WAJE

West African Journal of Education

VOL. XL, 2020

ISSN: 0043-2997

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Published by the Institute of Education, University of Ibadan on behalf of Participating West Africa Universities and Ministries of Education

West African Journal of Education (WAJE)

(For enhanced quality of research and discourse on Education)

Vol. XL 2020 ISSN: 0043-2997

Website: http//www.instituteofeducui.com

The West African Journal of Education (WAJE) pioneered academic/professional publishing in the Sub-region in the late 1950s. It has also nurtured the development of a good number of academic journals that have expanded the frontiers of educational research and information exchange over the years. The WAJE, in its revised form maintains the goal of becoming the most widely cited education journal in the sub-region, hence the current efforts that are being made to enhance the quality of reports and other discourses published in it.

The WAJE has the tripartite mission of:

(a) promoting a culture of excellence in educational research;
(b) encouraging the exchange of profound and innovative ideas capable of generating creative practices in education research and practice; and
(c) disseminating information on educational development that are not usually easily available to academics and practitioners.

The Journal accordingly publishes the following categories of papers:

(a) Research papers that move away from orthodoxy and which really break new grounds in terms of methodology and findings;
(b) Essays and issues papers that contribute to re-orienting received ideas, values; and practices.
(c) Documents emanating from national and international conferences, as well as from large-scale research projects that project emerging trends and thinking in educational development.

The WAJE is published once a year – in any area of education relevant to academics and practitioners. Please note that the conclusions drawn and the opinions expressed in the journal are those of the authors and not necessarily those of the Editorial Board.

EDITORIAL STATEMENT

Institutions are set up in every part of the World to promote what is considered as desirable learning. In these institutions, the expectations from the learners are the acquisition of approved knowledge while the responsibility of imparting it dwells on the teacher. We are happy to publish in this volume ten articles which focus attention on the stakeholders involved in teaching-learning for effectiveness of education at all levels.

Odinko and Okocha researched on the extent of E-Learning facilities acceptance, proficiency, training and retraining among academic staff in University of Ibadan while Uzoeshi and Odinko's article clearly identified textual characteristics of recommended English Textbooks used at pre-primary and primary 3 level using Fog Index requirements in Rivers State, Nigeria. Other areas presented in this volume include; comparison of the Content validity of 2018 Mathematics Test Items of Public Examining Bodies in Nigeria; Undergraduates' Entry Requirements and Student Personal Variables as Determinants of Academic Performance in Faculty of Science, University of Ibadan, Nigeria; Assessing Teacher Competence in Items Development through Evidence of Convergent Validity of Test Scores from Alternate Examinations; Students Achievement in English Language, Mathematics, Basic Science and Basic Technology as Predictor of their Success in SSCE Science and Managerial Potentials as Determinants of Students' Entrepreneurial Self Reliance in Technical Colleges

Only one paper focused specifically on the roles of teaching methods the achievement of learners (Prevailing Methods of Teaching Daily Living and Socialization Skills to Students with Intellectual Disability in Ilorin Metropolis, Kwara State). Lastly, psychological issues as they impact on learners' achievement were discussed in two different papers (Relationship between Home Literacy Environment and Emergent Literacy Skill of Pre-School Children in Ilorin West Local Government Area of Kwara State; Mathematical competence and attitude as predictors of students' performance in secondary school physics).

The editorial team believes that the time has come when the issues raised in this volume be integrated into the school curriculum to aid all round development of learners.

Thank you.

Monica N. Odinko
Editor

EDITORIAL COMPOSITION

CALL FOR PAPERS

The Editor of the West African Journal of Education (WAJE) invites authors to submit manuscripts for consideration in these scholarly journals. The call for paper describes the guidelines for submission. Before manuscript submission, please read and strictly follow the guidelines for authors carefully. This will ensure that the publication of your manuscript is as rapid as possible. Manuscripts could be submitted at any time for publication in any subsequent issue to the following email addresses: moniquengozi@yahoo.com; babatundeezekiel11@gmail.com

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General Information

Manuscripts submitted to our journals must be written in English. Full name of all authors should be indicated and the names of multiple authors are separated by a comma (please surname last). Provide the full affiliation for each author including institutional affiliation (or postal address), city, country, e-mail, etc. If multiple authors have contributed to the article, details of the corresponding author should be clear. Email address is compulsory for the corresponding author.

Structure and Format of the Manuscript

Contributors to the Journals are to respect the avowed principle of QUALITY in all its ramifications and ensure that:

(a) RESEARCH PAPERS are technically and faultlessly designed, executed and reported, with a clear contribution to knowledge.

(b) ESSAYS AND ISSUES PAPERS are analytically sound, presenting solid and original ideas that can positively influence change in educational thought, research and practice.

(c) The manuscript, which should include title, abstract, text, tables, figures, where necessary, should be type written on A4 size paper, with double-spacing and should not exceed 15 pages. The main text usually can be divided into separated sections, organised by Introduction, Methodology, Results, Discussion, Conclusion and Recommendation if any.

(d) Papers which should be written on only one side should be submitted in triplicate with a soft copy.

(e) Author(s) should strictly follow APA format 6th Edition (2010). Attention has been drawn to a few of the areas here.

Paper Title

An acceptable title should be brief, specific and informative, and should not be more than 23 words.

Abstract

The abstract should concisely state the purpose of the investigation and summarise the important findings and conclusions. It should be a single paragraph of generally not more than 250 words.

Keywords

Include 5 keywords or short phrases for indexing.

Introduction

What is the problem of the study?

Provide an overview of the scope and relevance of the research, especially with regards to previous advancements in the field and other related fields.

Methodology

Describe the methodology completely by presenting the research design or research type, choice of subjects, sampling technique used, instrumentation, including data collection procedure, statistical tests used for data analysis etc. If your manuscript is clinical or science-based, you need to include information on research duration, inclusion/exclusion criteria, processing and laboratory analysis. Use section headings/subheadings in a logical order to entitle each category or method.

Results

Present and illustrate your findings objectively and concisely, if appropriate, with figures/ tables. In the main text, describe each of your results clearly with suitable statistics *(Please also read more information on how to further present your results below).*

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Provide an interpretation of your results and make comparisons with previous studies. The significance of findings should be clearly described. If your results differ from your expectations, explain why that might have happened. If your results agree, then describe the theory that the evidence supported.

Conclusion and Recommendations

The main conclusions of your work should be presented. The contribution of the work to the behavioural and social sciences research and its implications should be emphasized. Recommendations should derive from the findings and may not be necessarily too many.

How to Present your Results

Table Title

Every table must have a unique title placed at the top. Titles should be clear and concise, and they should not be complete sentences. *(See an example below).*

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Table tools in Microsoft Word are strongly recommended for inserting a table. Tables created with the tab key or drawn by hand are inacceptable. Each table should be bordered by three horizontal lines, two lines above and one below. All other lines (rows and columns within the table should not be visible). In essence tables when completed should flow in one piece with the text *(See the example below).*

Table 1.2: Adjusted Mea ns for Treatment Effects and Critical Thinking

Independent Variable		Critical Thinking			95% Confidence Interval	
		M	SD	Std Error	Lower Bound	Upper Bound
Treatment						
(i)	Collaborative task method	58.18	11.14	1.26	55.70	60.67
(ii)	Self-directed learning	59.12	9.97	1.23	56.71	61.53
(iii)	Collaborative task method & Self-directed learning	59.17	9.72	1.13	56.94	61.39
(iv)	Traditional Method	57.71	12.75	1.16	55.42	59.99

Table Numbering and Citation

Tables in the main body of the text should be numbered consecutively and be referred to in text according to their appearance in the text. Ensure that your tables flow with the text in one piece after they have been created.

Figure Caption

Each figure should have a caption. The caption should be concise and typed below the figure, not on the figure area or above the figure. If figures have parts (for example, A and B), authors should ensure that all parts are explained in the caption. Ensure that the figures do not distort the flow of the text in the manuscript.

Figure Numbering & Citation

All figures like the tables are to be sequentially numbered with Arabic numerals. Figures should always be cited in text in consecutive numerical order.

Figure Resolution

Figures must be created at a minimum resolution of 300 dpi e. g JPG. Fuzzy or jagged figures or images and also line drawings done with Word will not be accepted. Authors are advised to replace them by conforming to the specified standard.

Scientific or Science- related Manuscripts

For Clinical or Science-related manuscripts the following should further be ensured:

Equation Format

The equation number should be placed in parentheses to the right of the equation. E.g. $H_{n+1}(1/n+1, 1/n+1, \ldots, 1/n+1)$ (1); Do not create equations as pictures. Use Math Type or insert symbols as normal text.

Equation Numbering and Citation

Equations where used should be referred to in text and be numbered consecutively with Arabic numerals to avoid ambiguities. Citation for an equation should be made by using "(1)," not "Eq. (1)" or "equation (1)," except at the beginning of a sentence e. g. "Equation (1) is..."

References

All sources cited in text must appear in the reference list, and all items in the reference list must be cited in- text. Use alphabetical system to arrange the references in the reference list. Ensure that all cited in- text sources are cited in the reference list. *Refer to APA referencing style (6th Edition) for proper citation of sources.* A few examples have been provided here.

References In-Text Citation Format

The APA citation format requires parenthetical citation within the text rather than endnotes or footnotes. Citations in the text provide brief information usually about the author, year of publication to lead readers to the source of information in the reference list at the end of the paper.

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Authors are requested to check all references for completeness, including author (s) names, year., paper title, publisher, journal heading, Volume, Number, pages for journal citations.

Books

Author(s) names, Year. Book title, Country and Publisher, e.g.

Adegoke, B. A. (2013). *Multivariate statistical methods for behavioural and social sciences research,* Ibadan: Estom Graphic Prints.

Journal Articles

Single Author

If the author's name appears in the text, place the author's name, year of publication in parenthesis, followed with a period or dot, the source title, volume and/or issue number, and page(s). **The example given is only for Journals with volume or issue number.**

Gillies, R. (2000). The maintenance of cooperative and helping behaviour in co-operative groups. *British Journal of Educational Psychology,* 70, 97-110.

Multiple Authors (2-7 authors)

List all the authors and follow the format for single author as indicated above e.g.

Alade, O. M. & Omoruyi, I. V. (2014). Table of specification and its relevance in educational assessment. *European Journal of Educational and Developmental Psychology*, 2(1), 1-17.

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State all authors' names, year in parenthesis, followed with a period or dot, article title, conference title, pp. e.g.

Strijbos, J. W. & Martens, R. L. (2001) Group-based learning: dynamic interaction in groups. Euro-CSCL Conference 2001, Maastricht, the Netherlands. March, 22-24.

Appendix

An appendix may be included (and is often helpful) in mathematical or computational modelling.

Ethical Consideration

Authors are to ensure that necessary ethical considerations are observed. These should include but not limited to the following:

i. While authors may not necessarily indicate respective contributions to the manuscript, an author should be someone who made significant contributions to the paper. Names should not be appended just on moral grounds.

ii. Ensuring that issues relating to confidentiality, consent and harm to participants have been addressed in the work.

iii. WAJE does not encourage the practice of duplicate publication or any type of plagiarism.

iv. Since the journals aims at publishing original high quality research work, submitted manuscript should not have been published anywhere or is been considered elsewhere for publication.

v. When received with sufficient evidence, plagiarized manuscript would not be considered for publication.

Manuscript Submission

Manuscripts could be submitted at any time for publication in any subsequent issue. Manuscripts are to be submitted both in hard and soft copies in triplicate to the Editor or Production Manager to the Editorial Board through the following email addresses: moniquengozi@yahoo.com; babatundeezekiel11@gmail.com

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b. Neither the editor nor the editorial board shall be liable for article(s) lost in transit.

c. Those whose articles are accepted for publication will be so informed as regards other commitments.

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Professor Monica N. Odinko
Editor at moniquengozi@yahoo.com

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b. The reviewer should approach the peer-review job objectively without necessarily projecting personal criticism of the author.

c. Reviewers should not commit for personal research use any part of the manuscript under review before its publication.

d. The reviewer should as a matter of urgency notify the editor of any similarities between the manuscript under review and another article either published or under consideration by another journal. The reviewer should also immediately call the editor's attention to a manuscript containing plagiarized or falsified material or data.

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Undergraduates' Entry Requirements and Student Personal Variables as Determinants of Academic Performance in Faculty of Science, University of Ibadan, Nigeria

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Submitted: October 3, 2020; Revised: March 16, 2021; Accepted: April 10, 2021

Abstract

First year university undergraduates' performance has not been in tandem with achievement in entry requirements (Senior Secondary Certificate Examinations results, scores in Unified Tertiary Matriculation Examinations and Post-Unified Tertiary Matriculation Examination). Thus, undergraduates with good grades in SSCE results, high scores in UTME and Post-UTME lost their admissions due to poor performance in their first-year examinations. Past studies on causes of poor performance have focused largely on assessing the cognitive domain with little attention paid to students' other personal variables: interest in university education, mental ability, career aspiration and gender. This study examined the adequacy of the entry requirements students' personal variables and academic candidates' capability in determining first year students' performance in the Faculty of Science, University of Ibadan. Purposive sampling technique was used to select six out of the eleven departments in the Faculty. The instruments used were Undergraduates' Career Aspiration, Undergraduates' Interest in University Education Questionnaires and Mental Ability Test. Data were analysed using path coefficients at $p < 0.05$ level of significance and covariance based structural equation modelling. Modelling the variables revealed that 9 out of 27 paths were significant and true predictors of undergraduates' academic performance in the first academic year. While the direct and indirect path coefficients of mental ability on academic achievement were not significant and consequently eliminated from the model. Interest in university education, career aspiration, gender alongside performance in SSSE, UTME and Post-UTME were important in determining academic performance of first year science undergraduates in the University of Ibadan. Therefore, criterion on students' personal variables should be included in assessing candidates' capability for academic study.

Keywords: Undergraduates' performance, University of Ibadan entry requirements. Interest in university education Post- Unified Tertiary Matriculation Examination

Introduction

Performances of undergraduates in universities, among other factors, can strongly determine their achievement in their academics and potentials while in the university and even after graduating from the university. The qualified and skilled graduates from the university can contribute greatly and determine the quality of manpower of a country. Quality university education is a tool for realizing sustainable development goals of any nation as well as the fulfilment of any individuals' dreams and aspirations. Also, the attainment of goals and objectives of universities are measured through the performance of learners both at the undergraduate and post-graduate levels. However, education in Nigeria presently has become a source of concern to its stakeholders due to the fact that standards of education are below expectations as a result of the poor academic performance of university undergraduates.

Despite the huge amount of funding and provision of other educational needs being put into university education by the government and other stakeholders, there are still problems associated with undergraduates' academic performance (Akiri and Ugborugbo, 2009; Bamidele and Bamidele, 2013. They further reported that the drop-out rate, having extra years and probations of some undergraduates as a result of their poor performances in examinations are still witnessed in the universities over the years. Some are even advised to withdraw as early as their first year in the university. This calls to question the fact that after candidates have successfully passed the entry level examinations to gain admission into the university, their performance precipitously decline below expectations immediately after they are admitted into the university. Akomolafe and Olorunfemi-Olabisi (2011) states that a very important factor that could determine undergraduates' performance and have given so much concern to stakeholders of university education lately is undergraduates' entry requirements prior admission into the university of choice.

The entry requirements are examinations candidates must seat for and pass before they can qualify for admission into the university. These examinations include the Senior School Certificate Examination (SSCE), Unified Tertiary Matriculation Examinations (UTME) conducted by Joint Admissions and Matriculations Board (JAMB) and the Post-Unified Tertiary Matriculation Examination (Post-UTME) screening conducted by universities in Nigeria. These examinations are used to select and determine qualified candidates for admission into different departments. These entry examination as well as students' personal variables such as: undergraduates' interest in university education, mental ability, career aspiration and gender are the focus of the paper. These variables are classified into cognitive and non-cognitive issues that can affect the academic performance of university undergraduates.

The UTME and Post UTME screening test has the essence of examining candidates aspiring to gain admission into the university who would develop character and learning in various fields of their choice in the university. Among the faculties where these

prospective learners would seek admission into the university education system is the Faculty of Science. The Faculty is of great importance because the training of undergraduates revolves around having scientific skills and competencies both cognitively and structurally. Also, the Faculty of Science can enable undergraduates understand the world around them and the role science plays in our society. The courses offered in Faculty of Science can also enhance undergraduates' skill development, planning and conducting investigations, gathering information, team work and evaluating their findings, act responsibly when using scientific and applying scientific knowledge.

In Nigeria, selection processes of candidates aspiring to gain admission into tertiary institutions such as universities, polytechnics, mono-technics, colleges of education among others, are done by the Joint Admissions and Matriculations Board (JAMB), a statutory body set up by the Federal Government under JAMB Act, No. 2 of 1978, Chapter 193 of the Laws of the Federation of Nigeria. Joint Admissions and Matriculations Board conducts the Unified Tertiary Matriculations Examination into tertiary institutions in Nigeria, while the Post-Unified Tertiary Examination (Post-UTME) also known as the post University screening test is further used to screen and select the most qualified learners by each University (Obioma and Salau, 2007). The use of these public examinations is otherwise known as cognitive measures in education. This process is very vital because it is believed that the cognitive measure is the most valid and appropriate way of measuring candidates' level of intelligence in Nigeria (Obioma and Salau, 2007).

This statutory body is expected to admit the best qualified candidates recommended by the University who can be admitted into Nigeria's tertiary institutions. These examinations also have the purpose of predicting learners' performance in relation to completing their university education successfully which will be certified after the course of study. Academic Performance is generally measured through examination and can be expressed in many ways subject to what the examiner will do with the scores emanating from the examination. The possession of minimum of five credits including Mathematics and English Language, is compulsory in any of these underlisted public examinations which include, Senior School Certificate Examinations (SSCE) conducted by the West African Examinations Council (WAEC), the National Examinations Council (NECO) and National Business and Technical Examinations Board (NABTEB) which are requirements for the Unified Tertiary Matriculations Examinations (UTME).

Over the years, policies that have been introduced by the Federal government of Nigeria to is to address the issues of examining, selecting and admitting qualified candidates into universities and the issues of undergraduates' poor academic performance but it appears these policies have not been able to address properly the cause of these testing procedure in Nigerian universities. Also, a major reason for the

creation of the Joint Admisions and Matriculations Board (JAMB) in 1978 was to offer the opportunity to select qualified candidates as well as to diversify admission intakes to show a high rate of national spread in the candidates' placement. It was eenvisaged that candidates' selection and placement will be on merit, catchment area and the educationaly less advantaged states will be catered for.

Section 5(A), C (ii) of the JAMB Board Act, CAP II, Laws of the Federation of Nigeria, 2004 provides that the body should control the conduct of matriculation examinations in admitting students into all Colleges of education, Polytechnics and Universities. One major problem which erupted was the unwillingness of learners to study and the scourge of examination malpractices was on the increase Kpolovie and Okoto, (2014). It has to a large extent, militated against the objectives for which JAMB was established to achieve. Examination malpractice is a broad name for all forms of misconduct, which include; cheating, copying, spying, being in possession of unauthorized materials, use of Android handsets, impersonation among others. A frightening dimension is the involvement of parents, guardians and examination oficials in this unwholesome act. Consequently, the quality of candidates admitted by JAMB and the performance of undergraduates began to deteriorate yearly despite their good grades in their Ordinary Levels School Certificate Examinations and high scores in the Unified Tertiary Matriculation Examinations (UTME) conducted by JAMB Kpolovie, Joe and Okoto, (2014). At a time, the Ex-President of Nigeria, Olusegun Obasanjo alleged that JAMB was full of corrupt practices which had affected the standards of education in Nigeria (Ande, 2006).

This necessitated the calls by some universities and other stakeholders for a Post-Unified Tertiary Matriculation Examination (Post-UTME) (Olalekan, 2013). The first Post-UTME took place across the federation during 2005/2006 academic session. After over thirteen consecutive Post-UTME screenings, the issues of assessment of the effectiveness of Post-UTME screening in admitting candidates into the Nigerian universities have taken the front burner. Since then, many university administrators see it as a panacea to the problems associated with admitting new entrants into the Nigerian universities. Again, in 2016, the use of Post-UTME as a final measure for selection of candidates by universities was scrapped by the Federal government of Nigeria. The decision was taken by the Federal government due to the poor performances of learners in the universities and reports from the general public of the incompetence of Post-UTME screening test organised by the universities. Some of the factors that informed the ban on Post-UTME include needless duplication of efforts through written (UTME and Post-UTME) for one admission exercise; the risk of travelling on Nigerian roads over long distances; the psychological stress which candidates are exposed to in the Post-UTME exercise; and the extortion called administrative charges by universities.

In 2017, due to the poor performance of newly admitted undergraduates into the university through UTME conducted by JAMB, most universities re-introduced the

Post-UTME screening test for final selection and admission of qualified candidates. To buttress this fact, in an article by the Daily Post of 25th November, 2018, an-online Newsprint, reported that the management of the University of Ibadan has said that it will expel about 328 students' for what is called 'shameful academic results' in the 2016/2017 academic session. The Vice-Chancellor of the institution, however, blamed the situation on the absence of the Post-Unified Tertiary Matriculation Examination screening before the affected learners and others in their set were admitted. However, the use of (UTME) was previously used to select qualified applicants into the universities in Nigeria but it was also scrapped by the Federal government due to in-competencies reported on the conduct of the Board.

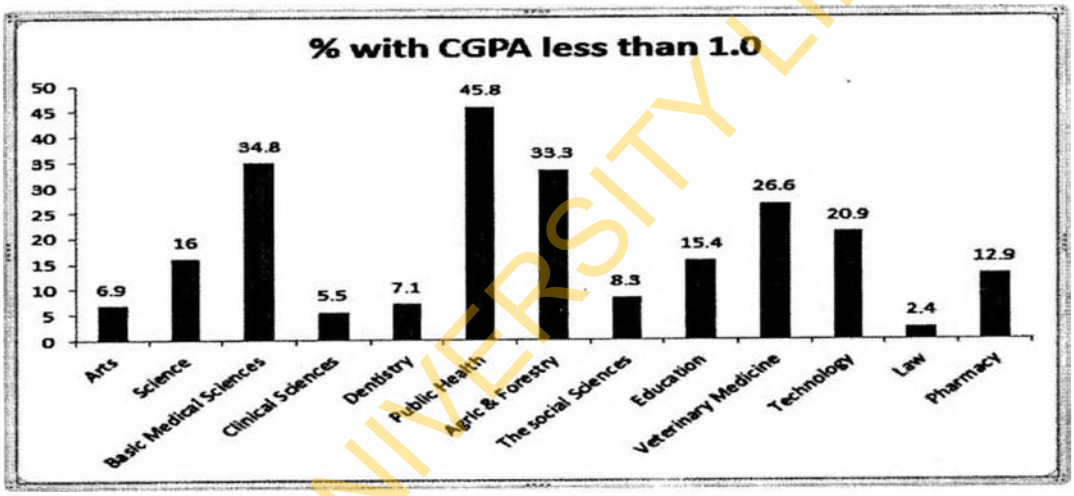

Figure 1. Undergraduates' Performance (100 Level) With Less Than 1.0 in University of Ibadan 2016/2017 Academic Session (Source: University of Ibadan, 2017)

In 2017, the University of Ibadan Senate suspended 580 undergraduate students out of the 2,961 undergraduate learners admitted in 2016/2017 academic session from the various faculties and departments in the university. This was as a result of their poor performance in their first semester examination. 510 of the learners out of the 2,961 posted a Cumulative Grade Point Average (CGPA) of less than 1.0. Figure 1. shows the breakdown of undergraduate learners' performance in the first semester of first year 2016/2017 academic session. It can be deduced from figure 1. that Faculties of Basic Medical Sciences, Public Health, Agriculture and Forestry, Veterinary Medicine Technology and Science had 16% to 45.5% of undergraduate who had less than 1.0 CGPA. This poor performance was blamed on the decision of JAMB to scrap the Post-UTME screening conducted by individual universities. It was believed that candidates were not properly screened and selected before admission into their institutions of choice.

Among other sources of concern is the placement of students into departments and disciplines by the universities based on the students' performance in the Post-UTME screening and the availability of spaces (Robbins, Lauver, Le, 2004). The proposed choice of course of study by some candidates sometimes ends up not being the course admitted for by the university. An alternative course of study is offered to the learners by the university which sometimes distresses the interest of the undergraduates.

In view of these inconsistences, policies summersaults and dearth of research on access to universities, there is a strong need to understand the best measures to adopt. Thus, the paper examined the causal effect among undergraduates' entry requirements as well as how students' personal variables can influence academic performance of the undergraduate in the Faculty of Science, University of Ibadan, Nigeria. The researcher also found how students' personal variables such as: mental ability, undergraduates' interest in university education, career aspiration and gender could influence the academic performance of the undergraduates. The Faculty of Science, University of Ibadan, Nigeria which was the focus of this study, have been conducting Post-UTME screening for over thirteen academic sessions. Therefore, it becomes necessary to investigate the causal linkages among entry examinations grades, students' personal variables and academic performance of undergraduates in the faculty of Science, University of Ibadan.

Several researches had been conducted in various aspects of admission process into universities but there is dearth of research that combined cognitive and student personal variables together. To this end, this paper examined the causal linkages among SSSCE results, UTME scores, Post-UTME scores and other students' personal variables such as undergraduates' mental ability, undergraduates' interest in university education, career aspiration, gender and academic performance of undergraduates in the faculty of science, university of Ibadan, Nigeria using causal modelling, the need to fill this gap informed this paper.

Based on the stated problems, the following research questions were raised to guide the study,

1. Is the model which describes the causal effect among the gender, SSCE result, UTME scores, Post-UTME scores, mental ability, career aspiration, interest in university education academic performance in the faculty of science consistent with the empirical data?
2. What is the most meaningful causal model, explaining students' personal variables, entry requirements and academic performance of faculty of science undergraduates?

Methodology

The research design adopted for this study was a non-experimental design, of Correlational type. The variables for the study are: Exogenous Variables – gender; endogenous variables - SSCE, UTME scores, Post-UTME scores, mental ability, career aspiration and interest in University Education; whereas the Criterion variable include undergraduate's academic performance in PHY 103 and MATH 121 in 100 level. The population of the study comprises of all undergraduate in the Faculty of Science, University of Ibadan.

The population of the study comprised all undergraduate science students in the Faculty of Science, University of Ibadan. Multi-stage sampling procedure was used to select participants. Purposive sampling was adopted in selecting two courses mostly taken by undergraduate in the Faculty of Science PHY 103 and MATHS 12 because these courses are offered by most undergraduates in the faculty of Science. In the second stage, purposive sampling was also used to select 6 out of 11 Departments in the Faculty of Science that offer the two selected 100 level courses (PHY 103 and MATH 121) and use it to measure the performance of undergraduates in the Faculty of Science. Hence, a total of three hundred and seventy six (376) undergraduates constituted the sample for this study. Table 1, shows the sample framework.

Table 1. Undergraduates in the Sampled Departments in the Faculty of Science who responded to the questionnaires by Gender.

S/N	Department	No of Males	No Females	Total	% of Males in the Sampled Population	% of Females In the Sampled Population
1.	Chemistry	12	28	40	5.56	9.78
2.	Computer Science	45	7	52	20.83	2.44
3.	Geology	31	11	42	14.35	3.85
4.	Mathematics	41	12	53	18.98	4.20
5.	Physics	50	2	52	23.15	0.69
6.	Statistics	37	10	47	17.12	3.67
Total	**6**	**216**	**70**	**286**	**75.54**	**24.46**

Methodology

The research design adopted for this study was a non-experimental design, of Correlational type. The variables for the study are: Exogenous Variables – gender; endogenous variables - SSCE, UTME scores, Post-UTME scores, mental ability, career aspiration and interest in University Education; whereas the Criterion variable include undergraduate's academic performance in PHY 103 and MATH 121 in 100 level. The population of the study comprises of all undergraduate in the Faculty of Science, University of Ibadan.

The population of the study comprised all undergraduate science students in the Faculty of Science, University of Ibadan. Multi-stage sampling procedure was used to select participants. Purposive sampling was adopted in selecting two courses mostly taken by undergraduate in the Faculty of Science PHY 103 and MATHS 12 because these courses are offered by most undergraduates in the faculty of Science. In the second stage, purposive sampling was also used to select 6 out of 11 Departments in the Faculty of Science that offer the two selected 100 level courses (PHY 103 and MATH 121) and use it to measure the performance of undergraduates in the Faculty of Science. Hence, a total of three hundred and seventy six (376) undergraduates constituted the sample for this study. Table 1, shows the sample framework.

Table 1. Undergraduates in the Sampled Departments in the Faculty of Science who responded to the questionnaires by Gender.

S/N	Department	No of Males	No Females	Total	% of Males in the Sampled Population	% of Females In the Sampled Population
1.	Chemistry	12	28	40	5.56	9.78
2.	Computer Science	45	7	52	20.83	2.44
3.	Geology	31	11	42	14.35	3.85
4.	Mathematics	41	12	53	18.98	4.20
5.	Physics	50	2	52	23.15	0.69
6.	Statistics	37	10	47	17.12	3.67
Total	**6**	**216**	**70**	**286**	**75.54**	**24.46**

Five instruments were used to answer the research questions. These instruments includes:

i. Inventory on Admission and Academic Records of Undergraduates
ii. Learning Outcome Inventory of Sampled Undergraduates
iii. Questionnaire on Undergraduate Students' Career Aspiration
iv. Questionnaire on Undergraduate Students' Interest in University
v. Mental Ability Test for Undergraduate Students

i. Admission and Academic Records of Undergraduates (AARU)

It is an inventory that was used to collect secondary information on selected student's Bio-data and Admission information from the Admission office in the University of Ibadan, Ibadan. The inventory was used to gather information on the number of students, students' enrolment by year and geopolitical spread in the 2017/2018 academic session, students' enrolment by discipline, and age. Also, other factors of concern in this study like the SSCE, NECO, UTME scores, Post-UTME scores and gender were gotten by using instrument.

ii. Learning Outcome Inventory of Sampled Undergraduates (LOISU)

The learning outcome inventory of Sampled Undergraduates (LOISU) was used to collect secondary data on the pattern of performance in PHY 103 and MATH examination results of first year undergraduates in the sampled departments, Faculty of Science were obtained. This was to determine the relationship between entry results, student's personal variables and undergraduates' performance. Information on undergraduates' academic records is kept by the course advisers of the various courses. No validation on these two instruments was done because the two instruments employed for data collection were the original records which was collected from the Course Advisers. Thus, they were adjudged to be correct, authentic and reliable. This agrees with the recommendations of (Wiseman, 1999; Johnson and Christensen, 2000 and Borich 2004).

iii. Questionnaire on Undergraduates' Career Aspiration (QUCA)

The Career aspiration questionnaire was adapted from O'Brien (1996) Career Aspiration Scale (CAS) and Students' Assessment of Career Development Activities. The Student's Assessment of Career Development Activities was adapted from A kit of career education assessment and evaluation instruments developed by the Wisconsin K-12 career education consortium, the instrument was a third draft of an instrument piloted during the 1974-75 school year in science classes at Medium West High School in the United States. The questionnaire had 27 items which undergraduates responded to on a four-point Likert scale. This instrument was used to capture information on undergraduates' career aspiration.

iv. Questionnaire on Undergraduates' Interest in University (QUIU)

The questionnaire on undergraduates' interest in university education was developed by the researcher. This instrument was designed to enable the researcher measure the extent of interest in university education by undergraduates in the Faculty of Science and the causal effect with performance. It contained 18 items and a four-point response scale which the respondents responded to. Both the Validity and Reliability of the instrument was carried out by the researcher.

v. Mental Ability Test for Undergraduate (MATU)

The Mental Ability Test was designed and adopted from the series of Sawaal and India Bix Mental Ability Test. The instrument was used to capture information on undergraduates' mental ability and it contained 25 items. The instrument had items which determined undergraduates' abilities on logical sequence of questions and answers and verification of truth of statements, etc. This instrument was basically used to measure intelligence and accuracy of first year undergraduates in the Faculty of Science, University of Ibadan.

Validation of the Instruments

The instruments developed and adapted by the researcher were given to experts for face, content and construct validity. The instruments were trial tested on a different population with similar characteristics with the intention of establishing the reliability of the instruments. Cronbach alpha reliability analysis was used for Mental Ability Scale, Interest in University Education and Career Aspiration Questionnaire. Cronbach alpha of 0.78 was obtained for the Mental Ability Test, while 0.82 was obtained for career aspiration and Cronbach alpha of 0.83 was obtained for students' interest in university education.

The data collected were analysed using descriptive statistics and partial least square- structural equation modelling (SEM) involving a multivariate analytical technique known as path analysis to answer both research questions. The choice of multivariate approach was made because of the fact that it enabled the researcher to establish the combined effect of the predictor variables as well as isolate their separate contributions to the criterion variable (Kerlinger and Lee, 2002).

Results

Research Question 1: Is the model which describes the causal effect among Gender, SSCE result, UTME scores, Post-UTME scores, Mental Ability, Career aspiration, Interest in University Education and Academic Performance in the Faculty of Science, University of Ibadan Consistent with the Empirical Data?

Table 2 : Significance of the Path Coefficient of Causal Model of Gender, SSCE result, UTME scores, Post -UTME scores, Mental Ability, Career Aspiration, Interest in University Education, and Performance in the Faculty of Science, University of Ibadan

Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Remark	Remark
CAR_ASP -> ACA PER	-0.048	-0.053	0.085	0.563	0.574	NS	Deleted
CAR_ASP -> INT_UNI	0.629	0.631	0.044	14.249	0.000	S	Retained
GENDER -> ACA PER	-0.163	-0.154	0.072	2.261	0.024	S	Retained
GENDER -> CAR_ASP	0.105	0.107	0.076	1.374	0.170	NS	Deleted
GENDER -> INT_UNI	0.047	0.051	0.052	0.903	0.367	NS	Deleted
GENDER -> MEN_AB	0.233	0.192	0.151	1.545	0.123	NS	Deleted
GENDER -> PUTME	-0.084	-0.081	0.061	1.387	0.166	NS	Deleted
GENDER -> SSCE	0.048	0.047	0.078	0.616	0.538	NS	Deleted
GENDER -> UTME	-0.18	-0.178	0.087	2.068	0.039	S	Retained
INT_UNI -> ACA PER	0.24	0.249	0.087	2.758	0.006	S	Retained
MEN_AB -> ACA PER	0.027	0.006	0.072	0.368	0.713	NS	Deleteed
MEN_AB -> CAR_ASP	-0.207	-0.155	0.168	1.231	0.219	NS	Deleted
MEN_AB -> INT_UNI	0.044	-0.001	0.089	0.5	0.617	NS	Deleted
PUTME -> ACA PER	0.231	0.233	0.058	4.013	0.000	S	Retain
PUTME -> CAR_ASP	0.085	0.085	0.076	1.117	0.264	NS	Deleted
PUTME -> INT_UNI	0.051	0.052	0.061	0.834	0.405	NS	Deleted
PUTME -> MEN_AB	-0.042	-0.005	0.123	0.344	0.731	NS	Deleted
SSCE -> ACA PER	0.242	0.244	0.069	3.536	0.000	S	Retained
SSCE -> CAR_ASP	-0.119	-0.119	0.079	1.505	0.133	NS	Deleted
SSCE -> INT_UNI	-0.085	-0.082	0.055	1.55	0.122	NS	Deleted
SSCE -> MEN_AB	-0.161	-0.095	0.152	1.06	0.290	NS	Deleted
SSCE -> PUTME	0.158	0.158	0.059	2.659	0.008	S	Retained
SSCE -> UTME	0.152	0.148	0.082	1.85	0.065	NS	Deleted
UTME -> ACA PER	0.197	0.193	0.064	3.103	0.002	S	Retained
UTME >CAR_ASP	0.031	0.037	0.075	0.415	0.678	NS	Deleted
UTME -> INT_UNI	-0.089	-0.086	0.058	1.543	0.124	NS	Deleted
UTME -> MEN_AB	-0.027	-0.018	0.079	0.343	0.732	NS	Deleted
UTME -> PUTME	0.322	0.319	0.066	4.857	0.000	S	Retained

Table 2 shows the significance of the path coefficients in the PLS-SEM causal model of gender, SSCE result, UTME scores, Post-UTME scores, mental ability, career aspiration, interest in university education and academic performance in the Faculty of Science. The Table showed that out of the 27 paths that made up the model only 9 paths were significant in the model while 18paths were not significant in the model, thus, all the paths that are not significant were removed to obtain the most significant model (parsimonious model) that can be used to predict academic performance of the undergraduates in the faculty of science, university of Ibadan. The implication of the result is that the hypothesized model shows that the significant paths are true predictors of undergraduates' academic performance in the first academic year.

Research Question 2: What is the most Significant Causal Model Explaining Students' Variables, Entry Requirements and Performance of Faculty of Science Undergraduates?

In order to isolate the most significant causal model explaining learners' variables, entry requirements and performance of Faculty of Science undergraduates in university Ibadan, the paths with insignificant coefficients were removed from the hypothesized model and thereafter, the model was re-specified and in turn estimated. The result is presented in Figure 2.

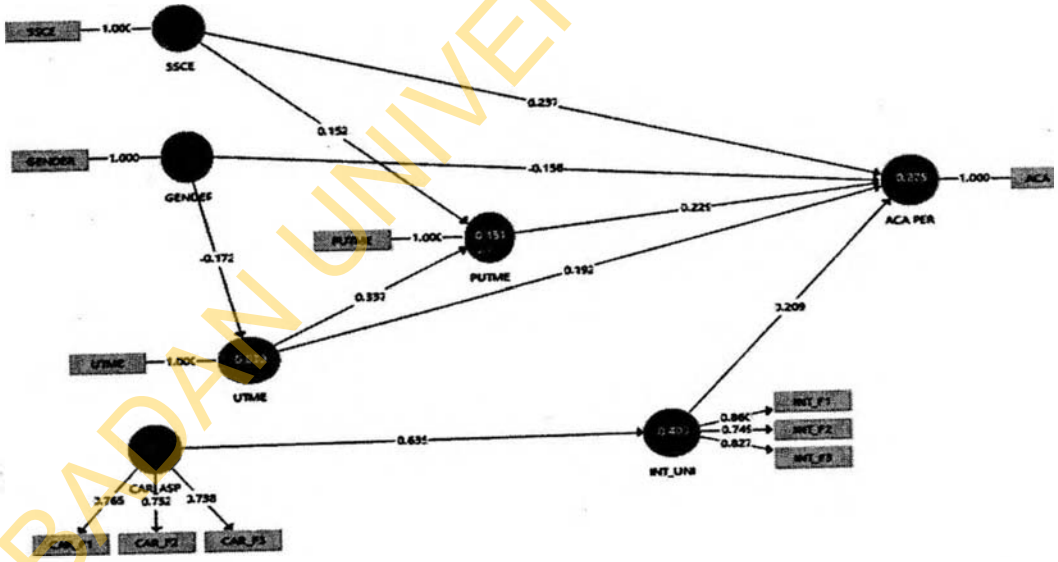

Figure 1 : Validated model of students' personal variables, entry requirements and academic performance of Faculty of Science undergraduates.

Discussions

Figure 1 shows the most meaningful model explaining students' personal variables, entry requirements and academic performance of undergraduates in the Faculty of Science. The model showed that only mental ability was not significant in the model and is not important in the explanation of students' personal variables, entry requirements and academic performance of undergraduates in the faculty of science. Students' personal variables such as: Interest in university education, Career Aspiration, and Gender as well as SSCE results, UTME and Post-UTME scores were found to be significant in the model determining the academic performance of first year undergraduates in the faculty of science, university of Ibadan. This finding implies that although the mental ability of a student is the possession of inborn abilities that are required to do something or get something done, however, these abilities otherwise known as intelligence quotient is limited to the student's ability to successful perform in a particular task while in the university. Mental ability does not paint the full picture of the individual's intelligence, it also requires the other domains of learning (psychomotor and affective) such as soft skill that are equally important part of a successful student academic performance in the faculty of Science in University of Ibadan, Ibadan.

The findings on the consistency of structural model revealed that the structural model is consistent with the empirical data through item reliability, consistency of each variable and the typical variance gotten. This finding supports the recommendation of Hair, Black, Babin and Anderson (2010), Afari, Alldrige, Fraser and Khine (2013) recommended that items reliability should be assessed by their respective factor loading on the underlined construct. Hair et al (2010) and Afari and Khine (2006) concluded that items are considered reliable if its factor loading is high. Furthermore, a construct is said to be reliable when it returned a value of higher coefficient reliability for predictive model.

The result regarding the most significant causal model explaining students' variables, entry requirements and performance of Faculty of Science undergraduates revealed that mental ability was not important in the explanation of students' variables, entry requirements and performance of Faculty of Science undergraduates. This result corroborates that of Oladipo-Abodunwa (2019) who found out that all the paths that are not significant were removed to obtain the most significant model (parsimonious model) that can be used to predict mathematics achievement. The result also agrees well with that of Odule (2017) who worked on students characteristics and opportunity to learn as determinants of achievement in measurement and evaluation among college of education learners in South-West, Nigeria and found that thirty-one out of thirty-six paths were significant in explaining the causal modelling for achievement in measurement and evaluation among college of education learners. To corroborate this findings, Bloom, Engelhart, Furst, Hill, Krathwohl (1956) states that there are three basic domains that make learning possible namely; the cognitive, affective and psychomotor domains.

The cognitive domain which focuses on ones' mental ability cannot function in isolation to contribute to effective learning without the contribution of the other domains. This makes it difficult for meaningful learning to take place by focusing only on a Childs mental ability. Similarly, researchers have also shown that there are certain learning abilities that a child may be naturally endowed with, others are acquired by nurture. Therefore, since the natural abilities may be traced to mental connectivity, a learner can equally acquire some learning prowess by nurturing other areas of ability which will contribute to performance in learning. Furthermore, research has shown that emotional intelligence has an incremental power to predict academic performance above and beyond the effect of general mental abilities. This position was supported by the study by Lopes, Salovey, Cole and Beers (2005) as they found that the ability to regulate emotions, as measured by a test of Emotional Intelligence was able to explain the quality of the social interactions of individuals with their peers, and that the explanatory power of Emotional Intelligence was above and beyond personality traits and verbal and fluid intelligence. Attention has therefore been drawn to the need for the development of students' emotion and emotional intelligence as this is as vital as mental intelligence of the student.

Conclusion

The Entry requirements (SSCE/NECO results, UTME and Post-UTME scores) into universities in Nigeria are meant to select and admit qualified candidates who will perform well in their academics. Based on the findings, it can be concluded that the objectives of SSCE/NECO, UTME by JAMB and the Post-UTME screening tests conducted by universities have to some extent, been achieved, except for improved strategies while selecting and admitting candidates into the university. Conversely, it is pertinent to note that students' variables such as interest in university education, career aspiration and gender have positive effect and can determine the performance of university undergraduates in Faculty of Science, University of Ibadan alongside the entry examinations (SSCE results, Post-UTME and UTME scores. Thus, it is very important to put these students' variables into consideration, most especially before and even after admission of undergraduates into the university. Not considering and determining the effect of these learner variables could be some of the reasons for the undergraduates' under performance in the university. Hence, undergraduates' interest in university education and career aspiration should be closely monitored and encouraged by both parents and the university management so as to enhance the involvement, dedication and performance of undergraduates in their academics.

Recommendation

i. Interest in university education, career aspiration, gender, alongside performance in Senior Secondary School Examinations and Post Unified Tertiary Matriculation, was important in determining academic performance of first year science undergraduates in the University of Ibadan. Therefore, criterion on student's personal variables should be included in assessing candidates' capability for academic study.

ii. The Nigerian government is encouraged to work with its statutory policies on access to university education in order to improve the performance of undergraduates. If this in place, the new suggested policies to be formulated by government would be an advantage to the examining bodies. University administrators should consider individual candidate's interest and their career aspiration before placement into alternative departments whenever the candidate does not meet up with the cut of mark for the initial course of study.

iii. Institutional support services should be done at regular intervals with undergraduates in order to detect areas of academic testing on time and necessary remediation.

iv. Regular career talks and seminars should be organised by institutions because it will encourage mentoring and motivate undergraduates in their various disciplines.

v. Parents are encouraged to offer support to their wards in their career choices in order to boost their performance.

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