, Adeneye and Awoyemi (2012) that there is interaction influence of gender and mode of entry on the academic performance of students. It further negates the view of Olukanye-David, and Fagbade (2015) that gender and mode of admission significantly affect the level of performance and that more male students are more likely to have a high performance compared to the female counterpart. Arigbabu, and Mji (2004) revealed that teachers within the system exhibit gender bias in the classrooms.

The finding showed that there is no significant interaction influence of gender and school type on the academic performance of students. This conforms with the view of Meremikwu and Enukoha (2010) that pupils' Mathematics achievement was significantly dependent on the treatment, school type and school location but not on pupil gender; the difference between the mean Mathematics achievement of the pupils in private and public schools was not statistically significant. In contrast, with respect to interaction effect, Mburu (2013) found that the type of school attended was determinant on gender difference in academic performance. Girls in single sex schools had better grades than girls in mixed schools. They were also found to be more confident and they displayed more leadership skills compared to girls in mixed schools. Equally, boys in single sex schools felt free to be themselves and to explore new fields than when they were in the same class with girls. In single sex schools, boys did not follow the stereotyped gender roles that they had been socialised to by the society. Similarly, Meremikwu and Enukoha (2010) found that the interactions of the treatment, gender, school type, and school location were statistically significant in explaining pupils' Mathematics achievement. In the urban areas, the authors report that pupils in the experimental group in private schools achieved significantly higher than their counterparts in the public schools.

The finding showed that there is no significant interaction influence of school type and mode of entry on the academic performance of 200 level science students. It disagrees with the view of Tooley and Dixon (2005) that private schooling is a solution to failing public schools in developing countries. Tokman (2002) found that public schools produce better results among students from disadvantaged family backgrounds than private voucher schools. Hoxby (2004) revealed that students in charter schools were found to be more likely to achieve proficiency on state math and reading exams than their counterparts in the schools they presumably would have attended without the charter school option. George, Ibiok and Nwabueze (2016) however reveled that female students who were admitted into University through the Joint Admission and Matriculation Examinations Board (JAMB) examinations and students that attended government secondary school performed better academically than their counterparts.

The finding showed that there is no significant interaction influence of gender, mode of entry and school type on the academic performance of 200 level science students. The findings conform to the view of Maikwu (2012) who found a statistical significant difference in the mean academic achievement of male and female students and that the academic achievement of male students was higher than their female counterparts. It also supports the view of Fatade, Nneji, Awofala and Awofala (2012) concluded that there was no significant effect of gender on Pre-service teachers' performance in degree certificate in the departments of biology, chemistry, mathematics, and physics. This showed that gender might not be a potent factor in Pre-service teachers' performance in degree mathematics and science courses in the Nigerian universities. This conforms to the view of Meremikwu and Enukoha (2010) who found no significant interaction influence of gender, mode of entry and school type on Mathematics achievement.

Recommendations

- 1. Both modes of entry are encouraged for candidates seeking admission into universities of higher learning. There is need for candidates to fully understand what is involved in the two modes to be able to decide or choose which one to opt for.
- 2. Equal admission opportunities should be given to both male and female prospective entrants into the degree science courses in Nigerian universities.
- 3. There is need for the total over haul of the entire Nigeria education system at all level to improve the overall performance of the system.

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