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Full Length Research Paper

Comparative analysis of academic achievement of UME and ex-remedial students: Case study of university of agriculture, Makurdi, Nigeria

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This study was undertaken with the objective of carrying out a comparative analysis of academic achievement of UME and ex-Remedial students with University of Agriculture, Makurdi as a case study to assist Government and policy makers in educational sector reform decisions as to the suitability or otherwise of domiciling remedial programmes in the Universities. The comparative assessment was based on Senate approved results for the 1st semester of the 2004/2005 session by arranging the academic achievement in terms of Grade Point Average (GPA) into mode of entry (Direct entry, UME and Remedial). Based on a population of 511 ex-Remedial and 428 UME students spread across 28 programmes, 17 academic Departments and 8 Colleges, the data was analyzed using Microsoft Excel computer software in terms of range, mean, standard deviation, skewness and kurtosis so as to provide leading answers to the questions initiating the research. Comparative analysis of data indicate that the lowest GPAs were recorded by UME in 76.9% of the programmes, 76.5% of the Departments and 75% of the Colleges with two recorded cases of GPA of 0.00. Highest GPAs were recorded by UME in 76.9% of the programmes, 73.3% of the Departments and 100% of the Colleges with overall maximum of 4.72. However, smaller range recorded by ex-Remedial in 88.9% of the programmes, 93.8% of the Departments and 100% of the Colleges shows that remedial achievements were more consistent than the UME which indicates unpredictability. Higher mean and smaller standard deviations were recorded for Remedial in 44.4 and 96% of the programmes, 41.2 and 94.1% of the Departments and 50 and 100% of the Colleges respectively indicating that ex-Remedial GPAs were clustered more closely to the means (*which were comparatively competitive*) than UME. Desirable skewness and kurtosis behavior was recorded in 58.3 and 25% for the programmes, 70.6 and 36.4% of the Departments and 62.5 and 40.0% of the Colleges respectively indicating that more of the ex-Remedial students are in the high performance group than UME. T-test at 5% level of significance showed that there was no significant difference between the achievements of ex-Remedial and UME students in 92.6% of the programmes, 88.2% of the Departments and 87.5% of the Colleges. However, the University-wide test showed significant difference. The ex-Remedial students were found to have higher, consistent and predictable achievement than the UME. Based on findings, it is recommended that Remedial programme should be allowed to stay as a means of meeting up admission quota and addressing issues of imbalance, post-JAMB test introduced by Universities should be sustained, ex-Remedial students should be given time to remedy their deficiencies before graduation and placement of ex-Remedial students should be officially published in JAMB brochure and accepted by NUC as part of the admission requirements in Nigerian Universities.

Key words: Academic achievement, comparative analysis, UME, ex-remedial, university education, Nigeria.

INTRODUCTION

Nigeria appreciates the key role that education can and should play in moving the country towards the attainment

of its social and economic goals. The broad national development objectives on which the educational objectives are premised derive from the following national goals (FME, 1981): a free and democratic society; a just and egalitarian society; a united strong and self reliant nation; a great and dynamic economy and a land of bright and full opportunities for all citizens. However, rapid expansion of the Nigerian educational system at all levels, compounded by rapid policy changes and the shrinking economy have constituted constraints to educational development in the country (Nigeria, 1996). A survey of the Nigerian educational scene reveals a series of disparities. There is disparity between urban and rural schools, and between schools owned and controlled by the Federal Government and those owned and controlled by the states and private agencies. Gaps are also observed between male and female enrolments and between admission figures and available teaching resources.

The 1969 National Curriculum Conference called for the cessation of the sixth form, that is, Higher School Certificate (HSC). Pupils will go direct from secondary school to university. The abolition of the Sixth Form (that is Higher School Certificate) Course means that the Universities will have to re-structure their courses from the 3 year to the 4 year degree course pattern to suit the six year secondary school system (Nigeria, 1981). It was not, of course, clear what informed the decision to shift students from the secondary schools in Nigerian educational backgrounds directly to universities, especially as the vast majority of the secondary schools were incapable of providing the students with the necessary background to effectively cope with advanced academic work, especially in science subjects (Yoloye, 1989). Thus an immediate consequence of the National Policy on Education for the universities was that they had less control over their entry conditions. Thus an immediate consequence of the National Policy on Education for the universities was that they had less control over their entry conditions (FME, 1987) consequent upon the establishment of the Joint Admissions and Matriculation Board (JAMB) by the Federal Military Government on February 13, 1978. The JAMB therefore co-existed with the Schools of Preliminary Studies, and other Advanced level facilities up till 1988 when the latter were finally closed down as per the specifications of the 1981 National Policy on Education (Nigeria, 1981).

The introduction of the JAMB and the subsequent closure of the School of Preliminary Studies evoked strong protests from students (West Africa, 1979). The most notable opposition to JAMB was concentrated in northern Nigerian universities where students significantly rely on the School of Preliminary Studies to gain access to especially northern universities. Establishing the JAMB and abolishing these university access schools was seen by northern students as an attempt to deny them access to university education by the Nigerian Government - a move seen as championed by southern interests. It was on this assumption that northern students demonstrated against the JAMB in February 1979, causing a temporary closure of all the northern universities by the Federal Government.

To cope with events such as these, the Nigerian Government gradually evolved an admissions policy for all federally controlled institutions based on an extremely flexible formula that apportions percentage points on the basis of merit (40%); educationally disadvantaged status (20%), catchment area (30%) and discretion (10%). Interestingly, while at the inception of JAMB it was detested by Northern radical student elements as attempts by Southern students to gain a stronghold into Northern institutions, the conception reversed itself a decade later when the JAMB admission formula seemed to favor Northern students. A significantly larger student output from Southern secondary schooling systems made repeated attempts to gain admission into apparently scarcely populated Northern universities (those in the South having been over-populated). This, coupled with strong protectionist measures from Northern institutions (claiming non-reciprocity for Northern students in Southern institutions) led to predominantly Southern dissatisfaction with JAMB as a means of gaining university entrance in Nigeria in late 1980s (Adamu, 2004). Particularly irksome to Southern opinions was the issue of basing admission on “quota”, the “disadvantaged status” and “catchment area” formulae (Akpofure, 1992).

The mechanism of operation of the JAMB re-introduced the philosophy of the grammar school curriculum and its tightly selective and elitist mechanism of determining who can have university education (Adamu, 2004). The National Policy on Education also made it clear that only students who are “able and willing” can proceed to senior secondary schooling, after the junior school - with a possibility of dropping out and getting a job which the junior schooling should have prepared the candidate for. In a situation where distribution of educational resources is not equitable, this imposed considerable disadvantage to junior high school students from poor urban schools, as well as virtually all the rural schools. University access then became possible only to students who attended well equipped schools, mostly located in urban centers. And at the end of the senior secondary school, students still have to pass the Senior Secondary School Certificate examination before they can apply to take the university entrance examination.

Moreover, despite the abolishing of the sixth form and School of Preliminary Studies in Nigeria, the government was aware that substantial remedial programs would have to be continued for a large number of students who

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would not otherwise have had a chance to obtain university education if the present mode of admission is maintained. To this end, the government accepted the recommendation by a committee set up in 1984 to investigate the university curricula in Nigeria to the effect that universities can continue providing science remedial programs "in order to attract students into their undergraduate programmes, especially in the sciences" (Nigeria, 1992). However, the same government accepted the recommendations of the Longe Commission, which recommended that "remedial programmes in the Universities should be phased out and candidates defective in specific subject areas should find means of remedying them outside the university system" (Nigeria, 1992). The Government accepted this and "directs the gradual phasing out of the science remedial programmes from universities" (Nigeria, 1992).

Only time will enable determining the consequences of this directive, especially in the light of attempts to provide more scientists and technologists in the university system in the country. Evidence shows that remedial programmes have not been phased out in most Northern Universities. The University of Maiduguri is even running Remedial Arts programme where justification for it in the light of National Development goals is questionable.

The only way to increase the eligibility of University education to students from the underprivileged areas is to remedy the effects of the fewer secondary schools they have, and the effects of the poorer standards of these secondary schools (Aminu, 2004). This means that the student should be given another chance to attempt entry into University courses, under more favorable circumstances. In view of the evidence of educational imbalance between the South and Northern parts of Nigeria (Aminu, 2004), not only should Universities in the North take part in the remedial course for reasons of justice, but also because they are the best equipped in terms of staff and facilities. These remedial students should not be isolated in a 'colony' but should be absorbed in their respective Universities and belong to the various faculties. If the WASC will be used to effect a political objective, it must be ensured that the examination is fair and efficient. The question of JAMB was raised because of the obvious incompetence of WAEC. There is likelihood that JAMB will face problems similar to WAEC. This is in terms of efficiency (Kolo, 2002). The recent introduction of post JAMB screening test by the Universities is an indication that JAMB has failed. Yet JAMB through the NUC is insisting on the outright cancellation of remedial programme in Universities.

A workshop for drawing up minimum guidelines for the operation of non-degree programmes, organized by the National Universities Commission (NUC) was held on Thursday 3rd March 2005 in Abuja. The workshop was held to look for ways of standardizing non-degree programmes, which are operated by Nigerian Universities. These remedial programmes were categorized into three namely;

a) Sub-degree programmes which include diplomas and certificates
b) Pre-degree programmes which include preliminary or basic studies and the
c) Remedial programme

The workshop was of the opinion that since the remedial programme is aimed at remediation of secondary level deficiencies, the University, which is oriented towards tertiary education, was not a suitable locus at which to domicile remedial studies.

The Joint Admissions and Matriculation Board (JAMB) also frowned at the involvement of Universities in the remedial programme. The Board insists that all candidates entering the University through the remedial programme must have remedied the deficiencies through West African Examination Council (WAEC) or NECO before they are absorbed into any degree course. They are also expected to register for the Universities Matriculation Examination (UME) while in the remedial programme.

At the 5th Joint Consultative Meeting of Policy Committee on Admissions into degree-awarding institutions held on Friday 17th October 2003 under the Chairmanship of the Honorable Minister of State for Education, Hajia Bintu Ibrahim Musa, the following policy was put in place:

> "That all institutions running remedial programme should ensure that all successful remedial students sit for the relevant matriculation examination before pursuing any degree programme".

The Board also requires information on the percentage of the admission quota reserved for remedial students and insists that there should be no direct absorption of ex-remedial students into degree programme. This policy was to take effect from the 2003/2004 academic session. The period for direct absorption of remedial students to degree programmes was however extended (by one year) to the 2004/2005 admission exercise at the 6th Joint Consultative meeting held on 17th November, 2004. The NUC workshop approved the pass mark of 50% in all the five subjects entered for before the students qualify for placement into degree programmes.

In the University of Agriculture Makurdi, the only such University in Northern Nigeria, there has been arguments in favor of continued running of remedial programmes by Universities in spite of the position of NUC and JAMB on the matter. The reason often stated in Senate during consideration of results is that students who come in through remedial, even though deficient in UME requirements, do better than those who have come through JAMB. However, this assertion has not been ascertained thus making this study imperative.

Statement of problem

The position of JAMB and NUC is that remedial students must be examined by an accredited examination body at the end of the programme; that all remedial students must enter and pass the UME in order to be absorbed into any degree programme and that the approved pass mark of 50% in all the five (5) subjects before students qualify to be absorbed into degree programmes. In response to the position of the NUC and JAMB, Senate of the University of Agriculture, Makurdi at its 168th meeting held on Wednesday 9th February, 2005 approved the following academic policies, which would become operational in the 2005/2006 academic session:

a) Remedial students who have deficiencies in the basic sciences at the end of the remedial programme will not be accepted as candidates into degree programme. Candidates with deficiencies must remedy such deficiencies during the year of the remedial programme.
b) All remedial students from the 2005/2006 session are required to register for and pass the University Matriculation Examination conducted by JAMB before they are admitted into degree programmes by the JAMB into courses in the University of Agriculture, Makurdi.

Students are advised to make early arrangements to register with the two examining bodies WAEC and NECO to meet up with the new regulations. In addition they must register and sit for the 2006 UME to qualify for the absorption in the degree programmes. This policy seem to suggest that students who come in through UME perform better than those that come in through the remedial programme of the University of Agriculture, Makurdi. This is because the remedial programme admits students with two credits minimum whereas the UME requires five credits and students who had come in through remedial were not made to remedy their deficiencies before graduation. The remedial programme was therefore seen as bringing into the Universities unqualified students through the back door. However, indications that these remedial students, in spite of their O/Level deficiencies when they come into 100 level do better than UME students made this study a necessity. It therefore became important to determine whether UME students are better in terms of academic achievement than the ex-remedial students of the University of Agriculture, Makurdi so as to provide a pedestal for policy makers in implementation of reforms in the educational sector. This will provide the opportunity for more thorough and detailed work to be carried out which will be useful both to management, readers and future researchers on the University.

Purpose of the study

The purpose of this study is to carry out a comparative analysis of academic achievement of UME and ex-remedial students with University of Agriculture, Makurdi as the case study to assist Government and policy makers in decisions as to the suitability or otherwise of domiciling remedial programmes in the Universities.

Research questions

This research seeks to answer the following questions at programme, departmental, college and university levels:

a) What is the performance of ex-remedial and UME students in terms of percentage of lowest or highest GPAs?
b) Which mode of entry presents consistency and predictability in terms of academic achievement?
c) Which mode of entry indicates competitiveness evidenced through clustering of the GPAs around the mean?
d) Which mode of entry is in the higher performance group than the other?

Research hypothesis

The null hypothesis for this research work is as follows:

(a) There is no significant difference between UME and ex-remedial students in academic achievement at programme, departmental, college and university levels at the University of Agriculture, Makurdi

Significance of the study

The study is significant because the University of Agriculture, Makurdi derives the greater percentage of their students from the remedial programme. NUC has taken a position that only Preliminary and Basic studies programme in the group of pre-degree programmes will be recognized in the very near future for purposes of admission to degree programmes. The reason is that ex-remedial students have deficiencies, which have to be remedied through WAEC or NECO.

The findings of this research would determine whether UME is a guarantee for better academic achievement in the University. The study is also significant because this is the first time this type of study is being carried out in the University. It is hoped that the findings and recommendations will interest the Senate of the University of Agriculture, Makurdi in deciding whether to scrap the remedial programme completely in line with NUC directives.

In addition, the NUC admission quota allocated to University of Agriculture, Makurdi was 1131 candidates for all programmes in the 2005/2006 session (UAM, 2005). However, only a total of 992 candidates applied

Table 1. Admission quota for 2005/2006 session.

S. No	Programmes	Quota for 2004/2005	2004/2005 actual	2005/2006 Quota	2005/2006 UME applications
1	Crop/Soil	42	35	50	5
2	Animal production	40	39	40	8
3	Agricultural Economics and Extension	86	74	80	140
4	Fisheries and Aquaculture	12	21	20	2
5	Forestry and Wildlife	23	20	30	2
6	Chemistry	40	40	40	15
7	Physics	47	40	40	4
8	Industrial Physics	43	46	40	6
9	Home Science and Management	30	25	40	9
10	Food Science and Technology	63	62	80	42
11	Mathematics/Computer Science	72	58	70	59
12	Statistics/Computer Science	72	68	70	22
13	Botany	20	21	20	
14	Zoology	14	15	20	45
15	Microbiology	51	53	40	
16	Agricultural Science Education	23	18	25	3
17	Integrated Science	13	13	15	2
18	Biological Sciences Ed.	16	12	20	3
19	Chemistry Ed.	12	12	20	-
20	Physics Ed.	12	12	20	-
21	Mathematics/Computer Science Ed.	21	20	21	7
22	Mathematics/Statistics Ed.	13	11	20	-
23	Statistics/Computer Science Ed.	9	8	20	-
24	Agricultural Engineering	63	62	60	14
25	Civil Engineering	60	52	60	127
26	Electrical/Electronics Engineering	76	65	60	313
27	Mechanical Engineering	57	56	60	121
28	Veterinary Medicine	51	46	50	43
	TOTAL	1081	1004	1131	992

Source: UAM, 2005

for admission into the various programmes for the 2005/2006 UME admissions (Table 1). Even if all the UME students qualified and were registered, the University would still not be able to meet the NUC quota of 1131. The implication is that the University would still need to depend on the remedial programme to meet up with the admission carrying capacity quotas for the various programmes.

METHODOLOGY

Area of study

The Federal University of Agriculture, Makurdi, Nigeria forms the area of the study. The University which was established on January 1, 1988 has the tripartite mandate of "teaching, research and extension services". Through this mandate, the University is supposed to among other things train human resource that is consistent with the requirements of an integrated research extension system. The University runs undergraduate, postgraduate and remedial science programmes with the remedial programme spanning from inception to date.

Sampling design

True experimental research which investigates possible cause-and-effect relationships by exposing one or more experimental groups to one or more treatment conditions and comparing the results to one or more control groups not receiving the treatment is the research type used for this study. The 100 level students of the University of Agriculture, Makurdi mainly makes up the population for this study. As shown in Table 2, the 100 level students' population of the University of Agriculture, Makurdi for the 2004/2005 session stands at 1004. However, those who actually sat for the 1st semester 2004/2005 examinations were 967 made up of 28 Direct Entry candidates, 428 UME candidates and 511 ex-remedial students spread across 28 programmes, 17 departments and 8 colleges (Table 2).

For the purpose of this study, the total population of 967 students

Table 2. The 100 level students for the 2004/2005 that form the population of the study.

College	Department	Programme	Number of 100 level students		
			Remedial	UME	Direct entry
Agronomy	Crop Production	B. Agric (Crop Soil)	11	10	-
	Soil Science	B. Agric (Soil Crop)	6	8	-
Agricultural Economics, Extension and Management Technology	Agricultural Extension and Communication	B. Agric (Agric. Economics and Extension)	49	25	-
Animal Science	Animal Production	B. Agric (Animal Production)	23	14	1
Engineering	Agricultural Engineering	B. Eng (Agric. Engineering)	31	30	-
	Civil Engineering	B. Eng (Civil)	40	18	-
	Electrical/Electronics Engineering	B. Eng (Elec/Elec Engineering)	41	28	2
	Mechanical Engineering	B. Eng (Mechanical Engineering)	29	20	5
Food Technology	Food Science and Technology	B. Sc (Food Science and Technology)	31	29	-
	Home Science and Management	B. Sc (Home Science and Management)	19	10	-
Forestry and Fisheries	Forestry	B. For (Forestry)	9	11	-
	Fisheries and Aquaculture	B. Fish (Fisheries and Aquaculture)	10	13	-
Science, Agricultural and Science Education	Physics	B. Sc Physics	21	17	-
		B. Sc Industrial Physics	26	20	-
	Biological Sciences	B. Sc Zoology	7	8	-
		B. Sc Microbiology	19	23	2
		B. Sc Botany	9	11	-
	Mathematics/Statistics/Computer Science	B. Sc (Hons) Statistics/Computer Science	37	27	1
		B. Sc (Hons) Mathematics/Computer Science	40	19	2
	Agricultural and Science Education	B. Sc (Ed) Statistics/Computer Science	4	5	1
		B. Sc (Ed) Mathematics/Computer Science	7	12	1
		B. Sc (Ed) Integrated Science	9	5	-
		B. Sc (Ed) Chemistry	1	8	2
		B. Sc (Ed) Biology	2	8	1
		B. Sc (Ed) Physics	2	10	1
		B Sc (Ed) Mathematics/Statistics	3	9	1
		B. Agricultural Education	-	9	8
Veterinary Medicine	Veterinary Medicine	Doctor of Veterinary Medicine	25	21	-
Total			511	428	28

who sat for the 1st semester 2004/2005 examinations was used. Akpa and Angahar (1999) define sampling as the act of selecting a portion of a population for investigation. Sampling is undertaken because it may be too expensive and time consuming to use the entire population. In this study, the entire population, which is homogenous in character, was used without the necessity of sampling since the advantages of sampling are not too critical in this respect.

Variable measurement and analytical techniques

This study relied on secondary data collected from Senate approved 100 level results for the 1st semester of the 2004/2005 session of the University of Agriculture, Makurdi. The other instrument used for this study is Personal observation as Head of Department and member of Senate of the University of Agriculture, Makurdi with full access to all Senate approved examination results. Personal observation also involves noting and discussing issues and factors relevant to the study with stakeholders.

This study sought to analyze data by arranging the academic achievement of students in terms of Grade Point Average (GPA) into mode of entry (Direct Entry, UME and Remedial). The student's results (academic achievement) were analyzed using research tables that gave valid results of the population that has been studied. To test for the hypothesis, t-test was used. This technique

is best in a comparison of achievements of two or more responding groups. Microsoft Excel computer programme was used in all data analyses (range, mean, standard deviation, skewness and kurtosis). The study made use of the whole population instead of sampling. The results generated are therefore parameters, which are measurements that characterize a population and not statistics that are measurements that characterize samples. T-test allows the calculation of mean difference for independent samples even when they are unequal (Spiegel and Stephens, 2002; Vernoy and Kyle, 2002).

RESULTS AND DISCUSSIONS

The analysis presented in Table 3 shows the basic statistical analysis based on the programmes being run in the University. The analysis presented in Table 4 shows the basic statistical analysis based on the Departments in the University. The analysis presented in Table 5 shows the basic statistical analysis based on the Colleges in the University. The analysis presented in Table 5 also shows the basic statistical analysis based on the University total for the population under study.

Basic statistical analyses

Programme based basic statistical analysis

For the B. Agric (Crop/Soil) programme, the GPA ranged from 0.83 - 3.17 for Remedial students while for UME, the GPA ranged from 0.67 - 3.38. The mean GPA of 1.72 and standard deviation of 0.70 was recorded for Remedial students while 2.06 and 0.92 respectively were recorded for UME. The skewness and kurtosis tests gave 0.94 and 0.32 respectively for Remedial students while 1.05 and -1.52 were the results generated from UME. Whereas the lowest and highest GPA was recorded for UME, the smaller range of 2.34 for Remedial compared to 2.71 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.70 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.92. Both Remedial and UME indicates skewness to the right with UME showing more skewness to the right than Remedial indicating that more of the UME students are in the high performance group than Remedial. While Remedial is leptokurtic, UME is platykurtic thus showing the relative high GPA spread recorded for most of the Remedial students.

In the case of B. Agric (Soil/Crop) programme, the GPA ranged from 0.83 to 2.83 for Remedial students while for UME, the GPA ranged from 0.54 to 3.92. The mean GPA of 1.69 and standard deviation of 0.79 was recorded for Remedial students while correspondingly 2.13 and 1.00 respectively were recorded for UME. The skewness and kurtosis tests gave 0.28 and -1.40 respectively for Remedial students while 0.18 and 1.12 were the results generated from UME. Whereas the lowest and highest GPA was recorded for UME, the smaller range of 2.00 for Remedial compared to 3.38 for UME results indicates that the remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.79 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 1.00. Both Remedial and UME indicates skewness to the right with Remedial showing more skewness to the right than UME indicating that more of the Remedial students are in the high performance group than UME. While UME is leptokurtic, Remedial is platykurtic showing the relative high GPA spread recorded for the UME students.

Considering the B. Agric (Agric. Economics and Extension) programme, the GPA ranged from 0.13 to 3.63 for Remedial students while for UME, the GPA ranged from 0.25 - 4.25. The mean GPA of 2.00 and standard deviation of 0.72 was recorded for Remedial students while correspondingly 1.96 and 1.01 respectively were recorded for UME. The skewness and kurtosis tests gave -0.06 and 0.05 respectively for Remedial students while 0.48 and -0.18 were the results generated from UME. Whereas the lowest GPA was recorded for Remedial, the highest GPA was recorded for UME. However, the smaller range of 3.50 for Remedial compared to 4.00 for UME results indicates that the remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.72 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 1.01. The Remedial results indicates skewness to the left while the UME indicates skewness to the right indicating that more of the UME students are in the high performance group than Remedial for the programme. While UME is platykurtic, Remedial is leptokurtic showing the relative high GPA spread recorded for the Remedial students.

In the case of the B. Agric (Animal Production) programme, the GPA ranged from 0.25 - 3.25 for Remedial students while for UME, the GPA ranged from 0.33 - 3.33. The mean GPA of 1.51 and standard deviation of 0.70 was recorded for Remedial students while 1.53 and 0.76 respectively were recorded for UME. The skewness and kurtosis tests gave 0.40 and 0.32 respectively for Remedial students while 0.08 and 1.40 were the results generated from UME. Whereas the lowest GPA was recorded for Remedial, the highest GPA was recorded for UME. The smaller range of 2.00 for Remedial compared to 3.00 for UME results indicates that the remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.70 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.76. Both Remedial and UME indicates skewness to the right with Remedial showing

Table 3. Programme based basic statistical analysis.

College	Department	Programme	Remedial							
			n_1	Sum	Range		x	σ	Γ^1	Γ^2
					Min	Max				
Agronomy	Crop Production	B. Agric (Crop Soil)	11	18.95	0.83	3.17	1.72	0.70	0.94	0.32
	Soil Science	B. Agric (Soil Crop)	6	10.13	0.83	2.83	1.69	0.79	0.28	-1.40
Agricultural Economics, Extension and Management Technology	Agricultural Extension and Communication	B. Agric (Agric. Economics and Extension)	49	98.18	0.13	3.63	2.00	0.72	-0.06	0.05
Animal Science	Animal Production	B. Agric (Animal Production)	23	34.76	0.25	3.25	1.51	0.70	0.40	0.32
Engineering	Agricultural Engineering	B. Eng (Agricultural Engineering)	31	72.69	0.61	4.00	2.34	0.87	0.06	-0.58
	Civil Engineering	B. Eng (Civil Engineering)	40	117.16	1.39	4.61	2.93	0.83	0.01	-0.36
	Electrical/Electronics Engineering	B. Eng (Electrical/Electronics Engineering)	41	143.77	1.78	4.61	3.51	0.75	-0.53	-0.67
	Mechanical Engineering	B. Eng (Mechanical Engineering)	29	78.46	0.94	4.22	2.71	0.97	-0.23	-1.14
Food Technology	Food Science and Technology	B. Sc (Food Science and Technology)	31	52.28	0.58	3.04	1.69	0.76	0.34	-0.82
	Home Science and Management	B. Sc (Home Science and Management)	19	30.29	0.58	2.63	1.59	0.64	0.29	-1.11
Forestry and Fisheries	Forestry	B. For (Forestry)	9	14.19	1.00	2.32	1.58	0.53	0.43	-1.91
	Fisheries and Aquaculture	B. Fish (Fisheries and Aquaculture)	10	14.89	0.67	2.13	1.49	0.50	-0.54	-0.73
Science, Agricultural and Science Education	Physics	B. Sc Physics	21	45.65	0.47	4.00	2.17	0.91	0.04	-0.18
		B. Sc Industrial Physics	26	56.49	0.94	3.88	2.17	0.73	0.83	0.56
	Biological Sciences	B. Sc Zoology	7	9.48	0.78	2.22	1.35	0.49	0.72	0.66
		B. Sc Microbiology	19	37.9	0.91	3.74	1.99	0.80	0.71	-0.19
		B. Sc Botany	9	10.52	0.39	1.78	1.17	0.45	-0.24	-0.68
	Mathematics/Statistics/Computer Science	B. Sc (Hons) Statistics/Computer Science	37	76.75	0.95	3.85	2.07	0.75	0.39	-0.77
		B. Sc (Hons) Mathematics/Computer Science	40	87.05	0.65	4.15	2.18	0.78	0.52	0.17
	Agricultural and Science Education	B. Sc (Ed) Statistics/Computer Science	4	7.17	0.95	2.45	1.79	0.70	-0.45	-2.88
		B. Sc (Ed) Mathematics/Computer Science	7	10.45	0.82	2.77	1.49	0.70	1.13	0.74
		B. Sc (Ed) Integrated Science	9	17.32	0.83	2.72	1.92	0.71	-0.37	-1.81
		B. Sc (Ed) Chemistry	1	0.90	0.90	0.90	0.90	-	-	-
		B. Sc (Ed) Biology	2	3.66	1.58	2.08	1.83	0.35	-	-
		B. Sc (Ed) Physics	2	3.63	1.18	2.45	1.82	0.90	-	-
		B Sc (Ed) Mathematics/Statistics	3	5.27	0.83	2.30	1.76	0.81	-1.66	-
		B. Agricultural Education	-	-	-	-	-	-	-	-
Veterinary Medicine	Veterinary Medicine	Doctor of Veterinary Medicine	25	60.57	0.91	3.65	2.42	0.66	-0.45	0.21

Table 3 Contd.

UME							
n_2	Sum	Range		x	σ	Γ^1	Γ^2
		Min.	Max.				
10	20.64	0.67	3.38	2.06	0.92	1.05	-1.52
8	17.03	0.54	3.92	2.13	1.00	0.18	1.12
25	48.93	0.25	4.25	1.96	1.01	0.48	-0.18
14	21.4	0.33	3.33	1.53	0.76	0.08	1.40
30	85.72	0.72	4.61	2.86	1.04	-0.05	-0.74
18	39.95	0.00	4.28	2.22	1.39	-0.10	-1.32
28	66.39	0.17	4.72	2.37	1.61	0.07	-1.67
20	43.13	0.56	4.17	2.16	1.24	-0.03	-1.48
29	50.56	0.46	3.54	1.74	0.92	-0.87	-0.72
10	11.50	0.08	2.42	1.15	0.78	0.24	-0.54
11	16.24	0.27	3.14	1.48	0.84	-0.55	0.19
13	19.16	0.17	3.46	1.47	0.93	-0.17	-0.04
17	34.89	0.71	4.24	2.05	0.92	0.29	0.40
20	44.09	0.71	4.47	2.20	1.03	0.22	-0.31
8	11.38	0.78	2.17	1.42	0.50	0.10	-1.10
23	47.71	1.35	3.09	2.07	0.55	0.17	-1.00
11	15.60	0.00	2.52	1.42	0.74	0.27	-0.09
27	55.00	0.40	3.65	2.04	0.87	0.22	-0.79
19	43.60	0.20	4.15	2.29	1.09	1.10	-0.82
5	9.81	0.86	4.45	1.96	1.48	0.70	2.63
12	24.05	0.64	3.05	2.00	0.73	1.29	-0.73
5	15.83	2.17	3.94	3.17	0.79	1.28	-2.25
8	14.15	0.80	2.90	1.77	0.78	-0.06	-1.18
8	12.42	0.21	3.29	1.55	0.90	-0.32	1.70
10	20.68	0.77	4.18	2.07	1.07	0.41	0.16
9	14.96	0.54	2.63	1.66	0.81	1.26	-1.97
9	21.65	1.50	3.25	2.41	0.55	0.50	-0.37
21	52.79	0.83	3.96	2.51	0.98	-0.39	-1.18

more skewness to the right than UME indicating that more of the Remedial students are in the high performance group than UME. Both Remedial and UME show leptokurtic distribution with Remedial approaching mesokurtic to a greater degree than UME thus further confirming the relative uniform performance spread recorded for the Remedial students.

For the B. Eng (Agricultural Engineering) programme, the GPA ranged from 0.61 to 4.00 for Remedial students while for UME, the GPA ranged from 0.72 - 4.61. The mean GPA of 2.34 and standard deviation of 0.87 was recorded for Remedial students while 2.86 and 1.04 respectively were recorded for UME. The skewness and kurtosis tests gave 0.06 and -0.58 respectively for Remedial students while -0.05 and -0.74 were the results generated from UME. Whereas the lowest GPA was recorded by Remedial, the highest was recorded by UME. However, the smaller range of 3.39 for Remedial compared to 3.89 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.87 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 1.04. Whereas Remedial indicates skewness to the right, UME indicates skewness to the left showing that more of the Remedial students are in the high performance group than UME. Both Remedial and UME show leptokurtic distribution with Remedial showing higher leptokurtic values thus further confirming the relative high GPA spread recorded for most of the Remedial students.

For the B. Eng (Civil Engineering) programme, the GPA ranged from 1.39 - 4.61 for remedial students while for UME, the GPA ranged from 0.00 - 4.28. The mean GPA of 2.93 and standard deviation of 0.83 was recorded for Remedial students while 2.22 and 1.39 respectively were recorded for UME. The skewness and kurtosis tests gave 0.01 and -0.36 respectively for Remedial students while

Table 4. Department based basic statistical analysis.

College	Department	Mode of Entry															
		Remedial								UME							
		n_1	Sum	Range		x	σ	Γ^1	Γ^2	n_2	Sum	Range		x	σ	Γ^1	Γ^2
				Min.	Max.							Min.	Max.				
Agronomy	Crop Production	11	18.95	0.83	3.17	1.72	0.70	0.94	0.32	10	20.64	0.67	3.38	2.06	0.92	1.05	-1.52
	Soil Science	6	10.13	0.83	2.83	1.69	0.79	0.28	-1.40	8	17.03	0.54	3.92	2.13	1.00	0.18	1.12
Agricultural Economics, Extension and Management Technology	Agricultural Extension and Communication	49	98.18	0.13	3.63	2.00	0.72	-0.06	0.05	25	48.93	0.25	4.25	1.96	1.01	0.48	-0.18
Animal Science	Animal Production	23	34.76	0.25	3.25	1.51	0.70	0.40	0.32	14	21.4	0.33	3.33	1.53	0.76	0.08	1.40
Engineering	Agricultural Engineering	31	72.69	0.61	4.00	2.34	0.87	0.06	-0.58	30	85.72	0.72	4.61	2.86	1.04	-0.05	-0.74
	Civil Engineering	40	117.16	1.39	4.61	2.93	0.83	0.01	-0.36	18	39.95	0.00	4.28	2.22	1.39	-0.10	-1.32
	Electrical/Electronics Engineering	41	143.77	1.78	4.61	3.51	0.75	-0.53	-0.67	28	66.39	0.17	4.72	2.37	1.61	0.07	-1.67
	Mechanical Engineering	29	78.46	0.94	4.22	2.71	0.97	-0.23	-1.14	20	43.13	0.56	4.17	2.16	1.24	-0.03	-1.48
Food Technology	Food Science and Technology	31	52.28	0.58	3.04	1.69	0.76	0.34	-0.82	29	50.56	0.46	3.54	1.74	0.92	-0.87	-0.72
	Home Science and Management	19	30.29	0.58	2.63	1.59	0.64	0.29	-1.11	10	11.50	0.08	2.42	1.15	0.78	0.24	-0.54
Forestry and Fisheries	Forestry	9	14.19	1.00	2.32	1.58	0.53	0.43	-1.91	11	16.24	0.27	3.14	1.48	0.84	-0.55	0.19
	Fisheries and Aquaculture	10	14.89	0.67	2.13	1.49	0.50	-0.54	-0.73	13	19.16	0.17	3.46	1.47	0.93	-0.17	-0.04
Science, Agricultural and Science Education	Physics	47	102.44	0.47	4.00	2.18	0.80	0.34	0.08	37	78.98	0.71	4.47	2.13	0.97	0.69	-0.14
	Biological Sciences	35	57.9	0.39	3.74	1.65	0.76	0.98	0.86	42	74.69	0.00	3.09	1.78	0.67	-0.11	0.02
	Mathematics/Statistics/Computer Science	77	163.8	0.65	4.15	2.13	0.76	0.46	-0.28	46	98.60	0.20	4.15	2.14	0.96	-0.08	-0.85
	Agricultural and Science Education	28	48.4	0.82	2.77	1.73	0.67	0.05	-1.57	66	133.55	0.21	4.45	2.02	0.93	0.41	-0.16
Veterinary Medicine	Veterinary Medicine	25	60.57	0.91	3.65	2.42	0.66	-0.45	0.21	21	52.79	0.83	3.96	2.51	0.98	-0.39	-1.18

Table 5. College based basic statistical analysis.

College	Mode of Entry															
	Remedial								UME							
	n_1	Sum	Range		x	σ	Γ^1	Γ^2	n_2	Sum	Range		x	σ	Γ^1	Γ^2
			Min.	Max.							Min.	Max.				
Agronomy	17	29.08	0.83	3.17	1.71	0.71	0.61	-0.52	18	37.67	0.54	3.92	2.09	0.93	0.13	-0.55
Agricultural Economics, Extension and Management Technology	49	98.18	0.13	3.63	2.00	0.72	-0.06	0.05	25	48.93	0.25	4.25	1.96	1.01	0.48	-0.18
Animal Science	23	34.76	0.25	3.25	1.51	0.70	0.40	0.32	14	21.4	0.33	3.33	1.53	0.76	0.08	1.40
Engineering	141	412.08	0.61	4.61	2.92	0.94	-0.24	-0.73	96	235.19	0.00	4.72	2.45	1.34	-0.03	-1.31
Food Technology	50	82.57	0.58	3.04	1.65	0.71	0.33	-0.81	39	62.06	0.08	3.54	1.59	0.91	0.54	-0.44
Forestry and Fisheries	19	29.08	0.67	2.32	1.53	0.51	-0.02	-1.10	24	35.40	0.17	3.46	1.48	0.87	0.47	-0.19
Science, Agricultural and Science Education	187	372.54	0.39	4.15	1.99	0.79	0.46	-0.19	191	385.82	0.00	4.47	2.02	0.90	0.38	-0.21
Veterinary Medicine	25	60.57	0.91	3.65	2.42	0.66	-0.45	0.21	21	52.79	0.83	3.96	2.51	0.98	-0.39	-1.18
UNIVERSITY TOTAL	511	1118.86	0.13	4.61	2.19	0.94	0.41	-0.44	428	879.26	0.00	4.72	2.05	1.06	0.39	-0.58

0.10 and -1.32 were the results generated from UME. Whereas the lowest GPA of 0.00 was recorded for UME, the highest GPA of 4.61 was recorded for Remedial. The smaller range of 3.22 for Remedial compared to 4.28 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.83 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 1.39. Whereas Remedial indicates skewness to the right, UME indicates skewness to the left indicating that more of the Remedial students are in the high performance group than UME. Both Remedial and UME show platykurtic thus showing the relative flat GPA spread recorded for most of the students undergoing the Civil Engineering programme.

In the case of the B. Eng (Electrical/Electronics Engineering) programme, the GPA ranged from 1.78 to 4.61 for Remedial students while for UME, the GPA ranged from 0.17 - 4.72. The mean GPA of 3.51 and standard deviation of 0.75 was recorded for Remedial students while 2.37 and 1.61 respectively were recorded for UME. The skewness and kurtosis tests gave -0.53 and -0.67 respectively for Remedial students while 0.07 and -1.67 were the results generated from UME. Where-as the lowest and highest GPA was recorded for UME, the smaller range of 2.83 for Remedial compared to 4.55 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.75 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 1.61. Whereas Remedial indicates skewness to the left, UME indicates skewness to the right indicating that more of the UME students are in the high performance group than Remedial. Both scores are platykurtic indicating the relatively flat GPA spread recorded for both Remedial and UME students for the Electrical/Electronics Engineering programme.

In the case of the B. Eng (Mechanical Engineering) pro-gramme, the GPA ranged from 0.94 to 4.22 for Remedial students while for UME, the GPA ranged from 0.56 to 4.17. The mean GPA of 2.71 and standard deviation of 0.97 was recorded for Remedial students while 2.16 and 1.24 respectively were recorded for UME. The skewness and kurtosis tests gave -0.23 and -1.14

respectively for Remedial students while -0.03 and -1.48 were the results generated from UME. Whereas the lowest GPA was recorded for UME, the highest GPA was recorded for Remedial. The smaller range of 3.28 for Remedial compared to 3.61 for UME results indicates that the Re-medial achievement was more consistent than the UME which indicates unpredic-tability. The smaller standard deviation of 0.97 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 1.24. Both Remedial and UME indicates skewness to the left with Remedial showing more skewness to the left than UME indicating that more of the UME students are in the high perfor-mance group than Remedial. Both Remedial and UME show platykurtic distribution thus showing the relative flat GPA spread recorded for the students of Mechanical Engineering.

For the B. Sc (Food Science and Technology) programme, the GPA ranged from 0.58 - 3.04 for Remedial students while for UME, the GPA ranged from 0.46 - 3.54. The mean GPA of 1.69 and standard deviation of 0.76 was recorded for Remedial students while 1.74 and 0.92 respectively were recorded for UME. The skewness and kurtosis tests gave 0.34 and -0.82 respectively for Remedial students while -0.87 and -0.72 were the results generated from UME. Whereas the lowest and highest GPA was recorded for UME, the smaller range of 2.46 for Remedial compared to 3.08 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.76 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.92. Whereas Remedial is skewed to the right, UME is skewed to the left indicating that more of the Remedial students are in the high performance group than UME. Both Remedial and UME show platykurtic distribution showing the relatively flat GPA spread recorded for the Food Science and Technology students.

For the B. Sc (Home Science and Management) programme, the GPA ranged from 0.58 - 2.63 for Remedial students while for UME, the GPA ranged from 0.08 - 2.42. The mean GPA of 1.59 and standard deviation of 0.64 was recorded for Remedial students while 1.15 and 0.78respectively were recorded for UME. The skewness and kurtosis tests gave 0.29 and -1.11 respectively for Remedial students while 0.24 and -0.54 were the results generated from UME. Whereas the lowest GPA was recorded for UME, the highest GPA was recorded for Remedial. The smaller range of 2.05 for Remedial compared to 2.34 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.64 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.78. Both Remedial and UME were skewed to the right with Remedial being more skewed than UME indicating that more of the Remedial students are in the high performance group than UME. Both Remedial and UME show platykurtic distribution showing the relatively flat GPA spread recorded for the Home Science and Management students.

For the B For (Forestry) programme, the GPA ranged from 1.00 - 2.32 for Remedial students while for UME, the GPA ranged from 0.27 - 3.14. The mean GPA of 1.58 and standard deviation of 0.53 was recorded for Remedial students while 1.48 and 0.84 respectively were recorded for UME. The skewness and kurtosis tests gave 0.43 and -1.91 respectively for Remedial students while -0.55 and 0.19 were the results generated from UME. Whereas the lowest and highest GPA was recorded for UME, the smaller range of 1.32 for Remedial compared to 2.87 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.53 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.84. Whereas Remedial is skewed to the right, UME is skewed to the left indicating that more of the Remedial students are in the high perfor-mance group than UME. Remedial scores indicates platykurtic distribution while UME show leptokurtic distribution showing the relatively flat GPA spread recorded for the Remedial students of the Forestry programme.

For the B Fish (Fisheries and Aquaculture) programme, the GPA ranged from 0.67 to 2.13 for Remedial students while for UME, the GPA ranged from 0.17 - 3.46. The mean GPA of 1.49 and standard deviation of 0.50 was recorded for Remedial students while 1.47 and 0.93 respectively were recorded for UME. The skewness and kurtosis tests gave -0.54 and -0.73 respectively for Remedial students while -0.17 and -0.04 were the results generated from UME. Whereas the lowest and highest GPA was recorded for UME, the smaller range of 1.46 for Remedial compared to 3.29 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.50 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.93. Whereas Remedial and UME are both skewed to the left, Remedial students are more skewed than UME indicating that more of the Remedial students are in the high performance group than UME. Both Remedial and UME show platykurtic distribution showing the relatively flat GPA spread recorded for the programme.

In the case of the B. Sc (Physics) programme, the GPA ranged from 0.47 - 4.00 for Remedial students while for UME, the GPA ranged from 0.71 - 4.24. The mean GPA of 2.17 and standard deviation of 0.91 was recorded for Remedial students while 2.05 and 0.92 respectively were recorded for UME. The skewness and kurtosis tests gave

0.04 and -0.18 respectively for Remedial students while 0.29 and 0.40 were the results generated from UME. Whereas the lowest GPA was recorded for Remedial, the highest GPA was recorded for UME. The range of 3.53 for Remedial and UME results indicates equal consistency and predictability. The smaller standard deviation of 0.91 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.92. Both Remedial and UME scores indicates skewness to the right with UME showing more skewness to the right than Remedial indicating that more of the UME students are in the high performance group than Remedial. Whereas Remedial show platykurtic distribution thus showing the relative flat GPA spread , UME show leptokurtic distribution indication relatively high GPA spread recorded for the students.

In the case of the B. Sc (Industrial Physics) programme, the GPA ranged from 0.94 - 3.88 for Remedial students while for UME, the GPA ranged from 0.71 to 4.47. The mean GPA of 2.17 and standard deviation of 0.73 was recorded for Remedial students while 2.20 and 1.03 respectively were recorded for UME. The skewness and kurtosis tests gave 0.83 and 0.56 respectively for Remedial students while 0.22 and -0.31 were the results generated from UME. The lowest and highest GPA was recorded for UME. The range of 2.94 for Remedial and 3.76 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.73 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 1.03. Both Remedial and UME scores indicates skewness to the right with Remedial showing more skewness to the right than UME indicating that more of the Remedial students are in the high performance group than UME. Whereas Remedial show leptokurtic distribution thus showing the relative high GPA spread, UME show platykurtic distribution indicating relatively flat GPA spread recorded for the students.

In the case of the B. Sc (Zoology) programme, the GPA ranged from 0.78 - 2.22 for Remedial students while for UME, the GPA ranged from 0.78 - 2.17. The mean GPA of 1.35 and standard deviation of 0.49 was recorded for Remedial students while 1.42 and 0.50 respectively were recorded for UME. The skewness and kurtosis tests gave 0.72 and 0.66 respectively for Remedial students while 0.10 and -1.10 were the results generated from UME. The lowest GPA of 0.78 was recorded for both Remedial and UME while the highest GPA was recorded for Remedial. The range of 1.44 for Remedial and 1.39 for UME results indicates that the UME achievement was more consistent than the Remedial which indicates unpredictability. The smaller standard deviation of 0.49 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a slightly higher standard deviation of 0.50. Both Remedial and UME scores indicates skewness to the right with Remedial showing more skewness to the right than UME indicating that more of the Remedial students are in the high performance group than UME. Whereas Remedial show leptokurtic distribution thus showing the relative high GPA spread, UME show platykurtic distribution indicating relatively flat GPA spread recorded for the students.

In the case of the B. Sc (Microbiology) programme, the GPA ranged from 0.91 - 3.74 for Remedial students while for UME, the GPA ranged from 1.35 - 3.09. The mean GPA of 1.99 and standard deviation of 0.80 was recorded for Remedial students while 2.07 and 0.55 respectively were recorded for UME. The skewness and kurtosis tests gave 0.71 and -0.19 respectively for Remedial students while 0.17 and -1.00 were the results generated from UME. While the lowest GPA of 0.91 was recorded for Remedial, the range of 2.83 for Remedial and 1.74 for UME results indicates that the UME achievement was more consistent than the Remedial which indicates unpredictability. The smaller standard deviation of 0.55 recorded for UME indicates that the GPAs are clustered more closely to the mean than Remedial with a standard deviation of 0.80. Both Remedial and UME scores indicates skewness to the right with Remedial showing more skewness to the right than UME indicating that more of the Remedial students are in the high performance group than UME. Whereas both Remedial and UME show platykurtic distribution thus showing the relative flat GPA spread, UME show more platykurtic distribution than Remedial indicating relatively more flat GPA spread recorded for UME students.

In the case of the B. Sc (Botany) programme, the GPA ranged from 0.39 - 1.78 for Remedial students while for UME, the GPA ranged from 0.00 to 2.52. The mean GPA of 1.17 and standard deviation of 0.45 was recorded for Remedial students while 1.42 and 0.74 respectively were recorded for UME. The skewness and kurtosis tests gave -0.24 and -0.68 respectively for Remedial students while 0.27 and -0.09 were the results generated from UME. The lowest and highest GPA of 0.00 and 2.52 respectively were recorded for UME. However, the range of 1.39 for Remedial and 2.52 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.45 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.74. Whereas Remedial indicates skewness to the left, the UME scores indicates skewness to the right indicating that more of the UME students are in the high performance group than Remedial. Both Remedial and UME show platykurtic distribution thus showing the relative high GPA spread but Remedial show higher platykurtic distribution indicating relatively higher GPA spread recorded for the Remedial students.

For the B.Sc Hons (Statistics/Computer) programme, the GPA ranged from 0.95 - 3.85 for Remedial students while for UME, the GPA ranged from 0.40 - 3.65. The mean GPA of 2.07 and standard deviation of 0.75 was recorded for Remedial students while 2.04 and 0.87 respectively were recorded for UME. The skewness and kurtosis tests gave 0.39 and -0.77 respectively for Remedial students while 0.22 and -0.79 were the results generated from UME. Whereas the lowest GPA was recorded for UME, the highest GPA was recorded for Remedial. The smaller range of 2.90 for Remedial compared to 3.25 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.75 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.87. Both Remedial and UME were skewed to the right with Remedial being more skewed than UME indicating that more of the Remedial students are in the high performance group than UME. Both Remedial and UME show platykurtic distribution showing the relatively flat GPA spread recorded for the Statistics/Computer Science students.

In the case of the B. Sc Hons (Mathematics/Computer Science) programme, the GPA ranged from 0.65 - 4.15 for Remedial students while for UME, the GPA ranged from 0.20 - 4.15. The mean GPA of 2.18 and standard deviation of 0.78 was recorded for Remedial students while 2.29 and 1.09 respectively were recorded for UME. The skewness and kurtosis tests gave 0.52 and 0.17 respectively for Remedial students while 1.10 and -0.82 were the results generated from UME. The lowest GPA of 0.20 was recorded for UME while the highest GPA of 4.15 was recorded for both Remedial and UME. The range of 3.50 for Remedial and 3.95 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.78 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a higher standard deviation of 1.09. Both Remedial and UME scores indicates skewness to the right with UME showing more skewness to the right than Remedial indicating that more of the UME students are in the high performance group than Remedial. Whereas Remedial show leptokurtic distribution thus showing the relative high GPA spread, UME show platykurtic distribution indicating relatively flat GPA spread recorded for the students.

In the case of the B. Sc (Ed) (Statistics/Computer Science) programme, the GPA ranged from 0.95 - 2.45 for Remedial students while for UME, the GPA ranged from 0.86 - 4.45. The mean GPA of 1.79 and standard deviation of 0.70 was recorded for Remedial students while 1.96 and 1.48 respectively were recorded for UME. The skewness and kurtosis tests gave -0.45 and -2.88 respectively for Remedial students while 0.70 and 2.63 were the results generated from UME. Whereas the lowest and highest GPA was recorded for UME, the smaller range of 1.5 for Remedial compared to 3.59 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.70 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 1.48. Whereas Remedial indicates skewness to the left, UME indicates skewness to the right indicating that more of the UME students are in the high performance group than Remedial. Whereas Remedial scores show platykurtic behavior, UME indicates leptokurtic behavior. This means that Remedial scores have relatively flat GPA spread while UME has relatively high GPA spread.

In the case of the B. Sc Ed (Mathematics/Computer Science) programme, the GPA ranged from 0.82 to 2.77 for Remedial students while for UME, the GPA ranged from 0.64 - 3.05. The mean GPA of 1.49 and standard deviation of 0.70 was recorded for Remedial students while 2.00 and 0.73 respectively were recorded for UME. The skewness and kurtosis tests gave 1.13 and 0.74 respectively for Remedial students while 1.29 and -0.73 were the results generated from UME. The lowest GPA of 0.64 and highest GPA of 3.05 were recorded for UME. The range of 1.95 for Remedial and 2.41 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.70 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a slightly higher standard deviation of 0.73. Both Remedial and UME scores indicates skewness to the right with UME showing more skewness to the right than Remedial indicating that more of the UME students are in the high performance group than Remedial. Whereas Remedial show leptokurtic distribution thus showing the relative high GPA spread, UME show platykurtic distribution indicating relatively flat GPA spread recorded for the students.

In the case of the B. Sc Ed. (Integrated Science) programme, the GPA ranged from 0.83 - 2.72 for Remedial students while for UME, the GPA ranged from 2.17 - 3.94. The mean GPA of 1.92 and standard deviation of 0.71 was recorded for Remedial students while 3.17 and 0.79 respectively were recorded for UME. The skewness and kurtosis tests gave -0.37 and -1.81 respectively for Remedial students while 1.28 and -2.25 were the results generated from UME. Whereas the lowest GPA of 0.83 was recorded for Remedial, the highest GPA of 3.94 was recorded for UME. The smaller range of 1.77 for UME compared to 1.89 for Remedial results indicates that the UME achievement was more consistent than the Remedial which indicates unpredictability. The smaller standard deviation of 0.71 recorded for Remedial indicates that the

GPAs are clustered more closely to the mean than UME with a standard deviation of 0.79. Whereas Remedial indicates skewness to the left, UME indicates skewness to the right indicating that more of the UME students are in the high performance group than Remedial. Both scores are platykurtic indicating the relatively flat GPA spread recorded for both Remedial and UME students for the programme. However, the UME scores show more platykurtic behavior than Remedial.

For the B. Sc Ed (Chemistry) programme, there was only one student who came in through the remedial programme with a GPA of 0.90 on the basis of which no standard deviation, skewness or kurtosis could be calculated. However for the UME there were 8 students with the GPAs ranging from 0.80 - 2.90 with a mean and standard deviation of 1.77 and 0.78 respectively. The range of 0.00 for Remedial and 2.1 for UME does not provide reasonable basis for comparison. The skewness and kurtosis tests gave -0.06 and -1.18 respectively for UME students. The lowest and highest GPA was recorded by UME students. Whereas UME indicates skewness to the left, kurtosis test show platykurtic distribution.

For the B. Sc Ed (Biology) programme, the GPA ranged from 1.58 - 2.08 for Remedial students while for UME, the GPA ranged from 0.21 - 3.29. The mean GPA of 1.83 and standard deviation of 0.35 was recorded for Remedial students while 1.55 and 0.90 respectively were recorded for UME. For the Remedial with n = 2, skewness and kurtosis tests cannot be evaluated. However for UME, the skewness and the kurtosis tests show -0.32 and 1.70 respectively. Whereas the lowest and highest GPA was recorded for UME, the smaller range of 0.50 for Remedial compared to 3.08 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.35 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.90. Whereas UME indicates skewness to the left, kurtosis test show leptokurtic distribution.

For the B. Sc Ed (Physics) programme, the GPA ranged from 1.18 - 2.45 for Remedial students while for UME, the GPA ranged from 0.77 - 4.18. The mean GPA of 1.82 and standard deviation of 0.90 was recorded for Remedial students while 2.07 and 1.07 respectively were recorded for UME. For the Remedial with n = 2, skewness and kurtosis tests cannot be evaluated. However for UME, the skewness and the kurtosis tests show 0.41 and 0.16 respectively. Whereas the lowest and highest GPA was recorded for UME, the smaller range of 1.27 for Remedial compared to 3.41 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.90 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 1.07. Whereas UME indicates skewness to the right, kurtosis test show leptokurtic distribution.

In the case of the B. Sc Ed. (Mathematics/Statistics) programme, the GPA ranged from 0.83 - 2.30 for Remedial students while for UME, the GPA ranged from 0.54 - 2.63. The mean GPA of 1.76 and standard deviation of 0.81 was recorded for Remedial students while 1.66 and 0.81 respectively were recorded for UME. The skewness tests gave -1.66 for Remedial students. With n = 3, it is not possible to compute kurtosis. However for the UME, the skewness and kurtosis tests gave 1.26 and -1.97 respectively. The lowest GPA of 0.54 and highest GPA of 2.63 were recorded for UME. The smaller range of 1.47 for Remedial compared to 2.09 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The standard deviation of 0.81 recorded for both Remedial and UME indicates that the GPAs are equally clustered closely to the mean. Whereas Remedial indicates skewness to the left, UME indicates skewness to the right indicating that more of the UME students are in the high performance group than Remedial. UME scores are platykurtic indicating the relatively flat GPA spread recorded for the students for the programme.

In the case of the B. Agricultural Education programme, there were no students that were admitted through the Remedial programme. In the case of the UME however, the GPA ranged from 1.50 - 3.25 with a mean GPA of 2.41 and a standard deviation of 0.55. The skewness tests gave 0.50 indicating that the UME scores are skewed to the right while the kurtosis test gave -0.37 indicating a platykurtic distribution.

Considering the Doctor of Veterinary Medicine programme, the GPA ranged from 0.91 - 3.65 for Remedial students while for UME, the GPA ranged from 0.83 - 3.96. The mean GPA of 2.42 and standard deviation of 0.66 was recorded for Remedial students while correspondingly 2.51 and 0.98 respectively were recorded for UME. The skewness and kurtosis tests gave -0.45 and 0.21 respectively for Remedial students while -0.39 and -1.18 were the results generated from UME. Whereas the lowest and highest GPA was recorded for UME, the smaller range of 2.74 for Remedial compared to 3.13 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.66 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.98. The Remedial and UME results indicates skewness to the left with Remedial showing more skewness to the left than UME indicating that more of the Remedial students are in the high performance group than UME for the programme. While Remedial is leptokurtic, UME is platykurtic showing the relative high GPA spread recorded for the Remedial

students and relative flat GPAs recorded for the UME students.

Department based basic statistical analysis

For the following one-programme Departments, the programme based analyses apply: Crop Production, Soil Science, Agricultural Extension and Communication, Animal Production, Agricultural Engineering, Civil Engineering, Electrical/Electronics Engineering, Mechanical Engineering, Food Science and Technology, Home Science and Management, Forestry, Fisheries and Aquaculture and Veterinary Medicine. However for the following Departments that run more than one programme such as Physics, Biological Sciences, Mathematics/Statistics/Computer Science and Agricultural and Science Education, the Departmental based analysis becomes imperative.

For the Department of Physics running two programmes, the GPA ranged from 0.47 to 4.00 for Remedial students while for UME, the GPA ranged from 0.71 to 4.47. The mean GPA of 2.18 and standard deviation of 0.80 was recorded for Remedial students while 2.13 and 0.97 respectively were recorded for UME. The skewness and kurtosis tests gave 0.34 and 0.08 respectively for Remedial students while 0.69 and -0.14 were the results generated from UME. Whereas the lowest GPA was recorded for Remedial, the highest GPA was recorded for UME. However, the smaller range of 3.53 for Remedial compared to 3.76 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.80 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.97. Both Remedial and UME indicates skewness to the right with UME showing more skewness to the right than Remedial indicating that more of the UME students are in the high performance group than Remedial. While Remedial is leptokurtic, UME is platykurtic thus showing the relative high GPA spread recorded for most of the Remedial students.

In the case of the Department of Biological Sciences running three programmes, the GPA ranged from 0.39 - 3.74 for Remedial students while for UME, the GPA ranged from 0.00 to 3.09. The mean GPA of 1.65 and standard deviation of 0.76 was recorded for Remedial students while 1.78 and 0.67 respectively were recorded for UME. The skewness and kurtosis tests gave 0.98 and 0.86 respectively for Remedial students while -0.11 and 0.02 were the results generated from UME. Whereas the lowest GPA of 0.00 was recorded for UME, the highest GPA of 3.74 was recorded for Remedial. The range of 3.35 for Remedial and 3.09 for UME results indicates that the EME achievement was more consistent than the Remedial which indicates unpredictability. The smaller standard deviation of 0.67 recorded for UME indicates that the GPAs are clustered more closely to the mean than Remedial with a standard deviation of 0.76. Whereas Remedial indicates skewness to the right, UME scores indicates skewness to the left indicating that more of the Remedial students are in the high performance group than UME. Both Remedial and UME show leptokurtic distribution thus showing the relative high GPA spread with Remedial showing more leptokurtic behavior than UME.

For the Department of Mathematics/Statistics/ Computer Science running two programmes, the GPA ranged from 0.65 - 4.15 for Remedial students while for UME, the GPA ranged from 0.20 - 4.15. The mean GPA of 2.13 and standard deviation of 0.76 was recorded for Remedial students while 2.14 and 0.96 respectively were recorded for UME. The skewness and kurtosis tests gave 0.46 and -0.28 respectively for Remedial students while -0.08 and -0.85 were the results generated from UME. Whereas the lowest GPA was recorded by UME, the highest of 4.15 was recorded by both Remedial and UME. However, the smaller range of 3.50 for Remedial compared to 3.95 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.76 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.96. Whereas Remedial indicates skewness to the right, UME indicates skewness to the left showing that more of the Remedial students are in the high performance group than UME. Both Remedial and UME show leptokurtic distribution with UME showing higher leptokurtic values thus showing the relative high GPA spread recorded for most of the UME students.

In the case of the Department of Agricultural and Science Education running eight programmes, the GPA ranged from 0.82 - 2.77 for Remedial students while for UME, the GPA ranged from 0.21 - 4.45. The mean GPA of 1.73 and standard deviation of 0.67 was recorded for Remedial students while 2.02 and 0.93 respectively were recorded for UME. The skewness and kurtosis tests gave 0.05 and -1.57 respectively for Remedial students while 0.41 and -0.16 were the results generated from UME. The lowest GPA of 0.21 and highest GPA of 4.45 were recorded for UME. The range of 1.95 for Remedial and 4.24 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.67 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.93. Both Remedial and UME scores indicates skewness to the right with UME showing more skewness to the right than Remedial indicating that more of the UME students are in the high performance

group than Remedial. Whereas both Remedial and UME show platykurtic distribution thus showing the relative flat GPA spread, Remedial show more platykurtic distribution than UME indicating relatively more flat GPA spread recorded for Remedial students.

College based basic statistical analysis

For the following one-programme, one-department Colleges, the programme and department based analyses apply: Agricultural Economics, Extension and Management Technology, Animal Science and Veterinary Medicine. However for the following Colleges that have more than one Department such as Agronomy, Engineering, Food Technology, Forestry and Fisheries and Science, Agricultural and Science Education, the College based analysis becomes imperative.

For the College of Agronomy with two Departments, the GPA ranged from 0.83 to 3.17 for Remedial students while for UME, the GPA ranged from 0.54 to 3.92. The mean GPA of 1.71 and standard deviation of 0.71 was recorded for Remedial students while 2.09 and 0.93 respectively were recorded for UME. The skewness and kurtosis tests gave 0.61 and -0.52 respectively for Remedial students while 0.13 and -0.55 were the results generated from UME. Whereas the lowest and highest GPA was recorded for UME, the smaller range of 2.34 for Remedial compared to 3.38 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.71 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.93. Both Remedial and UME were skewed to the right with Remedial being more skewed than UME indicating that more of the Remedial students are in the high performance group than UME. Both Remedial and UME show platykurtic distribution showing the relatively flat GPA spread recorded for the College of Agronomy students.

In the case of the College of Engineering with four Departments, the GPA ranged from 0.61 - 4.61 for Remedial students while for UME, the GPA ranged from 0.00 to 4.72. The mean GPA of 2.92 and standard deviation of 0.94 was recorded for Remedial students while 2.45 and 1.34 respectively were recorded for UME. The skewness and kurtosis tests gave -0.24 and -0.73 respectively for Remedial students while -0.03 and -1.31 were the results generated from UME. The lowest GPA of 0.00 and highest GPA of 4.72 were recorded for UME. The smaller range of 4.00 for Remedial compared to 4.72 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.94 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 1.34. Both Remedial and UME indicates skewness to the left with Remedial showing more skewness to the left than UME indicating that more of the UME students are in the high performance group than Remedial. Both Remedial and UME show platykurtic distribution thus showing the relative flat GPA spread recorded for the students of the College of Engineering.

In the case of College of Food Technology with two Departments, the GPA ranged from 0.58 - 3.04 for Remedial students while for UME, the GPA ranged from 0.08 - 3.54. The mean GPA of 1.65 and standard deviation of 0.71 was recorded for Remedial students while 1.59 and 0.91 respectively were recorded for UME. The skewness and kurtosis tests gave 0.33 and -0.81 respectively for Remedial students while 0.54 and -0.44 were the results generated from UME. The lowest GPA of 0.08 and highest GPA of 3.54 were recorded for UME. The range of 2.46 for Remedial and 3.46 for UME results indicates that the UME achievement was more consistent than the Remedial which indicates unpredictability. The smaller standard deviation of 0.71 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.91. Both Remedial and UME scores indicates skewness to the right with UME showing more skewness to the right than Remedial indicating that more of the UME students are in the high performance group than Remedial. Whereas both Remedial and UME show platykurtic distribution thus showing the relative flat GPA spread, Remedial show more platykurtic distribution than UME indicating relatively more flat GPA spread recorded for Remedial students.

In the case of the College of Fisheries and Forestry with two Departments, the GPA ranged from 0.67 - 2.32 for Remedial students while for UME, the GPA ranged from 0.17 - 3.46. The mean GPA of 1.53 and standard deviation of 0.51 was recorded for Remedial students while 1.48 and 0.87 respectively were recorded for UME. The skewness and kurtosis tests gave -0.02 and -1.10 respectively for Remedial students while 0.47 and -0.19 were the results generated from UME. The lowest and highest GPA of 0.17 and 3.46 respectively were recorded for UME. However, the range of 1.65 for Remedial and 3.29 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.51 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.87. Whereas Remedial indicates skewness to the left, the UME scores indicates skewness to the right indicating that more of the UME students are in the high performance group than Remedial. Both Remedial and UME show platykurtic distribution thus showing the relative high GPA spread but Remedial show higher platykurtic distribution indicating relatively higher GPA spread recorded for the Remedial students.

In the case of College of Science, Agricultural and

Science Education with four Departments, the GPA ranged from 0.39 - 4.15 for Remedial students while for UME, the GPA ranged from 0.00 - 4.47. The mean GPA of 1.99 and standard deviation of 0.79 was recorded for Remedial students while 2.02 and 0.90 respectively were recorded for UME. The skewness and kurtosis tests gave 0.46 and -0.19 respectively for Remedial students while 0.38 and -0.21 were the results generated from UME. The lowest GPA of 0.00 and highest GPA of 4.47 were recorded for UME. The range of 3.76 for Remedial and 4.47 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.79 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 0.90. Both Remedial and UME scores indicates skewness to the right with Remedial showing more skewness to the right than UME indicating that more of the Remedial students are in the high performance group than UME. Whereas both Remedial and UME show platykurtic distribution thus showing the relative flat GPA spread, UME show more platykurtic distribution than Remedial indicating relatively more flat GPA spread recorded for UME students.

University based basic statistical analysis

In the University total with eight colleges, seventeen Departments and twenty eight programmes, the GPA ranged from 0.13 - 4.61 for Remedial students while for UME, the GPA ranged from 0.00 to 4.72. The mean GPA of 2.19 and standard deviation of 0.94 was recorded for Remedial students while 2.05 and 1.06 respectively were recorded for UME. The skewness and kurtosis tests gave 0.41 and -0.44 respectively for Remedial students while 0.39 and -0.58 were the results generated from UME. The lowest GPA of 0.00 and highest GPA of 4.72 were recorded for UME. The range of 4.48 for Remedial and 4.72 for UME results indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability. The smaller standard deviation of 0.94 recorded for Remedial indicates that the GPAs are clustered more closely to the mean than UME with a standard deviation of 1.06. Both Remedial and UME scores indicates skewness to the right with Remedial showing more skewness to the right than UME indicating that more of the Remedial students are in the high performance group than UME. Whereas both Remedial and UME show platykurtic distribution thus showing the relative flat GPA spread, UME show more platykurtic distribution than Remedial indicating relatively more flat GPA spread recorded for UME students.

Test of hypotheses

Hypotheses are suppositions, usually presumed not to be true in order to be tested. The data obtained from the population sample was used to test the hypotheses and based on the results of the testing; the hypotheses were either accepted or rejected. To test each hypothesis, a non parametric test of significance otherwise known as t test was used. To test the statistical hypotheses, 5% level of significance was used. This is based on the probability that a chance of only five times may occur in every 100 cases.

Programme based hypothesis testing

The analysis presented in Table 6 shows the programme statistical computations for hypothesis testing for 28 programmes under study. For the B. Agricultural Education programme with no Remedial students, it was not possible to test the hypothesis. The results indicates that out of the remaining 27 programmes being run in the University, there was no significant difference between the performance of UME and ex-Remedial students in 25 programmes representing 92.6% of the programmes. However, for the B. Eng Civil and B. Eng Electrical/ Electronics Engineering programmes there was a significant difference between the performance of UME and ex-Remedial students. Based on the programme based statistical analysis for these two programmes, it is clear that the ex-Remedial students performed better than the UME where a minimum GPA of 0.00 was recorded for the B. Eng Civil Engineering programme among the UME candidates.

Department based hypothesis testing

The analysis presented in Table 7 shows the Department based statistical computations for hypothesis testing for 17 Departments under study. Out of the 17 Departments, there was no significant difference between UME and ex-Remedial students in the case of 15 Departments representing 88.2% of the Departments. In the case of the remaining two Departments of Civil and Electrical/ Electronics Engineering, the decisions on these one-programme Departments apply as in programme based hypothesis testing where significant difference was established.

College based hypothesis testing

The analysis presented in Table 8 shows the College based statistical computations for hypothesis testing for 8 Colleges under study. Out of the 8 Colleges, there was no significant difference between the achievement of UME and ex-Remedial students in 7 Colleges representing 87.5% of the Colleges. In the case of the College of Engineering, the largest College in the university

Table 6. Programme based statistical computations for hypothesis testing.

College	Department	Programme	Statistical Computations					
			Remedial n_1	UME n_2	Degree of freedom	t.cal	t.tab	Decision
Agronomy	Crop Production	B. Agric (Crop Soil)	11	10	19	-0.9581	2.0930	Accept H_o
	Soil Science	B. Agric (Soil Crop)	6	8	12	-0.8877	2.1788	Accept H_o
Agricultural Economics, Extension and Management Technology	Agricultural Extension and Communication	B. Agric (Agric. Economics and Extension)	49	25	72	0.2281	1.9935	Accept H_o
Animal Science	Animal Production	B. Agric (Animal Production)	23	14	35	-0.0703	2.0301	Accept H_o
Engineering	Agricultural Engineering	B. Eng (Agricultural Engineering)	31	30	59	-2.0865	2.0010	Accept H_o
	Civil Engineering	B. Eng (Civil Engineering)	40	18	56	2.4163	2.0032	Reject H_o
	Electrical/Electronics Engineering	B. Eng (Electrical/Electronics Engineering)	41	28	67	3.9480	1.9960	Reject H_o
	Mechanical Engineering	B. Eng (Mechanical Engineering)	29	20	47	1.7359	2.0117	Accept H_o
Food Technology	Food Science and Technology	B. Sc (Food Science and Technology)	31	29	58	-0.2627	2.0017	Accept H_o
	Home Science and Management	B. Sc (Home Science and Technology)	19	10	27	1.6474	2.0518	Accept H_o
Forestry and Fisheries	Forestry	B. For (Forestry)	9	11	18	0.3111	2.1009	Accept H_o
	Fisheries and Aquaculture	B. Fish (Fisheries and Aquaculture)	10	13	21	0.0462	2.0796	Accept H_o
Science, Agricultural and Science Education	Physics	B. Sc Physics	21	17	36	0.4088	2.0281	Accept H_o
		B. Sc Industrial Physics	26	20	44	-0.0780	2.0154	Accept H_o
	Biological Sciences	B. Sc Zoology	7	8	13	-0.2679	2.1604	Accept H_o
		B. Sc Microbiology	19	23	40	-0.3814	2.0211	Accept H_o
		B. Sc Botany	9	11	18	-0.8820	2.1009	Accept H_o
	Mathematics/Statistics/Computer Science	B. Sc (Hons) Statistics/Computer Science	37	27	62	0.1834	1.9990	Accept H_o
		B. Sc (Hons) Mathematics/Computer Science	40	19	57	-0.4775	2.0025	Accept H_o
	Agricultural and Science Education	B. Sc (Ed) Statistics/Computer Science	4	5	7	-0.2093	2.3646	Accept H_o
		B. Sc (Ed) Mathematics/Computer Science	7	12	17	-1.4917	2.1098	Accept H_o
		B. Sc (Ed) Integrated Science	9	5	12	-3.0241	2.1788	Accept H_o
		B. Sc (Ed) Chemistry	1	8	7	-1.0543	2.3646	Accept H_o
		B. Sc (Ed) Biology	2	8	8	0.4127	2.3060	Accept H_o
		B. Sc (Ed) Physics	2	10	10	-0.3103	2.2281	Accept H_o
		B Sc (Ed) Mathematics/Statistics	3	9	10	0.1747	2.2281	Accept H_o
		B. Agricultural Education	-	9	-	-	-	-
Veterinary Medicine	Veterinary	Doctor of Veterinary Medicine	25	21	44	-0.3741	2.0154	Accept H_o
TOTAL			511	428				

Table 7. Department based statistical computations for hypothesis testing.

College	Department	Statistical Computations					
		Remedial n_1	UME n_2	Degree of freedom	t. cal	t. tab	Decision
Agronomy	Crop Production	11	10	19	-0.9581	2.0930	Accept H_o
	Soil Science	6	8	12	-0.8877	2.1788	Accept H_o
Agricultural Economics, Extension and Management Technology	Agricultural Extension and Communication	49	25	72	0.2281	1.9935	Accept H_o
Animal Science	Animal Production	23	14	35	-0.0703	2.0301	Accept H_o
Engineering	Agricultural Engineering	31	30	59	-2.0865	2.0010	Accept H_o
	Civil Engineering	40	18	56	2.4163	2.0032	Reject H_o
	Electrical/Electronics Engineering	41	28	67	3.9480	1.9960	Reject H_o
	Mechanical Engineering	29	20	47	1.7359	2.0117	Accept H_o
Food Technology	Food Science and Technology	31	29	58	-0.2627	2.0017	Accept H_o
	Home Science and Management	19	10	27	1.6474	2.0518	Accept H_o
Forestry and Fisheries	Forestry	9	11	18	0.3111	2.1009	Accept H_o
	Fisheries and Aquaculture	10	13	21	0.0462	2.0796	Accept H_o
Science, Agricultural and Science Education	Physics	47	37	82	0.2322	1.9893	Accept H_o
	Biological Sciences	35	42	75	-0.7634	1.9921	Accept H_o
	Mathematics/Statistics/Computer Science	77	46	121	-0.1031	1.9798	Accept H_o
	Agricultural and Science Education	28	66	92	-1.5160	-1.5160	Accept H_o
Veterinary Medicine	Veterinary Medicine	25	21	44	-0.3741	2.0154	Accept H_o
TOTAL		511	428				

in terms of 100 level students population (n=378), there was a significant difference between the achievement of the two categories of students. This could be as a result of the influence of the excellent performance of Remedial Students over UME in the Departments of Civil Engineering and Electrical/Electronics Engineering where significant difference had earlier been established in programme and departmental based hypothesis testing.

University based hypothesis testing

The analysis presented in Table 8 also shows the University based statistical computations for hypothesis testing. The test for the University across eight colleges, seventeen Departments and twenty eight programmes for 511 Remedial and 428 UME students totaling 939 students, there was a significant difference between the achievement of UME and ex-Remedial students of the University.

Summary of major findings

It has been shown clearly in this study from basic statistical analysis that Remedial students are consistent and in the high performance group across programmes, Departments and Colleges. Again, even though the results in the College of

Table 8. College and university based statistical computations for hypothesis testing.

College	Statistical Computations					
	Remedial n_1	UME n_2	Degree of freedom	t.cal	t.tab	Decision
Agronomy	17	18	33	-1.3602	2.0345	Accept H_o
Agricultural Economics, Extension and Management Technology	49	25	72	0.2281	1.9935	Accept H_o
Animal Science	23	14	35	-0.0703	2.0301	Accept H_o
Engineering	141	96	235	3.1849	1.9701	Reject H_o
Food Technology	50	39	87	0.3492	1.9876	Accept H_o
Forestry and Fisheries	19	24	41	0.2466	2.0195	Accept H_o
Science, Agricultural and Science Education	187	191	376	-0.3197	1.9663	Accept H_o
Veterinary Medicine	25	21	44	-0.3741	2.0154	Accept H_o
University total	511	428	937	2.0748	1.9625	Reject H_o

Engineering is a contributing factor to the final University wide decision, the population of the College is one major factor that cannot be ignored for research purposes in the University. Remedial students are found to be better performers. The lowest GPA of 0.00 was recorded for UME in the Departments of Civil Engineering and Biological Sciences. However, the overall highest GPA of 4.72 was recorded for UME in the Department of Electrical/Electronics Engineering where hypothesis test indicated significant difference and basic statistical analyses indicated that ex-Remedial students were better achievers than UME. In the course of the study, it has been found that:

(a) In lateral comparison between UME and ex-Remedial across programmes, ex-Remedial recorded 6 cases of minimum GPA while UME recorded 20 with a tie of 0.78 for the B. Sc Zoology programme. Across Departments, minimum GPA was recorded by ex-Remedial in 4 Departments while UME recorded in 13 Departments. On College basis, ex- Remedial recorded minimum GPA in 2 while UME recorded minimum in 6 Colleges. The lowest GPA of 0.00 was recorded for UME in the Departments of Civil Engineering and Biological Sciences.

(b) In the case of maximum GPA, ex-Remedial recorded maximum against UME in 6 programmes while UME records maximum in 20 programmes with a tie of GPA = 4.15 for the B. Sc Hons (Mathematics/Computer Science) programme. At the Departmental level, ex-Remedial recorded maximum in 4 Departments with UME having 11 with a tie of GPA = 4.5 for the Department of Mathematics/Statistics/Computer Science. In the case of the Colleges UME recorded maximum in all the 8 colleges. The overall highest GPA of 4.72 was recorded for UME in the Department of Electrical/Electronics Engineering in the College of Engineering.

(c) The smaller range was recorded for ex-Remedial in 24 programmes and UME for 3 programmes. Department-wise, 15 Departments recorded smaller range with respect to ex-Remedial while one Department had UME with smaller range. At the College level, all the 8 Colleges recorded smaller range in favor of ex-Remedial students. Smaller range indicates that the Remedial achievement was more consistent than the UME which indicates unpredictability.

(d) Higher mean values were recorded in 12 programmes for ex-Remedial and 15 programmes for UME. Department-wise however, ex-Remedial recorded higher mean values in 7 programmes while UME recorded in 10 programmes. At College levels however, higher mean values were recorded in 4 Colleges for ex-Remedial and 4 Colleges for UME.

(e) The smaller standard deviation was recorded for 24 programmes with UME having smaller standard deviation in just one programme with a tie of 0.81 for the B. Sc Ed. Mathematics/Statistics programme. Department-wise, smaller deviations were recorded in 16 Departments leaving one Department where UME recorded smaller standard deviation. At College level, smaller deviations were recorded in all 8 Colleges with respect to the ex-Remedial students. Smaller standard deviation indicates that the GPAs are clustered more closely to the mean.

(f) In consideration of the programmes and for ex-Remedial, results of 9 programmes were skewed to the left while 15 programmes were skewed to the right whereas for the UME 7 programmes had their results skewed to the left while for 17 their results were skewed to the right. Department-wise, ex-Remedial had their results in 5 Departments skewed to the left while skewness to the right was accounted for in 12 Departments whereas for the UME 9 Departments had their results skewed to the left while for 8 their results were skewed to the right. At the level of the Colleges and for ex-Remedial, 4 Colleges had their results skewed to the left while 4 had their results skewed to the right whereas for UME 2 Colleges had their results skewed to the left while

6 had their results skewed to the right. On the overall desirable skewness was recorded in 14 programmes for ex-Remedial against UMEs 10; 12 Departments for ex-Remedial against UMEs 5; 5 Colleges for ex-Remedial against UMEs 3. This indicates that more of the Remedial students are in the high performance group than UME.

(g) For the kurtosis tests, 8 programmes showed leptokurtic behavior for ex-Remedial against 15 that showed platykurtic behavior whereas for UME 5 programmes indicated leptokurtic behavior against 18 which showed platykurtic behavior. Department-wise, 5 and 11 Departments showed leptokurtic and platykurtic behavior respectively for ex-Remedial while for UME 4 Departments showed leptokurtic behavior against 12 which showed platykurtic behavior. At the level of the College, leptokurtic behavior was observed in 2 Colleges while platykurtic behavior was observed in 6 Colleges in the case of ex-Remedial whereas for the UME only one College showed leptokurtic behavior with 7 Colleges showing platykurtic behavior. On the overall head to head analysis, desirable kurtosis was recorded in 3 programmes for ex-Remedial against UMEs 9; 4 Departments for ex-Remedial against UMEs 7; 2 Colleges for ex-Remedial against UMEs 3. On the overall Remedial shows better kurtosis values indicating relative high GPA spread.

(h) The hypothesis test for the University across eight colleges, seventeen Departments and twenty eight programmes for 511 Remedial and 428 UME students totaling 939 students shows that there was a significant difference between the achievement of UME and ex-Remedial students of the University. The ex-Remedial students were found to have higher, consistent and predictable achievement than the UME.

Conclusion

From the findings of this research work, one can conclude that there is a significant difference between the achievement of ex-Remedial and UME students. The ex-Remedial students were found to perform better than UME students. UME is therefore not a guarantee for better academic achievement in the University.

POLICY RECOMMENDATIONS

Based on the study, the following policy recommendations are made:

(a) The Remedial programme should be allowed to stay as a means of meeting up admission quota and addressing issues of imbalance in the Nigerian educational system

(b) The post-JAMB test introduced by Universities should be sustained especially as cases of students having a GPA of 0.00 have been recorded among UME candidates

(c) The ex-Remedial students should be given time to remedy their deficiencies before graduation from the University so as to enable them pursue postgraduate studies in Universities that insist on O Level requirements before admission into the postgraduate programmes

(d) Placement of ex-Remedial students and conditions for graduation should be inserted into the admission requirements of the University so that regulatory authorities such as the National Universities Commission will not accuse the University of admitting unqualified candidates.

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