READINGS IN TEACHING PEDAGOGY, EDUCATIONAL EVALUATION AND RESEARCH
Festschrift in Honour of an Academic Legend

PROFESSOR ROMY OKOYE

Edited by
Ngozi Nwabugo Agu
Christy Amaechi Ugodulunwa
Nkechi Mary Patricia Esomonu

READINGS IN TEACHING PEDAGOGY, EDUCATIONAL EVALUATION AND RESEARCH

A Festschrift in Honour of an Academic Legend

Professor Romy Okoye *NAE*

April 2024

READINGS IN TEACHING PEDAGOGY, EDUCATIONAL EVALUATION AND RESEARCH

A Festschrift for an Academic Legend

Professor Romy Okoye

Edited by

Ngozi Nwabugo Agu
Christy Amaechi Ugodulunwa
Nkechi Mary Patricia Esomonu

Associate Editors

Nneka Chinyere Ezeugo   Lydia Eleje
Ifeoma Clementina Metu   Njideka Gertrude Mbelede

Dedication

To all who understand the concept of burning the midnight candle in their desire to transfer knowledge
To all the teachers that have to speak understanding above the noise of confusion
To researchers with eyes that have soared through barriers to discover solutions to academic problems
To students who know the reality of *'brain work'* and are potential teachers and eventual researchers

TABLE OF CONTENTS

FOREWORD

I am highly delighted to be given the privilege of writing a foreword for the festschrift of Prof. Romy Okoye. Usually during University graduation ceremonies, a University Registrar, while presenting any class of graduating students to the Chancellor of the University to be awarded the relevant specific degree they studied for, will repeatedly use the phrase – *"Who have been found worthy in Character and Learning"* - in reference to the students. This, obviously, is to clearly affirm that any graduate of any such University will represent the lofty values the institution so pricelessly cherish. Professor Romy Okoye, from what I know about him, has by all standards, fulfilled the requirements to be awarded that phrase, in all aspects, due to the exceptional value he brought to bear in discharge of his duty as a professional teacher. He was exactly what the students needed; he was popular with colleagues; and he was more than above average in safeguarding the University assets.

Professor Romy Okoye is by every standard, a model of a lecturer who is absolutely down to earth in his strides to inculcate knowledge to his students. He is a mentor who teaches with character to fashion out a total man at the end of the day. He is very sound and fastidious in the discharge of his teacher education duties. Every young lecturer wishes Prof. Romy trained them, and his colleagues are at home in partnership and collaborative academic and research efforts with Prof. Romy, as he is fondly referred to.

I appreciate all those that thought of and brought to fruition this Festschrift. A Festschrift is a collection of articles published in honour of a scholar. Friends and colleagues of Prof. Romy Okoye, who recently retired from the services of Nnamdi Azikiwe University, decided to publish this Festschrift titled – **'*Readings in Teaching Pedagogy, Educational Evaluation and Research'* -** in his honour. This book is a compendium of research works in honour of dedication to duty, selfless service to humanity and transparent, transformative and legendary academic leadership. Prof. Romy highly deserves to be so honoured and all the colleagues and friends of Prof. Romy who anchored this publication will surely be blessed for giving him this merited honour.

This book has articles covering various disciplines within and outside Education with most of them dwelling on the areas of Educational Measurement, Evaluation and Research, such as: instrument development; curriculum design; implementation and evaluation; computer-based testing; and issues

on testing in education in general. It is not surprising that most of the articles dwelt on Educational Measurement, Evaluation and Research since that is the area of specialization of Prof. Romy Okoye.

Contributors of the festschrift came from different parts of Nigeria and even beyond. The papers are incisive, addressing relevant and current issues in Education. I have no doubt that researchers and Educationists will find them interesting and useful. I therefore, recommend this book to all lovers of education, teaching and research.

Prof. Frederick J. C. Odibo
Special Assistant to the Vice Chancellor on Academic Matters
Nnamdi Azikiwe University
Awka, Nigeria

PREFACE

This book is written to express our gratitude to Professor Romy Okoye for his numerous contributions in the field of Educational Evaluation, Research and Statistics. It is written in honour of Professor Romy Okoye, on his retirement from active service from Nnamdi Azikiwe University, Awka, Nigeria after meritorious years of service as a distinguished professional teacher educator, an academic giant and rock of great repute in the field of educational measurement and evaluation, research and statistics. The book is a collection of a rich number of diverse contributions by colleagues, students, mentees, friends and collaborators from all over Nigeria.

Professor Romy Okoye is a seasoned academic, a rugged and dogged scholar, who constantly not only queries the status quo but proffers solution to knotty problems that defy solutions. He is an exemplary educator of great repute who has made an indelible mark in the field of Educational Evaluation, Research and Statistics, as well as Education in general. We celebrate the man, who has no place for absenteeism, lateness, laziness, favouritism, sorting and myriads of contemporary problems in the present day higher education in Nigeria through this Festschrift written in his honour. Professor Romy Okoye has over the years steered his passion into teaching and research which proved to be an excellent medium for initiating thousands of students and colleagues to the beauty of educational evaluation, research and statistics.

Contributions of scholars in honour of Professor Romy Okoye are presented in 42 chapters covering mainly topics and issues relating to educational measurement and evaluation, educational research, and other related areas in education. Topics in educational measurement include: test item calibration and arrangement; peer and self-assessment; development and validation of achievement tests; item analysis; continuous assessment; assessment of big data; and programme evaluation, among others. Chapters under research and statistics dwelt on issues in developing research skills, effective research project supervision, and research tools; while those under general education focused on security challenges, curriculum development, inclusive education, psychosocial development, philosophy and human development, self-regulation in academic success, among others.

This book is a compendium of relevant topics in educational measurement and evaluation, research and statistics, effective teaching and management practices and interesting topics in education. It is

a must read for students, researchers and other stakeholders in education. Scholars who desire to grow in the field of education will find this book an indispensable companion.

We are greatly indebted to colleagues, students, mentees, friends, and collaborators of Professor Romy Okoye who contributed in no small measure in making this dream come true. We are grateful to you for honouring Professor Romy Okoye.

Christy Amaechi Ugodulunwa
Professor of Educational Evaluation
Nnamdi Azikiwe University, Awka
For the Editors

Memoirs of an Academic Legend

An effective teacher is no longer a hearer of lessons but a director of learning. He recognizes subject matter not as an end in itself but as a means to the development of human personality. He is willing to work with students as they are, rather than as they are expected to be (Groulier, 1985).

There are heroes and then, there are legends. While heroes may be forgotten, legends are always remembered. They are like the proverbial sword in the stone that stand as a beacon of hope for generations past, present and future. Prof Romy Okoye is unarguably an academic legend. He is renowned for his unbeatable mastery of the art of teaching and his skill in the research field.

Prof Romy, as he is popularly called, is an extraordinary teacher. He can convince a person that a pig can fly with his meticulous and expository manner of teaching. There has never been a misunderstanding or confusion that has arisen in his classroom that he hasn't dispelled systematically and intentionally.

I am a product of Prof Romy's legendary teaching. I had met a lot of boring lecturers during my secondary school and undergraduate days that I was gobsmacked to be in Prof. Romy's class. His teaching was a breath of fresh air. In fact, Prof Romy's teaching changed the course of my academic pursuit from Curriculum Studies to Educational Measurement, Evaluation and Research. He is a teacher per excellence.

In the Research field, Prof Romy is a force to be reckoned with. He is a Research enigma who always knows his subject matter like the back of his hand. He would fish out discrepancies in poorly presented research works without batting an eyelash. In the international research community, Prof Romy upholds a standard that is a challenge. When he sits in a pew among researchers when research is being discussed, his contribution is always apt and astounding.

Prof Romy is an academic legend. He is renowned for his intrinsic academic knowledge and experience. His academic strength goes beyond his infallible pattern of teaching and his immense

success in the research community to the academic presence he possesses. His speech would detail his years of experience without any barriers. His age is not an obstacle but a propeller.

Let me tell you about father of many. Prof Romy's kindness is legendary. He is not known for speaking unkind or demeaning words to anyone. He kills the stereotypical reality in the world of academics where intelligence and achievements are often accompanied by pride and meanness.

There have been heroes and will be heroes that have wowed many people in the academic community, but Prof. Romy is a legend with a record sealed in stone.

Ngozi Nwabugo Agu
Professor of Educational Evaluation and Research
Nnamdi Azikiwe University, Awka
For all Prof. Romy's Students and Mentees

Notes on the Chief Editors

Ngozi Nwabugo Agu is Professor of Educational Evaluation and Research in Nnamdi Azikiwe University, Awka, Nigeria where she has been a lecturer for 32 years and still counting. She is a motivated teacher and researcher. She is skilled in the assessment of academic strengths and weaknesses of students and in developing strategies to enhance students' learning. She is also adept at conducting academic research geared towards improving learning, learning pursuits, learning methods, and learning strategies. Her specific areas of expertise are in:

1. Student and Teacher Evaluation
2. Academic Administration
3. Curriculum Evaluation

1. Research
2. Empirical studies in Education
3. Public Speaking

4. Teaching
5. Student Relations
6. Evaluation of Programs
7. Communication

Administratively, Ngozi N. Agu has held many key positions in which she served her University and community meritoriously. Currently, she is the Director of Environmental Conservation and Beautification in Nnamdi Azikiwe University. Professionally, she is a member of different reputable professional bodies which include, among others, Association of Educational Researchers and Evaluators of Nigeria (ASSEREN), Nigerian Academy of Education (NAE), International Association for Educational Assessment (IAEA).

Christiana Amaechi Ugodulunwa is a Professor in the Department of Educational Foundations, Faculty of Education, Nnamdi Azikiwe University, Awka, Nigeria. She is a professional teacher, a researcher and an evaluator with several years of experience in teaching educational measurement and evaluation, research and statistics at the University of Jos, Alex Ekwueme Federal University Ndufu Alike, Ebonyi State and currently in Nnamdi Azikiwe University, Awka, Anambra State. She obtained her first degree from the University of Nigeria, Nsukka and her Master's and Doctoral degrees in Measurement and Evaluation from University of Jos, Nigeria. She has a Postgraduate Diploma in Monitoring and Evaluation (PgDME) from University of Stellenbosch, South Africa. She is a Fellow of the Association of Educational Researchers and Evaluators of Nigeria (ASSEREN), a member of the Nigerians Academy of Education (NAE), and a member of the International Association for Educational Assessment (IAEA), among other professional associations.

Lady Nkechi Patricia-Mary Esomonu *jp* is a Professor of Educational Measurement, Evaluation, Research and Statistics at Nnamdi Azikiwe University, Awka. She has served the University in many capacities including, Director, Affiliate Institutions; Dean, Faculty of Education; Associate Dean, School of Postgraduate Studies, Member, 7th University Governing Council, among others.
Prof Esomonu has attended many national and international conferences. She has over 155 academic materials which include index journal articles, books, edited books, chapters in edited books and volumes of edited journals. She is the 65th Inaugural Lecturer of Nnamdi Azikwe University, Awka.

She is a Fellow, Science Teachers' Association of Nigeria (FSTAN), Fellow of Wice (FWICE), member, Nigerian Academy of Education (MNAE), member, International Association for Educational Assessment (iaea), a member, Association of Educational Researchers and Evaluators of Nigeria (ASSEREN). Her impressive doer skill culminated into her having worked as a chairman of over 65 Committees within the academic institutions and the wider society.

Notes on the Associate Editors

Nneka Chinyere Ezeugo started her journey as a lecturer from Nwafor Orizu College of Education Nsugbe, but presently is a Senior Lecturer in the Department of Educational Foundations, Nnamdi Azikiwe University Awka (measurement and evaluation option). As a professional teacher, she has put in several years of teaching research methods and statistics, educational measurement and evaluation. She obtained her first degree from the University of Ibadan, Masters' degree from University of Nigeria Nsukka and a Doctorate degree from Nnamdi Azikiwe University Awka. Dr N.C. Ezeugo is a member of some professional bodies like Association of Educational Researchers and Evaluators of Nigeria (ASSEREN), Association of Behavioural Research Analysts and Psychometricians (AB-ReAP) and she has some publications to her credit in both National and international journals.

Lydia Eleje is a Lecturer at the Department of Educational Foundations, Faculty of Education, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria. She holds a Masters and Ph.D in **Educational Measurement, Evaluation and Research.** Presently, she is a member of Editorial Board of Open Journal of Educational Research, Journal of Education, Teaching and Social Studies and Integrity Journal of Education and Training. She is currently contributing to capacity building in training of over 4000 Undergraduate Students in Nigeria. She pioneered the **development and validation of Diagnostic** test and **Achievement test** researches for diagnosing students' strengths and weaknesses, and achievement in quantitative economics. She has a special interest in promoting quality of teaching, evaluation and research, instrumentation, diagnostic testing (Education) and item analysis. She is a reviewer to numerous international Journals including Vision: The Journal of Business Perspective. She has numerous publications in local and international Journals.

Ifeoma Clementina Metu is a lecturer at the Department of Educational Foundations, Nnamdi Azikiwe University, Awka where she teaches courses that cut across Educational Research, Statistics, Measurement and Evaluation. She holds a Ph.D in Measurement and Evaluation from University of Nigeria. Her areas of interest include Scale Development, Data Analysis and Interpretation, and Evaluation of Test and Measures. She reviews articles for both local and international journals. She is a member of many professional bodies including ABREAP and ASSEREN.

Njideka Gertrude Mbelede is a lecturer at Nnamdi Azikiwe University Awka, Nigeria. She is an expert in Measurement and Evaluation, majored in instrumentation and data analysis. She is an innovative educator versed in history of facilitating student learning. She has won and completed a research grant from Women in Measurement, (WIM) Inc. USA centered on bridging the gap of women underrepresentation in echelon positions of examination boards in Nigeria. She was a Rector of Homik Oil and Gas Facility Engineering Polytechnic Port Harcourt, Nigeria and the centre

manager at the National Teachers' Institute Kaduna, Nigeria. Dr. Njideka is an editor of reputable local and international journals and has publications nationally and internationally. She adapts to students' needs to deliver top-quality lectures and seminars. Leads and supervises in-depth research projects on educational issues. She guides both online and in-class discussions with innovative instructional techniques. She excels in discussion-driven environments with strong skills in research, communication and instruction and works collaboratively to gather and disseminate data for diverse research grants and projects, supports diversity, equity, and inclusion as guiding principles in delivery services.

Notes on the Contributors

Dr Achilike I Nicholas Ph.D
> Department of Business Administration, Alex-Ekwueme Federal Univeristy, Ndufu-Alike Ikwo, Ebony State Nigeria.

Prof. Christiana Amaechi Ugodulunwa Ph.D.
> Department of Educational Foundations, Faculty of Education, Nnamdi Azikiwe University, Awka, Anambra State

Mr Peter Olorunmowaju AJAYI
> Department of Educational Psychology and Counselling,
> Federal College of Education (Technical) Asaba, Delta State Nigeria

Dr Ihenacho, U.O. Ph.D
> Department of Business Education.

Ike-Obioha, B.U. Ph.D
> Department of Educational Foundations/Administration,

Duru, N.D. Ph.D
> Department of Educational Psychology/Guidance and Counselling,

Ihem C.U. Ph.D
> Department of Early Childhood care and Education, Alvan Ikoku Federal University of Education, Owerri, Imo State, Nigeria

Owoyemi, Mariam Adebusola
> Department of Early Childhood Care and Education, College of Education, Science and Technology Omu-Ajose, Ogun State, Nigeria

Orjinta, Esther Olayemi SikiruAdetona
> Department of Early Childhood Care and Education, College of Education, Science and Technology Omu-Ajose, Ogun State, Nigeria

Adams Andrew Attah
> Department of Social Science & Humanities, School of General Studies Federal College of Education (Technical) Asaba

Nwanze Obindu
> Department of Social Science & Humanities, School of General Studies Federal College of Education (Technical) Asaba

Prof Justina I. Ezenwafor MNIM, FABEN, FCIRS
> Professor of Business Education

Zainab Lawal Ibrahim, PhD
> Department of Guidance and Counselling, Federal Government College Sokoto, Sokoto. State, Nigeria.

Lukman Fasasi, PhD
> Department of Educational Psychology, FCE (Tech), Asaba, Delta State,Nigeria.

Lawson, Iyene-Emi
> Department of Music (Music

Prof Patience Egboka

Professor of Educational Management and Policy. Department of Educational Management and Policy. Faculty of Education, Nnamdi Azikiwe University, Awka Anambra State, Nigeria.

Dr Chidi Nnebedum

Department of Educational Management and Policy. Faculty of Education, Nnamdi Azikiwe University, Awka Anambra State, Nigeria.

Somtoo Victor Nduka

Department of Educational Foundations, Faculty of Education
Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

Ikeanumba Chukwuemeka Benedict

Department of Educational Foundations, Faculty of Education
Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

Benedicta Chika Fejokwu

Department of Educational Foundations, Faculty of Education
Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

Elijah Tochukwu David

Department of Educational Foundations, Faculty of Education
Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

Dr Kingsley Chinaza Nwosu Ph.D

Associate Professor of Educational Psychology, Department of Educational Foundations
Nnamdi Azikiwe University, Awka Anambra State, Nigeria

Ogechi Anastacia Obioha

Department of Educational Foundations, Nnamdi Azikiwe University, Awka Anambra State, Nigeria

Onochie, Christopher Chukwudi

Department of Computer Education Federal College of Education (Technical) Asaba
Delta State, Nigeria

Maureen Chikanma Aham

Department of Educational Foundations, Faculty of Education, Nnamdi Azikiwe University, Awka, Nigeria.

Dr Lydia Ijeoma Eleje MEd, Ph.D

Lecturer I, Department of Educational Foundations, Faculty of Education, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria.

Olaseinde Felicia Olufemi Ph. D

Department of Arts and Language Education, Ekiti State University, Ado - Ekiti. Ekiti – State, Nigeria.

Dr Felicitas Ogonna Ejinkonye ME.d, PhD

Department of Educational Psychology, School of Education, Federal College of Education, Eha-Amufu, Enugu, Nigeria.

Dr Nneka Chinyere Ezeugo PhD

Senior Lecturer, Department of Educational Foundations, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria.

Blessing Solomon Dawal

Department of Science and Technology Education, University of Jos

Dr. Josephine Eleojo Haruna
Department of Educational Foundations, Faculty of Education, Federal University, Lokoja,

Prof Ngozi N. Agu Ph.D
Professor of Educational Evaluation and Research, Department of Educational
Foundations, Nnamdi Azikiwe University Awka, Anambra State, Nigeria

Anachunam, Christian ME.d
Department of Educational Foundations, Nnamdi Azikiwe University Awka, Anambra
State. Nigeria

Dr Nneka Chinyere Ezeugo Ph.D
Senior Lecturer, Department of Educational Foundations, Nnamdi Azikiwe University
Awka, Anambra State, Nigeria

Ajabor Daniel Nkeonye
Department of Educational Foundations, University of Delta, Agbor

Dr Onyebuchi Geoffrey Chidi Ph.D
Associate Professor of Educational Philosophy, Department Of Educational Foundations,
Nnamdi Azikiwe University Awka

Wogor Emmanuel Akpa
Department of Educational Foundation, University of Nigeria Nsukka, Enugu State, Nigeria.

Dr James Nweke Nnamdi Ph.D
Department of Philosophy. Nnamdi Azikiwe University Awka

Nkereuwem, Ogonna Nchekwube
Language and Communication, Education Department, School of General Studies,
Federal College of Education Technical, Asaba, Delta, Nigeria

Agnes, S. Ojile Ph.D.
Departtment of Educational Foundations, Faculty of Education University of Jos

Ofojebe, Edna Nkechi Ph.D.
Department of Guidance and Counselling, Faculty of Education, Nnamdi Azikiwe
University, Awka

Uzoekwe, Helen Efeyadu,
Department of Guidance and Counselling, Faculty of Education, Nnamdi Azikiwe
University, Awka

Nnadi, Grace Chinyere
Department of Guidance and Counselling, Faculty of Education, Nnamdi Azikiwe
University, Awka

Nwobi, Lovina Ngozika
Department of Guidance and Counselling, Faculty of Education, Nnamdi Azikiwe
University, Awka

Chukwuemeka Benedict Ikeanumba ME.d
Department of Educational Foundations, Faculty of Education, Nnamdi Azikiwe University,
Awka, Anambra State

Kelechi Lilian Anikpe
Department of Educational Foundations, Faculty of Education, Nnamdi Azikiwe University, Awka, Anambra State

Mabekoje, O. Sesan Ph.D
Olabisi Onabanjo University, Ago-Iwoye

Adepoju, Olufemi Adetunji
Department of Guidance and Counselling, University of Education, Oyo

Emmanuel Alayande
Department of Guidance and Counselling, University of Education, Oyo

Fadairo, O. Onyelola
Department of Science Education, School of Technical Education, Yaba College of Technology, Yaba, Lagos State

Dr Florence Ohunene Omuya
Department of Educational Foundations Federal University Lokoja, Kogi State

Dr Josephine Eleojo Haruna
Department of Educational Foundations Federal University Lokoja, Kogi State

Chioma A. Ezimechine
University of Ibadan, Ibadan

Oluchukwu David Okoli
Department of Educational Foundations, Faculty of Education, Nnamdi Azikiwe University.

Anene, Anthony Ndubueze
Department of Educational Foundations, Ebonyi State University, Abakaliki

Dr Okeke, Nkechi Uzochukwu
Lecturer 1, Department of Educational Foundations, Nnamdi Azikiwe University, Awka.

Dr Chidiebere C. Abanobi Ph.D
Department of Educational Psychology, F.C.E. (T), Asaba, Nigeria

Dr Ifeoma C. Metu Ph.D
Lecturer 1, Department of Educational Foundations, Nnamdi Azikiwe University, Awka Anambra State, Nigeria

Joy Chinwe Obunadike
Department of Agricultural and Vocational Education, Michael Okpara University of Agriculture, Umudike

Eje Amuche Elom
Department of Agricultural Education, Joseph Sarwuan Tarka University, Makurdi

Erutujiro, Goodluck
Department of Educational Foundations, NnamdiAzikiwe University, Awka

Uzoukwu, Chimaraoke Goodluck
Department Of Political Science Alvan Ikoku University Of Education, Owerri

Owuamanam, Moses Chukwuma
Directororate Of Socail Sciences, Federal Technology University Owerri

Oluwakemi Olurinola
Olabisi Onabanjo University, Ijebu-Ode, Ogun State (NIGERIA)

Esther Kibga

Aga Khan University, Institute for Educational Development, East Africa (AKU-IED, EA) (TANZANIA)

Fredrick Mtenzi

Aga Khan University, Institute for Educational Development, East Africa (AKU-IED, EA) (TANZANIA)

Iwu, Doris C.

Department of Educational Foundations, Faculty of Education, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria.

Prof. Nkechi Patricia-Mary Esomonu

Professor of Educational Measurement, Evaluation, Research and Statistics, Department of Educational Foundations, Faculty of Education, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

Ohaja Aloysius Munachim

Department of Health Education, Alvan Ikoku Federal College of Education

Da'am Emmanuel Haniya Ph.D

Department of Physical & Health Education, University of Jos

Anyanwu, Stellamaris Ngozi

Department of Health Education, Alvan Ikoku Federal College of Education

Anthonia Chika Ikwelle

Department of Early Childhood Care Education, Nwafor-Orizu College of Education, Nsugbe- Nigeria

Mbelede, Njideka Gertrude

Department of Educational Foundations, Faculty of Education, Nnamdi Azikiwe University Awka

Onyema, Patience Solomon

Department of Educational Foundations, School of Education, Federal College of Education (Technical), Asaba, Delta State

Uchunor, Ifeanyi Christiana

Department of Educational Foundations, School of Education, Federal College of Education (Technical), Asaba, Delta State

Iwezu, Ngozi Caroline

Department of Education Foundations, School of Education, Federal College of Education (Technical), Asaba, Delta State.

Development and Validation of Chemistry Achievement Test for Senior Secondary Two Students

[1]Maureen ChikanmaAham and [2]Lydia I. Eleje (Ph.D)

1 Department of Educational Foundations, Faculty of Education, Nnamdi Azikiwe University, Awka Anambra State, Nigeria.
Email: mc.aham@stu.unizik.edu.ng
2 Department of Educational Foundations, Faculty of Education, Nnamdi Azikiwe University, Awka Anambra State, Nigeria.
Email: li.eleje@unizik.edu.ng, ijeomaexcite@gmail.com
http://orcid.org/0000-0002-8587-289X

Abstract

This study aimed to present a step-by-step procedure on how to develop and validate Chemistry Achievement Test (CAT) for Senior Secondary Two (SS2) students. In this study, two hundred and fifty (250) SS2 students offering Chemistry were used for the trial-testing of 80 objective test items developed. The sample size used for establishing the reliability consisted of 83 SS2 students offering chemistry randomly selected from 4 secondary schools using a systematic sampling technique for determining sample size. Face and content validation of CAT was ensured by developing 80 CAT items using a test blueprint. Subject experts in SS2 Chemistry and two experts in Measurement and Evaluation were also consulted. The test reliability established through the formula 20 gave a coefficient of 0.85 and the test was proven to be of good quality, reliable, and valid. Out of the 80 items, 50 items were found to have difficulty indices ranging from 0.20 to 0.79 and discrimination indices from 0.20 to 0.40. At the end of the analysis, these 50 items were retained. This CAT was therefore recommended for use in assessing SS2 students' achievement in Chemistry and for predicting students' performance in chemistry in their final class (SS3), especially in their external examinations such as the West African Examination Council and the National Examination Council (i.e. WAEC and NECO respectively).

Keywords: Development, Chemistry Achievement test, Validation, Item analysis.

Introduction

Chemistry is one of the science subjects usually considered to be abstract in senior secondary school since it needs a high level of comprehension, deep analysis, keen observation, deductive and inductive reasoning. More so, it takes into cognizance all the facets of our daily lives and deals with some systematic processes referred to as biochemical processes in our body. Teachers are oftentimes involved in the assessment of students' learning outcomes to determine the gaps between what has been learned and what needs to be learned. A major way of assessing students' learning outcomes is through the use of achievement tests. According to Bhagat and Baliya (2010) in Indi and Jumarito (2022, pg15.), "an achievement test is a tool for teachers to measure the

developed skills or knowledge proficiency of an individual in a particular topic that has been taught". Since this testing aims to determine the strengths and weaknesses of the students an expert is needed to develop a test for this special purpose. Therefore, this Chemistry Achievement Test (CAT) was well developed and carefully planned, and its validity and reliability were ensured. Therefore it is a standard test tool that can be used by both chemistry teachers and non-Chemistry specialists in determining the academic achievement of SS2 students. Item analysis was carried out on the CAT item.

Item analysis is a statistical technique that involves a systematic process of selecting and rejecting test items based on their difficulty index, distractibility, and discrimination index. Item Analysis is a very important technique for determining the quality of a test item and for increasing the effectiveness of the test item. Esomonu and Agbonkpolo (2010) and Osadebe (2012) observed that many teachers are not conversant with the construction of valid and reliable test items in their various subject areas. Hence, they find it simpler to develop test items in the lower cognitive levels such as knowledge and comprehension than in the higher cognitive levels application, synthesis, analysis, and evaluation). This causes an educational evaluation problem. Due to these rigorous processes involved in developing a standard test item, most teachers use unstandardized test tools. This is because teachers are always tasked with assessing the students' learning outcomes to determine their learning gaps and learning achievements for every lesson (Bilbad, 2015). Bilbad added that a Learner's achievement in a lesson can be identified when the learning objectives are evaluated. These include evaluating the changes in the cognitive, affective, and psychomotor domains of the learners. Therefore, the validated Chemistry Achievement Test is targeted to be used as an effective test tool for SS2 Chemistry teachers that they can always refer to whenever there is a need to make quick test questions for their class-works, quizzes, and assignments.

Research Questions
The following research questions guided the study:
 1. What are the difficulty indices of the CAT items?
 2. What are the discrimination indices of the CAT items?
3. What are the distracter indices of the CAT items?
4. To what extent is the CAT Item valid according to standard?
5. To what extent is the CAT item consistently reliable in line with the set objectives?

Method
This study is qualitatively designed to standardize chemistry test items that can be used in achievement testing. A sample of 83 students randomly drawn from a population of two hundred fifty (250) SS2 students offering Chemistry was used for the trial-testing of 80 objective test items that were developed. 80 objective test items for the test tried-out yielded the data for item analysis. In analyzing the item, their discriminating indices, distractibility, and discrimination indices were determined.
The development of this CAT involved the following steps;
Step 1: Preparation

Step 2: Development
Step 3: Validation
Step 4: Trial Testing
Step 5: Determining the Sample Size for Analysis
Step 6: Item Analysis
 Conclusion
Recommendation.

Step 1: Preparation

The very first step is to make observations, and reviews of the SS2 Chemistry topics based on the curriculum and the syllabus with which they are taught. These served as the base data and information for the progress of the test development. Then decide on the number of test items you want to develop (here 80 items will be developed), visit the table of contents on selected topics for the class, and prepare a table of specifications to accommodate the three domains of instruction (cognitive, affective and psychomotor domains).

Table 1
The Table of Specifications

S/n	Content	Levels of Educational Objectives						Percent of Time for Test Item (%)
		Knowled	Comprehension	Applic	Analy ly	Synthesis	Evaluation	
1.	Gas laws	(5.00%) 5	(5.00%) 5	(3.00%) 3	(2.0%) 2	(2.0%) 2	(2.00%) 2	20
2.	Acids, Bases & Salts	(7.00%) 7	(7%) 7	(4.20%) 4	(2.8%) 2	(2.8%) 2	(4.20%) 4	28
3.	Electrolysis	(3.00%) 3	(3.00%) 3	(1.80%) 2	(1.2%) 1	(1.2%) 1	(1.80%) 2	12
4.	Redox Reaction	(1.25%) 1	(1.25%) 1	(0.75%) 1	(0.5) 1	(0.5) 0	(0.75%) 1	5
5.	Chemical Bonding	(1.25%) 1	(1.25%) 1	(0.75%) 1	(0.5) 0	(0.5) 1	(0.75%) 1	5
6.	Periodicity	(1.25%) 1	(1.25%) 1	(0.75%) 1	(0.5) 1	(0.5) 0	(0.75%) 1	5

7.	Rates of Reaction	(1.25%) 1	(1.25%) 1	(0.75%) 1	(0.5) 0	(0.5) 1	(0.75%) 1	5
TOTAL		20	20	12	8	8	12	**80**

Source: Aham. M.C (2023).

Step 2: Development
The development process involves fully constructing the test items from the table of specifications in step 1 using different test formats such as multiple choice, matching type, true/false type, and short answer type. Following the guidelines stipulated by Elejeetal (2016), eighty (80) items that are in line with the table of specifications were constructed using Chemistry textbooks recommended by the Ministry of Education. After developing the 80 test items the next is to validate the items. These items were developed from the JAMB, WAEC, and NECO syllabus 2010, 2015, 2020, the chemistry textbook by Osieye Ababiyo (2011) second edition, and Key Point on Chemistry by U.R. Garba (2020).

Step 3: Validation
Three experienced teachers majoring in Chemistry education were consulted for the test item validation to establish the content validity and face validity. These evaluators used a 5-point Likert-scale evaluation checklist in validating the items see attached items in the appendix. The test items afterwards were revisited considering the suggestions and comments that were made by the evaluators.

Step 4: Trial Testing
The 80 test items were trial tested on 250 selected SS2 students offering chemistry from 4 secondary schools in AwkaAnambra State, Nigeria, for the 2022/2023 academic session. Students' responses were collected, marked, and scored. Their marked answer scripts were then arranged in order of performance from the highest score to the lowest score.

Step 5: Determining the Sample Size for Analysis
The sample size used for establishing the reliability consisted of 83 SS2 students offering chemistry. The students were randomly selected from the 4 secondary schools using a systematic sampling technique for determining sample size; $S = N/n$
Where S= sample size

N = total number of SSS2 students that took the test item on Chemistry (250).

n the exact number of the test item that was administered to them (80).
So, S= 250/80 = 3.0 approximately.

Now, assign numbers 1-250 to each of the students' scripts and select a number randomly from the first 10 sets say 3. Then keep adding 3 to the next numbers. Therefore by using this method of systematic random sampling technique, the samples selected for the study are;

3,6,9,12,15,18,21,24,27,30,33,36,39,42,45,48,51,54,57,60,63,66,69,72,75,78,81,84,87,

90, 93, 96, 99, 102,105,108,111,114,117,120,123,126,129, 132, 135,138, 141.144,147, 150,153,156,159,162,165,168,171,174,177,180.183,186,189,192,195,198,201,204,207,2 10, 213, 216, 219,222,225,228, 231,234,237,240.243,246,249.

By using this method, there is reliability and there was no bias in the selection.

Step 6: Item Analysis

Item analysis was done to make sure that the items were of good quality. The result of the analysis helped to identify the indices of difficulty, distracters, and discrimination. Distracter analysis also helped to pinpoint the misunderstanding of the students to the particular concept being assessed by each of the items. After the item analysis, distracter analysis, and difficulty index analysis, the achievement test was revisited and formatted again which then resulted in having only 50 test items as the final form of the test items.

1. Item Difficulty Index Level (DL): This was determined by getting the sum of the correct responses from the upper and lower groups and dividing it by the size sample in the upper and lower groups.

Difficulty index $= \dfrac{H + L}{NH + NL}$

Where H = Score of Higher achievers

L= Score of Lower achievers

NH= Total Number of correct responses among H

NL= Total Number of correct responses among L

Table 2 shows that the 50 items with difficulty indices ranging from 0.20 to 0.75 were "accepted" and retained in the Achievement Test, whereas 30 Items with DL below the range of 0.20 were "reject

Results and Discussion
Table 2
Summary of CAT Item Difficulty Index

Category	Dl	Frequency	Item no	Remark
A	Above 0.75	0	0	Very Easy Rejected
B	Between 0.20 and 0.75	50	1,2,3,4,5,7,8,9,12,13,15,16,18, 21,22,23,24,26,28,30,31,32,33, 35,36,37,38,39,41,43,44,45,46, 48,49,50,52,53,54,56,57,58,59, 62,66,69,73,74,75,80.	Moderately difficult Accepted
C	Below 0.20	30	6,10,11,14,17,19,20,25,27,29, 34,40,42,47,51,55,60,61.63,64, 65,67,68,70,71,72,76,77,78,79	Very difficult Rejected

Source: Aham. M.C (2023)

2. ***Item Discrimination Index (DI):*** Item discrimination refers to the ability of an item to differentiate between students based on how much they understood the topic and topic questions.

Discrimination index $= \dfrac{H - L}{N}$

Where H = Score of Higher achievers

       L= Score of Lower achievers

       N= Total Number of correct responses among H OR L

Eleje et al. (2016) maintained that; "the quality of a test is evident in the appropriateness of the test item parameters (difficulty, discrimination, and distracter indices) obtained from item analysis". Hence, items found to be good with appropriate difficulty and discrimination indices should retained. Table 3 shows that 20 items were considered "excellent" and did not need any modification because the items have DI Above 0.40. Therefore, the items in category A were selected for the final draft of the test item. In category B, 16 items had a DI between 0.31 and 0.40 and were considered to be very good but needed to check the punctuation. 14 Items between 0.20 and 0.30 in category C were good but subject to improvement concerning Sentence Construction and clarity, with some options replaced. The other 30 items which had DI below 0.20 were regarded as "poor" and were rejected.

Table 3
Summary of CAT Item Discrimination Index (DI)

Category	DI	Frequency	Item no	Remark
A	Above 0.40	20	1,2,3,4,5,7,8,9,12,13,15,16,18, 21,22,23,24,26,28,30.	Excellent discriminating Items. Accept
B	Between 0.31 and 0.40	16	35,36,37,38,39,41,48,49,50, 57,58,59,62,66,69,73.	Very Good discriminating Items. Accept
C	Between 0.20 and 0.30	14	31,32,33,43,44,45,46. 52,53,54,56, 74,75,80.	Good but subject to improvement and retention.
D	Below 0.20	30	6,10,11,14,17,19,20,25,27,29, 34,40,42,47,51,55,60,61.63,64, 65,67,68,70,71,72,76,77,78,79	Poor discriminating Items. Reject.

Source: Aham. M.C (2023)

3. ***Item Distractibility Index:***

A distractor is a wrong option that is designed to see if the testee being tested will be able to notice the difference between the correct option and the wrong options in a test or not. A distractor is said to be good if it attracts more testees from the group of low achievers than the group of high achievers. There are mainly two types of distractors. The non-functional distractor (NFD) and functional distractor (FD).   The Non-functional distractor (NFD) in a test item is that option, other than the correct option selected by less than 5% of examinees and the functional or effective distractor is the option selected by 5% or more.

The percentage of distractors is calculated as shown below;

Percent of a distractor = $\underline{\text{Number of the examinees of the distractor}}$ $\times 100 \%$
The total number of examinees

The Distractor Efficiency (DE) for any item ranges from 0 to 100% and is determined based on the number of NFDs in an item. It means DE is expressed as 0%, 33.3%, 66.6%, and 100% depending on the number of NFDs.

Number of Non- Non-functional Distractors	Distractor Efficiency (DE)
3 NFDs	0.00 %
2NFDs	33.33 %
1NFD	66.66 %
0 NFD	100 %

Table 4 shows a summary of all the item analyses of the Difficulty index, discrimination index, and number of non-functional distractors for the final 50 items selected as the final items.

Table 4
Difficulty Index, Discrimination Index, and Number of Non-Functional Distractors

Item Number		Difficulty Index (DL)	Discrimination Index (DI)	Number of NFDs	Distractor Efficiency (DE)in (%)
1.	1.	0.79	0.45	0	100
2.	2.	0.79	0.45	0	100
3.	3.	0.78	0.42	0	100
4.	4.	0.77	0.42	0	100
5.	5.	0.75	0.41	0	100
6.	7.	0.75	0.41	0	100
7.	8.	0.75	0.41	0	100
8.	9.	0.75	0.40	0	100
9.	12.	0.75	0.40	0	100

10.	13.	0.75	0.40	0	100
11.	15.	0.75	0.40	0	100
12.	16.	0.75	0.40	0	100
13.	18.	0.75	0.40	0	100
14.	21.	0.75	0.40	0	100
15.	22.	0.75	0.40	0	100
16.	23.	0.75	0.40	0	100
17.	24.	0.75	0.40	0	100
18.	26.	0.75	0.40	0	100
19.	28.	0.75	0.40	0	100
20.	30.	0.75	0.40	0	100
21.	35.	0.65	0.38	1	66.66
22.	36.	0.55	0.36	1	66.66
23.	37.	0.55	0.36	1	66.66
24.	38.	0.45	0.35	1	66.66
25.	39.	0.45	0.35	1	66.66
26.	41.	0.33	0.33	1	66.66
27.	48.	0.33	0.33	1	66.66
28.	49.	0.31	0.31	1	66.66
29.	50.	0.31	0.31	1	66.66
30.	57.	0.31	0.31	1	66.66
31.	58.	0.31	0.31	1	66.66
32.	59.	0.31	0.31	1	66.66
33.	62.	0.31	0.31	1	66.66
34.	66.	0.31	0.31	1	66.66
35.	69.	0.31	0.31	1	66.66
36.	73.	0.31	0.31	1	66.66
37.	31.	0.29	0.30	2	33.33
38.	32.	0.29	0.30	2	33.33
39.	33.	0.29	0.30	2	33.33
40.	43.	0.29	0.30	2	33.33
41.	44.	0.29	0.30	2	33.33
42.	45.	0.29	0.30	2	33.33
43.	46.	0.26	0.28	2	33.33
44.	52.	0.26	0.28	2	33.33
45.	53.	0.24	0.26	2	33.33
46.	54.	0.23	0.25	2	33.33
47.	56.	0.23	0.25	2	33.33
48.	74.	0.23	0.23	2	33.33
49.	75.	0.22	0.22	2	33.33
50.	80.	0.21	0.22	2	33.33

Source: Aham. M.C (2023)

Conclusion

This achievement test was developed for SS2 students in Chemistry and only 50 items were validated. This achievement test aimed at assisting the science in-service teachers as a means of building a test bank in chemistry. More so, the process in the development and validation of this achievement test can be used as an alternative effective assessment tool for preparing teacher-made tests. It will also help the teachers to identify the areas that the students did not understand very well and give more emphasis on those areas. Furthermore, it could be concluded that the chemistry achievement test constructed in this study is of good quality, valid, and very reliable. Therefore, the developed, validated, and reliable CAT can now be used in evaluating SS2 students' achievement in chemistry. It can also be used to predict students who will do well in chemistry in their SS3 classes. The instrument developed in this study can be used to measure the desired learning outcomes of senior secondary two chemistry in Nigeria Finally, the method given in the development and validation of this CAT can serve as a model for teachers and researchers when crafting an achievement test.

Recommendations

This study is recommended for use by chemistry teachers for evaluating the achievement of SS2 students in chemistry. Furthermore, the following recommendations were made to expand the use of standardized tests in other areas;
1. Development and validation of test items with different topics in Chemistry or other subjects is recommended.
2. Development and validation of test items can be done by other fields to help teachers who are not specialized in all fields of science.
3. It is also recommended that In-service training and workshops should be organized for teachers so that they can learn how to develop and validate tests.

References

Ababiyo O.Y (2011). *New school chemistry (New ed.).* ISBN 5270 2620, 4 (4), 193-1985.

Angadi, N. B., Nagabhushana, A., & Hashilkar, N.K. (2020). Item analysis of multiple choice questions of undergraduate pharmacology examinations in a medical college in Belagavi, Karnataka, India. *International Journal of Basic & Clinical Pharmacology,* 7(10). 1917-1920. 2

Bilbad, (2015). *Effective curriculum evaluation*. (https://academia,com)

Bilbad, & Puritan, P. (2022). *Curriculum development. pp. 40* https://academia,com

Boopathiraj, C. & Chellamani, K. (2021).Analysis of test items on difficulty level and discrimination index in the test for education research. *International Journal of Social Science & Interdisciplinary Research,* ISSN 2277 3630, 2 (2), 189-193. Online available at indianresearchjournals.com.

Eleje, L.I., Chidiebere C. A. & Emma O. (2017). Development & validation of economics achievement tests for secondary schools. *Asian Journal of Education and Training* ISSN (E): 2519-5387 Vol. 3, No. 1, 6-17, 2017.

Eleje, L.I., Esomonu, N.P.M., Agu, N.N., Okoye, R.O., Obasi, E. & Onah, F.E. (2016). Development and validation of diagnostic economics tests for secondary schools. *World Journal of Education,* 6(3), 90.

Esomonu, N.P.M. & U.M. Agbonkpolo, 2010. Construction and validation of achievement test in senior secondary school economics. *International Journal of Educational Research and Development,* 4(1), 68-79

Gajjar, S., Sharma, R., Kumar, P., & Rana, M. (2020). Item and test analysis to identify quality multiple-choice questions (MCQs) from an assessment of medical students of Ahmedabad, Gujarat. *Indian Journal of Com¬munity Medicine*, 39(1), 17-22.

Grab a U.R (2010) *KeypPoint understanding chemistry.* ISBN 2277 2330, 4 (2).

Indi, L. G., Jumarito, E.H., & Mauyag, N. D. (2022). *Secondary education chemistry.* evaluationlaisana.indi@g.msuiit.edu.phefefanyjane.jumarito@g.msuiit.edu.phnor ain.mauyag@g.msuiit.edu.ph.

Morales, M. (2012). *Development and validation of concept tests in introductory physics for biology students.* The Manila Journal of Science pp. 26-44.

Appendix

Chemistry Achievement Test (Cat) For Senior Secondary Two (SS2)
Instruction: Answer all questions.

1. (1) The equation P= PA/PT represents _____
   1. Dalton's law B. Gay-Lussac's law C. Graham's law D. Charles's law E. Boyle's

2. (2) The volume of a fixed mass of gas is negligible compared to the volume of its containing vessel. True/False

3. (3) The molecules of gases are in constant random motion in a _____ until they collide with each other and the walls of their container.

4. (4) Use the diagram below and answer questions 4 to 7
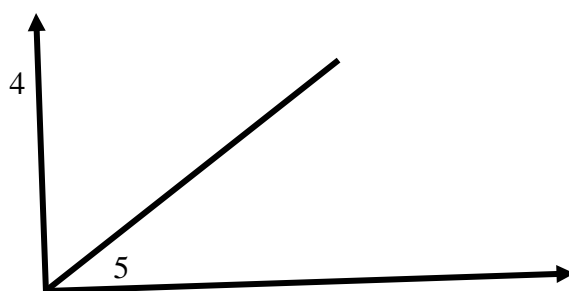
KEY
1/V
V
P
1/P

6. The diagram above is a graphical representation of _____?

7. (8) The variations in the volumes, pressures, and temperatures of ideal gases are subject to certain simple laws known as _____ A. Graham law B. Boyles Law C. Gas Laws D. Charles Laws E. Ideal gas equations.

8. (9.)105cm^3 of hydrogen gas is liberated by the action of 0.3g of Zinc on excess dilute tetraoxosulphate (vi) acid at 85°c, What volume would the gas occupy at room temperature of 25°c? A. 87.0 cm^3 B.87.4 cm^3 C. 78.4dm D. 87.0dm^3 E.88.1 cm^3

Use the diagram below to answer questions 9 to 12: (12, 13, 15, and 16)
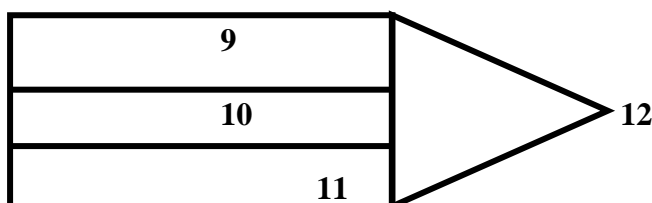
	KEY
9	Pressure A
10	Pressure B
11 12	Pressure C
	Average pressure
	Middle Pressure
	Total Pressure

13.   (18). Complete the equation below
$$2H_{2(g)} + O_{2(g)}? \longrightarrow$$
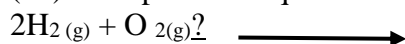
14. (21). Identify the odd one in the series;
A. Hydrogen B. Oxygen C. Neon D. Carbon E. Chlorine
15-18 (22, 23, 24, and 26). Match the following to their appropriate nomenclature

Ar	Fluorine
F	Krypton
K	Chlorine
Kr	Argon
Fr	Aluminum
Cl	Calcium.

19. (28). Which of the following represents Charles's law?
A. P1V1=P2V2 B. T1/V1=T2/V2 C. P1/V1=P2/V2 D.V1/T1=V2/T2 E. T1V1=T2V2

20. (30). The force of attraction or repulsion between gas molecules are very powerful due to Strong intermolecular bond and that is why gas cylinder can explode easily. TRUE/FALSE

21. (35). A chemical substance which in solution produces hydroxonium ions as the only positive ion is called _____?
A. Anion B. Acid C. Acid anhydride D. Cation E. Base

22. (36). Weak acids ionize partially in aqueous solution. TRUE/FALSE
23. (37). Acids that contain little or no water are said to be _____
24. (38). One of these is not an acid.
A. HCl B. H_2CO_3 C.H_3PO_4 D. $Ca(OH)_2$ E.HNO_3.

1. (39). Increasing the pressure of a gas lowers the average kinetic energy of the molecules True/False

2. (41) Sodium decahydrate (Na2SO4 10H2O) on exposure to air loses all its water of crystallization. The process of loss is known as A. Efflorescence B. Hygroscopy C. Deliquescence D. Effervescence E. Dehydration.

3. (48) Which of the following happens during the electrolysis of molten sodium chloride? A. Sodium ion loses an electron B. Chlorine atom gains an electron C. Chloride ion gains an electron D. Sodium ion is oxidized E. Chloride ion is oxidized.

4. (49) A mixture of common salt, ammonium chloride, and barium sulfate can best be separated by A. addition of water followed by filtration then sublimation B. addition of water followed by sublimation then filtration C. sublimation followed by addition of water then filtration D. fractional distillation E. fractional crystallization.

5. (50) Sodium hydroxide (NaOH) pellets are also known as _____

6. (57) A piece of sea shell, when dropped into a dilute solution of hydrochloric acid produces a colorless odorless gas, which turns clear limewater milky. The shell contains A. sodium chloride B. ammonium nitrate C. calcium carbonate D. calcium chloride E. magnesium chloride.

7. (58) Solution X, Y, and Z have pH values of 3.0, 5.0, and 9.0 respectively. It means that Y is more acidic than X and Z is the most acidic. True/False.

8. (59) Addition of trioxonirate (V) acid (nitric acid) to tetraoxosulphate (V1) acid (sulphuric acid) is a neutralization reaction. True/False.

9. (62) Which of these metals, Mg, Fe, Pb, and Cu will dissolve in dilute HCl? A. All the metals B. Mg Fe, and Cu C. Mg, Fe and Pb D. Mg and Fe only E. Mg only.

10. (66) An element is electronegative if its ions dissolve readily in water TRUE/FALSE.

11. (69) The alkanol obtained from the production of soap is _____

12. (73) The color imparted to a flame by calcium ion is A. green B. blue C. brick-red D. yellow E. lilac.

13. (31)The flame used by welders in cutting metals is _____

14. (32)The three-dimensional shape of methane is _____

15. (33) Which of the following atoms contains the highest number of electrons in the outermost shell? A. $_8$O B. $_{10}$Ne C. $_{15}$P D.$_{19}$K E. $_1$H.**Match the following statements to the correct option.**

16. (43)   Electroplating of metals   oxidation

17. (44)   Addition of Hydrogen   electrochemical cell

18. (45)   addition of oxygen   application of electrolysis

19. (46)   Dry cell   reduction Oxidation.

20. (52) What is the electronic configuration of an element represented as $^{23}_{11}Na$?
    - $1S^2 2S^2 2P^6 4S^1$ B. $1S^2 2S^2 2P^5$ C. $1S^2 2S^2 3P^3 4S^4$ D. $1S^2 2S^2 3P^5$ E. $1S^2 2S^2 3P^5 4S^2$

21. (53) Which of the following compounds has the highest ionic character?

22. PCl$_5$ B. SiCl$_4$ C. AlCl$_3$ D. KCl E. KNO

23. (54) If an element with high electron affinity combines with another element with low ionization energy, the bond formed will be mainly___? A. Covalent B. Ionic C. Dative D. Metallic E. Coordinate Covalent

24. (56) Which of the following lowers the activation energy of a chemical reaction?
    5. Reducing agent B. Water C. catalyst D. freezing mixture E. Temperature.

25. (74) What quantity of silver is deposited when 96500C of electricity is passed through a solution of silver ions? A.1.08g B. 5.40g C. 10.8g D. 108g E. 54.0g

26. (75) Water is a mixture of?
    A.CO$_2$ and H$_2$ B. CO$_2$ and H$_2$O C. CO$_2$ and CO D. CO and H$_2$ E. O$_2$ and H$_2$.

27. (80) Petrol can be obtained from diesel by___?
    A. distillation B. Cracking C. Catalyst D. Polymerization.

The Implication and Shortcomings of the 21st Century Internet Advancement in the Teaching and Learning of French Language: The Way Forward.

By

OLASEINDE, Felicia Olufemi (Ph. D)

Department of Arts and Language Education

Ekiti State University, Ado - Ekiti. Ekiti – State.

e-mail address: **felicia.**olaseinde@eksu.edu.ng/feliciaolufemi@gmail.com

08063048492

Abstract

This study assessed and examined the implications and shortcomings of the 21st century internet advancement in the teaching and learning of French Language. The world is rapidly teaching to a global digital society through the use of internet facilities. Learners are confronted with series of computer and social networking applications. It seems o(zero) accessibilities and o(zero) availabilities of electronic and internet facilities add more to the problem of teaching and learning of French language in our Nigeria school, this aid the poor performance of student in French language. Teachers are to improve on their experience by receiving training on the use of internet facilities and incorporate electronic and social media resources into their teaching and learning processes ;through this ,learning would have been trained on how to go internet and get information , ideas innovations and life styles would be spread to nooks and crannies of the world. The research design for this study was descriptive research of a survey type. The sample sizes of two hundred (200) respondents were used for this study. The respondents selected were students from all the universities in Ekiti State, Nigeria. Fifty (50) students from each of the selected universities were selected. The findings of the study revealed that there are benefits as well as shortcomings associated with the internet advancement in the French language pedagogy and it was recommended among others that the school management should provide adequate computers and adequate training of teachers and students in the knowledge of ICT and its usage in the teaching and learning of French Language.

Keywords: Benefits, French Language, French Language Pedagogy, Internet Advancement, Shortcomings.

Introduction

Primary and Secondary Schools in Nigeria have not been making the study of French language compulsory for the students; with the encouragement of French language teachers who with the adequate instructional materials and techniques of motivation, have been making the subject interesting to the few interested students.

According to Okafor and Fagbemi (2016); they discover that one of the constraints to quality education in Nigeria is inadequate media, equipment or facilities in our schools. These in turn make the uninterested students interested and the interested students more interested to the extent of going further to study the language even in tertiary institutions. Obiete etal (2019) says that the collective and rigid nature of learning associated with the use of textbooks and chalkboard do not contribute serious innovative changes to traditional methods of teaching. Since the beginning, the teaching and learning of French language has been done by teachers using the physical expository or explanatory method to show the students relevant information and rudiments of the language with the use of written materials and textbooks like *Je Parle Français, Transafrique, Bescherelle, On y va!, Ça Marche,* among others. But as the earth rotates and the world expands, the internet has taken over as a wide means of passing information and a better way of stimulating learning in the Nigerian education system.

Obunadike (2009) is of the observation that the whole world is experiencing the advancement of science and technology, little wonder that Poore (2015) opines that social platforms have changed how people learn and gain knowledge, therefore Educational Technology is wide spreading and the use of technology for teaching and learning languages has expanded rapidly and that our experience of using e-learning as a support to our eye-to-eye classes has proved to be positive and stimulating both for students and the teachers. Moreover, Meziobi etal (2021) underscore the importance of instructional resources for teaching by observing that they have potential to supply concrete basic for conceptual thinking and reduce meaningless responses of students, we can therefore conclude that the 21st century internet advancement has brought about a further development in language teaching and learning and has stood as a means of support to the physical expository method which has been previously and regularly employed by the teachers of French language.

Lord and Lomicka (2014) declares that, the use of internet for educational purposes has opened the door to teachers and language learners to experience new ways of teaching and learning French as they facilitate and allow for more authentic and engaging ways of learning. Today, the internet, consisting of millions of computers, it has an important role and great potential in educational life. It is also used specifically and widely in second language learning all over the world. Taiwo (2007) supports this assertion by saying that one of the most remarkable events in the last fifty years in Africa is the continent's connection to the global world through the internet and mobile telecommunications.

In the Nigerian context, the need to utilize the various forms of digital tools such as language laboratory in upgrading the professional capabilities and pedagogical efficiency can best be described as being challenging (Nwite, 2007). For this reason,

there is an apt need for upgrade in the language teaching-learning process and for teachers to be ICT friendly so as to bring about ease and smooth transmission of knowledge from the teacher to the learners. Amoor (2020) declares that, the emergence of electronic media such as modern computers, the internet, the modern telephonic system including handset and multimedia among others, have notably revolutionized the teaching environment but have also brought changes in the ways people are doing things. Little wonder that almost 60% of secondary school teachers in Nigeria have been trained and equipped to use online learning mediums for teaching purposes and particularly for teaching French Language as a subject. Moreover, various platforms have been introduced into the Nigeria education system as platforms where teachers teach, communicate and interact with quite a large number of students even without being physically close to one another. These platforms include Google Classroom, Zoom, Google Meet, Coursera, edX, FutureLearn, LearnWorlds among others with which the instructor and the instructed can both locally and internationally connect with one another. This method has helped teachers over the years to become versatile in the usage of ICT and it has prevented the students from lagging behind in their lessons even when schools are not in session.

Nevertheless, despite the great impact that the 21st Century internet advancement has made in the language pedagogy, studies show that it is still encompassed with some disadvantages and shortcomings which are not helpful to the enhancement of the teaching of French language at all. This is in line with the view of Aydin (2007), that the internet use in the second and foreign language learning have some disadvantages, although it has brought certain advantages. As a matter of fact the internet improves communicational and language skills, the significant point is that teachers and learners are not sometimes aware of why, how, whom and where they teach and learn. Moor (2013) states that for lecturers to grow professionally and remain relevant, they must possess skills to operate these media resources. Many students and teachers don't know how to navigate through the online learning mediums and many of them are not even aware if such e-learning mediums are available.

Statement of the Problem

The outbreak of COVID-19 in Nigeria and the whole World in general; brought about a total lockdown and restriction of movements in Nigeria and in the entire universe in the year 2020. This affected education in general whereby there were no learning taking place in schools, colleges and institutions of higher learning.

Purpose of the Study

The study investigated the benefits associated with the incorporation of internet into the French language pedagogy. It brings out the merits and demerits of e-learning and provides possible solutions; and ways forward to these problems so as to have a better enhancement in the French language pedagogy in the Nigerian Education system.

Significance of the Study

There is no doubt that the findings from this study would be of great and viable relevance to a number of stakeholders in education: the parents, teachers, students, school managements and the government on the need to provide an improvement in the utilization of internet in the teaching and learning of French language.

The students' parents will benefit from this study as it will help them discover the need to familiarize their children with the use of internet right from childhood and to provide them the necessary gadgets needed, together with the financial obligations so as for them not to lag behind in the e-learning and online classrooms whenever it comes in place.

This study will also be beneficial to the teachers as it opens their eyes to the need of obtaining adequate training of internet operations so as to be able to cover a lot of lessons to the students in spite of incessant academic breaks and also to prevent stress for themselves and for the students.

The students themselves will identify the need of utilizing the internet well instead of using it for social activities alone. The students will see the importance of joining their online classes on time, towards improving their academic performances and their proficiency in the usage of the French language.

Equally, this study will enable the school managements, together with the government to see the need of providing adequate online facilities and e-learning instruments in language laboratories so as to enhance the usage of the internet in the teaching and learning of French language.

Conclusively, the findings of this study will serve as a guide, bibliography and reference materials to students, teachers and future researchers that may subsequently wish to carry out research in this particular field or in any related field synonymous to this study.

Research Questions

The following questions will be raised to guide the study:
  a. What are the advantages and benefits of the 21st century internet advancement in French language teaching and learning?

b. What are the implications and shortcomings of the 21st century internet advancement in the teaching and learning of French language?

c. What are the possible solutions and ways forward to the problems of the 21st century internet advancement in the French language pedagogy?

Methodology

This research work adopted a descriptive survey design. The population for the study comprised of all the French language students in the universities in Ekiti State. The sample consisted of selected French Language Students of two hundred (200) respondents. The respondents selected were students from all the four (4) universities in Ekiti State, Nigeria. The sample was selected using purposive sampling technique. Therefore 200 students studying French across the universities were selected and by so doing, a total of fifty (50) respondents were selected from each of the sampled universities. Quionnaire was given to the selected students to get data pertaining to the implications and shortcomings of the 21st Century internet advancement on the teaching and learning of French Language. The data collected were analyzed using the simple percentage method of analysis.

Results

Research Question 1: What are the advantages and benefits of the 21st century internet advancement in the French language teaching and learning?

Table 1

Percentages Score of Respondents on the Advantages and Benefits of Internet Advancement in the Teaching and Learning of French Language

S/N	Items	Agree		Disagree	
		Freq. 200	**%** 100**%**	**Freq.** 200	**%** 100
1.	I assimilate more when I read on internet.	180	90**%**	20	10%
2.	The internet advancement has really helped me in understanding so many key concepts in the French Language.	190	95%	10	5%
3.	The use of computers in French Language pedagogy has been a source of motivation to learn.	176	88%	24	12%
4.	I find the internet based lectures engaging	166	83%	34	17%
5.	The use of internet in learning French	114	57%	86	43%

saves time consumption

Source: Field Data, 2023.

Responses from the table 1 show that 180 (90%) of the respondents agreed to the fact that they assimilate more when they read on internet while only 20 (10%) of them disagreed to the statement. 190 (95%) of the respondents agreed that the internet advancement has really helped them in understanding so many key concepts in the French Language while 10 (5%) of the respondents disagreed with the statement. Furthermore, 176 (88%) of the respondents agreed that the use of computers in French Language pedagogy has been a source of motivation to learn while 24 (12%) of the respondents disagreed to the statement.

More so, 166 (83%) of the respondents agreed that they find the internet based lectures engaging while 34 (17%) disagreed. 114 (57%) of the respondents agreed that the use of internet in learning French saves time consumption while 86 (43%) of the respondents disagreed to the statement. Table 1 therefore shows the advantages and benefits of the 21st century internet advancement to the teaching and learning of French Language.

Research Question 2: What are the implications and shortcomings of the 21st century internet advancement in the teaching and learning of French language?

Table 2
Percentage Score of Respondents Showing the Implications and Shortcomings of the 21st Century Internet Advancement in the Teaching and Learning of French Language

S/N	Items	Agree		Disagree	
		Freq. 200	% 100%	Freq. 200	% 100%
1.	Internet is good, but I have been unable to access it due to poor network.	162	81%	38	19%
2.	Many of our teachers have been unable to utilize the internet in teaching us.	192	96%	8	4%
3.	Due to financial constraints, I have been unable to get data subscriptions to attend my online classes.	150	75%	50	25%
4.	The internet consumes storage a lot; I can only access little information at once.	160	80%	40	20%
5.	I get carried away by other things on internet like porn, movies, and social	190	95%	10	5%

media.

Source: Field Data, 2023

Responses from the table 2 show that 162 (81%) of the respondents agreed that they have been unable to access the internet due to poor network while 38 (19%) of them disagreed to the statement. 192 (96%) of the respondents agreed that many of their teachers have been unable to utilize the internet in teaching them while 8 (104%) of the respondents disagreed with the statement. Furthermore, 150 (75%) of the respondents agreed that due to financial constraints, they have been unable to get data subscriptions to attend online classes while 50 (25%) of the respondents disagreed to the statement.

More so, 160 (80%) of the respondents agreed that the internet consumes storage a lot and that they can only access few information at once while 40 (20%) disagreed. 190 (95%) of the respondents agreed to the assertion that they get carried away by other things on internet like porn, movies, and social media while 10 (5%) of the respondents disagreed to the statement. Table 2 therefore shows the implications and shortcomings of the 21st century internet advancement to the teaching and learning of French Language.

Research Question 3: What are the possible solutions and ways forward to the problems of the 21st century internet advancement in the French language pedagogy?

Table 3
Percentage of Respondents Showing the Possible Solutions and Ways Forward to the Problems of 21st Century Internet Advancement in the French Language Pedagogy

S/N	Items	Agree		Disagree	
		Freq. 200	% 100%	Freq. 200	% 100%
1.	The internet should be removed from the teaching and learning of French Language.	20	10%	180	90%
2.	Both teachers and students should be trained on how to use the internet	100	50%	100	50%
3.	The school management and the government should provide computers in our school with enough data subscriptions.	100	50%	100	50%
4.	There should be rules and regulations for students to guide them with the usage of	100	50%	100	50%

5.	ICT. There should be an accurate time table for online lectures so that the students and teachers will be prepared beforehand.	184	92%	16	8%

Responses from the table 3 show that 20 (10%) of the respondents agreed that the internet should be removed from the teaching and learning of French Language while 180 (90%) of them disagreed to the statement.100 (50%) of the respondents agreed that both teachers and students should be trained on how to use the internet while 50 (50%) of the respondents disagreed with the statement. Furthermore, 100 (50%) of the respondents agreed that the school management and the government should provide computers in their school with enough data subscription while 100 (50%) of the respondents disagreed to the statement.

More so, 100 (50%) of the respondents agreed that there should be rules and regulations for students to guide them with the usage of ICT while 100 (50%) disagreed. 184 (92%) of the respondents agreed to the assertion that there should be an accurate time table for online lectures so that the students and teachers will be prepared beforehand while 16 (8%) of the respondents disagreed to the statement. Table 4 therefore shows the possible solutions and ways forward to the problems of the 21st century internet advancement in the French language pedagogy.

Discussion and Findings of the Study

Having observed that the world is rapidly tending to a global digital society through the use of internet facilities, this study examined the implications and shortcomings of the 21th century internet advancement in the teaching and learning of French language

The research came up with following finding

1. The learners were able to assimilate better when they read on internet advancement really helped them to understand the key concepts in French language.
2. The use of computers in French language pedagogy has been a source of motivation to learners, they find internet based lectures engaging and saves time consumption.
3. Learners were unable to access the internet due to poor network and power supply, some teachers were unable to utilize the internet during teaching.
4. Due to financial constraints, learners were unable to get data subscriptions to attend on-line classes; students were carried away by other things on the internet.

5. Government should help the schools to get internet facilities so as to get network, and also train the teachers on how to use the internet so as to make learning easier for the students.
6. Computers should be supply to schools by Government and provide enough data and other good things that will make the computers to function.
7. Rules and regulations should be made for student to guide them on the usage of the computer, likewise accurate time-table should be provided for online lectures.

Conclusion

Internet is a good instrument in the teaching and learning of French Language. There are disadvantages associated with the internet advancement in the French language pedagogy. This study also provided some possible ways forward to the problems associated with the internet in the teaching and learning of French Language.

Recommendations

Parents should ensure proper monitoring of their wards; to make sure they do not use the internet for non-profitable activities at the expense of their online lessons. The school management should recruit teachers who are versatile in the usage of internet to teach. Teachers of French language should participate in symposiums and seminars pertaining to computer literacy in the Language pedagogy. The government and school managements should ensure provision of enough computers with enough data subscriptions so as to help the students in participating in online classes. The internet providers should ensure limitations to what the students will have access to on the internet.

References

Aydin, S. (2007). The use of the Internet in ESL learning: Problems, advantages and disadvantages. *Humanising Language Teaching. 9.*

Amoor,S.S (2002).The need of improve teacher quality in business education programme in Nigerian Universities .*International Journal of Education Research,11(1),1-11*

Lord, G., & Lomicka, L (2014).Twitter as a tool to promote community among language teachers. *Journal of technology and Teacher Education.,22(2),187.*

Macor, D. (2013).*The teacher's role in developing interaction and reflection in an online learning community.*

Mezieobi, Y.A ,Fubura ,V .R and Meziboi S.A (2021). *Social studies in Nigeria: Teaching methods, instructional materials and multimedia instructional materials (2nd ed.).* Owerri :Academic peak publishers.

Nwite, O. (2007). Utilization of ICT in Schools: Problems and Suggestions. In Babalola J. B., Akpan, G. O., Ayeni A. O., Adedeji S. O. (Eds). *Access, Equity and Quality in Higher Education.* National Association for Educational Administration and Planning (NAEAP) Publications. Ibadan: Awemark Printers.

Obiete I.A., Nwozor, J.C & Mbah ,F.I .(2019). Strategies for teaching education students in Nigerian tertiary institution for co-operate governance. *Journal of Education and Practice,(*618),170-175

Obunadike, J. C. (2009). Implementing ICT techniques in teaching for effective implementation of the new nine-year ube curriculum in Anambra State. *African Research Review, An International Multidisciplinary Journal, Ethiopia. 3(3)*

Okafor, A.I & Fagbemi,K.S (2016).Provision and utilization of science (Biology) laboratory facilities as effective way of transforming education in senior secondary schools in Zamfara State . *Knowledge Review, 34(1),1-7*

Poore , M.(2015).*Using social media in the classroom: A best practice guide.* Thousand Oak, CA: SAGE Publications

Taiwo, R. O. (2007). Language, Ideology and Power Relations in Nigerian Newspaper Headlines. *Nebula 4(1)* *https://www.researchgate.net/profile/Rotimi-Taiwo/publication/*

Exploring the Strategies for Assessment for Learning as Pathway for Effective Teaching and Learning

Felicitas Ogonna Ejinkonye (PhD)
Department of Educational Psychology, School of Education, Federal College of Education, Eha-Amufu, Enugu, Nigeria.
ejinkonye.felicitas@fceehamufu.edu.ng
iamfelicitas@gmail.com
and
Nneka Chinyere Ezeugo (PhD)
Department of Educational Foundations, Nnamdi Azikiwe University, Awka, Nigeria.
nc.ezeugo@unizik.edu.ng

Introduction

The principal aim of education is to impact knowledge, skills, abilities, and all round learning on the students (Prasad & Gupta, 2020). The teachers hold a leading role in the realization of educational goals (Murati, 2015) and are expected to carry out all activities aimed towards helping the students to learn effectively. The teachers plan the lesson, deliver the lesson and also manage the classroom environment. However, one other vital teacher's activity is the accurate and productive assessment actions they undertake (Hawthorne, 2022), which help in ensuring the achievement of the expected learning goals. While classroom assessment may have direct and indirect impact as well as negative and positive impact, ultimately teachers' productive assessment actions contribute to a supportive learning atmosphere that fosters academic growth and achievement (DeLuca, Coombs, MacGregor, & Rasoli, 2019). On the other hand, the students being the target for all the efforts of the teacher also have evaluative actions needed of them to ensure that the desired learning outcomes are achieved.

The teacher cannot achieve the expected goal of instruction without the students' co-operation. The students' active participation and engagement in the classroom evaluative process are crucial for their learning and growth. Students providing constructive feedback, asking questions, and seeking clarifications contribute to a deeper understanding of the subject matter. Students' self-assessment and reflection on their performance also empower them to take ownership of their learning journey and make necessary improvements. Thus, Wyatt-Smith and Adie (2019) challenged the idea of portraying assessment as teachers' sole responsibility and among other things, proposed conditions that will help students to develop their evaluative expertise, such as teachers sharing assessment criteria with the students. The foregoing therefore establishes that teaching, learning and assessment are inseparable. Effective assessment should inform the instructional process and foster students learning. This paper therefore highlights the

concept of assessment for learning (AFL), its benefits to teachers and students, strategies of AfL and challenges encountered in the implementation of AfL in the classroom.

Arnold (2022) in a study on prioritizing students in Assessment for Learning (AfL) found students experience as responsive to changes in teachers practice when students are co-practitioners in AfL. He again noted that AfL contribute to generative experience of learning when it enhances dialogic interactions with students and teachers as partners. Oyinloye and Imenda (2019) found that learners following an AfL instructional approach performed statistically higher than those that follow normal classroom instruction. From the forgoing, there is need for proper practice of AfL to achieve the desired aim of teaching and learning.

Concept of Assessment for Learning

Assessment for learning is a strategy that requires the collaborative interaction of the teacher and students to achieve the required educational objectives. Steele (2019) defined assessment for learning (AfL) as a teaching approach that generates feedback which students can use to improve their performance. It involves observing class discussions, asking questions and reviewing students' work-in-progress. AfL is often immediate and informs changes that teachers can introduce into the lesson to make it more effective. Teachers and students can use the feedback to improve learning and such feedback includes information as regards: (a) how students are learning (b) their learning progress (c) the nature of their understanding (d) any difficulties they are having (Steele, 2019). Hawthorne (2022) defined AfL as any assessment activity that guides learning. Hawthorne (2022) further opined that AfL is a clinical approach to teaching and learning used by both teachers and students to help learners fulfil their potential. This implies that AfL helps get information that tells both the teachers and students where the learners are in their learning. Again, assessment for learning refers to the process of collecting and interpreting evidence about learning to be used by the teacher and learners to adjust teaching and learning (Rhalmi, 2020). According to him, the purpose of assessment for learning is to get informed about the learning process. The teacher uses the information collected to device activities intended to guide learners towards the intended goals. AfL involves evaluating small content areas as part of the on-going learning process. Through AfL educators can amend their approach so as to help students learn as well as acquire the strategies needed to maximize their own progress. AfL when used effectively is a highly impactful teaching tool because it acts as a bridge between where students are currently in their learning and achievement and where they want to get to.

Moreover, since the aim of any instructional activity is to achieve learning, the activities of the teacher should focus on enhancing student's learning. The students

which are the target recipients on their part are also expected to key into the aim by playing their part for achievement of expected learning. Assessment for learning (AfL) avails the learner of the expected learning goals, mediums to check progress and feedback necessary for improvement.

Conceptual Framework:
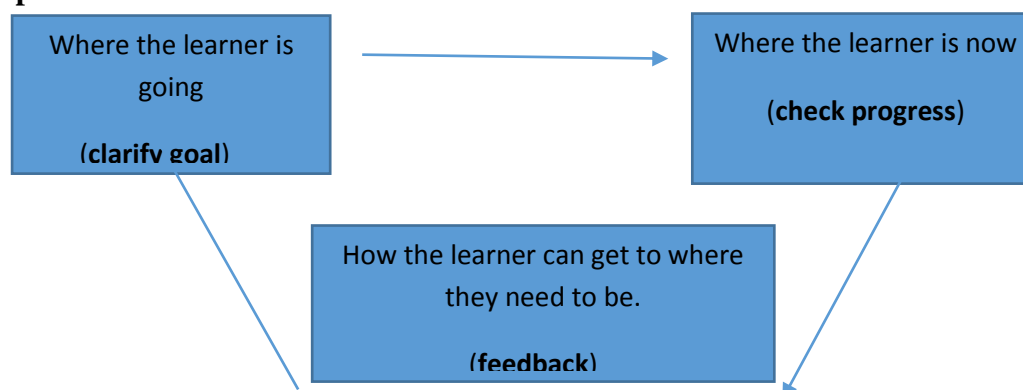
Figure 1: Assessment for learning framework.
Source: Steele (2019)

This framework shows that assessment for learning requires that the students should know the goal or objective of their learning. They are also expected to know what they have been able to learn in relation to the stipulated goals. Furthermore, students should know what they have been able to learn through proper feedback from both the teacher and fellow students.

Benefits of Assessment for Learning to the Teachers

The process of assessment for learning has potential benefits for the teachers and students. To the teachers, AFL gives them a better understanding of the level of students learning of various concepts and units of lesson (Steele, 2019); teachers identify students' strengths and weaknesses/ areas needing improvement(Structural learning,2021), and as well enjoy improved relationship with their students (Hawthorne, 2022). This information can be used for adequate planning of instruction and provision of more effective support to the students. AFL improves teachers' classroom practice as it demands ''teacher competencies'' (Wolterinck et al.2022: p). Heitink et al.(2016) had opined that to successfully undertake assessment for learning, there are some requisite skills, knowledge and attitudes which every teacher must possess and manifest. The presence of these qualities will have an overall effect in improving teacher practice in the classroom. AFL also helps in providing teachers with feedback on their teaching.

This feedback can be used to identify areas where teachers need to improve and to make necessary adjustments.

AfL can lead to increased teacher satisfaction by helping teachers to feel more confident in their ability to help their students succeed. The assurance in AFL that there is possibility for progress for every learner generates confidence in the classroom teachers in the teaching/ learning enterprise (Bullock, n.d). AfL equally helps teachers to improve their feedback with parents by learning environment consisting of a culture of feedback and self-reflection is thus generated. The above benefits of AFL agree with the conclusion of Florez and Sammons (2013), in the review they carried out on Assessment for learning in which they observed that AFL has benefits for ''teachers' professionalism and teaching practices'' (p17)

Benefits of Assessment for Learning to the Students

The practice of assessment for learning has several benefits for the students. This can be categorized in terms of its impact on students' dispositions, academic achievement, classroom environment, student engagement etc. AFL improves students' confidence, resilience, self-esteem, motivation, (Hawthrone, 2022).He further stated that it fosters a healthy relationship between teachers and students, improves classroom culture, teaching and learning environment. AfL improves students learning skills, increases students' engagement or active participation, improves academic achievements, encourages independent/self-learning and improves the achievement of learning goals and objectives (Sudhir Memorial Institute Liluah, 2023; De Vries, Dimosthenous, Schildkamp & Visscher, 2022, William, 2011). In essence, the practice of AFL exposes students to an understanding of where they are in their learning, where they ought to be and the effective means to arrive at their desired destination. AfL improves classroom practice, contributes to personalized learning whereby learners are empowered to take active part in their own learning (Steele, 2019), develop confidence of learners to undertake peer and self-assessment (Oyinloye & Imenda, 2019). Also AfL can improve long term recall and learning outcome, provide evidence of learning, help individual students to learn more effectively. These benefits can only become a reality if effective strategies are adopted in the practice of assessment for learning in the classroom.

Assessment for Learning Strategies

Assessment for Learning (AfL) strategies are powerful tools used by educators to understand and enhance students' learning. Several strategies can be adopted for the purpose of assessing learning. Some of them are discussed here.

The Use of Questioning Technique

Among the strategies for the assessment for learning, the use of the questioning technique stands out as a valuable and versatile approach that allows teachers to assess the depth and breadth of students' understanding in real-time. Proper distributive questions enhance attentiveness of the students (Okoye, 2011). Shanmugavelu et al. (2020) suggested that questions should be used to gain attention of students, be presented clearly to the students, students should be allowed time to think about the answer, questions should be relevant to the age and ability of the students, be distributed to all students in the class and varied based on different levels of questioning. Strategies to respond to students questions by Center for Innovation in Teaching and Learning (2023) include: that the teacher should answer the question, can redirect the question to the class to enhance students interaction, the teacher can attempt to help the student answer his own question, ask students to stop after class to discuss the question, refer students to resources where they can find the answer, defer the question until a more appropriate time if the question is not connected to the material being covered by the teacher. Borkola (2022) equally pointed out that mental preparation for question before asking, raising hand or standing up, asking questions in a loud and clear voice, keeping questions short and on point, paying attention when the answer to the question is given help to master the act of confidently asking question in class.

There are many benefits associated with the questioning technique as an AfL strategy. Questioning encourages active learning by promoting student engagement and participation; it helps build an interactive classroom environment, driving meaningful conversations and peer learning. According to Jenkins (2023), the practice of questioning not only improves critical thinking but also enhances communication skills. He emphasized also that students who engage in questioning-based learning are more likely to articulate their thought and ideas effectively. Questioning therefore enhances critical thinking, promotes active learning and helps to build engagement (Jenkins, 2023). Furthermore, asking questions encourage active learning, help to clear doubts, make the subject more interesting, help retain information and promote personal growth (Borkola, 2022). Feedback provided in response to students' answers helps them understand their progress, correct misconceptions, and refine their thinking. Additionally, students' response serve as feedback for teachers, enabling them to adapt their teaching strategies to better meet students' needs.

To maximize the effectiveness of the questioning technique, a variety of question types should be employed, including open-ended, close-ended, higher-order and lower-order questions. Open-ended questions can stimulate critical thinking and creativity, while close-ended questions can confirm understanding and recall. Higher-order questions can help in developing complex cognitive skills, while lower-order questions

can reinforce foundational knowledge. Wait-time is another important aspect of this technique. Giving students adequate time to think before they answer increases participation and encourages deeper thinking. This results to meaningful feedback. Byme (2021) is of the opinion that time should be mapped out for questioning and discussions. Also, implementing a 'no hands up' rule can prevent the same students from dominating the discussion and ensure that all students have equal opportunities to contribute.

Giving Immediate / Instant Feedback

Instant feedback is when information is provided contextually and 'on-demand', in immediate response to a learner's action in the flow of learning (Markovic, 2023). He further stated that instant feedback helps to deepen learners understanding, serves to reinforce knowledge by correcting mistakes, affirming competence or debunking misconceptions on the topic. Immediate feedback gives room for misconceptions to be acted upon immediately in order to create strong mental ties to learning materials. Giving immediate feedback no doubt helps students learning. It is expected that feedback should be timely in each student's learning activity. This will boost better understanding of learning content. When in the course of teaching students become confused, immediate clarification is needed such that the students will be able to learn other content which might build on the one in question. Providing instant feedback is a dynamic tool for ensuring a more effective learning process, and it comes with several advantages which according to Yusri (2022) include making students perform better, discovering areas where students need more practice, deepening learning, improving students engagement and allowing for review of quality of questions. Also, Milton and Lando (2019) found that immediate feedback technique facilitate active learning through discussion and problem solving.

Giving Quality Feedback

Quality feedback is a kind of feedback that is useful and timely for improvement of students understanding. According to Bymes (2021), understanding how feedback works during the learning process can help make informed decision about how to provide the right kind of feedback to students. The way a teacher chooses to give feedback is essential to how students respond to it. The teacher therefore should be mindful of the nature of feedback to give in order to receive the right type of response. Quality feedback involves giving corrections to students on what they can do to improve, giving correction immediately following the task or when the task is on the process of completion, giving corrections individually to students, giving students room

to ask questions for clarifications. Bymes (2021) suggested that for feedback to be meaningful it should:

4.   praise students' effort not talent.
5.   be specific showing details of what students are doing well or what they need to do to improve.
6.   be given one on one.
7.   be explained wherever possible.
8.   be timely that is given immediately after a task.
9.   be given to students throughout every step of the process of learning.

Follow up on Students' Activities

Activities in which students can be assessed include: tests, assignments, projects, group discussions, etc. The teacher, to ensure effective assessment for learning has to pay detailed attention to students' responses from the above activities. Their responses to test questions as well as assignments which are not correct should be a guide to the teacher on what to correct the students on in order to answer properly in subsequent exercises. A study on the effect of teachers' homework follow-up practices on students found out that three types of homework follow-up practices (checking homework orally; checking homework on the board; and collecting and grading homework) had a positive impact on students' performance (Rosario et al., 2015). Again when students' know that teachers constantly check their activities, it keeps them up and doing and this results to effective learning.

Good Communication Relationship

When students feel free with the teacher, it helps for effective assessment for learning. It makes them free to ask the teacher questions anytime, anywhere and even confide in the teacher tasks they find difficult. Good communication relations boost the students' learning a lot.   Hanifan (2022) affirmed that effective communication can help to build and foster a safe learning environment where students can thrive, prosper and learn. According to him, it has been proven that supportive teacher-student relationship has a positive impact on class participation, engagement and ultimately on students achievements. He also noted that effective communication can be achieved through creating a safe environment, encouraging team work, moving around and getting involved with the students, responding and listening to the students and giving positive feedback.

Good Motivation to Students

Motivation is the process that initiates, guides and maintains goal oriented behavior (Cherry, 2023). According to her, it causes an individual to act in a way that gets the person closer to her goals. Motivation helps in sustaining students' effort in achieving a goal. When one is motivated, he is persistent in achieving success. Any

medium in which the teacher can use to make teaching interesting results to motivation. Motivation can come in form of encouraging equal participation of students, use of praises, material enticement, giving understandable and timely feedback, encouraging free communication. National Academic Press (2015) affirms that children who are motivated tend to be engaged, persists longer, have better learning outcomes and perform better than other children in standardized achievement test. Students can be motivated by praising their effort to answer questions and carry out tasks. They can be motivated by being encouraged to ask questions if they need clarification. According respect to students' opinion is also motivational. The teacher is expected to do all the things possible to boost students' interest in the classroom.

Teach thought (2021) gave the following ideas on how to motivate students: (i) Give students a sense of control by making the learning objective clear to them. (ii) Make students know what is expected of them in order to stay motivated to work. (iii) Create a threat free environment. (iv) Change scenario, that is, teaching can be done outside the classroom. (v) Offer varied experiences. (vi) Use positive competition, that is, work to foster friendly spirit of competition in the classroom. (vii) Offer reward to students. (viii) Give students responsibilities. (ix) Allow students to work together. (x) Give praise when earned. (xi) Encourage self-reflection. (xii) The teacher should be excited about teaching to get students excited about learning. (xiii) The teacher should get to know the students and be interested in their success. (xiv) Harness students interest (xv) Help students find intrinsic motivation. (xvi) Manage students' anxiety. (xvii) Make goal higher but attainable. (xviii) Give learning feedback and offer changes to improve. (xix) Track students' progress. (xx) Make things fun. (xxi) Provide opportunity for success.

Group Study

This is a situation where students form small groups to discuss, analyze, internalize, and proffer solutions to tasks in a subject area. For effectiveness, the activities of the study group require adequate planning, for instance setting up some ground rules, assigning roles to members, setting up an agenda and a format etc(Ender & Newton, 2000). When students form study groups, it creates opportunity for them to interact with their fellow students. They ask and answer questions they encountered in the course of learning such that one who does not understand will learn from the ones who understood. This act improves the performance of all individuals in the group since all of them will finally have a better understanding of the lesson content. Florida National University (2019) affirmed the above by stating that study group will make students gain better understanding of subject, get better grades, gain well rounded insight, maintain personal responsibilities, gain team experience, combat procrastination, sharpen problem solving skills, motivate and inspire others.

Prompt Feedback on the Part of the Students

Students' hiding their ignorance deters learning. Students are supposed to be open in telling the teacher areas in the instructional process where they do not understand. Students are fond of responding 'yes sir' or 'yes aunty' to the teacher's questions of 'do you understand'? This should not be because with this scenario, the aim of the learning activity is defeated. Minero (2016) suggested the use of students survey to allow students voice out their learning issues, needs, desires, give feedback on how a teacher can change his/her instruction to help them perform better in class. Teachers can achieve prompt feedback from students by giving time for submission of task giving to students and ensuring compliance of the students, making out time to go through students work and giving correction that will help the students repeat the task they did not do well, checking to ensure that the student did the required correction, punish those that failed to submit and ensuring they do so.

Giving Time for Correction and Feedback

In the timetable, no provision is made for giving correction however it is very essential for learning to take place. Teachers and educators are encouraged to make out time for correction of students' work. According Markovic (2023), correcting mistakes or reinforcing answers in the flow of learning helps in three fronts: to make learning autonomous, self-directed and to better embed received information. To enable the teacher give corrections as expected, the teacher should write out necessary corrections as they set the task to be given to the students. This act makes it easy for the teacher to provide the correction when needed. Some teachers fail to write out corrections or keys as they set questions hence they find it difficult to provide the correction promptly. When learning is followed up with immediate feedback, it causes learners to pause, engage and modify bahaviour (Markovic, 2023).

Self-Assessment

Self-assessment requires students to make judgments about their own work, identifying the gaps between their current performance and the desired standard and take actions to close the gaps (Andrade, 2010 in Yan, 2022). Teachers are encouraged to integrate self-assessment into instruction so that students are seen as active partners who share responsibilities with the teacher in the assessment process (Yan, 2022). When using self-assessment formatively, students reflect on the quality of their work against reference information (example, learning goal, assessment criteria or other works), identify the gap between the current and desired performance and revise accordingly (Adrade, 2019; Nicol, 2020; Panadero et al. 2019 in Yan, 2022). According to Yan (2022), formative use of self-assessment has greater educational merit for students learning by acting as a learning process, rather than a substitute for other types of summative assessment. Self-assessment is an involvement of learners in making

judgments about their achievements and the outcomes of their learning and is a valuable approach to supporting students, particularly when used formatively. Self-assessment supports students' learning and is one of the most important skills that students require for future professional development and life-long learning, as it develops their capacity to be assessors in learning.   For self-assessment to be effective, there should be students' understanding on the assessment criteria, standards and learning outcome (Wride, 2017).

Portfolios

This involves documenting students' progress during their learning through systematic collection of samples of their work. Portfolios provide helpful insight for both students and the teacher for further adjustment of learning (Rhalmi, 2020). According to Rhalmi, portfolios may include classwork, assigned homework, test results and feedback from peers and teachers. The Glossary of education reform (2016) explained that a student's portfolio is a compilation of academic work and other forms of educational evidence assembled for the purpose of: (i) evaluating coursework quality, learning progress and academic achievement. (ii) determining whether students have met learning standards or other academic requirements for course, grade-level promotion and graduation. (iii) helping students reflect on their academic goals and progress as learners. (iv) creating a lasting archive of academic work products, accomplishments and other documentations. Portfolio assessment in the classroom should include students proper choosing of personal growth goal from among the list of skills and competences targeted by a course, students' reflecting publicly at the end of the course their progress towards stipulated goals, teacher provision of actionable outcomes based feedback and students use of their teacher's feedback to set goals and reflect on their progress over time (Cummings, 2018).

Challenges

The implementation process of assessment for learning in the classroom is faced with several challenges as outlined by some researchers (Bezabih, et al., 2019; Mogues, 2018; Sajjad, et al., 2022). Some of these challenges are discussed below:

One of the main challenges is the misunderstanding of what "assessment for learning" actually entails. It is not merely a series of tests but an ongoing process where assessments inform teaching and learning strategies. This requires a shift in mindset for both teachers and students, which can be through constant enlightenment on what AfL is all about.

Assessment for learning is time-consuming because it involves regular, timely feedback and adjustments to teaching strategies. This can strain the already limited time resources in the classroom. Teachers should therefore make use of varied assessment tools including assessments that can be done off the classroom. In a classroom setting,

there is often pressure to ensure that all students are learning at the same pace. However, assessment for learning focuses on individual student progress, which can make it difficult to manage and cater to the varying learning speeds and styles of individual students. Individualized learning practices can be put in use,

Providing high-quality feedback is a skill that takes time to develop, and not all educators may be equipped to do so effectively. Feedback needs to be immediate, clear, and constructive for assessment for learning to be effective. Teachers should be put through constant training and workshop on skills in giving high quality feedback. Parents often have expectations based on traditional forms of assessment. Communicating the benefits and strategies of assessment for learning to parents, and adjusting their expectations, can be of significant help.

Implementing assessment for learning may require additional resources like training materials, technology for data tracking, and more. Not all schools or teachers may have access to these necessary resources. To overcome this challenge, schools may get financial help from school community, parent-teachers association, philanthropists and the government.

Over-emphasis on High-stakes Assessments can be a barrier to implementation of AfL. Many educational systems are focused on high-stakes, summative assessments. This emphasis can deter the effective implementation of formative, on-going assessment for learning strategies. Teachers might lack the necessary training to effectively implement and interpret assessment for learning strategies. This underscores the need for continuous professional development in this area.
The teachers should be enlightened through workshops and seminars on AfL strategies to enhance improvement of students' learning.

In larger classrooms, personalizing feedback and tracking individual progress can be particularly challenging. Teachers may struggle to provide individual attention to each student, which is a key component of assessment for learning. The teacher-student ratio should be reduced to enable the teacher individualize learning.

Fear of failure or negative judgment can make students resistant to engage in assessment for learning, as it involves regularly showcasing their understanding and skills. Overcoming these psychological barriers can be a considerable challenge. This challenge can be taken care of if every single effort of the learner is appreciated.

Conclusion

This review highlighted the concept of AfL, its benefits to students and teachers, strategies and challenges. It stressed that for effective teaching and learning, different strategies for assessment for learning have to be put in use regularly. It was pointed out in the discussion that the teachers has to be skillful in the use of questions in the

classroom ensuring that they are properly distributed, feedback should be given immediately after a task to aid learning as well as give the necessary corrections for students' improvement, good communication relationship is necessary to foster learning, and students should be motivated by all means to learn, through forming study groups as well as keeping record of students' portfolios.

Recommendations

Based on the foregoing, the following recommendations are made.

1) Time should be mapped out for assessment to give time for more interaction, questioning, enough time to think and answer questions.

2) Assessment of teachers' performance should not just be based on the extent of coverage of scheme of work, focus should be on the ability to make impact on the students' learning based on where they are before the learning started.

3) There should be constant enlightenment of teachers through workshops and seminars on assessment for learning strategies.

4) Financial help can be sought from school community, parent-teachers association, philanthropists and government to help acquire assessment for learning materials. .

References

Arnold, J. (2022). Prioritizing students in assessment for learning: A scoping review of research on students' classroom experience. *Review of Education*. https://doi:10.1002/rev.3.3366.

Bezabih, B. M., Yigzaw, Y. H., Garad, A. A. (2019). Knowledge, perception, practices, and challenges of assessment for learning (AFL) among First Cycle primary school teachers in Somali Regional state. *IOSR Journal of Humanities and Social Sciences, 24*(1), 21– 33 www.iosrjournals.org.

Borkola, L. K. M. (2022). *Top five benefits of asking question in class.* https://collegemarker.com/blogs/topfive.

Bymes, R. (2021). *14 ways to give students meaningful feedback.* https://studycat.om/14waystogivestudents.

Bullock (n.d). *Assessment for learning*. https://www.teachingenglish.org.uk/en/professional-development/teachers/assessing-learning/artic...

Center for Innovation in Teaching and Learning (2023). *Teaching and learning strategies to responding to students questions.* https://citl.illinois.edu/citl.101/teaching.

Cherry, K. (2023). *Motivation: the driving force behind our actions*. https://www.verywellmind.com/whatis.

Cummings, J. (2018). *4 advantages of using students process portfolios*. https://globalonlineacademy.org/insight.

DeLuca, C., Coombs, A., MacGregor, S., & Rasooli, A. (2019). Towards a differential and situated view of assessment literacy: Studying teachers' responses to classroom assessment scenarios. *Front. Educ.* 4, 94. https://doi: 10.3389/feduc.2019.00094.

De Vries, J. A., Dimosthenous, A., Schildkamp, K., & Visscher, A. J. (2022). The impact on student achievement of an assessment for learning teacher professional development program. *Studies in Educational Evaluation,* 74. https://doi.org/10.1016/j.stueduc.2022.101184.

Florez, M. T., & Sammons, P. (2013). Assessment for learning: Effects and impact. *Oxford University Department of Education.* https://files.eric.ed.gov/fulltext/ED546817.pdf.

Ender, S. C., & Newton, F. B. (2000). *Students helping Students*. (pp129-155). John. C. Wiley and Sons, Inc.

Florida National University (2019). *Ten reasons why you should form a study group*. https://www.fnu.edu/tenreasons-form.

Hanifan, O. (2022). *5 ways to establish effective communication in the classroom.* https://www.mentimeter.com/blog/inter.

Hawthorne, H. (2022). *How to use assessment for learning in schools.* https://www.highspeedtraining.co.uk.

Heitink, M. C., Van-der-Kleij, F. M., Veidkamp, B. P., SchilDkamp, K., & Kippers, W. B. (2016). A systematic review of prerequisites for implementing assessment foo learning in classroom practice. *Educational Research Review, 17,* 50-62. https://doi.org/10.1016/j.edurev.2015.12.002.

Jenkins, P. (2023). Importance of questioning: unlocking critical thinking skills. *Brilliantio.* https://brilliant.com/importanceofquestioning.

Markovic, I. (2023). *Why giving instant feedback is important for effective learning*. https://www.edume.com/blog/role-of-feedback.

Milton, L. E., & Lando, L. E. (2019). Students' perspective on the immediate feedback assessment technique. *Journal of Occupational Therapy Education*, 3(3). https://doi.org/10.26681/jote.2019.030301.

Minero, E. (2016). Improving teaching with expert feedback from students. *Edutopia.* https://www.edutopia.org/practice/student.

Mogues, B. (2018). The implementations and challenges of assessment practices for students' learning in public selected Universities, Ethiopia. *Universal Journal of Educational Research*. doi:10.13189/ujer.2018.061213.

Murati, R., (2015). The role of the teacher in the educational process. *The Online Journal of New Horizon in Education, 5*(2), 75 – 78.

National Academic Press (2018). *How people learn II: Learners, contexts and culture: Motivation to learn.* https//:nap.nationalacademics.org/read

Okoye, R. O. (2011). Maximizing the learning potential of learners in Nigerian schools. *Multidisciplinary Journal of Research and Development, 17*(4), 1-8.

Oyinloye, O. M., & Imenda, S. N. (2019). The impact of assessment for learning and learners performance in life science. *Eurasia Journal of Mathematics, Science and Technology Education, 15*(11). https://doi.org/10.29333/ejmsta/108689.

Prasad, C., & Gupta, P. (2020). Educational impact on the society. *International Journal of Novel Research in Education and learning, 7*(6), 1-7.

Rosario, P., Nunez, J. C., Vallejo, G., Cunha, J., Nunes, T., Suarez, N., Fuentes, S., Moreina, T. (2015). *The effect of teachers' homework follow-up practices on student EFL performances: A randomized-group design.* https://www.frontiersin.org/article.

Rhalmi, M. (2020). *What is assessment for learning? Definition, purpose, types and examples*. https://www.myenglishpages.com/blog.

Sajjad, H., Nasir, S., Nasir, A., & Saif. U. (2022). *Teachers' classroom assessment practices: Challenges and opportunities to classroom teachers in Pakistan.* https://www.qurtuba.edu.pk/thedialogue/The%20Dialogue/14_1/Sajjad%20Hussain.pdf.

Shanmugavelu, G., Ariffin, K., Vadivelu, M., Mahayudin, Z. & Sundarad, M. A. R. K. (2020). Questioning technique and teachers' role in the classroom. *Shanlax International Journal of Education, 8*(4), 45-49. https://doi.org/10.34293/education.v8i4.3260

Steele, A. (2019). *What is assessment for learning and what are the benefits?* https://www.cambridge.org.

Structural Learning (2021). *Strategies for assessment for learning.* https://www.structural-learning.com/post/strategies-for-assessment-for-learning

Sudhir Memorial Institute Liluah (2023). *Benefits of assessment for learning*. https://sudhirmemorialinstituteliluah.com.

Teachtaught staff (2021). *21 simple ideas to improve students' motivation*. https://www.teachtaught.com/pedagog.

The Glossary of Education Reform (2016). *Portfolio*. https://www.edglossary.org/portfolio.

William, D. (2011). What is assessment for learning?. *Studies in Educational Evaluation.* 37(1): pp 3-14. https://doi.org/10.1016/j.stueduc.2011.03.001.

Wolterinck, C., Poortman, C., Schildkamp, K., & Visscher, A. (2022). Assessment for learning:

Developing the required teacher competencies. *European Journal of Teacher* https://doi.org/10.1080/02619768.2020.2124912

Wride, M. (2017). *Guide to student self-assessment*. Academic Practice, University of Dublin Trinity College.

Wyatt-Smith & Adie (2019). The development of students' evaluative expertise: enabling conditions for integrating criteria into pedagogic practice. *Journal of Curriculum Studies, 53*(4) 399-419. https://doi.org/10.1080/00220272.2019.1624831.

Yan, Z. (2022). *Students' self-assessment as a process for learning*. https://www.researchgate.net/publication. https://10.4324/9781003162605.

Yusri, S. (2022). *Reasons why immediate feedback is important for effective learning*. https://www.blog.intedashboard.com.

Relevance of Educational Research in Science and Technology Education

Blessing Solomon Dawal
Department of Science and Technology Education
University of Jos
08035968844
dawalb@unijos.edu.ng; blessingdawal2010@gmail.com

Abstract

The modern world is increasingly becoming research-based, and it heavily depends on science and technology for economic growth and national sustainability. Researchers today use teaching and learning to inform the advancements in science and technology. Science and technology research relies on the consistency of knowledge from various sources that is frequently built on prior knowledge to go beyond what is already known. By supplying information to support more strategically and efficiently delivered instruction, educational research enhances both teaching and learning methodologies. Student application of science and technology knowledge to real-world situations is aided by educational research. It explains how to solve difficulties using a scientific approach and methodology. This paper examined the relevance of educational research in science and technology education. The main areas taken into consideration in this paper on relevance of educational research are: improved teaching, curriculum development enhanced students learning outcomes, equity and inclusion, policy and decision making and continuous professional development. Ways for adopting educational research were discussed.
Keywords: Educational Research, Science and Technology, Teaching and Learning

Introduction

Science and technology education are essential components of modern educational systems. Educational research in this domain holds significant promise for improving the quality of teaching and learning. For economic growth and national sustainability, the modern world is growing more and more research-based and dependent on science and technology. Researches in science teaching and learning considerably influence the practice in science and technology education today. Research in science and technology education is dependent on the synthesis of knowledge from various sources that continuously expand upon prior understanding in order to move beyond what is currently known (Etiubon & Okopide, 2015). Science and technology are viewed as tools for personal and societal growth on a global scale. This has led to thorough study being done on science and technology education. Education and

scientific and technological research play an unlimited significance in society. The remedies to the problems facing our educational system, according to research studies are buried in intensive vigorous research (Eze,2015). It is the most important for advancing knowledge, promoting progress and enabling man to relate more effectively to his environment to accomplish purpose and resolve problems. Eze (2015) explained that research leads to better and improved practices in science and technology education. Results of the sciences and technology research revealed in the past that those instructional materials, technologies and methods that prove to be more effective indicted those that seem to be ineffective.

In Nigeria, many research based discoveries on better and more effective ways of teaching science and technology subjects have been published to improve learning outcomes amongst students, especially at the secondary school level yet students' performance in science and technology continues to dwindle. The National Policy on Science and Technology to Arts and Humanity enrolment ratio of 60% to 40% in higher education is not yet met. The majority of the potential applicants at the secondary school level are unable to score credit passes in science and technology. This situation has called for questions as to whether science and technology teachers in Nigeria understand the relevance of research in science and technology education. Despite these numerous research-based discoveries and publications on teaching science and technology subjects such as the inquiry based learning, cognitive science learning theory and STEM education, students' performance in these areas continues to decline. This raises questions about the understanding of relevance of educational research among science and technology teachers. Teachers need to recognize the value of research in their field and its impact on teaching and learning outcomes. It is because of these problems that this paper discussed relevance of research in science and technology education. The relevance of educational research in science and technology education are discussed under the following sub-headings: improved teaching methods, curriculum development, enhanced student learning outcomes, equity and inclusion, policy and decision making and continuous professional development.

Improved Teaching Methods

Educational research plays a fundamental role in identifying and refining effective teaching strategies in science and technology education. Empirical studies by Anaduaka and Okafor (2013) emphasized the impact of inquiry-based learning, problem-solving techniques, and hands-on experiments in enhancing students' engagement and understanding. how accessible research information is to science teachers. Some research studies have been carried out in the area of instructional techniques and learning strategies. The result of these studies indicated that learner-centred methods are

more effective than teacher centred methods in enhancing students' performance. For example, Aniodoh and Eze (2013) investigated the effectiveness of programmed instruction and lecture methods on students' achievement in secondary school chemistry. The result revealed that programmed instruction enhanced students' achievement better than traditional lecture method. Adebola and Onakoya (2013) examined the effect of think-pair-share instructional strategy on students' achievement in secondary school mathematics. They reported that there was a significant difference in performance of students and this difference was in favor of think-pair- share strategy. Nwagbo and Okoro (2012) explored the effect of interaction patterns on achievement in Biology among secondary school students. They found interaction pattern more effective than traditional methods. However, an evaluation report on what goes on in science classrooms revealed that teachers predominantly use old traditional teaching methods which do not actively involve learners in the learning process and this has resulted in consistent poor performance in science (Eze, 2012). This explains why researchers advocate a re-orientation from didactic teacher centred methods to active learning strategies which engage students gainfully in the learning process. Active learning method has become a preferred way to change the traditional teacher centred classroom into newer student-centred approach to learning (Otutu, 2014) Additionally, constructivist theoretical framework highlighted the importance of leveraging technology to create interactive and dynamic learning experiences in science and technology education. Improving teaching methods in science and technology education is crucial to enhance learning outcomes and prepare students for the demands of a rapidly evolving technological landscape. Relevance of educational research in this field is essential for informed decision-making and the implementation of evidence-based instructional strategies. Some approaches to improving teaching method include the inquiry based learning method, problem-based learning method (PBL), flipped classroom approach, use of educational technology and collaborative learning and peer interaction.

Inquiry-Based Learning (IBL): Inquiry-Based Learning is a student-centered approach that encourages active engagement and critical thinking. It involves posing questions, problems, or scenarios that guide students to explore and investigate concepts and phenomena. A study by Pedaste et al. (2015) highlighted the effectiveness of IBL in improving science education by fostering a deeper understanding of scientific principles and promoting problem-solving skills.

Problem-Based Learning (PBL): Problem-Based Learning is another student-centered approach that involves presenting students with real-world problems to solve. This method encourages critical thinking, collaboration, and the application of knowledge to practical situations. Hmelo-Silver (2014) demonstrated the effectiveness

of PBL in promoting higher-order thinking skills and enhancing students' motivation and engagement in science and technology education.

Flipped Classroom Approach: The flipped classroom approach involves reversing traditional teaching. Students engage with instructional content (e.g., lectures) independently outside of class and then actively participate in interactive, collaborative activities during class. A study by Lage, Platt, and Treglia (2018) explored the benefits of the flipped classroom approach, including increased student engagement and improved understanding of complex scientific concepts.

Use of Educational Technology: Integrating educational technology, such as virtual labs, simulations, and multimedia resources, can enhance science and technology education. Research by Hew and Cheung (2013) discussed the positive impact of using technology on student engagement, motivation, and learning outcomes in science education.

Collaborative Learning and Peer Interaction: Collaborative learning involves students working together in groups to achieve a common goal. Research by Johnson and Johnson (2014) emphasized the positive effects of cooperative learning on students' achievement, engagement, and the development of critical thinking skills.

In conclusion, integrating inquiry-based and problem-based learning, utilizing the flipped classroom approach, incorporating educational technology, and fostering collaborative learning are effective methods to enhance science and technology education.

Curriculum Development

Tyler's Objective Model (TOM) proposed by Tyler in 1949 emphasized the need to align curricula with emerging trends and real-world applications, ensuring relevance and applicability. Empirical studies by Ngozi (2020) showed that positive impact of incorporating interdisciplinary topics, such as sustainability and digital literacy, on promoting a comprehensive understanding of science and technology. Curriculum development in science and technology education is a critical aspect of ensuring that students are equipped with the knowledge and skills necessary to succeed in a rapidly advancing technological world (Agata, 2020). The relevance of educational research in this field is paramount for designing and implementing effective curricula. A crucial aspect of curriculum development is aligning the content and structure with the latest scientific and technological advancements (Sonnert, 2012). Research by Bybee (2013) emphasizes the importance of updating and aligning curricula with current research and developments in science and technology to ensure that students are learning relevant and up-to-date information.

Modern science and technology are highly interdisciplinary, requiring a curriculum that integrates knowledge and skills across multiple domains. Research by Voogt (2013) advocate for integrating cross-disciplinary content into the science and technology curriculum to prepare students for the interdisciplinary nature of contemporary scientific and technological challenges. Research by Norman (2020) suggests that incorporating inquiry-based learning (IBL) into the curriculum can enhance students' understanding of scientific principles and improve critical thinking and problem-solving skills. Hofstein and Rosenfeld (2016) discussed the benefits of IBL and its potential to promote deep understanding and engagement in science education. Curriculum development should prioritize practical applications and hands-on experiences to provide students with real-world skills and problem-solving abilities. Research by Barak (2019) highlights the effectiveness of incorporating hands-on experiences and practical applications to enhance science and technology education. Ethical considerations and social implications associated with science and technology should be integrated into the curriculum. Research by Jansen and Scherer (2019) emphasized the importance of addressing ethical aspects and societal implications in science and technology education to foster responsible citizenship.

Incorporating current scientific and technological advancements, integrating cross-disciplinary content, utilizing inquiry-based learning, emphasizing practical applications, and addressing ethical and social implications are essential aspects of curriculum development in science and technology education. These strategies are supported by empirical and theoretical research, ensuring that the curriculum remained relevant and effective for preparing students' for the dynamic world of science and technology.

Enhanced Students' Learning Outcomes

Enhanced learning outcomes in science and technology education are essential for preparing students to thrive in a technology-driven world. Incorporating relevant educational research is vital to design and implement effective strategies that optimize learning in these domains. Active learning strategies, such as group discussions, collaborative projects, and interactive experiments, significantly enhance learning outcomes in science and technology education (Sadler, 2012). Freeman (2014) conducted a meta-analysis that demonstrated that active learning methods improved students' examination performance and reduced failure rates compared to traditional lecture-based methods. Also utilizing formative assessment techniques and providing timely, constructive feedback can enhance learning outcomes in science and technology education. Black and Wiliam (2019) argued that formative assessment practices lead to improved students' learning and achievement by providing insights into students' understanding and tailoring instruction accordingly. Also Incorporating technology into

science and technology education enhanced engagement and learning outcomes. Research by Kay and Greenhill (2011) highlights the potential of educational technologies, such as simulations and virtual labs, to improve students' understanding of complex scientific concepts, thereby fostering critical thinking and problem-solving skills. A study by Balogun (2016) emphasized the role of critical thinking in science education and how developing these skills can positively impact learning outcomes. Inquiry-based learning encouraged active exploration, investigation, and problem-solving. Studies have shown that implementing IBL in science and technology education enhanced critical thinking, understanding of scientific concepts, and motivation among students (Blumenfeld, 2021).

Introducing active learning strategies, utilizing formative assessment and feedback, integrating technology, fostering critical thinking and problem-solving skills, and implementing inquiry-based learning are key factors that enhance learning outcomes in science and technology education.

Research in science and technology education offers valuable insights into enhancing student learning outcomes. Deweys experimental theory highlighted the role of evidence-based strategies in improving student achievement and critical thinking skills. Coburn, C. E., & Penuel, W. R. (2016) demonstrated the positive correlation between specific instructional practices informed by research and improved learning outcomes in science and technology subjects.

Equity and Inclusion

Equity and inclusion in science and technology education are essential for ensuring that all students, regardless of their background, have equal access and opportunities to succeed in these fields. Incorporating relevant educational research is crucial to develop strategies that promote equity and inclusion in science and technology education. A critical aspect of promoting equity in science and technology education is addressing the existing gaps in participation and achievement. A study by Nwagbo and Okoro (2012) emphasized the need to address disparities in STEM education, particularly for underrepresented minority groups, to improve equity and diversity in STEM fields. Implementing inclusive pedagogical approaches and practices is fundamental to promote equity in science and technology education. Research by Chasteen (2017) discussed the importance of adopting inclusive teaching practices, such as active learning and fostering a sense of belonging, to address disparities and enhance participation and success for all students. Incorporating culturally relevant curriculum and instruction is essential to engage diverse student populations and promote equity. Otutu (2018) emphasized the importance of integrating diverse perspectives and experiences into science and technology education to enhance inclusivity and relevance

for all students. Also Providing targeted support and resources to underrepresented groups is crucial for promoting equity in science and technology education. A study by Fayombo (2012) emphasized the role of mentorship and peer support in retaining underrepresented minority students in STEM majors. Sometimes, instituting policy changes and addressing systemic issues are critical to promoting equity in science and technology education. A study by National Academies of Sciences, Engineering, and Medicine (2016) provides insights into policy recommendations to enhance diversity and equity in STEM fields.

Policy and Decision-making

Policy and decision-making in science and technology education are critical for shaping the direction and effectiveness of educational systems. Incorporating relevant educational research in policy formulation and decision-making is essential to ensure informed, evidence-based practices The importance of evidence-based policy and decision-making cannot be overstated. Incorporating relevant educational research into policy making processes ensured that decisions are grounded in empirical evidence. A study by Otutu (2018) provided insights into the use of research evidence in policy and practice, emphasizing the need for effective knowledge translation mechanisms. Policies and decisions in science and technology education should align with broader educational goals and objectives. An empirical study by Supovitz (2013) examined the relationship between policy and educational practice, emphasizing the importance of policy coherence and consistency with overall educational objectives.

Engaging stakeholders, including educators, researchers, policymakers, and community members, in the policy making process is crucial. Research by Anderson, Maier, and Michael (2018) explores the importance of collaboration among diverse stakeholders to enhance policy effectiveness and implementation in education. Also effective policy and decision-making in science and technology education should have a long-term perspective. Research by Banilower (2013) discussed the importance of long-term vision in STEM education, emphasizing the need for sustained efforts and strategic planning. Continuous evaluation and iteration of policies are essential to ensure their effectiveness and relevance. Coburn and Penuel (2016) presented insights into the importance of policy feedback and iterative processes to enhance policy implementation and outcomes. Evidence-informed policy and decision-making, alignment with educational goals, stakeholder involvement, long-term planning, and policy evaluation and iteration are crucial aspects of effective policy development in science and technology education. Incorporating empirical and theoretical research in these processes ensured that policies are well-informed, coherent, and effective in achieving educational objectives in the realm of science and technology education.

Continuous Professional Development

10.   Research is instrumental in shaping effective professional development programmes for science and technology educators. Davis (2018) emphasized the importance of research-based insights in enhancing educator knowledge and pedagogical practices. Authors like Rotgans and Adebayo (2021) showed in their works the positive outcomes of research-informed professional development on educator confidence and effectiveness in teaching science and technology. Teachers must have opportunities for continuous professional growth through regular attendance at workshops, seminars, and conferences. This will allow them to update their teaching skills and access the latest information needed to meet curriculum demands. Additionally, improving job remuneration and working conditions for teachers will raise the professional standards and attract more highly skilled educators.

Ways For Adopting Educational Research In Science And Technology Education

Building upon the reviewed implications and drawing from the theoretical and empirical insights, we propose a comprehensive framework for the effective adoption of educational research in science and technology education. This framework incorporates best practices derived from the implications explored, aiming to guide educators, policymakers, and stakeholders in leveraging research to enhance the teaching and learning of science and technology.

Integration of Innovative Teaching Methods

Encourage the adoption of inquiry-based learning, problem-solving techniques, and hands-on experiments through targeted professional development programs.
Promote the use of technology as a tool to enhance interactive and dynamic learning experiences in science and technology classrooms.

Flexible and Dynamic Curriculum Development

Establish mechanisms for ongoing collaboration between educators, researchers, and industry professionals to align curricula with emerging trends and real-world applications.
Provide support and incentives for educators to integrate interdisciplinary topics, such as sustainability and digital literacy, into science and technology curricula.

Data-Driven Instructional Strategies

Encourage educators to regularly evaluate and adjust their instructional strategies based on evidence from research and assessments of student learning outcomes.

Facilitate a culture of continuous improvement by fostering dialogue and collaboration among educators to share best practices and research findings.

Inclusive and Accessible Education

Implement policies that promote inclusivity and diversity in science and technology education, ensuring equitable access and opportunities for all students.

Provide resources and support to educators to address disparities and create an inclusive learning environment that fosters diversity of thought and perspectives.

Evidence-Based Policy Formulation

Establish research-driven policy making bodies or committees that synthesize research findings and recommendations to inform policy decisions related to science and technology education.

Foster collaboration between researchers, policymakers, and educators to translate research outcomes into actionable policy recommendations.

Lifelong Learning and Professional Development

Design and implement professional development programs that are research-based and tailored to the specific needs of science and technology educators.

Encourage educators to engage in continuous learning, stay updated with the latest research, and apply evidence-based strategies to enhance their teaching practices. Educational research in science and technology education holds immense potential for advancing teaching methodologies, curriculum development, student learning outcomes, equity, policy influence, and continuous professional development. By comprehensively reviewing theoretical and empirical studies on these implications, we have proposed a robust framework that encompasses best practices to guide the effective adoption of educational research in science and technology education. Implementing this framework will undoubtedly contribute to the continual enhancement of science and technology education, preparing students for the challenges and opportunities of the future.

Conclusion

In conclusion, educational research plays a crucial role in science and technology education, as well as in the overall development of education systems. It served as a systematic and objective process of investigating and analyzing information to increase understanding and find solutions to educational problems. Through educational research, teachers and educators can identify effective teaching and learning practices, improve instructional methods, develop innovative technologies and materials, and enhance student outcomes. The implementation of research findings can lead to better learning

outcomes, effective teaching strategies, and the development of relevant and practical solutions to educational problems.

References

Anderson, L. M., Maier, D. S., & Michael, B. (2018). Toward a more effective role for education policy research in state decision making. *Educational Policy, 32*(1), 94-126.

Awujo, C., & Agbakwuru, C. (2013). Effect of Students' Exposure to Rubrics Development on their achievement in mathematics. *54th STAN Annual Conference Proceedings:* 357-362.

Banilower, E. R., Smith, P. S., Weiss, I. R., Malzahn, K. A., Campbell, K. M., & Weis, A. M. (2013). *Report of the 2012 National Survey of Science and Mathematics Education.* Horizon Research, Inc.

Barak, M., Zadok, Y., Barak, J., & Surkes, M. A. (2019). The effect of teaching and learning with tablet PCs on teaching and learning science in Israeli high schools. *Educational Technology Research and Development, 67*(4), 911-929.

Best, J. W., & Kahn, J. V. (2020). *Research in education.* Retrieved June 20, 2023, from http://ww2.odu.edu-jritz/attachments/reined.pdf

Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation, and Accountability, 21*(1), 5-31.

Blumenfeld, P. C., Soloway, E., Marx, R. W., Krajcik, J. S., Guzdial, M., & Palincsar, A. (1991). Motivating project-based learning: Sustaining the doing, supporting the learning. *Educational psychologist, 26*(3-4), 369-398.

Boykin, L. (2020). *Why research in education?* Retrieved June 20, 2023, from http://www.ascd.org/ASCD/pdf/journals/ed_lead/el_197204_boykin.pdf

Bransford, J. D., Vye, N. J., Stipek, D., Gomez, L. M., & Lam, D. (n.d.). *Equity, excellence: Elephants And Evidence.* Retrieved June 20, 2023, from http://hepg.org/HEPG/Media/Documents/intro_role-of-research-in-ed-improvemtient-4.pdf

Bulterman-Bos, J. A. (2018). Will a clinical approach make education research more relevant for practice? *Relevance in Education Research, 1*(377), 412-420. Retrieved June 20, 2023, from https://pdfs.semanticscholar.org/at/43940675c1d41987c6d0419570531368768.pdf

Chasteen, S. V., Perkins, K. K., Beale, P. D., Pollock, S. J., & Wieman, C. E. (2017). A top- down approach to inclusive teaching. *Science, 356*(6337), 632-634.

Coburn, C. E., & Penuel, W. R. (2016). Research–practice partnerships in education: Outcomes, dynamics, and open questions. *Educational Policy, 31*(1), 225-261.

Dabney, K. P., Tai, R. H., Almarode, J. T., Miller-Friedmann, J. L., Sonnert, G., Sadler, P. M., & Hazari, Z. (2012). Out-of-school time science activities and their association with career interest in STEM. *International Journal of Science Education, Part B, 2*(1), 63-79.

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly, 13*(3), 319-340.

Estrada, M., Woodcock, A., Hernandez, P. R., & Schultz, P. W. (2011). Toward a model of social influence that explains minority student integration into the scientific community. *Journal of Educational Psychology, 103(*1), 206-222.

Freeman, S., Eddy, S. L., McDonough, M., Smith, M. K., Okoroafor, N., Jordt, H., & Wenderoth, M. P. (2014). Active learning increases student performance in science, engineering, and mathematics. *Proceedings of the National Academy of Sciences, 111*(23), 8410-8415.

Gay, G. (2018). *Culturally responsive teaching: Theory, research, and practice.* Teachers College Press.

Gay, L. (1996). *Educational research: Competencies for analysis and applications.* New Jersey: Merill.

Hew, K. F., & Cheung, W. S. (2013). Use of three-dimensional (3-D) immersive virtual worlds in K-12 and higher education settings: A review of the research. British *Journal of Educational Technology, 44*(6), 851-871.

Hofstein, A., & Rosenfeld, S. (2016). Bridging the gap between formal and informal science learning. *Studies in Science Education, 52*(1), 135-152.

Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? Educational psychology Review, 16(3), 235-266.

Jansen, M., & Scherer, R. (2019). A call to action: The need for a societal perspective in science education. *Cultural Studies of Science Education, 14*(4), 1029-1041.

Johnson, D. W., & Johnson, R. T. (2014). Cooperative learning in 21st century. *Annual Review of Education, Communication, and Language Sciences, 11*, 83-103.

Kay, R. H., & Greenhill, V. (2011). Students as (co) producers of technology-enhanced learning. *Educational Technology & Society, 14*(2), 17-27.

Lage, M. J., Platt, G. J., & Treglia, M. (2000). Inverting the classroom: A gateway to creating an inclusive learning environment. *The Journal of Economic Education, 31*(1), 30-43.

Lederman, N. G., & Glass, S. V. (Eds.). (2019). *Handbook of research on science education.*

National Academies of Sciences, Engineering, and Medicine. (2016). *Barriers and opportunities for 2-year and 4-year STEM degrees: Systemic change to support diverse student pathways.* National Academies Press.

Pedaste, M., Mäeots, M., Siiman, L. A., de Jong, T., van Riesen, S. A., Kamp, E. T., ... & Tsourlidaki, E. (2015). Phases of inquiry-based learning: Definitions and the inquiry cycle. *Educational Research Review, 14,* 47-61.

Pramodini, D. V., & Sophia, K. A. (2012). Evaluation of Importance of Research Education. *International Journal of Social Science & Interdisciplinary Research, 1*(9), 1-6. Retrieved June 20, 2023, from http://indianresearchjournals.com/pdf/USSIR/2012/September/1.pdf

Supovitz, J. A. (2013). The case for coherence in educational policy. *Educational Policy, 27*(2), 353-391.

Teo, T. (2009). *Examining the influence of subjective norm and facilitating conditions on the intention to use technology among pre-service teachers.*

Tsui, C. Y. (2016). Fostering critical thinking in science education: Teachers' perspectives on instruction and professional development. *Research in Science Education, 46*(1), 87-103.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425-478.

Voogt, J., Fisser, P., Pareja Roblin, N., Tondeur, J., & Braak, J. V. D. (2013). Technological pedagogical content knowledge–a review of the literature. *Journal of Computer Assisted Learning, 29*(2), 109-121.

Weiss, C. H. (2013). The many meanings of research utilization. *Public Administration Review, 33*(5), 426-431.

Teaching Practice and the Challenges of Evaluation
By
Dr. Josephine Eleojo Haruna
Federal University, Lokoja
Faculty of Education
Department of Educational Foundations
Josephine.haruna@fulokoja.edu.ng
08036459331

Abstract
This chapter discusses teaching practice, challenges of evaluation and possible solutions. Teaching practice is a key component of teacher education in Colleges of Education, Faculties of Education and Institutes of Education in Nigeria. However, teaching practice cannot be complete without evaluation of the performances of student teachers who are expected to translate the knowledge they obtain in their institutions into practice in different schools they are posted to. There are challenges of evaluation both on the part of supervisor and student teachers. These challenges include insecurity, financial constraint, lack of sufficient knowledge of the subject matter, impatience, excessive workload, and several others. In order to have authentic and productive evaluation of the teaching practice exercise, certain solutions to the challenges identified were recommended. The solutions include financial support from the institution, making the cooperating teachers among assessors, adequate security provision, to mention a few.

Keywords: Teaching, Practice, Challenges, Evaluation.

Introduction
The training of competent and professional teachers at Colleges of Education, Faculties of Education or Institutes of Education in any institution cannot be complete without teaching practice, though some people are of the opinion that teachers are born not made. If we work with this assertion, then anyone that demonstrates any knowledge of teaching will be allowed to teach. This will make jest of teaching. Hence, Fafunwa (1974)was of the view that a good teaching programme must seek to assist the individual teacher to grow and develop as a person, provide him with the necessary skills and professional abilities that will help him become an effective teacher.

Teaching is a noble profession that deals with imparting knowledge and moral values. In traditional concepts, teaching is seen as the act of imparting instructions to the learners in the classroom. In modern concepts, teaching is to cause, guide or direct learners to learn and acquire the desired knowledge, skills, values and also desirable ways to live in the society.A teachercan be seen as someone who has acquired knowledge through training and been certified to impart the knowledge on others (learners) with the hope

that the learners will use the knowledge acquired to benefit themselves and the society. Haruna (2022) defines a teacher as aperson with the accurate and specific ability, intuition, education, experience, skills, knowledge, values, attitude and qualification to teach a specific subject or number of subjects.

All the students in Colleges of Education, Faculties/Institutes of Education must be exposed to the rudiments of teaching practice through the course of their studies. This would allow them to attain skills, knowledge and attitudes needed to become authentic teachers who can serve as nation builders.

In Onimisi (2023), teaching practice is a major segment of teacher preparation. It involves the practical demonstration of all theoretically acquired concepts, theories, skills, value and subject matter in actual classroom situation. It is theory in practice. Teaching pactice is an opportunity for teacher trainee to serve as an apprenticeship scheme in the course of their training before they can be qualified as a certified teacher. It provides orientation and experience to guide the teacher's operation in classroom situation (Okpanachi et al., 2004).

Ekele (2016) maintains that teaching practice is an exercise in which student teachers are guided to acquire practical skills and competencies necessary for effective teaching. The student teachers are exposed to schools similar to those in which they will work after graduation from a College of Education or University. The schools where the student teachers carry out the teaching practice is called co-operating schools and the permanent teachers the students are attached to are called co-operating teachers. Teaching practice period is the same as Industrial Training (IT)to a would-be engineer, houseman ship to medical doctor or nurse and SIWES to a library or computer science student.

Onimisi (2023) stresses that student-teachers often referred to as teacher interns are sent to schools within their locality to practically participate in all school activities and teach subjects related to their areas of specializations. The author opines that teaching practice is said to be the hub upon which the professionalism of teaching revolves. It is a programme in methodology of education designed to provide teacher intern practical opportunities to translate theoretical facts and concepts into observable, quantifiable concrete and practical terms. Free dictionary (2023) defines Teaching practice as a temporary period of teaching in a school undertaken under the supervision by a person who is training to become a teacher.

The definitions of teaching practice by different authors above connote certain things as follows:

- Teaching practice is carried out by students who are training to become future teachers to enable them put all the theories they have learnt into practice.
- It involves specialized knowledge and skills in various fields.

Objectives of Teaching Practice

Objectives of teaching practice include the following:

- To give the student teachers an opportunity to put into practice the theories, methods, concepts that were taught. There is a popular saying that ' it is easily said than done'. Teaching practice is a reality check.
- To serve as an evaluation process to assess teaching effectiveness to grade the student teachers. This will enhance evaluating the student potential as a teacher and suitability for the teaching profession.
- To enable the student teachers to establish teacher-pupil relationship.
- To provide opportunity for the student teacher to get acquainted with the school environment and its resources.
- To develop personal relationship with other principals, teachers, parents, students, e.t.c.
- To provide opportunity for self evaluation and to discover strength & weaknesses.
- To give room for exchange of ideas and methods between practicing school and teacher training institution.
- To provide the student teachers with practical experience in the school to overcome the problems of discipline and enable him/her to develop method of control.
- To enable the student teachers to benefit from constructive criticism.

Procedure of Teaching Practice

1. Constitution of microteaching and teaching practice committees
2. Microteaching
3. Classroom Observation
4. Teaching practice orientation for the students
5. Teaching practice orientation for the staff
6. Posting of students
7. Field experience
8. Supervision/evaluation
9. Post teaching practice briefing

Microteaching

The first step for preparation for teaching practice is to set up a committee that will put in place the entire necessary plan for microteaching and subsequently the teaching practice. It consists of the chairperson, a secretary and representatives from all the departments. After the microteaching, the students will be allocated to various

secondary schools for classroom observation. The students submit the form upon completion.

Teaching Practice Orientation for the Students

All the students qualified to go for teaching practice must attend the orientation. Other attendants are the teaching staff in the faculty and some management staff. A programme of activities is drawn to highlight all the students' needs i.e expectations from the students throughout the period of teaching practice.

Staff Orientation

It is the responsibility of the teaching practice committee to also organize an orientation for the academic staff that will serve as supervisors. A detailed written code of conduct is distributed and discussed. The supervisors are trained on how to use the teaching practice assessment forms; how to motivate the students and the general rules guiding supervision.

Posting of Students to Schools

The academic staff of the Faculty of Education in the university serves as supervisors. The teachers in the cooperating school serve as the internal or resident supervisors. Other senior lecturers, professor and some management staff will serve as rovers. The role of the rover is to move round the cooperating schools at random and carryout supervision. The last type of supervisor is the external supervisors. They are appointed from outside the Colleges of Education or Universities. Their function is to also go round the cooperating schools and validate the supervisors' assessment of the student teachers.

Evaluation of Teaching Practice

Teaching Practice is a 6 credit unit course. Evaluation is carried out through the cooperating school teachers, the university supervisors and the external supervisors who are assigned to visit the cooperating schools. They are different segments of the student teachers that are evaluated. Each aspect is assigned maximum and minimum marks. Example of a teaching practice assessment is shown below:

TEACHING PRACTIVE ASSESSMENT FORM

(To be completed by the Supervisor)

Name of Student: ……………………….………… Matric No: …………………

Name of School: …………………………….……………… Dept: ……………...

Subject taught: …………………………………….. Topic: …………………..

	Maximum	EX	VG	GO	FA	PO	Mark Awarded	Comment

1. PREPARATION OF LESSON • Statement of Objectives	5							
• Content, Sequence and Adequacy	5							
1. PREPARTION 2. Introduction (relevance)	5							
3. Development of Lesson	5							
4. Mastery of Subject Matter	10							
5. Use of Chalk/White Board	5							
6. Time Management	5							
7. Questioning Technique	5							
8. Effective use of Instructional Material (adequacy & variety)	5							
9. Class Partcipation	10							
10. Summary/Conclusion	5							
2. CLASS MANAGEMENT								
1. Class Control and Arrangement	5							
2. Reaction/Reinforcement for Students Responses	5							

248

3. COMMUNICATION SKILLS									
28. Clarity of Voice & Appropriate use of Language	5								
4. EVALUATION									
1. Suitability of Assessment	5								
2. Attainment of stated objectives	5								
5. TEACHER PERSONALITY									
1 Dressing (neatness, modesty and appropriateness)	5								
2 Composure	5								
TOTAL	100								

Additional Comments ……………………………………….………………………………….
……………………………………………..……………………………………………………
Name of Supervisor…………………………………Sign/Date……………...

Source: 2023 Teaching Practice Committee Faculty of Education, Federal University Lokoja, Kogi State.

Challenges of Evaluation in Teaching Practice
The challenges can be grouped into two categories: it could be on the part of the students and on the part of the supervisors.

Challenges Faced by the Students. The challenges faced by the students that will directly or indirectly affect evaluation are outlined below:
Financial Constraint. The student teachers who have financial difficulties may be absent in the school for evaluation due to lack of transport fare. In addition, they may

be hungry at the time of evaluation and this may lower their performances. Further, the students may be emotionally unstable if they have some problems that require financial solutions. The purchase of instructional materials to enhance teaching practice may be impossible for the financially handicapped students. All these and other issues can stem from financial constraint and hinder the supervisor from assessing the true abilities of the students which they would demonstrate when the financial difficulties are eliminated.

Geographical Location of the Cooperating School. The student teachers may not be at the cooperating school when they should if the school is located at a remote place. Lack of punctuality and absenteeism can prevent evaluation from taking place.

Lack of Cooperation Between the Cooperating Teacher and the Student Teacher. For the success of every engagement, there is need for cooperation among the concerned individuals or groups. The cooperating teachers have roles to play towards the successful evaluation of teaching practice. These can only be adequately played when there is profound cooperation between these school teachers and student teachers. These roles include enhancing cordiality between teachers in training and the students of the cooperating school, warm reception of the supervisor, suspending other lessons and activities in the classroom and allowing the evaluation to take place, and encouraging the student teachers to be prepared for the evaluation. In the absence of cooperation between both, evaluation may not take place.

Lack of Instructional Materials. Without instructional material, teaching cannot be complete. One of the most serious deficiencies that teaching at any level of education can have is lack of or inadequate use of instructional materials. In the absence of good instructional materials, evaluation will not be complete because effective use of instructional material is one of the variables to be assessed in any authentic teaching practice exercise. When the student lacks instructional material, his grade in the evaluation will be negatively affected.

Insufficient Knowledge of the Subject Matter. Evaluation of the mastery of subject matter is an aspect of teaching practice evaluation. A student who does not possess adequate knowledge of the topic he/she presents cannot excel in the evaluation. Each topic has its details which the student teachers are expected to master if they aspire success in the evaluation.

Inability to Apply the Correct Method of Teaching. The term 'correct method of teaching' is a complex term that the student teachers must understand and practice. For a method of teaching to be correct, it must consider subject taught, age of the students, culture of the society, and different characteristics of the individual learners. For example, discovery and experimental methods are suitable for sciences, critical pedagogy can be used in philosophy, narrative methods in history, to name but a few.

Considering age of the learners, play-way method is usually suitable for children as Montessori (2012) has affirmed. Cultural sensitiveness is also a feature of correct method of teaching. For example, in African society where respect for elders is an important value, the use of discussion method would be carried out cautiously as the young learners are made to realize when they should be quiet and how they should talk with their elderly teachers with respect. Inability of student teachers to use correct and effective method of teaching can make them fail in the evaluation.

Wrong Questioning Techniques. Teacher trainees are expected to ask the learners questions in order to determine the level of the latter's learning achievement. These questions constitute the student teachers' evaluation of their learners. The questions to be asked must be clear, not too loaded, asked using right verbs that indicate specific expected responses that are consistent with behavioural objectives. The verbs like define, outline, explain, draw, list, label, etc help in making the questions clear. Inability to apply right questioning techniques can confuse the learners and make them unable to answer the questions. This will adversely affect the grade of the student teachers.

Objectives Wrongly Stated. Objectives of the lesson should be clearly stated using measurable verbs such as define, mention, discuss, not the verbs like know, understand. Objectives of the lesson are like heart of the lesson without which the lesson cannot have direction. Objectives must be clear and achievable. Inability of the teachers-would-be to state objectives clearly can make them fail the statement of objectives aspect of the evaluation.

Lack the Ability to Translate Knowledge to the Learners. All the activities in teaching practice would be considered wasted if knowledge cannot be imparted to the learners. In order to ascertain whether the learners have acquired, the student teachers need to ask questions or give tasks to the learners. If the teacher trainees cannot impart knowledge to the learners, the supervisor would have to indicate low grade or performance in the 'attainment of stated objectives' part of the evaluation.

Challenges Faced by the Supervisors

The above challenges faced by the students will affect the evaluation of the students one way or the other. In addition, below are the likely problems faced by the supervisors.

- **Large Number of Students to a Supervisor:** The supervisor cannot have adequate and thorough evaluation if there are too many student teachers to be supervised within short period of time.
- **Inadequate Time:** Time and duration for the supervision should be sufficient. Otherwise, evaluation will be shallow and lopsided.

- **Poor Remuneration:** Poor remuneration will not motivate the supervisor to be thorough in his/her evaluation. So some supervisors find it difficult to access some of the schools they are supposed to go for supervision.
- **Impatience:** Detailed evaluation requires high degree of patience and calmness. Looking at spellings, lexis and structure, statement of objectives, questions for evaluation, suitability of instructional materials; indication of difference in time, period and duration, all can be properly done only with patience. Impatience is one of the fastest routes to poor evaluation in the teaching practice exercise.
- **Distance:** Even if the evaluation takes place, the supervisor may not be able to assess the student teachers as rigorously and thoroughly as he/she should because of his/her tiredness from a long trip to the school. Some schools are in riverside. Supervisors can access such areas only with the aid of ferries and boats. Distance can be a challenge to appropriate evaluation.
- **Insecurity:** Any rational human being would avoid insecure environment. The supervisor would not visit a school that is located in an insecure environment. With the high rate of insecurity in some areas in Nigeria, supervisors find it difficult and risky to access some area for teaching practice supervision.
- **Cost of Transportation:** with poor remuneration and the high cost of transportation, the supervisor may visit few schools and forgo the rest. He/she may be tempted to just fabricate evaluation report and try to contact the student teachers through telephone calls or other means to get the latter informed about the supervisor's unethical practice.
- **Excessive Workload:** Apart from the supervision, the supervisor may also have other academic and administrative responsibilities in his/her institution. If the workload of the supervisor is excessive. he/she may not be able to do meaningful evaluation.
- **Indiscipline:** Several acts of indiscipline which are unethical can be carried out by the supervisor or other stakeholders. For example, the supervisor may decide to take bribe in exchange for good grade. Definitely if this happens, there is no valid or reliable evaluation.
- **Unqualified Teachers:** This point can be explained in two ways in relation to evaluation. The student teachers who are yet to be qualified and registered can constitute problems for the supervisor in evaluation. For example, some student teachers may not make lesson plan available during evaluation because of their limited experience. Another set of unqualified teachers are the cooperating teachers who did not undergo teacher education and

therefore lack the prerequisite knowledge and skills for standard teaching. If such teachers are assigned the task of assessing the lesson plans, he/she will not be to guide the student teachers when they make mistakes in their lesson plans. Since the supervisor needs to do all the corrections of the lesson plans that the unqualified cooperating teachers failed to do, it adds to the evaluation workload of the supervisor.

Ways to Overcome the Challenges of Teaching Practice
- The outlined challenges on the part of the students and Supervisors need to be sorted out to enable the Supervisor carry out an objective evaluation in line with all the items in the assessment form. The Universities or Colleges of Education should ensure that sufficient amount of money is budgeted for teaching Practice. The students can also be asked to pay a subsidized amount of money.
- The cooperating teachers should be part of the assessors. This is because they see the student teachers on a daily basis. They will be in a better position to give a more accurate account of the student teachers. In some cases, the student teachers only come to school when they hear that supervisor will be coming.
- More time should be used for supervision. The 30 to 40 minutes presently used is inadequate. In some cases, some supervisors will not use up to that time because of the rush to supervise other students. Ekele (2016) stressed that activities of teaching practice should comprise of pre-observation, actual classroom observation and post teaching practice. This will give room for adequate preparation and the students will know how to express themselves in writing their own lesson plan effectively.
- Collaboration between all the stakeholders is very necessary. There is need to maintain synergy between the students teachers, the supervisors, the cooperating schools and cooperating teachers. So that everyone will know what they are supposed to do. This will reduce or limit disconnection or any form of confusion. For example, some cooperating schools give the student teachers different instruction that contradict what the students were told from the Universities or Colleges of Education. We had a situation where a Principal kept the student teachers to do classroom observation for more than two weeks when they were supposed to be teaching. The head of the teaching committee had to intervene before the right was done.
- There is need for domestication of all the courses Faculty of Education students are offering in the Faculty (Bagudo, 2019). This will enable the Faculty to create enough time to train the students' on how to handle the primary and secondary school curriculum. This will also make the evaluation of the students easier.

- Geographical location of cooperating schools is one of the major problems to evaluation of teaching practice. When students are posted to areas that are far and cannot be easily located. It becomes a problem for both the students and the supervisors. This might give room for compromise in evaluation. To avoid this, students should not be posted to far distance.

Conclusion

Teaching practice is like a laboratory where students experiment the theoretical knowledge acquired into practical experience. Adequate preparation should be made to ensure that no stone is left unturned. The student teachers should be properly taught all the pedagogiesof teaching so as to put them to use during their teaching practice. No nation can grow without proper education. But if the teachers cannot impart knowledge properly, quality and standard of education cannot be maintained. Therefore, all the people concerned must ensure that teaching practice is carried out and evaluated properly.

References

Ayelaagbe, S.O. & Bello, A.O.(2015). Microteaching: A strategy for training quality teachers in Nigerian colleges of education. *Journal of Qualitative Education*, 11(1), 1-8

Bagudo, A. A. (2019). Improving teaching practice exercise in Usman dan Fodio University, Sokoto. *International Journal of Research and Innovation in Social Science (IJRISS)*.

Ekeke, J.T.H. (2015) Evaluation of teaching practice exercise in Nigeria. *European Journal of Educational Studies*. www.oapub.org/edu

Fafuwa, A.B. (1974). *History of education in Nigeria*. London: George Allen and Unwin

Federal Republic of Nigeria (2023). *Teaching practice supervisor's toolkits: A handbook for teaching practice supervisors in Nigeria*. Abuja: National Commission for Colleges of Education

Free Dictionary (2023). *Teaching practice*. https://efreedictionary.com

Haruna, J. E. (2022). *Teaching practice*. Unpublished 300level lecture note. Federal University Lokoja.

Omuya, O. F& Haruna, J.E. (2023). Classroom management. In J.E. Odey & T.A. Adaka (Eds). *Elements of teaching and support services*(89-101).Makurdi: Nats printing enterprise.

Okpanachi, O.g, Atanu, F.H., Audu, T. A. & Odawn, T.I.(2004). *Students' guidepost on teaching practice*. Anyigba: Sam Artrade Ltd.

Onimisi, J. O. (2023). *Orientation towards quality and excellence*. An unpublished Faculty of Education Orientation Programme.

Osasona, I.S.(2010). *Hints to effective teaching practice*. Okene: Dele Printing Press.

Postgraduate Students' Perceptions on Research Supervision in Universities in Anambra State, Nigeria

Ngozi N. Agu. (Ph.D.)[1],
n.agu@unizik.edu.ng,   +2347061138589
https://orcid.org/0000-0002-9518-7255

Anachunam, Christian,[2]
acovirtue@gmail.co
Nneka Chinyere Ezeugo (Ph.D)[3]
nc.ezeugo@unizik.edu.ng

Department of Educational Foundations, Nnamdi Azikiwe University Awka, Nigeria

 Abstract
The seeming low completion rate of postgraduate research work and by extension, postgraduate programmes in most Nigerian universities has put a question mark on the nature and effectiveness of research supervision in these universities. Thus, this study aimed at ascertaining postgraduate students' perceptions of research supervision in universities in Anambra State using a survey research design. The population of the study comprised all the postgraduate students in public universities in Anambra State. Data were collected from 351 postgraduate students (169 males and 182 females) using a Postgraduate Students' Perceptions of Research Supervision Questionnaire (PSPRSQ), adapted from University of Australia's Students' Perceptions of Research Supervision PSPRSQ. Using the Cronbach Alpha method, a reliability co-efficient of 0.83 was obtained for the instrument. Data were analyzed using mean and standard deviation. The findings of the study revealed that majority of the postgraduate students agreed that research supervision: helps them to provide feedback on the quality of their research; set research deadlines among others. However large number of supervisees per lecturer is a big challenge. The findings of the study further revealed that no significant difference existed between the perceptions of male and female students on research supervision. Based on these findings, it was recommended among other things that Deans of various faculties should devise a system of receiving and appraising comprehensive progress reports on research supervision so as to enable them track the progress of their students.

Keywords: Postgraduate Programmes; Nigerian Universities; Postgraduate Students' Perceptions; Research Supervision

Introduction

Postgraduate students contribute, in no small measure, to the research output of contemporary universities all over the world. Research supervision is a rudimentary element in the postgraduate experience. However, researches have shown Ofem, & Akpo (2022); Mbogo, Ndiao, Wambua, Ireri, and Ngala (2020) that some postgraduate students experience difficulty in completing their research work in record time. Students encounter sundry challenges in their postgraduate research work, ranging from paucity of guidelines, paucity of related literature, lack of analytical skills to lack of familiarity with research topic and methodology. Buttressing this point, Wanasinghe (2020); Matin and Khan (2017); Abiddin, Ismail and Ismail (2011), all pointed out that lack of student-supervisor relationship/ interaction and some other student related factors are responsible for this ugly trend. A successful Ph.D and by extension Masters degree programme should be an outcome of a three-way relationship involving the student, supervisor and the Institution (Lubbe, Worrall, & Wopper,2005) The foregoing explains why research supervision goes beyond mere academic framework and involves more complex social and human relations (Dimitrova, 2016). Dimitrova added that much as there is no universally agreed perception of how an effective supervision would look like, a postgraduate student effectively supervised is expected to produce high quality research work. Put differently, the need for effective research supervision cannot be over-emphasized.

Research supervision, aids in growth (Garvis & Pendergast, 2012), as it is very vital for students acquisition of sustainable research skills (Bahtilla & Oben, 2021). It is deemed one of the most intellectually-stimulating factors in postgraduate experiences which in turn adds to the Universities output (Almusaed & Almusaed, 2020; Goher & Qouta, 2021). Research supervision captures both an intellectual dimension entailing providing knowledge, suggestions, and feedback, and affective aspects such as caring, support, and friendliness (Halse & Malfroy, 2010). Noteworthy here is the fact that the supervisor plays a wide range of roles ranging from advising and mentoring to monitoring of students' research progress (Grant, Hackney & Edgar, 2014). Grant et al. (2014) added that research supervision requires regular meetings between supervisees and supervisors, devotion of quality time to supervisees, keen interest in supervisees' research project(s), demonstrating supportive and encouraging attitude, accepting and correcting students' errors, appreciating students' ideas, and directing them towards the completion of their research work(s).

It is interesting to note that postgraduate research work and coursework are distinguishable in at least four ways viz: duration, focus, teacher–student interaction, and goals (Kleijn, 2013). First, in the Nigerian universities, the postgraduate research work has longer life-span than the period of course work. The longer duration for the research

work makes it more tasking and also offers the student more opportunity of creating depth than the general coursework. This arises from the fact that throughout this period, students concentrate on just one research work, which they devote their time and resources to constantly elaborate and fine-tune.

Second, the focus of the research that is done in a postgraduate research work is in vast majority of cases, considerably determined by the student, both in terms of topic and methodology. This makes it easy for students to explore research areas that match their interest and needs. This means that the results of the research work can neither be predetermined by the student nor the supervisor, in contrast to the course work where the lecturer already knows the result, given the fact that the marking guide is spelt out by the lecturer. Additionally, the student is the main driver of the research process. In fact, selecting a good research topic is a challenging process majorly for the students and then for the supervisors alike (Adhikari, 2020; Saini, Issac, Kumar, Chaudhury, Sharma, Dangi, & Chail, 2022). The choice of a topic has serious implications on the duration and possibilities of completing a research project (Rosser, 2009).

Third, the lecturer–student interaction in coursework can usually be characterized as one-on-many, as most times, there will be one or two teachers and a large group of students (Kleijn, 2013). In contrast, the lecturer–student interaction in a postgraduate research work is on one-on-one basis. This offers the students the opportunity of driving the research process in such a manner that their preferences in terms of research designs are given utmost consideration. One-on-one supervision still seems to be the current fad in postgraduate research supervision.

Fourth, the goals of coursework are to support and evaluate students in the learning process while those of research works are to ascertain the creative skills of students via the evaluation of the quality of the research work. The research work is therefore the climax of the entire postgraduate studies and correct perception is of utmost importance for the students' effectiveness.

Postgraduate students' perception on research supervision embodies their expectations of the roles of supervisors and students in supervisory relationships. That is the extent to which they are satisfied with their supervisors input and the entire research process. Students' varied perceptions of research supervision may be fuelled by the fact that there seems to be a low completion rate of postgraduate research work or worse still, postgraduate programmes. More so, their perceptions of research supervision could be shaped by pressure to publish conference papers that could earn them grants. Going further, research supervisors' attitude towards their supervisees coupled with the disposition of research supervisors to employ e-research supervision in line with current trend considerably impact on postgraduate students' perception of research supervision. In similar vein, Mushoriwa and Nyakutse (2014) explored 96 M.Ed. graduates'

perceptions of thesis supervision, writing and defense in the M.Ed. Programme in the Faculty of Education, University of Swaziland using survey research design. Mushoriwa and Nyakutse found that most students viewed thesis supervision, writing and defense in the faculty favourably. However, the findings revealed that there were areas of serious concern to some graduates viz: difficulty in identifying a research topic, locating related literature, deciding on which aspect of related literature to include, deciding on how to present the data and being nervous during defense. Bahtilla and Oben (2021), did an exploratory case study on the perception of international students on research supervision in the social sciences using 60 postgraduate social science international students from three comprehensive universities in China. The study revealed that majority of the students were dissatisfied with their supervisors input and feedback in their research work. In a study on students' perception of supervisory qualities, Davies (2019) compared what students want as against what they believe they receive across 15 Australian universities with 698 students participating. The study established that students' prefer cognitive and affective person related qualities in supervisors over discilpline / research expertise qualities, Things like the supervisors mode of interaction with the students, availability of the supervisors, supervisors demonstration of interest in the students research and career development were of great importance. Equally Tladi and Seretse (2021), conducted an investigation of students' perception of postgraduate research supervision at Botswana Open University in three Master's programme viz: Master of Education (Educational Leadership), Commonwealth Executive Master of Business administration and Commonwealth Executive Master in Public Administration. From the findings of the study, the students expressed varied challenges towards research supervision with respect to the three Masters' programmes investigated. While the education students had positive supervision experience, the business students reported having challenges with their research supervision. All these studies so far reported adopted foreign participants, thus the need for the present study carried out in Anambra state, south-east Nigeria. Moreover, the perceptions of students on research supervision could differ along gender lines.

Gender is a factor that could impact on postgraduate students' perception of research supervision. This is to the extent that male and female postgraduate students may not necessarily reason alike in matters of research supervision. In line with the foregoing assertion, Javaid and Hussain (2018) examined the perceptions of 250 research scholars towards research supervision and its impact on academic satisfaction and research skills in M. Phil degree, University Faisalabad using survey research design and observed that a statistically significant difference existed between male and female scholars on the basis of their perceptions about the supervisors' research supervision. Some male students may expect their supervisors to provide guidance while they work more

independently in their research works; the female students, in turn, may expect their supervisors to actively participate in their research works so as to complete their thesis in record time. This disparity in expectations might affect students' perceptions of research supervisions along gender lines. In view of the foregoing, there is need for an empirical investigation to ascertain postgraduate students' perception on research supervision in Anambra State.

Practices of Research Supervision

According to Halse and Malfroy (2010), writing and acceptance by postgraduate students and supervisor of rights and obligations (written contract/rules defined by both) are some supervisory practices that may reduce postgraduate students' attrition and drop out. It is expected that in the course of supervision, the supervisor and the supervisee establish a one-on-one relationship with a clear definition of boundaries that must not be crossed; all in the overall interest of the student who is at the centre of research supervision. In this sense, the dialogue between the supervisor and the postgraduate student is more than an exchange of ideas, but rather a means of creating new knowledge (Bohm, 2013).

The practice of research supervision ought to be tailored towards the development of students' ability to balance creativity and criticism (Kobayashi, Grout and Rump, 2015). Supervision becomes defective when students' creativity is not deepened. Interestingly, the creativity of students is enhanced when supervisors offer constructive criticism of the students' research works. The supervision by academic panels, informal meetings, and collaborative meetings may promote the research skills development of postgraduate students (Pearson, 2012). The inputs and supervisors' timely feedback in course of research supervision has a way of identifying grey areas that need to be re-visited or fine-tuned as the case may be. The identification of grey areas will in no small measure help the postgraduate students in sharpening their research skills. They get a sense of where they need to improve upon following feedback from their supervisors.

The socialization of postgraduate students in the research group, which includes a good institutional climate, the promotion of a sense of belonging, the inclusion of students in departmental activities, a physical space (office) and technical support are effective research supervision practices that promote the completion of the degree (Gardner, 2010). But, it is expedient that universities evolve clear research study policies that will serve as templates for research supervision. Research study policies will serve as a road map for both the students and the supervisors. It will capture code of ethics and regulations governing the art of research supervision.

Another practice of research supervision is the use of learning plans that can be

applied online to allow both the student and the supervisors to monitor the work being developed (Ayers, Kiley, Jones, McDermott and Hawkins, 2016). It is a strategy that has proven to be able to help postgraduate students overcome the difficulties encountered in using analogue means to monitor the progress of research work being developed. The research supervision approach must be distinctive and as Fillery-Travis and Robinson (2018) asserted "there is a significant change in the purpose of postgraduate education from the training of an academic to the higher-level development of advance practitioners' and with it arises the changes in the pedagogy and practices. Azure (2016) examined elements of effective supervision from 125 Ghanaian graduate students' perspective using survey research design. Questionnaire was used for data collection while frequencies, percentages and chi-square were used for data analysis. The findings of the study revealed that the three most important attributes of supervisors as perceived by graduate students were: supervisors should be friendly, approachable and flexible; knowledgeable and resourceful; and encourage students to work and plan independently. In addition, the findings of the study indicated that effective supervision means that supervisors are able to establish good and professional relationships with students; give support and guidance; and provide continuous motivation and inspiration. The findings of the study further revealed that there were no significant differences between attributes of supervisors and effective supervision based on programme, faculty, course structure, gender and semester. In view of the going, the following research questions guided the study:

1.   What are postgraduate students' perceptions on research supervision?
2.   What are male postgraduate students' perceptions on research supervision?
3.   What are female postgraduate students' perceptions on research supervision?

Hypothesis
        The null hypothesis will be tested at 0.05 level of significance:
1.There is no significant difference between the male and female students' perceptions on research supervision.

Materials and Methods
        Research Design. The current study used survey research design.
        Participants. The population of the study comprised all the postgraduate students in public universities in Anambra State. The sample size for the study comprised 351 postgraduate students (169 males and 182 females) obtained using accidental sampling technique.
        Procedure. Postgraduate Students' Perceptions of Research Supervision Questionnaire(PSPRSQ) which was adapted from University of Australia's Students'

Perceptions of Research Supervision was used for data collection. The response options are: Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) with numerical values of 4, 3, 2 and 1. PSPRSQ was subjected to both face and content validations by giving it to two experts in measurement and evaluation, all of the Department of Educational Foundations, Faculty of Education, NnamdiAzikiwe University, Awka. In testing the reliability of the instrument, the Cronbach Alpha method was used. Reliability co-efficient0.83 was obtained for the cluster. The high values confirm that the instrument is reliable. PSPRSQ was administered to respondents through their supervisors who served as research assistants. The researchers followed up with phone calls and was able to retrieve the PSPRSQ two weeks after administration.

   Data Analysis. Data were analyzed using mean, standard deviation and paired t-test The standard deviation was used to ascertain the homogeneity or other-wise of the respondents' mean ratings. For the hypothesis, p-value interpretation was used with the decision rule that if the p-value is less than <0.05, the null hypothesis was rejected but when the p-value is higher than 0.05, the null hypothesis was not rejected.

Results
Table 1
Mean Scores of Respondents on Postgraduate Students' Perceptions on Research Supervision

S/N	I perceive that research supervision:	Mean	SD	Remark
1.	helps me in getting a research topic.	3.65	0.83	Agree
2.	determines the direction of my research throughout my candidacy.	3.56	0.79	Agree
3.	helps in setting research deadlines for me.	3.54	0.71	Agree
4.	enables me to come up with written work on a pre-arranged schedule.	3.43	0.65	Agree
5.	helps me to provide feedback on the quality of my research.	2.96	0.53	Agree
6.	monitors feedback on my progress towards completion of my research.	3.08	0.58	Agree
7.	allows me to make independent research decisions.	3.48	0.69	Agree
8.	enhances my expertise in my research area.	3.90	0.98	Agree

S/N		Mean	SD	Remark
9.	increases my existing knowledge and skills.	3.38	0.79	Agree
10.	introduces me to scholarly networks.	3.68	0.89	Agree
11.	inspires my consultation of other people for skills development.	3.23	0.94	Agree
12.	assists me in developing research networks with other students.	3.09	0.80	Agree
13.	informs me about research support available to students.	2.62	0.62	Agree
14.	helps me to evolve ways I can make effective use of my work time.	3.73	0.91	Agree
15.	assists me in developing my academic writing skills.	2.98	0.70	Agree
16.	helps me in publishing my research works.	3.16	0.76	Agree
17.	assists me to develop my presentation skills.	3.86	0.93	Agree
18.	is made difficult for me by the large number of students per supervisor.	3.18	0.57	Agree

Table 1 shows that item 8 with a mean score of 3.90 has the highest mean score. This indicates that most of the respondents agreed that research supervision enhances their expertise in their research area. This is followed by item 16 with a mean score of 3.86 which shows that a good number of respondents are of the view that research supervision assists them to develop their presentation skills. This is followed by items 14, 10, 1, 2, 3, and 4 with mean scores of 3.73, 3.68, 3.65, 3.56, 3.54 and 3.43. Item 13 with lowest mean score of 2.62 shows that the least number of the respondents are of the opinion that research supervision informs them about research support available to students.

Table 2
Mean Scores of Male Postgraduate Students' Perceptions on Research Supervision

S/N	I perceive that research supervision:	Mean	SD	Remark
19.	helps me in getting a research topic.	3.67	0.75	Agree
20.	determines the direction of my research throughout my candidacy.	3.87	0.82	Agree

21.	helps in setting research deadlines for me.	3.04	0.70	Agree
22.	enables me to come up with written work on a pre-arranged schedule.	3.00	0.56	Agree
23.	helps me to provide feedback on the quality of my research.	3.54	0.68	Agree
24.	monitors feedback on my progress towards completion of my research.	3.82	0.80	Agree
25.	allows me to make independent research decisions.	3.77	0.76	Agree
26.	enhances my expertise in my research area.	3.80	0.78	Agree
27.	increases my existing knowledge and skills.	3.98	0.84	Agree
28.	introduces me to scholarly networks.	3.90	0.90	Agree
29.	inspires my consultation of other people for skills development.	3.18	0.58	Agree
30.	assists me in developing research networks with other students.	3.22	0.60	Agree
31.	informs me about research support available to students.	3.44	0.64	Agree
32.	helps me to evolve ways I can make effective use of my work time.	3.50	0.68	Agree
33.	assists me in developing my academic writing skills.	3.08	0.52	Agree
34.	helps me in publishing my research works.	3.86	0.82	Agree
35.	assists me to develop my presentation skills.	3.60	0.72	Agree

19

Table 2 shows that item 27 with a mean score of 3.98 has the highest mean score. This indicates that most of the male respondents agreed that research supervision increases their existing knowledge and skills. This is followed by item 28 with a mean score of 3.90 which shows that a good number of male respondents are of the view that research supervision introduces them to scholarly networks. This is followed by items 20, 34, 24, 26, 25, and 36 with mean scores of 3.87, 3.86, 3.82, 3.80, 3.77 and 3.74. Item 22 with lowest mean score of 3.00 shows that the least number of the male respondents are of the opinion that research supervision enables them to come up with written work on a pre-arranged schedule.

Table 3

Mean Scores of Female Postgraduate Students' Perceptions on Research Supervision

S/N	I perceive that research supervision:	Mean	SD	Remark
37.	helps me in getting a research topic.	3.66	0.79	Agree
38.	determines the direction of my research throughout my candidacy.	3.72	0.81	Agree
39.	helps in setting research deadlines for me.	3.29	0.71	Agree
40.	enables me to come up with written work on a pre-arranged schedule.	3.22	0.61	Agree
41.	helps me to provide feedback on the quality of my research.	3.25	0.61	Agree
42.	monitors feedback on my progress towards completion of my research.	3.45	0.69	Agree
42.	allows me to make independent research decisions.	3.63	0.73	Agree
44.	enhances my expertise in my research area.	3.85	0.88	Agree
45.	increases my existing knowledge and skills.	3.68	0.82	Agree
46.	introduces me to scholarly networks.	3.79	0.90	Agree
47.	inspires my consultation of other people for skills development.	3.21	0.76	Agree
48.	assists me in developing research networks with other students.	3.16	0.70	Agree
49.	informs me about research support available to students.	3.03	0.63	Agree
50.	helps me to evolve ways I can make effective use of my work time.	3.62	0.80	Agree
51.	assists me in developing my academic writing skills.	3.03	0.61	Agree
52.	helps me in publishing my research works.	3.51	0.79	Agree
53.	assists me to develop my presentation skills.	3.73	0.83	Agree
54.	is made difficult for me by the large number of students per supervisor.	3.46	0.66	Agree

Table 3 shows that item 44 with a mean score of 3.85 has the highest mean score. This indicates that most of the respondents agreed that research supervision enhances their expertise in their research area. This is followed by item 46 with a mean score of 3.79 which shows that a good number of respondents are of the view that research supervision introduces them to scholarly networks. This is followed by items 53, 38, 45, 37, 42 and 50 with mean scores of 3.73, 3.72, 3.68, 3.66, 3.63 and 3.62. Items 49 and 51 with lowest mean score of 3.03 shows that the least number of the respondents are of the opinions that research supervision informs them about research support available to students and assists them in developing my academic writing skills.

Table 4
t-Test Significance of Difference in the Male and Female Students' Perceptions on Research Supervision

Gender	N	$\overline{X}$	SD	Df	p-value	alpha level	Decision
Male	169	3.56	0.72				
				349	0.07	0.05	Not Significant
Female	182	3.46	0.74				

Table 4 show that male respondents (169 in number) have a mean rating of 3.56 and a standard deviation of 0.72 while the females (182 in number) have a mean rating of 3.46 and standard deviation of 0.74. The standard deviations of 0.72 and 0.74 for male and female respondents respectively shows that the male respondents were more homogenous in their responses than their female counterparts. The analysis revealed that since the p-value of 0.07 is more than 0.05 alpha level at 349 degrees of freedom, the null hypothesis is not rejected. This means that no significant difference between the male and female students' perceptions on research supervision.

Discussion

The findings of the study revealed that majority of the postgraduate students agreed that research supervision: helps them to provide feedback on the quality of their research, helps in setting research deadlines for them, enables them to come up with written work on a pre-arranged schedule, monitors feedback on their progress towards completion of their research, allows them to make independent research decisions, enhances their expertise in their research area, increases their existing knowledge and

skills, introduces them to scholarly networks, inspires their consultation of other people for skills development, assists them in developing research networks with other students, helps them to evolve ways they can make effective use of their work time, assists them in developing their academic writing skills, helps them in publishing research works, assists them to develop their presentation skills and is made difficult for them by the large number of students per supervisor.

The implication is that postgraduate students have favourable disposition towards research supervision. The findings of this study contradicts the stand of Bahtilla and Oben (2021) that majority of the students were dissatisfied with their supervisors contributions and feedback in their research work and that of Davis (2019) were 75% of the sample had negative perception of research supervision (25% had no qualities in common between the actual and ideal supervisor and 50% just had one quality in common between the actual and ideal supervisor). On the other hand, the findings of the study corroborates with the position of Mushoriwa and Nyakutse (2014) that most postgraduate students viewed research supervision favourably, inspite of the challenges encountered in the course of it. That is to say that research supervision is not without its attendant challenges such as poor quality of interaction between supervisors and the students as a result of large number of students per supervisor. This finding of the current study agrees with the observation of Kimani (2014) that the large number of students per lecturer made it virtually unfeasible for any quality interaction to take place between the supervisor and students; for such numbers eroded the supervisory energy and commitment to the process. For Tladi and Seretse, (2021), there were variations in the students' experiences.

The education students had positive research experience while the business students had negative perception. This may be as a result of the supervisors training and area of specialization. Supervisors in education are already trained to teach. The findings of the present study that research supervision provides feedback on the quality of students' research, helps in setting research deadlines for them, enables them to come up with written work on a pre-arranged schedule and monitors feedback on their progress towards completion of their research are contradicted by Garwe (2015) in a study in Ghana where he asserted that students were of the views that accessing their supervisors for consultations and discussions of their research progress was a night mare; their supervisors neither critiqued their written work constructively, nor provide feedback on their written submissions on time. This apparent contradiction may be linked to the peculiarity of research supervision in the area of study. It could also be linked to the fact that there may be no checks and balances to curtail the excesses of research supervisors in the area of study (Ghana).

The finding of the current study revealed that there's no significant difference between the male and female students' perceptions on research supervision. In other words, to a high degree, the male as well as the female students perceive research supervision as being favourable. The finding of the present study is reinforced by Azure (2016) who posited that no significant differences existed between graduate students' perceptions towards their supervisors and effective supervision based on gender. This implies that students' perceptions of the effectiveness of their supervisors' supervision of research work are similar regardless of their gender. The finding of the study is however contrasted by Javaid and Hussain (2018) who found that female students were found to be more dissatisfied than those of male students in both supervisory practices and research expertise of the supervisors. This contradiction could be traceable to the disposition of the research supervisors towards the female students.

Conclusion

Based on the findings of the study, it was concluded that though research supervision is not without its attendant challenges, postgraduate students have favourable perceptions towards research supervision. It was further concluded that no significant difference existed between the perceptions of male and female students on research supervision.

Recommendations

In view of the findings of the study, the following recommendations were made:

- School of postgraduate studies should ensure that research supervisors are not over-burdened with more than five students per session so as to make for effective interaction between the research supervisor and the student.
- University authorities should improve research supervision by evolving a policy for promotion based on the number of graduate students one has supervised, the quality of such works and the publication of such theses with the students.
- Deans of various faculties should devise a system of receiving and appraising comprehensive progress reports on research supervision so as to enable them track the progress of their students.

References

Abiddin, N.Z., Ismail, A. & Ismail, A. (2011). Effective supervisory approach in enhancing postgraduate research studies. *International Journal of Humanities and Social Science, 1*(2), 206-217.

Adhikar, G. R. (2020). *Strategies for selecting a research topic.* Retrieved from https://www.researchgate.net/publication/343683240_strategies_for_selecting_a_Research_Topic

Almusaed, A. & Almusaed, A. (2020). The role of supervision on developing Ph.D. students' skill. In R. Thripp & I. Sahin (eds), *Proceedings of IHSES 2020. International Conference on Humanities, Social and Education Sciences*. Retrieved from https://files.eric.ed.gov/fulltext/ED626403.pdf

Ayers, N., Kiley, M., Jones, N., McDermott, M-L. & Hawkins, M. (2016). Using learning plans to support doctoral candidates. *Innovations in Education and Teaching International, 1*(2), 16-19.

Azure, J.A. (2016). Students' perspective of effective supervision of graduate programmes in Ghana. *American Journal of Educational Research, 4*(2), 163-169.

Bohm, D. (2013). *On dialogue*. London: Routledge.

Bahtilla, M. & Oben, A.I. (2021). International students' perception of research supervision in the social sciences: The case of three comprehensive universities in China. *Journal of Further and Higher Education, 46*(3)

Davis, D. (2019). Students' perceptions of supervisory qualities: what do students want? What do they believe they receive? *International Journal of Doctoral Studies, 14*(1), 431 – 464.

Dimitrova, R. (2016). Ingredients of good PhD supervision– evidence from a student survey at Stockholm University. *Utbildning & Lärande*, *10*(1), 40-52.

Fillery-Travis, A. &Robinson, L. (2018). Making the familiar strange- a research pedagogy for practice. *Studies in Higher Education, 43*(5), 841-853.

Gardner, S. K. (2010). Student and faculty attributions of attrition in high and low-completing doctoral pro-grams in the United States. *Higher Education*, *58*(1), 97-112. Retrieved from https://doi.org/10.1007/s10734-008-9184-7.

Garvis, S. & Pendergast, D. (2012). *The importance of supervision in higher education.* Springer. Retrieved from https://link.springer.com/chapter/10.1007/978-94-6209-1-64-1_3

Grant, K., Hackney, R., & Edgar, D. (2014) Research Supervision: an 'agreed' view of metaphors and conceptual model. *International Journal of Doctoral Studies,* 1(1)1-20.

Gawe, E. C. (2015). The quality of MBA research supervision in Zimbabwean Universities. *Global Journal of Educational Studies, 1*(1), 110-122.

Halse, C. & Malfroy, J. (2010). Re-theorizing doctoral supervision as professional work. *Studies in Higher Education*, *35*(1), 79-92. Retrieved from http://dx.doi.org/10.1080/03075070902906798.

Javaid, Z. & Hussain, S. (2018). Perceptions of research scholars towards research supervision and supervisory practices at doctorate level. *European Online Journal of Natural and Social Science, 7* (4), 710-719.

Kimani, E. N. (2014). Challenges in quality control for postgraduate supervision. *International Journal of Humanities, Social Sciences and Education, 1*(9), 63-70.

Kleijn, R.A.M. (2013). Adaptive research supervision: exploring expert thesis supervisors' practical knowledge. *Studies in Higher Education, 37*(8), 925-939.

Kobayashi, S., Grout, B. & Rump, C. (2015). Opportunities to learn scientific thinking in joint doctoral supervision. *Innovations in Education and Teaching International, 52* (1), 41-51.

Lubbe, S. Worrall, L. & Wopper, R. (2005). Challenges in postgraduate research: How doctorates come off the rails. *Unisa Institutional Repository 12* (1), 241-262. https://uir.unisa.ac.za

Matin, A. M. & Khan, M.A.W. (2017). Common problems faced by postgraduate students during their thesis work in Bangladesh. *Bangladesh Journal of Medical Education 8*(1), 22-27.

Mbogo, R.W, Ndiao, E., Wambua, J.M., Ireri, N.W., & Ngala, F.W. (2020). Supervision challenges and delays in completion of Ph.D. programmes in public and private universities: Experiences of supervisors and graduate students in selected universities in Nairobi, Kenya. *European Journal of Education Studies 6* (11). https://dx.doi.org/10.46827/ejes.v010.2838

Mushoriwa, T.D. & Nyakutse, G. (2018). M.Ed. graduates' perceptions of thesis supervision, writing and defense. *Mediterranean Journal of Social Sciences Mediterranean Journal of Social Sciences, 5*(8).

Ofem, U. & Akpo, C.D. (2022). *Predictive analysis of research competence on thesis complish rate among postgraduate students in universities in south-south geopolitical region, Nigeria.* https://papers.ssrn.com/s013/papers.cfm?abstract_id=4190465

Pearson, M. (2012). Research training and supervision development. *Studies in Higher Education, 27*(2), 135-150.

Rosser, A. (2009). *A tool to assist postgraduate research students and their supervisors in selecting a dissertation topic*. Retrieved from https://www.adelaide.edu.au/graduate-research/ua/media/86/rosser-2009-thesis-topic-toolpdf

Saini, R., Issac, M., Kumar, D. Chaudhury, S. Sharma, R. Dangi, A. & Chail, A. (2022).Selecting a thesis topic: A post graduates' delinma. *Industrial Psychiatry Journal*. DOI: 10.4103/ipj.ipj_62_22

Wanasingbe, W. (2020). Identification of issues encountered by students in completing their research dissertations for the master of Education Degree programme. *Open Journal of Social Sciences. 8*, 36-44. DOI:10.4236/jss.2020.812004

Analysis Of Distribution of Cognitive Levels and Content Coverage of National Examination Council Economics Multiple Choice Questions

by
Ajabor Daniel Nkeonye
Department of Educational Foundations
University of Delta, Agbor
Email: daniel.ajabor@unidel.edu.ng
Phone: 08065371973

Abstract

This study examined the analysis of distribution of cognitive levels and content coverage of NECO Economics multiple choice questions. Two research questions and two hypotheses guided the study. The design of this study is an instrumentation research design. The population of the study consists of all NECO multiple choice questions in Economics examinations done in Nigeria. It is made up of 23 years Economics examinations questions consisting of 1,380 multiple choice questions. Sample of two years that is 2020-2021 multiple choice questions of 120 was selected using purposive sampling technique. The instruments for data collection were NECO Economics multiple choice questions and a checklist. The reliability of the instruments was not estimated because NECO Economics multiple choice questions had already been developed and administered by the examination body. The data collected was analysed using descriptive statistics of frequency count and percentages. These were used to answer the research questions formulated for this study while inferential statistics of Chi-square (x^2) goodness of fit was used to test the hypotheses formulated at 0.05 levels of significance using SPSS version 25. The findings showed that NECO Economics multiple choice questions were not evenly distributed across the cognitive levels and content areas in 2020 and 2021, the Economics multiple choice questions were set to cover only the lower levels of the cognitive domain while the higher levels of the cognitive domain were grossly neglected, the items were not evenly distributed on the content areas. Some content areas had more items, others less, while some content areas had none, the distribution of items across the cognitive levels is significantly different from the expected in 2020 NECO Economics multiple choice questions and the distribution of items across the cognitive levels is significantly different from the expected in 2021 NECO Economics multiple choice questions. Based on the findings it was recommended among others that NECO Economics multiple choice questions should be set to cover the six cognitive levels.

Keywords: Cognitive Levels, Content Coverage, Economics and Multiple-Choice Questions.

Introduction

Economics is a social science that the act of choosing between alternatives in order to obtain the maximum satisfaction from limited resources. In other words, Economics is a science of scarcity and choice. According to Robbins as cited by Anyanwocha (2020), Economics is a science which studies human behaviour as a relationship between ends and scarce means which have alternative uses. Economics is one of the senior secondary school subjects that require assessment to ascertain students' basic knowledge, skills and understanding of the concepts, and the nature of economic problems in any society. This will equip the students with the fundamental areas of intellectual, vocational, cultural development and national interest (Ogunbamowo, Adediwura, & Diyan, 2019).

According to National Examination Council (2017), the general guiding principle of Economics is to equip graduates of the Senior Secondary School with the basic knowledge and skills that will enable them appreciate the nation of economic problems in the society. However, the Economics syllabus is aimed at testing candidates: knowledge of basic economic principles; concepts and the tools for economic analysis; knowledge of the structure and functioning of economic institutions-commercial, industrial and financial; understanding of the basis for rational economic decisions; appreciation of the problems which countries encounter in their economic growth and development; ability to follow the role and status of countries in international economic relationship, and ability to understand and explain the basis and structure of the Nigerian economy, including the role of agricultural industry and mining and their contributions to the national income. National Examination Council (NECO) is an evaluation agency that was set up to conduct and administer standard and credible examinations to offer Nigerian students a chance to continue their education without hindrance. Its mission is to ensure that the examinations conducted by the organization are in accordance with the provisions, expectations, and yearnings of the national policy on education and the national curriculum (Prospect Academy, 2019).

Testing of an individual or group of individuals have come a long way in the history of mankind and the essence of testing is to reveal the latent ability of examinee. Testing has been accepted in most modern societies as the objective method of decision making in schools, industries and government establishments. Testing has become one of the most important parameters by which a society adjudges the product of her educational system. A test is referred to as a series of items/tasks or a set of questions that learners respond to orally or in writing that makes it possible to examine differences between learners. Similarly, test consists of a set of uniform items to which an examinee is to respond independently and the result of which can be treated in such a way as to

provide a quantitative comparison of the achievement among different students (Nworgu, 2015). Tests are used to gain useful information about examinees' knowledge, skills and progress.

In the use of a particular test item format, what really matters is the ability of the test type to measure aspects of learner achievement by recall or application of knowledge and by any other reliable demonstrations of change in behaviour after instruction. As such, the major concern to all testers in the use of any test format is to make sure that test takers' performance is affected most by the ability being measured and least by factors which are not part of the ability we want to measure, otherwise the meaningfulness or validity of score interpretations will be lessened. However, the multiple-choice objective type of test seems to be gaining popularity specifically in Nigeria as it is also commonly used even in several national standardized examinations due to the fact that it allows for wider curriculum coverage and give the fairest opportunity to test takers to prove their competence (Shogbesan, 2017). Usually, a multiple-choice item format is designed for objective measurement and contains a stem and response options one of which is the correct answer. The stem is the beginning part of the item expressed clearly and concisely that presents the item as a problem to be solved, or a lead-in question which describes what the examinee must do, or an incomplete statement to be completed (Jimoh & Adediwura, 2020) and it is meant to acquaint the examinee with the problem that is being posed while the options are the possible answers that the examinee can choose from, with the correct answer called the key and the incorrect answers called the distracters.

The term content has been described by Nicholls and Nicholls as cited by Ughamadu (2015) as the knowledge, skills, attitudes and values to be learned. Content also refers to the body of knowledge or information that makes up the learning material for a specific course or a given class or grade level. The body of information or knowledge may be comprised of facts, laws, explanations, principles, theories, events and generalisation. The criteria for the selection of content include validity, significance, utility, learnability, interest and feasibility (Ughamadu, 2015). Content can also be viewed as representing all the subjects and subject matter learners are being taught in schools. The content coverage of economics topics as stated in NECO syllabus are characterised by their breadth of content which include definition and scope of economics, basic tools for economic analysis, basic economic problems of the society, types and basic features of economic system, theory of consumer behaviour, production and theory of cost, demand theory, supply theory, theory of price determination, market structures, agriculture, money, inflation, business organizations, distributive trade, population, human capital development, labour market, industrialization, financial institution, national income, public finance, international trade, balance of payments, petroleum and the Nigerian

economy, economic development and planning, international economic organization, economic community of West African States and economic reforms programmes and economic plans.

According to Ugodulunwa (2020), cognitive domain deals with the mastery of concept, principles, skills and academic achievement in school subjects. She opined that specific objective in this domain deal with what students will be able to do intellectually as a result of instruction. The cognitive levels involve knowledge and the development of intellectual abilities and skills. This includes the recall or recognition of specific facts, procedural patterns and concepts that serve in the development of intellectual abilities and skills. There are six major categories which are arranged in hierarchical order of complexity of tasks involved. The six categories include knowledge, comprehension, application, analysis, synthesis and evaluation starting from the simplest behaviour to most complex. The categories can be thought of as degrees of difficulties. That is, the first ones must normally be mastered before the next ones can take place. Cognitive levels include those objectives which deal with thinking, knowing and problem solving, such skills include skills of understanding, problem solving, reading, writing and the processes of information storage, retrieval, rearrangement and evaluation. In other words, objectives in this area range from simple recall of materials learned to highly original and creative ways of combining and synthesising new ideas or materials. Therefore, this study sort to examine the distribution of cognitive levels and content coverage of National Examination Council (NECO) economics multiple choice questions.

According to the Federal Republic of Nigeria (2013), Economics is one of the elective subjects or non-vocational subjects in senior secondary school course. The broad goals of secondary school education in Nigeria, as stated in the National Policy of Education (NPE) section 5, sub-section 21, is to prepare the individual for useful living within the society and higher education. However, these aims are very often defeated as most secondary school graduates fail to adapt adequately to society and fail to succeed in post-secondary education despite their possession of excellent or good certificates (Kpolovie, Ololube & Ekwebelem, 2011). They posited that post-secondary education institutions are overtly dissatisfied with the incompetence of many entrants who have gained admission into courses that they are not prepared for. The public likewise disparages the falling standard of education as evidenced by the lack of skills and personal integrity of many school leavers. Ajayi, Onibeju and Olutayo (2020) opined that Economics is concerned with how people earn their living and make a choice between alternatives to satisfy their wants. They asserted that over the years, achievement in senior secondary school economics has been a major concern to stakeholders in education because with its popularity, one would expect students taking

the subject to do well and have distinctions. But this is not the case as many students performed below credit pass in the subject. This could be the issue of the distribution of the content areas across the levels of the cognitive domain.

However, studies have shown that some content areas and all the objective levels of the cognitive domain were either over-emphasised or under-emphasised. The implication is that students are not adequately tested in all the topics in the NECO Economics syllabus. In the same vein, majority of senior school multiple choice questions in Economics examinations were asked at lower levels of the cognitive domain, virtually higher order levels were not tested and test items were not consistent in the content area. It was further discovered that each year of the examination, test items in the content areas superseded the other and not all the content areas were covered. The question is, what is the distribution of cognitive levels and content coverage of National Examination Council (NECO) economics multiple choice questions?

Purpose of the Study

The general purpose of this study is to analyse the distribution of cognitive levels and content coverage of NECO Economics multiple choice questions. Specifically, the study analysed:

1.the distribution of cognitive levels and content coverage of 2020 NECO Economics multiple choice questions.

2.the distribution of cognitive levels and content coverage of 2021 NECO Economics multiple choice questions.

Research Questions

To guide this study, the following questions were formulated.

1.What is the distribution of cognitive levels and content coverage of 2020 NECO Economics multiple choice questions?

2.What is the distribution of cognitive levels and content coverage of 2021 NECO Economics multiple choice questions?

Hypotheses

The hypotheses were formulated for testing at 0.05 level of significance.

Ho_1:   The distribution of items across the cognitive levels is not significantly different from the expected in 2020 NECO Economics multiple choice questions.

Ho_2:   The distribution of items across the cognitive levels is not significantly different from the expected in 2021 NECO Economics multiple choice questions.

Methods

The design of this study is an instrumentation research design. The population of the study consists of all NECO multiple choice questions in Economics examinations done in Nigeria. It is made up of 23 years Economics examinations questions consisting of 1,380 multiple choice questions. Sample of two years, that is 2020-2021 multiple choice questions of 120 was selected using purposive sampling technique. They were purposively sampled because the study is based on researcher's judgement. The researcher exercises this judgement in relation to what he thought would constitute a representative sample with respect to the research purpose. The instruments for data collection were NECO Economics multiple choice questions and a checklist to find out the distribution of cognitive levels and content coverage of NECO Economics multiple choice questions. The reliability of the instruments was not estimated because NECO Economics multiple choice questions was used to collect data. NECO Economics multiple choice questions had already been developed and administered by the examination body. The data collected was analysed using descriptive statistics of frequency count and percentages. These were used to answer the research questions formulated for this study while inferential statistics of Chi-square (x^2) goodness of fit was used to test the hypotheses formulated at 0.05 levels of significance using SPSS version 25.

Results

Research question 1

What is the distribution of cognitive level and content coverage of 2020 NECO Economics multiple choice questions?

Table 1

The Frequency Count and Percentage Distribution of Cognitive Level and Content Coverage of 2020 NECO Economics Multiple Choice Questions

S/N	Content Coverage	Cognitive Levels						Total	Percentage
		Kn	Co	Ap	An	Sy	Ev		
1	Definition and Scope of Economics	1	1					2	3
2	Basic Tools for Economic Analysis	2		2				4	7
3	Basic Economic Problems of the Society							0	0
4	Types and Basic Features of	3						3	5

#	Content	Kn	Co	Ap	An	Sy	Ev	Total	Percentage
	Economic System								
5	Theory of Consumer Behaviour	2						2	3
6	Production and Theory of Cost	4	1	2				7	12
7	Demand Theory	2		2				4	7
8	Supply Theory			1				1	2
9	Theory of Price Determination		1					1	2
10	Market Structures	1	1					2	3
11	Agriculture	2						2	3
12	Money	3						3	5
13	Inflation	1		1				2	3
14	Business Organizations	2						2	3
15	Distributive Trade	2						2	3
16	Population	2						2	3
17	Human Capital Development	1						1	2
18	Labour Market	1		1				2	3
19	Industrialization	3						3	5
20	Financial Institution	2						2	3
21	National Income	1		3				4	7
22	Public Finance	2						2	3
23	International Trade	2						2	3
24	Balance of Payments	1						1	2
25	Petroleum and the Nigerian Economy	1						1	2
26	Economic Development and Planning	1						1	2
27	International Economic Organization	1						1	2
28	Economic Community of West African States (ECOWAS)							0	0
29	Economic Reforms Programmes and Economic Plans	1						1	2
	Total	44	4	12	0	0	0	60	
	Percentage	73	7	20	0	0	0		100

Kn = Knowledge, Co = Comprehension, Ap = Application, An = Analysis, Sy = synthesis, Ev = Evaluation.

Table I showed the summary of results of the checklist for the distribution of cognitive level and content coverage of 2020 NECO Economics multiple choice

questions. The largest number of questions (items) were at the knowledge level of the cognitive domain with a total of 44(73%). Comprehension and application levels of the cognitive domain had a total of 4(7%) and 12(20%) respectively. However, analysis, synthesis and evaluation levels of the cognitive domain had an aggregate of zero (0) (0%) each.

In the 2020 NECO Economics multiple choice questions of 60 items, production and theory of cost had the highest item representation with a total of 7(12%) items. This is followed by basic tools for economic analysis, demand theory and national income which had a total of 4(7%) each. furthermore, types and basic features of economic system money and industrialization had a total of 3(5%) items each. Nevertheless, definition and scope of economics, theory of consumer behaviour, market structures, agriculture, inflation, business organizations, distributive trade, population, financial institution and international trade had a total of 2(3%) items each. finally, supply theory, theory of price determination, human capital development, balance of payments, petroleum and the Nigerian economy, economic development and planning international economic organization and economic reforms programmes and economic plans had a total of 1(2%) each. meanwhile, basic economic problems of the society and Economic Community of West African States (ECOWAS) had no question in the 2020 NECO Economics multiple choice questions.

Research question 2

What is the distribution of cognitive level and content coverage of 2021 NECO Economics multiple choice questions?

Table 2

The Frequency Count and Percentage Distribution of Cognitive Level and Content Coverage of 2021 NECO Economics Multiple Choice Questions

		Cognitive						**Tota**	**Percenta**
		Levels						**l**	**ge**
S/ N	Content Coverage	K n	C o	A p	A n	Sy	E v		
1	Definition and Scope of Economics	2						2	3
2	Basic Tools for Economic Analysis		2	2				4	7
3	Basic Economic Problems of the Society	1						1	2
4	Types and Basic Features of Economic System							0	0

#	Topic	Kn	Co	Ap	An	Sy	Ev	Total	Percentage
5	Theory of Consumer Behaviour	1	1					2	3
6	Production and Theory of Cost	4	4					8	13
7	Demand Theory	1		2				3	5
8	Supply Theory	3						3	5
9	Theory of Price Determination							0	0
10	Market Structures	2	1					3	5
11	Agriculture	1		1				2	3
12	Money	2	1					3	5
13	Inflation	1						1	2
14	Business Organizations	1	1					2	3
15	Distributive Trade	1	1					2	3
16	Population		2					2	3
17	Human Capital Development							0	0
18	Labour Market	1	2					3	5
19	Industrialization	3						3	5
20	Financial Institution	2						2	3
21	National Income	2		3				5	8
22	Public Finance	3						3	5
23	International Trade	1						1	2
24	Balance of Payments	1						1	2
25	Petroleum and the Nigerian Economy	1						1	2
26	Economic Development and Planning	1						1	2
27	International Economic Organization	1						1	2
28	Economic Community of West African States (ECOWAS)	1						1	2
29	Economic Reforms Programmes and Economic Plans							0	0
	Total	37	15	8	0	0	0	60	
	Percentage	62	25	13	0	0	0		100

Kn = Knowledge, Co = Comprehension, Ap = Application, An = Analysis, Sy = synthesis, Ev = Evaluation.

Table 2 showed the summary of results of the checklist for the distribution of cognitive level and content coverage of 2021 NECO Economics multiple choice questions. The largest number of questions (items) were at the knowledge level of the cognitive domain with a total of 37(62%). Comprehension and application levels of the

cognitive domain had a total of 15(25%) and 8(13%) respectively. However, analysis, synthesis and evaluation levels of the cognitive domain had an aggregate of zero (0) (0%) each.

In the 2021 NECO Economics multiple choice questions of 60 items, production and theory of cost had the highest items with a total of 8(13%) items. This is followed by national income and basic tools for economic analysis which had a total of 5(8%) and 4(7%) items respectively. Furthermore, demand theory, supply theory, money, labour market, industrialization and public finance had a total of 3(5%) items each. Nevertheless, definition and scope of economics, theory of consumer behaviour, agriculture, business organizations, distributive trade, population and financial institution had a total of 2(3%) items each. Finally, basic economic problems of the society, inflation, international trade, balance of payments, petroleum and the Nigerian economy, economic development and planning, International Economic Organization and Economic Community of West African States (ECOWAS) had a total of 1(2%) each. Meanwhile, types and basic features of economic system, theory of price determination, human capital development and economic reforms programmes and economic plans had no question in the 2021 NECO Economics multiple choice questions.

Hypotheses 1

The distribution of items across the cognitive levels is not significantly different from the expected in 2020 NECO Economics multiple choice questions.

Table 3

Chi-Square (X^2) Test Statistics on the Distribution of Items Across the Cognitive Levels in 2020 NECO Economics Multiple Choice Questions

	Knowledge	Comprehension	Application	Total	df	x^2	P-value	Decision
Observed	44	4	12	60				
					2	44.80	.000	Rejected
Expected	20	20	20	60				

Table 3 showed that observed knowledge had a total of 44 items, comprehension had a total of 4 items, and application had a total of 12 items while analysis, synthesis and evaluation had no item which brought the total observed frequency to 60. The levels of the cognitive domain had expected frequency of 20 each with an aggregate of 60. It also showed that Chi-square (x^2) (2, n = 60) = 44.80, p < .000. Testing at an alpha level

of .05, the p-value is less than the alpha level. Therefore, the null hypothesis was rejected. This implies that the distribution of items across the cognitive levels is significantly different from the expected in 2020 NECO Economics multiple choice questions.

Hypothesis 2

The distribution of items across the cognitive levels is not significantly different from the expected in 2021 NECO Economics multiple choice questions.

Table 4

Chi-Square (X^2) Test Statistics on the Distribution of Items Across the Cognitive Levels in 2021 NECO Economics Multiple Choice Questions

	Knowledge	Comprehension	Application	Total	df	x^2	P-value	Decision
Observed	37	15	8	60				
					2	22.90	.000	Rejected
Expected	20	20	20	60				

Table 4 showed that observed knowledge had a total of 37 items, comprehension had a total of 15 items, and application had a total of 8 items while analysis, synthesis and evaluation had no item which brought the total observed frequency to 60. The levels of the cognitive domain had expected frequency of 20 each with an aggregate of 60. It also showed that Chi-square (x^2) (2, n = 60) = 22.90, p < .000. Testing at an alpha level of .05, the p-value is less than the alpha level. Therefore, the null hypothesis was rejected. This implies that the distribution of items across the cognitive levels is significantly different from the expected in 2021 NECO Economics multiple choice questions.

Discussion of Findings

The findings on the distribution of cognitive level and content coverage of 2020 NECO Economics multiple choice questions showed that NECO Economics multiple choice questions were not evenly distributed across the cognitive levels and content areas in 2020. Research question one in table 1 revealed that the questions were set to cover only the lower levels of the cognitive domain (knowledge, comprehension and application) while the higher levels of the cognitive domain were grossly neglected. Based on the content areas, the items were not evenly distributed. Some content areas had more items, others less, while some content areas had none. The hypothesis one

tested in table 3 showed that the distribution of items across the cognitive levels is significantly different from the expected in 2020 NECO Economics multiple choice questions. This is because the items were not evenly distributed across the cognitive levels. This is related to a study carried out by Kendra (2017) who opined that a test has content validity, when the items on the test represent the entire range of possible items the test should cover. In view of this Martyn (2019) asserted that content validity is often seen as a prerequisite to criterion validity because it is a good indicator of whether the desire trait is measured. If elements of the test are irrelevant to the main construct, then they are measuring something else completely, creating potential bias. Content validity of a test is best determined by the curricular method, whereby the analysis of the test content is match against the analysis of the course content and instructional objectives to ascertain the degree of agreement. The higher the degree of agreement, the higher the content validity (Nworgu, 2015).

Findings on the distribution of cognitive level and content coverage of 2021 NECO Economics multiple choice questions revealed that NECO Economics multiple choice questions were not evenly distributed across the cognitive levels and content areas in 2021. Research question two in table 2 revealed that the questions were set to cover only the lower levels of the cognitive domain (knowledge, comprehension and application) while the higher levels of the cognitive domain were grossly neglected. In the same vein, the items on content areas were not evenly distributed. Some content areas had more items, others less, while some content areas had none. The hypothesis two tested in table 4 showed that the distribution of items across the cognitive levels is significantly different from the expected in 2021 NECO Economics multiple choice questions. This implies that the items based on the content areas were not evenly distributed across the cognitive levels. This corroborates a study carried out by Ukeje (2012) who stated that objective tests in Economics is not a comprehensive evaluative device because of its failure to reflect all the content areas as it is specified in the ordinary level economics syllabus. Siti (2017) stated that our students will understand the meaning, apply it somehow, express themselves, synthesize and create something of their own using the knowledge given. He further stated that the essence of cognitive levels is to help a teacher to advance the learning process from recalling learning materials from lower to higher level of thinking. It guides teachers to develop higher levels of thinking process for critical thinking or creative thinking in learning and provides a basis to asses student performance at all of these levels. The teachers who keep a list of question prompts relating to the various levels of Bloom's Taxonomy undoubtedly do a better job of encouraging higher-order thinking in their students than those who have no such tool (Soozandehfar & Adeli, 2016).

Conclusion

The major conclusion reached from the interpretation of the results is that:

- NECO Economics multiple choice questions were not evenly distributed across the cognitive levels and content areas in 2020 and 2021.
- the Economics multiple choice questions were set to cover only the lower levels of the cognitive domain while the higher levels of the cognitive domain were grossly neglected.
- Based on the content areas, the items were not evenly distributed. Some content areas had more items, others less, while some content areas had none.
- The distribution of items across the cognitive levels is significantly different from the expected in 2020 NECO Economics multiple choice questions.
- The distribution of items across the cognitive levels is significantly different from the expected in 2021 NECO Economics multiple choice questions.

Recommendations

Based on the findings of this study, the following recommendations were made.

- NECO Economics multiple choice questions should be set to cover the six cognitive levels.
- The higher cognitive levels such as analysis, synthesis and evaluation to enhance the student's thinking skills for problem solving and decision making should be given priority.
- Test-blue print or table of specification is a tool for content validity, therefore NECO should ensure strict adherence to the use of test blue print.
- The assistance of measurement and evaluation experts should be sort to help NECO in generating test items for economics.

References

Ajayi, K.O.; Onibeju M.O. & Olutayo, D.O. (2020). Teachers' qualification, attitude and mastery of content as correlates of students' academic achievement in economics in Lagos State, Nigeria. *KIU Journal of Humanities, 5(1),* 315–324.

Anyanwuocha, R.A.I. (2020). *Fundamentals of economics for senior secondary schools*. Africana-Fep.

Federal Republic of Nigeria (2013). *National policy on education*. NERDC Press.

Jimoh, K. & Adediwura, A.A. (2020). Assessment of reliability and distracter efficiency of Three, Four and Five options Economics multiple-choice items using confidence scoring procedure. *Journal of Evaluation, 5(1),* 77-79.

Kendra, C. (2017). *What is validity?* http://*www.about.com.*

Kpolovie, P.J., Ololube, N.P. & Ekwebelem, A.B.I (2011). Appraising the performance of secondary school students on the WAEC and NECO SSCE from 2004 to 2006. *International Journal of Scientific Research in Education, 4*(2), 105-114.

Martyn, S. (2019). *Content validity.* http://explorable.com/content-validity.html.

National Examination Council (2017). *Regulations and syllabus for senior school certificate examination, revised edition.* Otuson Nigeria Limited.

Nworgu, B.G. (2015). *Educational measurement and evaluation theory and practice.* University Trust publishers.

Ogunbamowo, A.O., Adediwura, A. A., & Diyan, R.O. (2019). Psychometric properties of 2017 west African examination council and national examinations council's economic senior school certificate examination items. *Journal of Advances in Education and Philosophy, 3(1),* 9-18.

Prospect Academy (2019). *Brief history of the creation of NECO.* https:www.facebook.com>post>neconational-exam…

Shogbesan, Y.O. (2017). *Effect of test facets on the construct validity of economics achievement tests in Osun State secondary schools.* An unpublished M.A.Ed. Thesis, Faculty of Education, Obafemi Awolowo University, Ile-Ife, Nigeria.

Siti, H. (2017). *Cognitive domain applied by EFL teacher in reading skill.* A paper submitted to Faculty of Teacher Training and Education University of Muhammadiyah Sumatera Utara Medan.

Soozandehfar, S.M.A., & Adeli, M.R. (2016). A critical appraisal of bloom's taxonomy. *American Research Journal of English and Literature, 2,* 1-9. DOI:10.21694/2378-9026.16014.

Ughamadu, K.A. (2015). *Curriculum: concept, development and implementation.* Kmensuo Educational Publishers.

Ugodulunwa, C.A. (2020). *Fundamentals of educational measurement and evaluation 2ⁿᵈ edition.* Fab Education Books.

Ukeje, R.P. (2012). *Educational measurement and evaluation for Teachers.* Key Publisher

Philosophy, the Common Good Verses Self Sovereignty and Vaccine Administration

By

Dr. Onyebuchi Geoffrey Chidi

Department Of Educational Foundations

Nnamdi Azikiwe University Awka

EmaiL: gc.onyebuchi@unizik.edu.ng

Phone: 08037461322

Wogor Emmanuel Akpa

Department Of Educational Foundation

University Of Nigeria Nsukka

Email: emmanuelwogor@gmail.com

Phone: 07033843406

Dr James Nweke Nnamdi

Department Of Philosophy

Nnamdi Azikiwe University Awka

Email: jamesdethinker@yahoo.co.uk

Phone:08037418752

Abstract

Philosophy as an academic discipline or human activity is concerned with the examination of fundamental principles of reality. When viewed in the context of politics, it is seen as a set of beliefs which forms the bases of administration and governance of a state. It is the study of the nature and meaning of the universe and of human life. In our contemporary era, humanity is faced with the reality of scientific and laboratory manipulations that has reduced life to mere object of experiment; and as such people tend to protect their territories with every instrument at their disposal. This article reflects the growing need of the right of states to self -sovereignty driven by the trust of common good. Common good usually conjures up benevolent associations: it is something to be desired, a worthy goal. The current mystery surrounding the emergence of covid-19 has raised a lot of suspicion on vaccine and its administration. Some say it's a conspiracy between world powers for political and economic dominance, while others point at selfish desires from private individuals and pharmaceutical companies to make more wealth. This study investigates philosophy, the common good versus self -sovereignty and vaccine administration; and concludes that for the sake of legitimacy the procedural aspects of deliberating about what is in the common good are crucial. Thus,

pointing that participation in democratic deliberations is necessary to avert conflict of interest.

Introduction

Philosophy is the hub that propels every human activity. It is the study of the nature and meaning of the universe and of human life. At independence, many factors called for state dominance as well as state-driven developmental strides. Yet in some places, weak political philosophy and social institutions, coupled with poor leadership and bad governance seem to have contributed to a massive failure in state administration and control. This, to a lager extent can be attributed to the clench and dominance of the colonialist over the sovereign state. It is critical to state here that such grip on an independent state does not promote self-sovereignty. Europe, North America and Asia-Pacific have harnessed their potentials for the common good and have become self-sustaining. The common good is a huge philosophical debate that incorporates the culture of interest of the vast majority before a consideration of 'the self.' For instance, while Americans think of what they can do for America, people of some nations think of how to loot the common treasury. When the common good is placed as the fulcrum, the internal running of the state makes for administrative consistency, self- reliance and state sovereignty. Thus, considering the clash of interest between world powers and the controversies surrounding the covid-19 pandemic and its remedial strategies of vaccine production, people are poised to look at the philosophy behind this; not losing sight of the value of the common good and self-sovereignty in the administration of this and other vaccines.

Philosophy: A Set of Belief and Attitude

What is the meaning of the term Philosophy? The term Philosophy is derived from the Greek "philo" and "Sophia" which translates to "love of wisdom". It is the study of the nature and meaning of the universe and of human life. Philosophy is a set of beliefs or attitude resulting from the search about life and the universe. And this becomes a guide to the social order. A philosopher is someone who loves wisdom But what does it mean to be wise? For Socrates to be wise mean to be a moral person. For Plato, to be wise means to have knowledge about everything. For Karl Marx to be wise mean to have a scientific understanding of laws that determine world and social processes. To be wise means also to have practical knowledge. Not only to know is important; it is important to know how to act. "The philosophers have only *interpreted* the world, in various ways. For Jean-Paul Sartre to be wise means to understand that human being is absolutely free and that our life depends on our decisions only. Nothing

else is able to determine human behaviour; Nothing else, only our own choices and decisions. To be wise men means to use this freedom in a responsible way.

The understanding of wisdom and philosophy has been changed in the history. But it is possible to distinguish some general understandings of philosophy. Not every philosopher has his or her own idea of the philosophy. Many philosophers belong to the philosophical schools or theoretical tendencies or orientation. The first great concept of philosophy is the classic concept. It is composed of three typologies:

1. Philosophy has its own autonomic object in the world. It has an object that is interesting for it itself; only philosophy explores it. The field of philosophical explorations does not conflict with others sciences explorations.

2. Philosophy creates its own methods that are not identical with the methods used in other types of knowledge.

3. Philosophical theories and (or) singular statements can be assessed for their epistemological value, we are able to fix whether they are true, false or only probable.

There are also the statements that cannot be decided in a relation to their epistemological value (true, false, probable). Examples: questions, poetry, poetical phrases: My sadness is white like white roses. Are you happy today? Do you remember Lora Lynn?

Philosophy has not its own autonomic object in the world. Each part of the word which can be explored at all is being explored in the sciences. There is no place for the specific, autonomic philosophical explorations already. Philosophy tries to formulate a general description of the world only based on the solutions given in sciences. Philosophy does not explore. It follows the sciences (knowledge about the structure and behaviour of the natural and physical world, based on facts that can be proven only by experiments and advances in technology). The goal of philosophy is to create a kind of synthesis of the cognitive perspectives given in sciences, aimed at improving the lot of man.

The Common Good

The term good is indicative of morally right behaviour. Common good usually conjures up benevolent associations: it is something to be desired, a worthy goal, and it would be a brave person who declared they were against the common good**.**

> *Aristotle says this about the relationship between the goals of the individual and the state: 'For even if the end is the same for a single man and for a state, that of the state seems at all events something greater and more complete whether to attain or to*

preserve; though it is worthwhile
to attain the end merely for one
man, it is finer and more godlike
to attain it for a nation or for
city-states'.   *Aristotle.*
Nicomachean Ethics.

Experiences in modern times have taught us to be critical and even suspicious of such grand rhetoric, leading us to query what lies behind this ambitious notion, who formulates what it stands for and how such formulations have been reached. Nowadays the concept of 'public interest' is often at the forefront of debate and used in contexts where a philosopher, or perhaps a preacher, might say 'common good'. In fact, discussing common good is impossible without references to its numerous 'relatives' – concepts of public interest, common interest and public good. Some argue that these notions are inter-changeable, some say that they overlap to a degree, some see them as fundamentally different.

It would be perfectly plausible to interpret the history of political theory as a series of attempts to formulate the best possible method of serving the public interest. Considered from this point of view, the various forms of political theory can be explained in terms of varying interpretations of the term 'public interest'. Once we descend from this wholly abstract level, however, the associations and connotations grow more confusing. The complex history of the concepts of "common good" and public interest illustrates very well the fundamental difficulties of defining the idea in any one correct way. It is an idea that contains a lot of expectations, and both positive and negative judgments about its usefulness; its centrality in political and philosophical theory and rhetoric is well-established, but it is often also roundly criticized. There is certainly no consensus on the scope and limits of the concept nor often is it even clear what type of phenomenon is at stake – an objective, a procedure or even a myth? (Glendon Schubert, 1960), devoted an entire book to the study of the concept of public interest, concluded bleakly that alternative concepts 'that offer greater promise of becoming useful tools' should be employed instead.

A contemporary communitarian might take a more positive view of the unitary position, especially when the community in question is a relatively small one. Yet, differently from the philosophers of antiquity, one now has to deal with a well-established discourse of individual rights and interests within the concept of common good. The core question here is linked to the extent to which community values are seen to contribute towards the constitution of personal identity and how much individual autonomy or independence from those values is recognized. The stronger the self-identification with the community, the less likely are conflicts between personal and

communal interest. Although even then it was not meant to denote simply an aggregation of private interests, it did place individuals at the center of a concept that was largely intended to protect material interests. With the advent of the Hobbesian anthropology of the essentially selfish human, private interest became a legitimate motive and thus the concept gained moral authority. Previously it would have been simply immoral to refer to one's individual interests, and therefore a legitimate conflict with the common good was almost impossible. Hobbes, however, argued that people were selfish, that it was natural to have selfish, individual interests, and this was not to be considered immoral. Individual interests therefore acquired a legitimacy and positive connotation that they did not enjoy before. The concept of common good as projected with vaccine administration has generated a lot of concern in our contemporary era.

The Turmoil of Interests on Vaccine Administration

The current mystery surrounding the emergence of covi-19 has raised a lot of suspicion on vaccine and its administration. Some say it's a conspiracy between world powers for political and economic dominance, while others point at selfish desires from private individuals and pharmaceutical companies to make more wealth. Admist these contradictory views, we shall look at the struggle as outlined below:

Religion. Clarity of messaging surrounding the safety of the vaccines should also be sensitive and address concerns across religious and cultural groups. The drop in confidence of vaccines in Indonesia has been partially linked to key Muslim leaders questioning the safety of the MMR vaccine who issued a fatwa (religious ruling) that the vaccine was haram (containing ingredients derived from pigs, thus unacceptable for Muslims). (Yufika, et al., 2020). A predominantly Muslim sample of respondents in Malaysia reported concerns that the vaccine was not a Halal vaccine and were thereby less likely to be vaccinated. (Wong & Sam, 2010).

Social network. The proportion for and against vaccination within an individual's' social circle has also been shown to be relevant. Parents who chose not to vaccinate their children had a much higher percentage of individuals (70%) in their social networks with similar attitudes than those who did vaccinate their children (13%) (The British Royal Academy, 2020)

Past health and vaccination behaviour. A systematic review of H1N1 vaccination uptake found that one of the strongest predictors for vaccination was past behaviour. Those who had previously been vaccinated against seasonal influenza were the most likely to opt for an pandemic vaccination (Bish, et al., 2011). A study in the US, for

example, found that those who previously had influenza vaccinations were more likely to consider the H1N1 pandemic as serious and were more positive about the safety of vaccines (Maurer, et al., 2010). A survey in the UK of COVID-19 vaccine intentions likely found that past vaccination behaviour was a key predictor. The researchers, however, revealed potential confusion that may arise with individuals who were vaccinated for seasonal influenza believing that it would aid in COVID-19 immunity (US Center for Disease Control and Prevention, 1999).

Higher risk priority groups. Due to higher exposure to viruses and disease, a large volume of literature also focusses on vaccine uptake by *occupations and in particular health care professionals*. Doctors and health professionals have been shown to have higher vaccination intentions and rates in general and also during the H1N1 pandemic, which is logical since they are often designated as priority groups (Bish, , et al., 2011)

The findings show that *pregnant women* who are also often a priority group are more likely to vaccinate, particularly when they have concerns about the disease (Tucker, et al. 2010). Other studies showed that as with other groups, pregnant women were also more likely to be vaccinated if they believed it was effective (Fabry, et al., 2011).

Having a *chronic illness* or being the priority group for vaccination has also been associated with greater intentions to vaccine, once again logical given the awareness and priority allocation. After a vaccine is licensed, many governments mandate the reporting of vaccine-related adverse events.

Self Sovereignty and the Debate of State Control

The right to self-sovereignty as declared in many international documents is fast becoming one of the thorniest issues for the international community and U.S. foreign policymakers in particular. Considerable confusion and conflict have resulted not so much over the notion of the *right* to self-determination, proclaimed in such documents as the International Covenants on Human Rights and the Helsinki Final Act, but over the *definition* of self- sovereignty (Kadri, 2011). What exactly does this right entail—autonomy? or statehood? What other rights come with it? Who is able to exercise it? Who is not, and why?

Self-sovereignty as a political force in international society is a relatively recent phenomenon, emerging in the aftermath of World War I and the breakup of the Ottoman and Austro-Hungarian empires as a demand of national groups seeking to divide territory. President Woodrow Wilson was the statesman most closely identified with the self- sovereignty principle, though ironically the term does not appear in his "Fourteen Points" speech. While he referred to minority rights within a larger state, he rarely

mentioned the establishment of new, independent states. Self-determination became officially sanctioned after 1945, when it was included in the United Nations Charter, though it applied to existing states, not to peoples or national groups. However, self-sovereignty quickly evolved from a principle to a right, especially after the 1960 UN Declaration on the Granting of Independence to Colonial Peoples, when the term came to denote decolonization. Still, self- sovereignty applied to territories and not to peoples.

Since the 1970s, there has been a move to combine the ideas of minority rights and decolonization, and the result has been a tendency on the part of some advocates to define self-determination as conferring the right to independent statehood on every distinctive ethnic group. Many observers of this trend share the concern that confusion about what the principle of self-determination means and what putative rights it confers is helping to fuel the violence characterizing contemporary independence movements. Yet the realities of the international system provide a rationale of sorts for such movements, including the view that internationally recognized borders are "artificial, arbitrary, and accidental" and that they in fact legitimize the combining of different peoples arbitrarily, and often against their will, within the same territory (Hoedemaekers, 2006). Moreover, the growth of these movements is not a temporary phenomenon, but the direct result of changes in the world wrought by the universal application of Western ideas such as democracy and human rights. Most of the world's peoples have little experience with the West's long history of sovereignty and statehood and are thus not prepared to adhere to the Western insistence on the inviolability of existing borders. Those in the West who are alarmed by the growth of these nationalist movements should consider not whether these contemporary manifestations of nationalism are legal or appropriate, but rather that they are happening—and that they very likely cannot be stopped. The potential for violence and international instability becomes even more obvious when one considers that some still very large empires, such as Russia and China, are likely to be affected by these movements.

Unfortunately, turning to international legal standards on the right to self-determination does not resolve the problem, since the right has never been explicitly defined. In any case, it is impractical to assume that legal principles alone will resolve what are essentially territorial, and political disputes (Schmidt & Pathak, 2020). Because the right has never been defined, the notion of self-determination typically embraces several different meanings, none of which addresses the central issue of how to respond to a national or other identity group's aspirations for control over the lives of its members.

Without a doubt, any new definition of self- sovereignty must include customary human rights standards (e.g., respect for individual and minority rights) and the right of an appropriate body to enforce those standards. In their later stages, self-determination

movements typically become the target of human rights violations, which should be addressed before they reach the often intractable phase of organized struggle against the state. However, the right to self- sovereignty must be separated from the right to secession and the establishment of independent statehood, with the understanding that there are intermediate categories short of statehood that can address a minority group's interests and aspirations, such as membership in various international forums or regional organizations (Cochran, 1976). Human rights violations are easy to condemn; the dilemma is whether they justify the persecuted group's secession from the state, a conclusion the international community is largely unwilling to draw.

Can a principle be developed that stands somewhere in between recognized human rights standards and the right to self- sovereignty? Somewhat ironically, the very propagation of the idea of human rights intensifies demands for greater recognition among minority groups that invoke claims of human rights violations to support their demands. However, the idea that human rights and political stability are bound to clash is tenuous, since states held together through terror and repression are rarely stable in most senses of the word. In the end, though, it may not be possible to compel an oppressive government to end its unacceptable actions toward a minority group if outside countries are unwilling to intervene with military force.

Vaccine Administration

The word "vaccine" originates from the Latin *Variolae vaccinae* (cowpox), which Edward Jenner demonstrated in 1798 could prevent smallpox in humans. Today the term 'vaccine' applies to all biological preparations, produced from living organisms, that enhance immunity against disease and either prevent (prophylactic vaccines) or, in some cases, treat disease (therapeutic vaccines) (Myers & Goodwin, 2011). Vaccines are administered in liquid form, either by injection, by oral, or by intranasal routes. Vaccines are composed of either the entire disease-causing microorganism or some of its components. They may be constructed in several ways: living organisms that have been weakened, usually from cultivation under sub-optimal conditions (also called attenuation), or from genetic modification, which has the effect of reducing their ability to cause disease; From whole organisms that have been inactivated by chemical, thermal or other means; From components of the disease-causing organism, such as specific proteins and polysaccharides, or nucleic acids; From inactivated toxins of toxin-producing bacteria; From the linkage (conjugation) of polysaccharides in addition to the bulk antigen that goes into a vaccine, vaccines are formulated (mixed) with other fluids (such as water or saline), additives or preservatives, and sometimes adjuvants. Collectively, these ingredients are known as the excipients (Plotkin, & Plotkin, 2008). These ensure the quality and potency of the vaccine over its

shelf-life. Vaccines are always formulated so as to be both safe and immunogenic when injected into humans. Vaccines are usually formulated as liquids, but may be freeze-dried (lyophilized) for reconstitution immediately prior to the time of injection (Myers Goodwin, 2011)

Preservatives

This ensures the sterility of the vaccine over the period of its shelf-life. Preservatives may be used to prevent contamination of multi-dose containers: when a first dose of vaccine is extracted from a multi-dose container, a preservative will protect the remaining product from any bacteria that may be introduced into the container. Or, in some cases, preservatives may be added during manufacture to prevent microbial contamination (United Nations Office on Drugs and Crime, 2020) . Preservatives used in vaccines are non-toxic in the amounts used and do not diminish the potency of vaccines. But not all preservatives can be used in all vaccines for some preservatives will alter the nature of some vaccine antigens. (World Health Organization. Immunization Safety Surveillance, 2020)

How do Vaccines Work?

When inactivated or weakened disease-causing microorganisms enter the body, they initiate an immune response. This response mimics the body's natural response to infection. But unlike disease-causing organisms, vaccines are made of components that have limited ability, or are completely unable, to cause disease (United Nations Office on Drugs and Crime, 2020). The components of the disease-causing organisms or the vaccine components that trigger the immune response are known as "antigens". These antigens trigger the production of "antibodies" by the immune system. Antibodies bind to corresponding antigens and induce their destruction by other immune cells. The induced immune response to either a disease-causing organism or to a vaccine configures the body's immune cells to be capable of quickly recognizing, reacting to, and subduing the relevant disease-causing organism. When the body's immune system is subsequently exposed to a same disease-causing organism, the immune system will contain and eliminate the infection before it can cause harm to the body.

The effectiveness and the duration of the protective effect of a vaccine depend both on the nature of the vaccine and on the manner in which they are processed by the immune system (World Health Organization. Immunization Safety Surveillance, 2020). Some disease-causing organisms, such as influenza, change from year to year, requiring annual immunization against new circulating strains. In very young children, the immune system is immature and less capable of developing memory. In this age group, duration of protection can be very short-lived for polysaccharide antigens.

Vaccine Testing in Humans and the Intriques of Common Good in the 21ˢᵗ Century

Every effort in science and technology is aimed at making the world a better place for humans. Man stands at the fore of every invention and as such, his well-being is placed supreme above all goods. In humans, testing of vaccine proceeds in three phases:

• Phase I clinical trials involve a few dozen subjects; • Phase II involve 50 – hundreds of subjects; and,

• Phase III involve thousands or tens of thousands of subjects. A safety concern that arises at one phase will stop the clinical study from advancing to the next phase. The effects of the tested vaccine are compared to the effects of a placebo to determine the cause of any adverse events. Standardized case definitions of adverse events, set through the Brighton Collaboration, allow data from different clinical trials to be compared (US Center for Disease Control and Prevention, 1999). A license to allow use of the tested vaccine may be applied for when clinical testing of the vaccine is completed. All safety data from clinical testing must be submitted to a regulator for review. The regulator will carefully consider the data from all phases of clinical testing to determine if the vaccine is safe and meets the requirements for licensure. Only a vaccine which meets all of the regulator's safety requirements will be considered. The regulator may grant a conditional license if there is a possibility that a rare adverse event is associated with the vaccine. The conditions of the license may include conducting post-marketing (Phase IV) studies over a large sample size and /or over a long period of time.

After a vaccine is licensed, many governments mandate the reporting of vaccine-related adverse events. In the US, this is mandated by the National Childhood Vaccine Injury Act (NCVIA). The Vaccines Adverse Event Reporting System (VAERS) allows the US government to evaluate the incidence of specific adverse events, or to detect variations in the rates of vaccine-related adverse events. Governments may use a variety of methods to monitor vaccine safety. Most countries use spontaneous (or passive) safety monitoring systems. These have a relatively low cost of operation. Some countries have a combined adverse event reporting system for both vaccines and drugs. Other countries report adverse events from vaccines and drugs through separate reporting systems.

The Controversy of Common Good and Self Sovereignty Admist Vaccine Administration

Vaccines have one of the greatest impacts on public health. Their impact on reducing human mortality is second only to the provision of safe drinking water. Vaccines are provided to individuals to protect them from disease, but they play an even greater role

in protecting entire populations from exposure to infectious diseases. Vaccine-preventable diseases that were once prevalent in industrialized countries have virtually disappeared where vaccination has been implemented. In the 20th century, vaccines have reduced the morbidity from vaccine preventable diseases by as much as 89 – 100% (Bish, et al., 2011). The prevention of disease has had an enormous impact on economic development by limiting the costs of curative care and saving billions of dollars in countries where diseases have been well controlled or eliminated. This section provides a brief overview of the main areas of controversies:

- Perception of personal risk.
- Efficacy under conditions of uncertainty
- Safety and speed of vaccine development and political interventions
- Distrust and underrepresentation of key risk groups in vaccine trials
- Sources of information and knowledge deficits

Perception of Personal Risk. A persistent finding is that individuals are complacent and perceive that if they are at a low or no risk of contracting, becoming ill or dying from the virus, there will be little reason to vaccinate. As described shortly, the individual risk of dying from COVID-19 has been disproportionality concentrated in older ages, those with co-morbidities and particularly ethnic groups. A study in March 2020 in the US during the initial outbreak of COVID-19 found that 25% were very worried about contracting the virus with around 13% not worried at all. Those who rated the virus as less serious were younger individuals, men, those living in lower socio-economic circumstances and Black participants (Tucker, et al., 2010). In August 2020, however, the Director of the WHO recognised what has been termed 'long COVID', which includes debilitating symptoms such as breathlessness and fatigue for those who have recovered, predominantly concentrated in younger age groups38. The growing awareness of these long term health risks may increase awareness of personal risks.

Multiple studies of H1N1 vaccine uptake amongst health professionals found that those who perceived that they were not at risk were less likely to be vaccinated (Hidiroglu & Topuzoglu, 2010). Conversely, a study of pregnant women in the US found that those more worried about the virus had a higher likelihood to be vaccinate.

Efficacy under Conditions of Uncertainty. What is unusual for COVID-19 compared to previous vaccines is that dialogue and communications about the safety and efficacy of the various vaccines must be developed under conditions of uncertainty. According to a COVID-19 Clinical trial tracker, over 100 vaccine candidates are currently active (Thorlund, et al., 2020). As described in the recent DELVE report, vaccines must go through various trials, with none of the current vaccines in the final stage of Phase III trials. It is at this stage where the vaccine is tested for potential side-

effects across various types of people. Generally when vaccines are introduced and communicated to the public there is already detailed information on immune responses following vaccination (e.g., fever), effectiveness, risks for various risk groups (children, older adults, pregnant women, chronical medical conditions, immune-compromised), and also on the duration of immunity and the need for repeated vaccination. Vaccines are overwhelmingly safe, but do have some side effects for particular individuals.

Safety and Speed of Vaccine Development and Political Interventions. A large volume of research lists fears of safety as one of the largest deterrents of vaccine uptake (Larson, et al., 2014). Multiple media reports and individual scientists have discussed the speed at which the COVID-19 vaccine has been developed and tested, raising safety concerns. The timeline for vaccine development for COVID-19 is unparalleled, with vaccine development which normally takes a decade compressed into 1 to 2 years (Graham BS. 2020). As discussed in the recent DELVE report, vaccine candidates must complete clinical trials, be licensed by regulatory boards and develop complex manufacturing and distribution programmes Although regulatory bodies have in the past taken between one to two years, the UK Medicine (DELVE. 2020) and Healthcare products Regulatory Agency (MHRA) has reported that it will fast-track it to take 70 days. COVID-19 has also become entwined with political timetables, which they allege may jeopardise safety and efficacy. A prominent example is 'Operation Warp Speed' in the US, for instance, which aims to have the vaccine ready before the presidential election in early November 2020. Experts point to some cautionary examples where the speed of vaccine deployment or development impacted safety, such as the 1955 Cutter incident discussed later in this report (Offit & Donnell; 2005).

In 1976, when President Gerald Ford faced an election in the US, a vaccine for a swine flu strain was fast-tracked and given to 45 million Americans in fear of an impending epidemic (Sencer, & Millar, 2006) of those who were vaccinated, 450 individuals developed Guillain-Barré syndrome and there were 30 deaths (Rachiotis, et al. 2010) Although not exhaustive, the key lessons learned were that when large numbers of people are exposed to a vaccine, adverse reactions emerge and children respond differently. It was also noted that public explanation was necessary when coincidental deaths occurred that were unrelated to the vaccine and what the relationship was with new and unrelated disease (Legionnaires) that emerged. Another example is the Pandemrix vaccine used during the 2009 - 10 H1N1 (swine flu) epidemic, which had been allegedly given rapid approval by the European Medical Association (EMA) (Doshi, 2018). In the UK it was administered to six million high-risk groups including children. It is estimated that of around the 30 million that were vaccinated in Europe

around 1,300 children and adolescents developed narcolepsy, which was likely to be causal (Miller, et al., 2013).

Recent attempts to eradicate polio in Africa, for instance, are referred to where mass production began while the vaccine was still in clinical trials with the aim to also faced serious setbacks in 2019 when the live-virus vaccine was found to cause new infections (Roberts,   2019) Across 12 countries, 196 children were paralyzed by a strain derived from a live vaccine (vaccine-derived polio virus type 2) that in turn regained virulence and spread.

These rapid approvals do not necessarily denote lower quality or vigilance but rather follow similar approval procedures. This happened for instance during the 2014 - 16 West Ebola outbreak which had both high transmission and case fatality rates. In that case, the risk of receiving an experimental drug was deemed manageable and was lower than the risks implicated by contracting the virus. Other examples are in 2019, where mass production began for vaccine for a new polio outbreak while the vaccine was still in clinical trials, with plans to deploy it for emergency use (Roberts, 2019).

Distrust and underrepresentation of key risk groups in vaccine trials

There has also been the concern that COVID-19 clinical trials have underrepresented certain groups. One concern is the lack of representation by minority groups, particularly by race and ethnicity (Chastain, et al. 2020) yet these groups have the highest rates of hospitalization and mortality from the virus. This is often related to high levels of distrust amongst certain groups. In the US for instance, the government's Tuskegee syphilis study from 1932 –72 carries a lasting negative memory (Washington & Medical 2007). In this experiment, African Americans who had the disease were told they were provided free health care and then intentionally not provided treatment and were not informed in order to study the progression of the disease. There are also age-based concerns about the trials. Although the vaccine will very likely be targeted first to those aged 65 and older, the trials largely contain younger age groups but also exclude children.

Sources of information and knowledge deficits

Sources of information are another factor related to vaccine administration. A study of parents during the H1N1 pandemic found that those who were more likely to vaccinate their children watched the national television news and pro-actively engaged in information-seeking behaviour (Jung, et al., 2013). Another study in the US found that individuals who received their information about H1N1 from a health-care provider or public health department were more likely to perceive the vaccine as safe (Maurer, et al., 2010). Greek study concluded that those who received information from the government

were more likely to be vaccinated than those who primarily received information from the television and radio (.Rachiotis G, et al. 2010). Effective communication and vaccine distribution strategies have been suggested as particularly vital for minority communities (Uscher-, et al., 2011).

Recommendations

Considering the controversy and myth surrounding the production and use of vaccines, the following recommendations are made:

- All governments should regulate the clinical development of vaccines.
- A thorough evaluation of vaccine safety must be performed before a government will grant a license to allow its use.
- After a vaccine license has been granted, almost all national immunization programs should continue to monitor the nature and frequency of adverse events following immunization.
- There should be Vaccine Adverse Event Reporting System (VAERS) which allows all stakeholders in immunization from the public and private sectors to report on the safety of licensed vaccines.
- Vaccine policy-makers should use the information from adverse event reporting systems to guide vaccine policies, including policies to assess the benefits and risks of immunization.
- Vaccine safety should first be evaluated in animals. If there is no evidence of harm in animals, testing can begin in a small number of humans. If there is no evidence of harm in humans, testing proceeds to increasing numbers of human subjects just as the covid-19 vaccine was tested

Conclusion

People have personal interests that can and do conflict because the values underlying these preferences conflict. Clearly some value conflicts can be more difficult to solve than others, as when we have two very important values at stake (the common good and self-sovereignty). Depending on the context and after weighing of the various interests, needs and other relevant information, a decision about the value preferences in a specific case can be made. According to Virginia Held's classification these preponderance theories are theories in which the content of the public interest is decided by weighing the relevant interests and goods at stake. This is the approach that best captures the mainstream view of the common good and public interest of today. Weighing alternatives and reflecting on the accommodation of various interests while upholding certain fundamental values is a method that has, with some variations, been advocated by many great philosophers from Hobbes and Hume to Rawls. Thus, for the

sake of legitimacy the procedural aspects of deliberating about what is in the public interest are crucial and this is often recognized. The means of participating in democratic deliberations are manifold: from the traditional media to social networking sites to targeted public engagement activities and beyond. When these options are explored effectively, conflict of interests would be avoided.

References

Aristotle Nicomachean Ethics [Internet]. *The internet classics archive.* Available from: http://classics.mit.edu/Aristotle/nicomachaen.html.

Bish, A., Yardley, L., Nicoll, A., & Michie, S. (2011). Factors associated with uptake of vaccination against pandemic influenza: A systematic review. Vaccine 29, 6472 - 6484. doi:10.1016/j.vaccine.2011.06.107

Chastain, D. B., Osae, S. P., Henao-Martínez, A. F., Franco-Paredes, C., Chastain, J. S., Young, H. N. (2020). Racial disproportionality in covid clinical trials. *N Engl J Med*, 383, e59. doi:10.1056/nejmp2021971

Cochran, C..E. (1974). Political science and "the public interest". *The Journal of Politics*, 36(2), 327–55.

Delve (2020). *SARS-CoV-2 vaccine development & implementation; scenarios, options, key decisions.* Available from: https://rs-delve.github.io/reports/2020/10/01/covid19-vaccination-report.html

Fabry P, Gagneur A, Pasquier J-C. (2011). Determinants of A (H1N1) vaccination: Cross-sectional study in a population of pregnant women in Quebec. *Vaccine 29*, 1824 - 1829. (doi:10.1016/j.vaccine.2010.12.109)

Graham, B. S. (2020). Rapid COVID-19 vaccine development. *Science*, 368, 945 - 946. doi:10.1126/science.abb8923

Hidiroglu, S., Ay, P., Topuzoglu, A., Kalafat, C., Karavus, M. (2010). Resistance to vaccination: The attitudes and practices of primary healthcare workers confronting the H1N1 pandemic. *Vaccine*, 28, 8120 - 8124. doi:10.1016/j.vaccine.2010.09.104.

Hoedemaekers, R., Gordijn, B., Pijnenburg, M. (2006). Does an appeal to the common good justify individual sacrifices for genomic research? *Theoretical Medicine and Bioethic* 27:415-31.

Jung, M., Lin, L., Viswanath, K. (2013). Associations between health communication behaviors, neighborhood social capital, vaccine knowledge, and parents' H1N1 vaccination of their children. *Vaccine,* 31, 4860 - 4866. doi:10.1016/j.vaccine.2013.07.068

Kadri, S. (2011). The concepts of common good and public interest: from Plato to biobanking. *Cambridge Quarterly of Healthcare Ethics* 20 (4):554-562

Larson, H. J., Jarrett, C., Eckersberger, E., Smith, D. M. D., Paterson, P. (2014). Understanding vaccine hesitancy around vaccines and vaccination from a global perspective: A systematic review of published literature, 2007 - 2012. *Vaccine.* 32, 2150 - 2159. (doi:10.1016/j.vaccine.2014.01.081)

Maurer, J., Uscher-Pines, L., Harris, K. M. (2010). Perceived seriousness of seasonal and A(H1N1) influenzas, attitudes toward vaccination, and vaccine uptake among U.S. adults: Does the source of information matter? *Preventive Medicine 51*, 185 - 187.
doi:10.1016/j.ypmed.2010.05.008

Miller, E., Andrews, N., Stellitano, L., Stowe, J., Winstone, A. M., Shneerson, J., & Verity, C. (2013). Risk of narcolepsy in children and young people receiving AS03 adjuvanted pandemic A/H1N1 2009 influenza vaccine: Retrospective analysis. *BMJ 346*, f794 - f794. (doi:10.1136/bmj.f794).

Myers, L. B., & Goodwin, R. (2011). *Determinants of adults' intention to vaccinate against pandemic.*

Offit, P. A. (2005). T*he Cutter Incident: How America's First Polio Vaccine Led to the Growing Vaccine Crisis*. R.R. Donnelley & Sons.

Plato. (2003). *Republic*. London: Penguin Books.

Plotkin, S. L. & Plotkin, S. A. (2008). A short history of vaccination (5th ed.). In S Plotkin, W Orenstein & P Offit (Eds). *Vaccines.* Saunders Elsevier, China.

Rachiotis, G., Mouchtouri, V. A., Kremastinou, J., Gourgoulianis, K., Hadjichristodoulou, C. (2010). Low acceptance of vaccination against the 2009 pandemic influenza A(H1N1) among healthcare workers in Greece. *Euro Surveill.* 15, 19486

Roberts, L. (2019). Polio eradication program faces hard choices as endgame strategy falters. *Science.* doi:10.1126/science.aba7189

Schmidt, H., Pathak, P., Sönmez, T., & Ünver, M. U. (2020). COVID-19: "How to prioritize worse-off populations in allocating safe and effective vaccines." *British Medical Journal 2020*; 371.

Schubert, G. (1960). *The public interest. a critique of the theory of a political concept*. Westport: Greenwood Press.

Sencer, D. J., & Millar, J. D. (2006). Reflections on the 1976 swine flu vaccination program. *Emerg. Infect.* Dis. 12, 23 - 28. doi:10.3201/eid1201.051007

The British Royal Academy. (2020). *COVID-19 vaccine deployment: Behaviour, ethics, misinformation and policy strategies*.

Thorlund, K., Dron, L., Park, J., Hsu, G., Forrest, J. I., & Mills, E. J. 2020). A real-time dashboard of clinical trials for COVID-19. *The Lancet Digital Health* 2, e286 - e287. (doi:10.1016/s2589-7500(20)30086-8)

Tucker, E. B. M., Coleman, J., Armstrong, K., & Shea, J. A. (2010). Risk perceptions, worry, or distrust: what drives pregnant women's decisions to accept the H1N1 vaccine? *Matern Child Health J 15*, 1203 - 1209. doi:10.1007/s10995-010-0693-5.

United Nations Office on Drugs and Crime. (2020). *Accountability and the prevention of corruption in the allocation and distribution of emergency economic rescue packages in the context and aftermath of the COVID-19 pandemic*. www.unodc.org/documents/Advocacy-Section/COVID-19_and_Anti-Corruption-2.pdf.

United Nations Office on Drugs and Crime. (2020). *State of integrity: A guide on conducting corruption risk assessments*. www.unodc.org/documents/corruption/Publications/2020/State_of_Integrity_EN.pdf

US Center for Disease Control and Prevention. *Achievement in public health, 1900-1999 impact of vaccines universally recommended for children – United States 1990-1998. MMWR* 48:243-248, 1999. http://www.cdc.gov/mmwr/preview/mmwrhtml/00056803.htm

Uscher-Pines, L., Maurer, J., Harris, K. M.. (2011). Racial and ethnic disparities in uptake and location of vaccination for 2009 - h1n1 and seasonal influenza. *Am J Public He*alth 101, 1252 - 1255. doi:10.2105/ajph.2011.300133.

Wong, L. P., & Sam, I-C. (2010). Factors influencing the uptake of 2009 H1N1 influenza vaccine in a multiethnic Asian population. *Vaccine,* 28, 4499 - 4505. (doi:10.1016/j.vaccine.2010.04.043)

World Health Organization. (1999). Immunization Safety Surveillance: guidelines for managers of immunization programs on reporting and investigating adverse events following immunization. *Immunization Focus, World Health Organization Western Pacific Region, Manila, 1999.*

World Health Organization. (2020). *Standardization of vaccines for coronavirus disease (COVID-19)* www.who.int/biologicals/Standardization_Covid-19/en/

Washington, H. A. (2007). *Medical apartheid: the dark history of medical experimentation on black Americans from colonial times to the present.* Doubleday.

Yufika, A. (2020). Parents' hesitancy towards vaccination in Indonesia: A cross-sectional study in Indonesia. *Vaccine* 38, 2592 - 2599. doi:10.1016/j.vaccine.2020.01.072

Oral Literature as a Means of Reconstructing Negative Gender Notions among Cultures in Contemporary Time

Nkereuwem, Ogonna Nchekwube

Language and Communication, Education Department, School of General Studies, Federal College of Education Technical, Asaba, Delta, Nigeria

ofonimen2015@gmail.com

Abstract

Over the ages, women have been largely misrepresented and wrongly depicted with various sexist-constructed negative gender notions, using literature. This article seeks to argue and demonstrate that oral literature is a viable means of reconstructing negative gender notions about women among cultures. It reveals that oral literature, which rose before written literature, is one viable mechanism for reconstructing negative gender notions about women among cultures. It concludes that oral literature is an ever potent oral source of utilising (indigenous) knowledge and information resources. The study recommends that both oral and written sources of literature should be used by societal institutions, writers and oral narrators to reconstruct women positively. Agents of socialisation should consistently change the old gender-based notions, beliefs, views and narratives of women.

Introduction

Oral literature, also regarded as *orature,* is affirmed to be an essential and indispensable means of teaching, learning, transmitting and sustaining various aspects of culture (Robert, 2017). By implication, it is one of the means of teaching, learning, transmitting and sustaining gendered constructions about males and females. The constructions are both negative and positive. The concern of this article is on negative gender constructions of women among cultures. Gender constructions are based on the profiling of males and females in respect to their psycho-behavioural and physiological traits, gender categories and identities.

The need to reconstruct women and grant them equality with men across cultures had been echoed in a formal writing by Mary Wollstonecraft in 1792. It is also echoed by the UN, as it proclaimed universal human rights and gender equality among all cultures of the world in 1948. The Beijing conference of 1995, being the United Nations Fourth World Conference on Women Forum, is another statutory call for gender reconstruction. Man-tailored gender ills suffered by women in society are condemned by different sources of written literature (Chimakonam, 2018; Ogonnaya & Besong, 2018; Afella, 2016; Ochelle, 2014; Ityavyar, 1993; CODESRIA, 1991).
Anyanwu (2023) condemns the linguistic profiling of women, as in Mbaise and Afikpo, for which they are stereotyped, neglected, relegated and assigned docile gendered roles.

Chimakonam (2018) argues that women are marginalised in the academic space of life. Balogun (2018) claims that Yoruba women were not marginalised in pre-colonial Africa, which shows that African women were never marginalised until the coming of the colonialists. Ochelle (2014) observes that the significant place of Nigerian women in history remains neglected and silenced. Similarly, Grimshaw and Fricker (2002) argue that the history of western philosophy is all about great men of ideas and not women. Besong (2021) posits that 'regardless of the physical differences between males and females, it is illogical to exploit such differences to promote gender stereotype' (p. 87).This study shares his position, as that is why it advocates the use of oral literature to reconstruct and assert women from age-long negative gender constructs.

In view of the above, this study makes a case for the judicious use of oral literature by all and sundry to reconstruct extant negative gender notions about women among cultures. It shall make its case under several sections. These are conceptual analysis; theoretical framework; oral literature and cultural constructions of women; situating oral literature in written language and literature; oral literature and the reconstruction of negative gender notions; and conclusion.

Conceptual Analysis

Literature is used in a wide sense to refer to written works and printed materials that give information, such as books, articles, pamphlets and other like materials (Anigbogu and Uwakwe, 2016). That is the pedestrian conception of literature, as the focus is only on written literature and information resources. For Anigbogu and Uwakwe (2016), literature may be defined as the study of imaginative works that relate to certain aspects of human experience. Limiting the definition of literature to its oral or written form alone, or to one of its three genres: prose, drama and poetry alone, implies a narrow conceptualisation of literature. Literature is in all spheres of human life (Nkereuwem, 2022). Robert and Anura (2018) define literature as the field that has both oral and written forms, three genres: drama, prose and poetry and diverse functions, with the primary functions being information, education, instruction, entertainment, preservation and portrayal culture, mimicking realities, and criticism.

This article defines literature as a human endeavour and formal discipline concerned with oral and written sources of knowledge and information on various aspects of culture, life, existence, nature, the universe, the world beneath, phenomena, abstract and concrete things, and about humans and the non-humans. Summarily, oral literature involves all the aforementioned embodiments of the definition of oral literature offered by this study. They together make it possible for oral literature to serve as a veritable tool for reconstructing and correcting negative gender notions in contemporary times. Oral literature is described as all forms of expressions and dispositions situated in

literature that are first presented and transmitted verbally (orally) before being written or left permanently in oral form and sources (Robert, 2017a).

Theoretical Framework

This article is anchored on Robert's (2017b)Indigenous Existential Phenomenology Theory (IEPT). The exponent of IEPT theorises that there is an existential connectivity between and among both divisible and indivisible elements of cultures, phenomena, things, and humans alike (Robert, 2017b). Here, the theory links oral literature to written literature, language, history, communication and knowledge on one hand. On the other hand, it links gender constructions and issues, culture, teaching and learning, child education and socialisation. In terms of socialisation and indigenous knowledge, IEPT emphasises indigenous and metaphysical innate and nurtured traits that rouse the consciousness of a person and a people to their personhood, existence, nature, being, dignity and ability (Robert, 2017b). It also emphasises the need for the people of different cultures to be conscious of what to do to uphold, promote and sustain their indigenous cultures in their entirety (Robert, 2017b).

Oral stories told about women in relation to their experiences, plights, abilities, contributions to society, and battered image are of oral literature in one regard or the other. The stories ought to be changed from negative to positive ones through oral narratives and sources. Doing so entails all hands being on deck in and outside the school and the home (family). The implication of the foregoing is that oral literature has to be used effectively to socialise all and sundry on the imperative of conceiving and constructing women in positive light. According to Robert (2017b), the connectivity doubles as physical and metaphysical, natural and artificial, innate and physiological, and in physique and behaviour. All the elements, which constitute the panorama of a given society, fall under one category, the indigenous phenomena of the culture. These indigenous phenomena constitute indigenous phenomenology. Indigenous phenomenology concerns in totality the indigenous phenomena and other embodiments of every given people (Robert, 2017b; Besong, 2019; Besong and Robert, 2020).

These involve the wholesome indigenous culture of a people, which include their indigenous knowledge, literature, worldviews, thought system (philosophy), history, language(s),and entire panorama(Robert, 2017b; Besong, 2019; Besong and Robert, 2020). Each of these is an integral part of the whole that makes up the wholeness of a thing/phenomenon, a person, a group and (a) people respectively (Robert, 2017b; Besong, 2019; Besong and Robert, 2020).As affirmed by Besong (2019, p. 70), IEPT rouses the consciousness of contemporary people of every culture, particularly Africans, to their cherished systems and practices, which are most often than not neglected, endangered and put to extinction in contemporary time. This assertion expresses the

relevance of IEPT to a study of this kind and its relevance in practical contexts of indigenous matters, practices and discourses. Thus, IEPT captures oral literature as an invaluable and viable aspect of the indigenous culture of every given people. Since gender culture differs among peoples, IEPT also captures the indigenous gender cultures of different peoples.

Oral Literature and Cultural Constructions of Women

Sexist negative stories, proverbs, wits, idioms, artefacts, masquerades, etc. are formed, propagated and sustained among cultures by the elite class that is most often dominated by men. Folkloric media, archives, translations and poetry are noted to be oral trado-media, which are used for various re/constructions, with literary and historical constructions being the core and oldest ones (Robert, 2016).The Ghanaian proverb, which says 'The dumbest man is better than a woman' (Aido, 1992, p. 15), is an indication of negative gender construction about woman through oral literature. Proverb is an aspect of oral literature. This Ghanaian proverb expresses how women are negatively constructed literarily, socio-culturally and otherwise.

As Robert (2017a, p. 1) notes, "oral literature encompasses history, belief, norms, values, customs, traditions, wisdom, knowledge and cosmology of a people." The above expressed proverbial knowledge depicts a negative literary construction of women in Ghanaian-African indigenous knowledge, which is passed on to generations. As this article advocates, once expressions, such as the above Ghanaian proverb, are reconstructed about women in contemporary time, reformed knowledge of who a woman truly is and what a woman can do, would become the new world order. Oral literature has been used to construct negative gender notions about and against women in society across ages. This study argues that as what has been successfully used to construct negative gender notions about and against women across cultures and ages, the same oral literature could be used judiciously to reconstruct (i.e. change) extant gender notions about women. The new (contemporary) reconstructions would be constructively positive, evolving and impactful. The construction of women as weaker vessel had been constructed orally and spread through both oral and written sources across ages and cultures.

Cultures have largely constructed women negatively as weaker vessels and inferior human beings. Studies have argued against the consideration of women as weaker vessels (e.g. Besong, 2021 and 2017; Robert, 2016; Ochelle, 2014). Robert (2016) specifically argues that if women are weaker vessels, it implies that men are weak vessels, and if the weak vessels can do whatever normal human beings do, the weaker ones could do same. Thus, to change the negative mentality about women, which are borne out of the negative gender constructs about women across ages, women have

to be reconstructed using oral literature. Although they can be reconstructed positively using other means, the central position and advocacy of this paper is for them to be reconstructed positively using oral literature. The reason is that before being able to read and write and exposed to written literature, one is first exposed to oral literature – folktales, myths and legendary.

The thinking that women have been constructed negatively overtime is given credence by Motaze (2000), who demonstrates that the profiling of women is evident in the use of derogatory names for women in some Nigerian languages as well as those of other nations. Obviously, profiling women, or even any other group of persons or things, ultimately involves the use of language and literature in ways that they are represented rightly, wrongly or both rightly and wrongly. This study argues that by profiling women in society, they become associated with certain negative gender-based notions, concepts, myths, tales, ideologies, identities, and battered status and image. These negations are expressed, spread and sustained about women through literature, language, media, socialisation and other means of creating, institutionalising, spreading, transmitting and sustaining such constructions.

More so, the legal system of a society has a bearing to the literature of that society, both oral and written literature alike. Court voice records undoubtedly constitute sources of oral literature, drawn from spoken language that could be put into written, using written language and literature (Koch, 1999). Court records, Koch (1999) has agreed, 'comprise a complex mixture of oral language and graphic codes, placed at different positions on the scale of communicative distance' (p. 410). The reflection on the foregoing is to capture the reality that oral literature is a source of evidence in and outside the court. It is a mechanism for legislation and adjudication. The reflection also highlights the place of oral literature in communication and the reality that written: language, history, culture and written knowledge are all dependent on, and products of oral literature.

Situating Oral Literature in Written Language and Literature

Oral literature is the base of written literature and language. It is also the base of oral and written history. It is observed that historical (written) texts often contain accounts of spoken language (Taavitsainen & Jucker, 2010). This assertion implies that oral literature is the base of written literature. As such, aside using written literature for varied purposes, including for pursuing and attaining new world order, oral literature could be used likewise in contemporary times as it were in classical times. Whatever written literature captures can be captured by oral literature or has its oral representation. It is more or less the case of using both oral and written forms of language and history.

Given that they are found less in written forms, it is imperative to sustain these features and as well evolve and sustain more of them.

Sell (2001) has observed that literary texts can also be studied as communicative acts that propose a perspective on literature, which focuses on the interaction of the real author with a real audience. This observation affirms the place of literature, oral and written, in communication. Thus, as viable part of communicative act, oral literature is an indispensable means of re/constructing gender notions. Gender is affirmed to be a social construction (Angya, 2016; Besong, 2021). Literature, no doubt, is the viable means of re/cons   tructing gender. Socio-cultural, epistemic and political constructions of persons, phenomena, things and realities take both oral and written forms, with oral form taking precedence.

As Taavitsainen and Jucker (2010, p. 9) note, "literary writing and reading are viewed as uses of language, which amount to interpersonal activity and are thereby capable of bringing about a change in the status quo.' By implication, these scholars" expressed view lends credence to the central position of this article that oral literature is capable of bringing change to extant gender situations or issues at stake, including getting rid of negative gender notions about women. Also, it lends credence to the position of this paper that language is germane to all literary activities. That is to say all literary activities are carried out with language use. This study argues that language is used for carrying out all literary activities, just like other human activities, and for re/constructing negative and positive gender notions alike.

Oral Literature and the Reconstruction of Negative Gender Notions

Literature, in both written and oral forms, has brought us, the contemporaneous of various global cultures, back to realities of life. Among the realities are those about various gendered notions about males and females in general, which are rather mythical, fallacious, misleading and unreal. Having brought us back so far to these realities, it becomes imperative for us to resort to using oral literature, which gains more audience than the written form, to reconstruct women and gendered notions and roles in the contemporary society.

Doing so would change the currently age-long made situations that affect women more on one hand and men less on the other hand. The problems arising from and associated with negative gender notions are brought back to us in contemporary time for lasting solutions. The wrong feelings about gender, identities and various other cultural practices are also brought back to us by literature in the contemporary era. Having been brought back, literature, among other means, has to be used to correct and change the wrongs for betterment. Literature also brings back to us past unequal and conflicting relationships between males and females in society. Instead of rooting the relationships

in parity, they are rather rooted in suzerainty because of patriarchy and matriarchy, with patriarchy taking precedence and being extremely negative about and unreceptive to women.

In both oral and written form and sources, literature informs, educates, instructs and entertains; transmits culture, norms and values; creates from nowhere and represents the society in both concrete and abstract forms, reality, and imagination (Robert and Anura, 2018; Robert and Besong, 2016; Nwachukwu-Agbada et al., 2011).Examples of oral literature, which is of three major categories viz: myth, folktale and legendary, include proverbs, idioms, songs, dance, myths, legends, tales, beliefs, artefacts, oral poems, drama and prose, music, story-telling and masquerade(Robert, 2016). These are forms of oral literature and oral history that conserve, sustain and express indigenous knowledge (Robert, 2016, p. 111).Thus, these are the means through which negative gender notions could be reconstructed positively and sustained across ages.

The oral reconstruction of negative gender notions about women through oral literature requires socialisation. The assertive reconstruction of women in positive light would change the negative gender constructions that portray women in negative light. Socialisation is affirmed to be one major mechanism used by society to influence the development of character and behaviours in its members (Robert and Dibie, 2015; Afen-Akpaida, 2008).Interestingly, teachers, as key players in the school, are influencers and instruments of change, all-round development, new world orders, transformation and different re/constructions. The school is the second agent of socialisation, next to the family. Like parents in the family circle of socialisation, teachers are the lead actors of the socialisation obtained at school. This reality is echoed by Robert and Dibie (2015), who emphasise the role of teachers in socio-cognitive and all-round development of the child.

Given the roles played by teachers, child education on indigenous cultures is pivotal (Robert and Dibie, 2015). Gender education, which reconstructs and corrects ageing negative notions about women, is imperative. This education involves constructive and positive use of oral literature and language. Since oral tradition and culture are widely accessible through the global information resources (Robert, Abubakar and Besong, 2016), using oral literature to reconstruct age-long negative gender constructions is possible; has a lot of prospects; and can be made widely available and accessible to the public across generations through the global information resources. African indigenous knowledge has to be codified into printed and electronic forms in order to have both audio and video sources. Probst (1984, p. 11) expresses the foregoing realities viz:

> Even in scientific and technological era, literature remains a
> vital subject of the curriculum. It is indeed our reservoir of
> insight into the human condition, the pool of perceptions and

conceptions from which we draw our visions of what it is to be human.

Conclusion

This article has so far shown that oral literature is an ever potent oral means of producing, sourcing and utilising indigenous knowledge and information resources. Its overall argument is that since oral literature is one of the societal means of constructing negative gender notions about women, it is also a viable means of reconstructing women positively in contemporary times. Given the foregoing, the following major recommendations are made:

(i) Both oral and written sources of literature should be used by societal institutions, writers and oral narrators to reconstruct women positively.

(ii) Agents of socialisation should consistently change the old gender-based notions, beliefs, views and narratives of women.

(iii) Gender discrimination and gender-based violence should be discouraged verbally and in written sources and also outlawed by statutory documents.

References

Afella, T. (2016). The role of women in Islam. In T. K. Anjov (Ed.). *Religion, Feminism, Gender Issues and National Development.* BWright Integrated Publishers Limited.

Afen-Akpaida, J. E. (2008). Socialisation and the agents of socialisation. In R. O. A. Aluede & E. O. Omeregie (eds.), *Sociology of Education*. Alltime Publishing Company.

Aidoo, A. A. (1991). *Changes: A love story*. The Women's Press.

Angya, C. A. (2016). Gender and good governance in Nigeria. In T. K. Anjov (Ed.), *Religion, Feminism, Gender Issues and National Development* (20-32). BWright Integrated Publishers Limited.

Anigbogu, N. & Uwakwe, U. D. (2016). Literary Appreciation. In A. E. Ogu, R. C. Ihejirika & O. A. Emejulu (Eds.), *The Use of English and Communication Skills for Tertiary Education*. Cel-Bez Publishing Co. Ltd.

Anyanwu, E. A. (2023). *Linguistic profiling of gendered roles in Mbaise and Afikpo.* Unpublished PhD thesis submitted to Department of Languages and Linguistics,   School of Post-Graduate Studies, Ebonyi State University, Abakaliki.

Balogun, O. A. (2018). Conceptual decolonization in African philosophy: Views on women. J. O. Chimakonam & L. du Toit (Eds.). *African Philosophy and the Epistemic Marginalization of Women* (142-154). Routledge.

Besong, E. N. (2019). Emerging sexual ethics and the erosion of African ethos. *THE LEAJON: An Academic Journal of Interdisciplinary Studies, 10, (1)* 66-78.

Besong, E. N. (2021). Exploring the logic of gender complementarity using Chimakonam's ezumezu system. *FilosofiaTheoretica: Journal of African Philosophy, Culture and Religions, 10, (1)* (January-April), DOI: https://dx.doi.org/10.4314/ft.v10i1.6.

Besong, E. N. & Robert, O. S. (2020). Ethical and moral considerations of gay practice, legalisation and
rights: African perspective. In M. Michael, E. T. Aliegba & A. A.

Chimakonam, J. O. (2018). Addressing the epistemic marginalization of women in African philosophy and building a culture of conversations. In J. O. Chimakonam & L. du Toit (Eds.). *African Philosophy and the Epistemic Marginalization of Women*. Routledge.

CODESRIA (1991). Gender Analysis and African Social Science, CODESRIA Workshop, Dakar, September, reported in *CODESRIA Bulletin no. 4.*

Grimshaw, J. & Fricker, M. (2002). Philosophy and feminism. In N. Bunnin and E. P. Tsui-James (Eds.). *Blackwell Companion to Philosophy,* 2nd ed. Blackwell.

Itayaryar, D. (1993). *The changing socio-economic role of Tiv women*. University of Jos Press Ltd.

Koch, P. (1999). *Court records and cartoons: Reflections of spontaneous dialogue in early romance texts.* In Jucker, A.H., Fritz, G. and Lebsanft, F. (Eds.), 399–429.

Motaze, D. (2000). Derogatory sense names of women in some Nigerian languages and women's struggle to break free. *Journal of Women in Academics*, *1*, (1), September.

Nwachukwu-Agbada, J.O.J. (2011). *Exam focus: Literature in English 2011-2013 for WAEC (WASSCE) and NECO (SSCE)*. University Press Plc.

Ochelle, J. O. (2014). *Women in the rural economy of Igede land since 1960*. A research proposal submitted to the Department of History, Benue State University, Makurdi.

Ogbonnaya, L. U. & Besong, E. N. (2018). The ontological foundations of gender (in)equality. In P. B. Bisong & O. J. Alexander (Eds.). *Essays on Feminism in Honour of Prince Nico Mbarga* (446-460). e20Media Limited.

Probst, R. E. (1984). *Adolescent literature: Response and analysis*. Washington, DC, C.E. Merrill Publishing Company.

Robert, O. S. (2016). Appraising a historian's literary contribution to social order: Prof. Okpeh, Ochai Okpeh, Jnr. *Spring International Journal of Arts and Humanities, vol. 3(12)*, 110-114, July.

Robert, O. S. (2017a). Bekwarra proverbs, oral literature, indigenous knowledge and culture sustenance, catalog number v359467. Grin Publishers.

Robert, O.S. (2017b). *The imperative of promoting, developing and sustaining indigenous music in Nigeria, catalog number v354538*. Grin Publishers.

Robert, O. S. & Anura, F. (2018). Poetic appraisal of state custodians' sins against the state: Philip Umeh's 'Ambassadors of poverty.' *International Journal of Academic Pedagogical Research (IJAPR), 2,* (2) February, 9-18.

Robert, O. S. & Besong, E. N. (2016). Nigerian media and indigenous cultures transformation: The journey so far. *J Mass Communicat Journalism*, 6: 317.

Robert, O. S. & Dibie, G. A. (2015). The imperative of effective socialisation towards sustaining indigenous cultures in Nigeria. *IIARD International Journal of Philosophy and Cultural Studies (IJPCS).*

Robert, O. S., Abubakar, Z. A. & Besong, E. N. (2016). Library, information technology, oral literature and history education and sustenance in contemporary Nigeria. *Sub-Sahara Scholar International Journal of Contemporary Education Research– JCER-2016-057.*

Sell, R. D. (2001). Historical but non-determinist pragmatics of literary communication. *Journal of Historical Pragmatics,* 2 (1), 1–32.

Taavitsainen, I. & Jucker, A. H. (2010). Trends and developments in historical pragmatics. In A.H. Jucker & I. Taavitsainen (Eds.), *Historical Pragmatics,* 3 (30). De Gruyter Mouton.

Wollstonecraft, M. (1972), *A vindication of the rights of woman*. Pegium.

Human Resource Management and Staff Effectiveness in Secondary Schools in Jos North Local Government Area of Plateau State

AGNES S. OJILE (Ph.D.)

Dept. of Educational Foundations
Faculty of Education
University of Jos
(ojileagnes@yahoo.com)
Phone No: 08061291853

Abstract

This study investigated the relationship between human resource management and staff effectiveness in secondary schools in Jos North Local Government Area of Plateau State. Three research questions guided the study. The design for the research was the survey research design. The population for the research comprised of all the secondary schools in Jos North Local Government Area. According to Statistics from the Plateau State Ministry of Education (PMOE, 2021), there are thirty-five secondary schools in Jos North Local Government Area with a population of 1,102 teachers. The sample size for the study consisted of 317 teachers randomly selected from the population. Questionnaire was used as instrument for data collection and the content validity of the questionnaire was ascertained through expert scrutiny in the Faculty of Education, University of Jos while Cronbach Alpha was used to determine the reliability of the instrument. The reliability coefficient obtained was 0.88. The data collected in the study were analysed using mean score. The findings of the study revealed that teachers' level of effectiveness in secondary schools in Jos North is poor as most of the teachers do not take the teaching profession serious. Human resource management helps to improve teachers' effectiveness in secondary schools thereby, improving their job commitment. Based on the findings of the study, it was recommended that only qualified persons should be appointed as principals or personnel managers in schools. Proper motivation and incentives should be provided for teachers such as prompt payment of salaries and allowances and increased remuneration to boost their effectiveness.

Keywords: Human, Resource, Management, Staff, Effectiveness, Secondary, School

Introduction

Organizations, whether profit-oriented or service oriented are designed to work towards achievement of set-goals. As workers (teachers) consciously contribute towards goals of the organization, they also have personal or group goals they expect to satisfy (Adeogun, 2023). Akpan, Okey and Esirah (2015) opined that of all tools in management (men, machine, material, money and market), without any iota of doubt, the most important is men. Men are the only animate instrument that is capable of influencing the other 4M's or making them moribund and hence affect positively or negatively the purpose of a system.

Human resource management is concerned with the people dimension in management. Akubue(2021) perceived human resource management as an important management function concerned with obtaining, developing and motivating the human resources required by an organization to achieve its objectives. Generally, education in Nigeria has been perceived as an instrument "per excellence" for effecting national development (FRN, 2004:4). Government has stated that for the benefit of all citizens, the country's educational goals shall be clearly set out in terms of their relevance to the needs of the individual and those of the society, in consonance with the realities of our environment and the modern world. If our education is to achieve the national goals, then, well-trained, well-qualified and efficient educators are absolutely essential. Thus, no educational system may rise above the quality of its teachers. Therefore, acquiring teacher's services, developing their skills, motivating them to high levels of productivity and ensuring that they continue to maintain their commitment to the organization are essential to achieving school organizational goals.

Human resource management is one of the most important and challenging functions of any organization because it constitutes the ultimate basis for the creation and utilization of the wealth of a nation. Human resource management is the acquisition of personnel or human resources and co-ordination of their performance within the organization. Ani(2017) explained that human resource management in any organization (education or otherwise) is part of the process of management in general that focuses on the people aspect of management, ensuring that the objective of the organization is met. In order words, human resource management is the effective utilization of people at work to achieve the aims and objectives of the organization. It is in line with this assertion that Atanda and Lammed (2018) asserted that, human resource management acts as the wheel of progress in the realization of educational goals and objectives. It means that without an effective human resource management, an organization may find it difficult to achieve its set goals and objectives.   Nwachukwu (2020) argues that for an organization to attain its desired objectives, it must seek to obtain the co-operation of the personnel working under it. It is clear that human resource management is

challenging in every organization but far more challenging in educational institutions. This is because most of the activities in education deal with human beings. The management of educational institutions is faced with not only the complexities of characters and behaviour of the staff, but also with those of the students and parents. This means that the way and manner these chains of human elements are managed could affect the success of educational institutions.

Managing teachers is that part of school management function which is concerned with teachers at work and their relationship within the educational enterprise. It seeks to bring together and develop into an effective educational organization, men and women who make up the teaching workforce, enabling each to make his/her own best contribution to its success. Management of teaching workforce involves a number of strategies that begins and maintain activities toward the achievement of personal and organizational goals.

Teachers' effectiveness has great implications on who and what the student become. It determines the level and extent of students' academic achievement. However, teachers' effectiveness is influenced and controlled by principal's leadership style. This stand on leadership makes the principals' role very critical and a matter of concern to many educationist (Babalola& Atanda2016). Badri and Abdulla (2021) are of the view that well-managed teachers will always look for better ways to do their teaching job. They are more quality-oriented and more productive. Management of teachers can be through the adoption of these management strategies; supervision, in-service training and compensation among others. Hence, any teacher that enjoys the influence of the above-named strategies is bound to give all his best in discharging his or her duty because he/she will derive the satisfaction of being a teacher, which in-turn will boost his/her productivity. It is against this background that this study was prompted to investigate human resource management and teachers' effectiveness in secondary schools Jos North Local Government Area of Plateau State.

Statement of the Problem

Over the past decades, it has been observed that there is a poor level of teachers' job effectiveness and commitment in secondary schools in Jos North Local Government Area. Casual observation of the secondary schools in Jos North Local Government Area revealed that teachers' often come to school late, rarely cover lessons and show low level of commitment to their job. Because of these challenges, Secondary schools in the study area are riddled with series of problems, which include poor academic performance of students, examination malpractice and poor attitude of teachers to teaching. It is in the light of the above observed problem that this study was conceived to investigate the relationship between human resource management and staff

effectiveness in secondary schools in Jos North Local Government Area of Plateau State.

Research Questions

The following research questions are formulated to guide the study

1. What is the level of effectiveness of teachers towards the teaching profession in Jos North Local Government Area?

2. What is the impact of human resource management operational framework on teachers' effectiveness in secondary schools in Jos North Local Government Area?

3. What are the solutions to the problems of teachers' ineffectiveness in secondary schools Jos North Local Government Area?

Literature Review

Concept of Human Resource Management

Human resource management is the art and process of acquiring the best manpower and effectively utilizing them through development and mobilization for the achievement of organizational goals. No organization can function effectively without professional human resource management. Human resource management is the function of all enterprises which provides for effective utilization of human resources to achieve both the objective of the enterprise and the satisfaction and development of the teachers.

According to Byars (2021), human resource management is that specialized activity of the organization, which caters for the employment, development, and utilization of the organization's human resources. The role of human resource management is a specialized one that demands cooperate activities of all the stakeholders in the organization concerned.

According to Armstrong and Baron (2022), human resource management, whether in an industry, business or schools, is concerned with management of people at work and their relationship within the enterprise. Its aim is to bring together and to develop into an active organization, the men and women who make up the enterprise and having regard for the well-being of the individuals and the working groups to enable them to make their best contributions to the success of the organization. It is only through effective and efficient management of personnel that the set goals of an enterprise or an organization can be achieved. No matter what other resources-physical or financial an organization can have, without the human or manpower resources, the organization (schools) will not be able to achieve its set objectives. Human resource management therefore is the process of recruiting, training, developing, effectively mobilizing and utililizing the human resource in an organization for the achievement of her set goals and objectives.

Chinedu (2015) listed the importance of human resource management in education thus:

• It makes certain that those who graduate from the different levels of educational system will receive the desired skills and knowledge.

• It identifies the current and future human resource requirement so that there will be no shortage of human resource towards the realization of the organizational goals.

• It makes certain that when there is vacancy, it is filled internally to boost workers morale. In addition, it attracts qualified and experienced staff that will help to achieve educational objectives

• It assists personnel in building up a good career.

• It ensures that the staff regularly undergo developmental programmes to enable them carry out their present and future duties properly

• Its selection and placement of staff is based on laid down principles to avoid favoritism that may mar the realization of educational objectives.

• It assists in the formulation of staff policies

• It ensures that organizational and government policies and educational objectives are communicated to teachers and implemented so as to enhance welfare of teachers, thus boosting their morale.

• It keeps records and bio-data of all teachers which could be referred to easily, even when the staff has left the school or the educational system;

• It provides the grading and evaluation system of the staff which enables the teachers and the education authorities to know how far the teachers have fared during a specific period. • It rewards good performance to motivate teachers and disciplines poor performance

• It ensures that teachers' needs are recognized and integrated into the education enterprise needs.

• It also ensures that justice, fair play and equity are held above all other things when dealing with educational staff.

• It creates and promotes espirit de corps among educational staff. It then means that no organization can do without a good management of its human resource.

Cole (2022) identified certain essential ingredients of the concept of human resource management such as motivational factor, strategic use of resources, behavioural factors, and coordination of human and organizational needs. In view of the important role of human resource management in organizational success, Damanpour and Gopalakrishnan (2015) remarked that human resource management is the key strategic challenge for all industries including education. Human resource management in education involves all the activities of getting the teaching and nonteaching staff to work toward attainment of educational goals. Human resource management in education

is a complex process because both the employee (Staff) the product (students) requires proper management in order to achieve the end objectives of education.

The aims of human resource management in a school organization according to Delery and Doty (2016), are to develop the kinds of personnel that would effectively perform the various tasks, provide effective leadership, create a climate conducive to maximum productivity, influence members of staff in performing effectively and assess what constitutes the needs of the organization. Others are to meet the need of the teachers and to maintain and improve staff welfare services.

Concept of Teachers' Effectiveness

Teachers' effectiveness has been conceived by many as instrumental to the physical and mental well-being of teachers. It is defined as teachers' level of activeness, commitment and attitudes towards the teaching profession (Dessler, 2021). Because work is an important aspect of human life teachers like other professionals maintain sensitivity to administrative behaviours that promote or diminish satisfaction at work place. Not only does job effectiveness improve their living standard but it also improves their productive capacity, leading to economic growth (Effanga, 2021).

Scholars have ascertained two dimensions of what influences teachers' job effectiveness – the intrinsic and extrinsic influences. Job effectiveness in the school system might result to teachers' commitment to duty and student achievement. Referring to the works of Damanpour and Gopalakrishnan (2015), Cole (2022) contended that intrinsic influences comprised teachers' control of classroom, student traits and class size; while extrinsic factors could be said to comprise school governance, salary and other benefits.

Dual factor theory by Herzberg's (1959), focuses on the same two groups of factors that determine job effectiveness. According to this exposition, only job content-related facets, such as achievement, responsibility, and the work itself lead to satisfaction, while job context-related facets, such as pay, security and working condition lead to job dissatisfaction. However, Ekundayo (2019) was not convinced of the validity of this study, highlighting some ambiguities. He maintained that workers' pay had close association with their satisfaction at work place.

In his study of job effectiveness in United Kingdom academics, Dessler (2021) confirmed that workers were dissatisfied with little pay and lack of promotion. This position won the support of discrepancy theorists like Locke (1969), who envisioned a significant relationship between employee satisfaction and employee's comparison of what existed at work place and what the employee desired. Reporting the position of situational occurrences theory, Dessler (2021) wrote that job effectiveness did not distinguish between content-related and context-related factors. Positive learning

environment is characteristic of transformational leadership, and fosters motivation and job effectiveness, even though they failed to expatiate on the meaning of positive learning environment and to what extent it could determine motivation and job effectiveness. Motivation has been shown to be an inspiring component of transformational leadership and in the school context can lead to teachers' job effectiveness. However, it is an environment, in which everyone is free to express themselves, and learn how to listen and cooperate with one another (Emechebe, 2019). This condition can bring fulfillment and satisfaction at work place, and is in line with the views of Delery and Doty (2016), who propounded that interrelationship at work place was one major source of job effectiveness. Principals who possess leadership styles create environment that fosters interrelationship between teachers and students and among teachers themselves. A school environment of this nature could form a strong supportive bond between teachers and their principals, and among teachers themselves. It could foster job effectiveness and commitment to duty, resulting to increased learning and student achievement.

Methodology

The design for this research was the survey research design. The population for this study comprised of all the secondary schools in Jos North Local Government Area. According to Statistics from the Plateau State Ministry of Education (PMOE, 2021), there are thirty-five secondary schools in Jos North Local Government Area with a population of 1,102 teachers. The sample size for the study consisted of 317 respondents randomly selected from the population. Questionnaire was used as instrument for data collection.   The content validity of the instrument was ascertained through expert scrutiny in the Faculty of Education, University of Jos while Cronbach Alpha was used to determine the reliability of the instrument. The reliability coefficient was 0.88. The data collected in this research were analysed using mean score.

Results

Research Question One: What is the level of effectiveness of teachers towards the teaching profession in Jos North Local Government Area?

Table 1

Level of Effectiveness of Teachers Towards the Teaching Profession in Jos North Local Government Area

		Responses					
s/n	Statement	SA	A	D	SD	Mean score	Decision
1	Teachers in my school are very effective in	52	28	98	62	2.29	Rejected

318

	discharge of their duties						
2	The effectiveness of teachers in my school is not encouraging as they do not take their duties serious	152	48	17	23	2.69	Accepted
3.	Teachers effectiveness is poor in my school	151	39	35	15	2.68	Accepted

Table 1 shows the responses of the respondents on the level of teachers' effectiveness in public secondary schools in Jos North LGA. The statement on whether teachers are very effective in discharging their duties was rated with a mean score of 2.29 and was therefore rejected. The second statement on whether teachers' level of effectiveness is not very encouraging as they do not take their duties serious was rated with a mean score of 2.69 and was therefore accepted. The third statement on whether teachers' effectiveness is poor was rated with mean score of 2.68 and was also accepted.

Research Question Two: What is the impact of human resource management operational framework on teachers' effectiveness in secondary schools in Jos North Local Government Area?

Table 2

Impact of Human Resource Management Operational Framework on Teachers' Effectiveness

		Responses					
s/n	Statement	SA	A	D	SD	Mean score	Decision
1	The operations of human resource management improves teachers' job effectiveness in my school	145	55	24	16	3.37	Accepted
2	The operational framework of human resource management improves teachers' motivation in my school	140	50	20	30	2.60	Accepted
3.	Human resource management operational framework has no impact on teachers effectiveness in my school	21	45	59	115	1.50	Rejected

Table 2 shows the responses of the respondents to research question two on the impact of human resource management operational framework on teachers' effectiveness in public secondary schools in Jos North Local Government Area. The statement on whether the operations of human resource management improve teachers' job effectiveness in school was rated with mean score of 3.37 and was therefore accepted. The next statement on whether operational framework of human resource management improves teachers' motivation in schools was rated with a mean score of 2.60 and was therefore accepted. The last statement on whether human resource management has no effects on teachers' effectiveness was rated with a mean score of 1.50 and was therefore rejected.

Research Question Three: How can teachers' effectiveness be improved in secondary schools in Jos North LGA?

Table 3

Ways of Improving Teachers' Effectiveness in Secondary Schools Jos North LGA

s/n	Statement	Responses				Mean score	Decision
		SA	A	D	SD		
1	Regular training of teachers	152	48	20	20	3.38	Accepted
2.	Improving welfare and working conditions for teachers	130	60	21	29	2.57	Accepted
3.	Motivation of teachers through prompt payment of salaries and other remuneration	141	49	40	10	2.67	Accepted

Table 3 shows the responses of the respondents on the ways of improving teachers' effectiveness in secondary schools in Jos North LGA. The statement on whether regular training of teachers will improve their effectiveness was rated with mean score 3.38 and was therefore accepted. The following statement on whether improving the welfare and working conditions in my school teachers will improve their job effectiveness was rated with a mean score of 2.57 and was therefore accepted. The following statement on whether motivation of teachers through prompt payment of salaries and other remuneration will improve their job effectiveness was rated with a mean score of 2.67 and was therefore accepted.

Discussion

Research question one on the level of teachers' effectiveness in secondary schools in Jos North LGA is analysed. From the analysis of data collected, it was discovered that teachers' level of effectiveness in secondary schools in Jos North is poor as most of the teachers do not take the teaching profession very serious. This finding is in consonance with the findings of Adeogun (2023) who discovered that a low job commitment existed among teachers in public secondary schools in Plateau State.

Research question two on the impact of human resource management operational framework on teachers' effectiveness in secondary schools in Jos North LGA is analysed. From the analysis of data collected, it was discovered that human resource management helps to improve teachers' effectiveness in secondary schools thereby, improving their job commitment. This finding is in conformity with the finding of Akubue (2021) who discovered that proper personnel management in schools helps to boost teachers' effectiveness in their job.

Findings from the analysis of research question three on the ways of improving teachers' effectiveness, it was revealed that the ways of improving teachers' effectiveness include regular training of employees, improved welfare for teachers and motivation of teachers through prompt payment of salaries and other remuneration. This finding corroborates the finding of Chen and Huang (2019)who discovered that providing in-service training and good remuneration to employees improve their job performance and commitment

Conclusion

Managing employees is that part of human resource management function in schools which is concerned with teachers' effectiveness at work and how it affects their relationship within the school in order to develop an effective working environment From the findings of this study, it is evident that human resource management practices improves teachers' effectiveness in secondary schools in Jos North LGA however, there are challenges affecting the practice of human resource management which need to be tackled to achieve maximum teachers' effectiveness in schools.

Recommendations

Based on the findings of the study, the following recommendations are made:
1. Only qualified teachers should be recruited to teach in schools in Plateau State
2. Only qualified persons should be appointed as principals and personnel managers
3. Proper motivation and incentives should be provided for teachers such as prompt payment of salaries and allowances and increased remuneration to boost their effectiveness

4. Personnel managers should regularly be sent on training programmes to update their knowledge and skills of management and administration

5. Teachers in secondary schools in Plateau State should also be regularly sent on in-service training in order to improve their job knowledge and job effectiveness.

References

Adeogun, A.A. (2023). *Economics of education*. Lagos: Olatunji press

Akpan, C.P; Okey, S.M. & Esirah, B. (2015). The effectiveness in maintenance of discipline among administrators of private and public secondary schools in southern senatorial district of Cross River State. *Nigerian Journal of Educational   Administration and Planning* 5(2), 7 1-77

Akubue, A.U. (2021). *Classroom organization and management: A 5-point strategy.* Ibadan: Wisdom Publishers Ltd.

Ani, C.I. (2017). Administrative strategies adopted by school principals for quality assurance in school discipline. *African Journal of Allied Education. Enugu*: 1(1), 35 – 41.

Armstrong, M,.& Baron, A. (2022). *Strategic human resource management: The key to improved business performance.* London: CIRD.

Atanda, A.I. & Lammed, W.O. (2016).*Fundamentals of school organization and classroom   management.* Ibadan: Awemark industrial printers.

Azolukwam, V. and Perkins, S (2019). Managerial Perspectives on HRM in Nigeria: evolving hybridization? *Cross Cultural Management. An International Journal*,   16(1) 5-27.htt//dx.dol.org.

Babalola, J.B., &Atanda, A.I. (2016). *Management thoughts and educational management*.Ibadan: Codat Publications.

Badri, A.M & Abdulla, H.M (2021). Awards of excellence in institution of higher education: An ATTP approach. *International Journal of Educational Management.*18(4), 224-242.

Byars, L.L. (2021). *Human resource management* (10th ed.). New York: McGraw- Hill companies.

Chen, C.J. & Huang, J.W. (2019). Strategic human resource practices and innovation performance: The mediating role of knowledge management capacity. *Journal of Business Research*, 62(1) 104-114

Chinedu, E.U. (2015). Problem of using performance appraisal in the selection of training and promotion of business education teachers in Imo State secondary   schools. *Unpublished M.Ed Thesis*, University of Nigeria, Nsukka.

Chukwuma, F.C. (2021). Human resource development in tertiary institutions in Africa.Issues concerns, directions in A.U. Akubue (Ed) *Higher education in developing countries. A book of reading.* Ibadan: Wisdom publishers ltd. 56 – 66.

Cole, G.A. (2022).*Personnel and human resource management* (5th ed). London: Continuum.

Damanpour, F. & Gopalakrishnan (2015). Theories of organizational structure and innovation adoption: The role of environmental change. *Journal of Engineering Technology Management,* 15(1) 1-24.

Delery, J.E., & Doty, D.H. (2016) , Modes of theorizing in strategic human resource management. Tests of Universalistic, contingency, and configurationally performance prediction. *Academy of Management Journal,* 3 9(4) 802-83 5.

Dessler, G. (2021). *Human resource management (2nd Ed.).* Pearson Education mc, New Jersey, America: Publishing as prentice Hall one lake street, Upper Saddle river.

Effanga, S.I. (2021). Student discipline behviour in school. In D.N. Umoren & C.N.Ogbodo (Eds). *A handbook on Teaching Profession In Nigeria.* Uyo: Prades Books and Press

Ejiogu, I.A. (2020). *School human resource management: A Nigerian perspective.* Lagos: University Press.

Ekundayo, H.T. (2019). Resource management in education.In J.B. Babalola, A.O. Ayeni (Eds).*Educational management: Theories and tasks.* Lagos: Macmillan publishers limited.

Emechebe, S.N. (2019). *Human resource management in education.* Lagos: Macmillan Publishers Limited.

Federal Republic of Nigeria (2004).*The National Policy on Education (4th Ed.)* Lagos: NERDC press.

Needs and Problems of Continuous Assessment as Perceived by Guidance Counsellors in Anambra State Secondary Schools

Ofojebe, Edna Nkechi
08039573856
Nnadi, Grace Chinyere
08036693462

Uzoekwe, Helen Efeyadu,
08032936196
Nwobi, Lovina Ngozika
08037469384

Department of Guidance and Counselling
Faculty of Education,
Nnamdi Azikiwe University, Awka

Abstract

This study was carried out in secondary schools in Anambra State Education Zones to determine the needs and problems of continuous assessment. It adopted a descriptive survey design. Two research questions guided the study. The population of this study consisted of 121 guidance counsellors in Anambra State Education zones. There was no sampling since the whole population was used as a result of the small size. The instrument, Needs and Problems of Continuous Assessment as perceived by Guidance Counsellors Questionnaire (NPCAPGCQ) was used for data collections through direct approach distribution. This instrument is validated by three experts in the field of guidance and counselling and measurement and evaluation. Test re-test was used to establish the reliability of the instrument and the reliability co-efficient of 0.71 was obtained. The data collected are analyzed through the use of statistical weighted mean. Any mean score of 2.50 and above is accepted while any one below a mean score of 2.50 is rejected. Among other things, the findings on the needs of continuous assessment revealed the following: continuous assessment indicates true comprehensive picture of every learner in secondary schools, it enhances the teachers' periodic assessment of the learners throughout a particular course in the cognitive, affective and psychomotor domain of every learner among others. Also, the study revealed that the problems of continuous assessment among other things include absence of guidance counsellors in some secondary schools, teachers handling of large classes, lack of commitments and lack of continuous assessment tools among others. The researchers recommended that Ministry of Education should be organizing workshops on test construction and administration. Also, government should employ more guidance counsellors.

Keywords: Problem of Continuous Assessment; Guidance Counsellors; Secondary Schools; Continuous Assessment Tools

Introduction

Evaluation and assessment have always been cardinal aspects of the teaching and learning process of schools. However, the strategies that have been employed in assessing student's learning have proved not to be effective. This gave rise to an emphasis on continuous assessment, a more holistic approach that ensures student's change as a result of exposure to instruction that is monitored step-by-step (Iyejare, 2022). Continuous assessment (CA) was first introduced in primary and secondary schools in Nigeria in 1977 when it adopted the National Policy on Education (NPE). Hence, the Federal Government of Nigeria, in 1984 introduced the 6-3-3-4 system of education which incorporated continuous assessment of learning outcomes, at all levels of the educational system. Educational assessment according to the Federal Republic of Nigeria (FRN, 2004 p. 73) will be liberalized by basing them in whole or in part on continuous assessment of the progress of the individual.

However, assessment of learners' performance before 1977, was purely based on one-shot examination usually administered at the end of the term or school year. In the same vein, students have proven over the past few years that they can burn the mid night oil and get their grades, but this does not showcase the knowledge that they have acquired over a period of time from the course. Therefore, continuously and regularly assessing and testing their performance on the various parameter is critical (Shukla, 2019). In addition, one of the recommendations in the National Policy on Education (2004) is that assessment of the students should no longer be the same usual end of year one-shot examination but should be done on continuous basis. The recommendation was made as a result of some deficiencies found in the traditional way of assessing students. These deficiencies are that assessment concentrated only on the cognitive domain in the traditional system. It failed to assess other domains such as affective, psychomotor and psychoproductive domains. It also encourages students to study only during examination period which in most cases is done by memorization of the facts. These facts can easily be forgotten after examination. Again, teachers don't normally make any attempt to use the results of student's performance as a feedback to help them. Moreso, the end of year or end of programme examination are set by external bodies only in the traditional system, without any consideration of the role of local conditions of the school such as school setting, the socio-economic factors of the children and the culture of the community. The teachers' inputs and initiatives were also not given any consideration in the old system among others.

It was based on these reasons and more that continuous assessment was recommended in the educational system by the committee set for the National Policy on Education in 1971. Continuous assessment according to National Policy on Education

(FRN, 2004) is a mechanism whereby the final grading of a student in the cognitive, affective, and psychomotor domains takes account of all his/her performances in a schooling period. Iyejare (2022) defines continuous assessment as a process that deliberately allows for periodic assessments throughout the course and takes into account progress toward the goal of the instruction, as well as the success in reaching it. Yoloye (1984) defines continuous assessment as a method of evaluating the progress and achievement of students in educational institutions which aims at getting the truest possible picture of each student's ability and at the same time help each student to develop his/her ability to the fullest. Moreso, Ezewu (1987) in Ukwuije (1989) defines continuous assessment as:

> an assessment procedure whereby each child's performance and progress in the cognitive, affective, psychomotor and psychoproductive areas of learning in the school are assessed from the first day a child steps into a school up to the last day in it in such a manner that the first assessment in each case is related and a pre-requisite to the assessment following it in order to maintain a continuity between the first assessment session and the last in a determined time, such as the end of a term, year or course (pg. 183).

Nwoko (2016) contended that continuous assessment is a method of appraisal in which students' achievements in the cognitive, affective and psychomotor domains are determined using scores obtained from various instruments like mid-term tests, homework, assignments, quizzes, practice sessions, laboratory, worksheets, and classroom participation. In the same vein, continuous assessment can be formative or summative. Both are essential parts of any curriculum map. In a nutshell, formative assessments are quizzes and tests that evaluate how someone learns throughout a course. In other words, formative assessments are evaluations of someone's learning progress in a classroom while summative assessments are quizzes and tests that evaluate how much someone has learned throughout a course (Zook, 2021). In line with the above definitions, Falayalo (1986) and Bahago (2004) define continuous assessment as a mechanism whereby the final grading of learners in the cognitive, affective and psychomotor domains of learning systematically takes account of all their performances during given period of schooling.

From the definitions above, one can infer that continuous assessment has some major characteristics. It is comprehensive in the sense that assessment is not restricted to only the cognitive domain but includes assessment in the affective, psychomotor domain and psychoproductive domain (task identification, task execution among others). It also

means that it uses various instruments and techniques to assess students aside examinations. They include observation, questionnaires, surveys, psychological tests, sociogram, teacher-made tests, assignments, ratings, field trips, projects, interviews, discussions, inventories among others. Also, continuous assessment is cumulative in nature showcasing that every assessment that is done on students should be in the continuity of what has been done before. The keeping of the records should be a continuous build-up of the previous records. These data are gathered together to give a true picture of the student's progress and overall achievement over time. In a related manner, continuous assessment is systematic in the sense that it requires a great deal of planning before it can be carried out. This way, the teacher does not act haphazardly but must employ his/her creativity in coming up with the best ways to assess students. It is also guidance-oriented. This implies that on the basis of students' performance on the cognitive, affective and psychomotor domains, the teachers, school guidance counsellor and other school guidance personnel will use the data obtained to ascertain what guidance goals to set in the school and guidance programs to organize for further growth and development of the students. Continuous assessment is also objective because the information got about the students are based on various types of instruments rather than on the teachers opinion and his personal interest about the child hence Santrock (2016) asserts that these assessment tools should complement each other having in mind that the objectives of continuous assessment are to make students learn consistently and effectively.

Consequently, the introduction of continuous assessment in Nigerian schools can be said to be very needful and justifiable, since it renders school based assessment, improved evaluation of learners' attainment by ensuring that assessment is cumulative, systematic, comprehensive and guidance-oriented. A need according to Wehmeier (2006) is to require something or somebody because they are essential or very important, not just because you would like to have them hence the need for continuous assessment in Anambra State secondary schools are enormous. In addition to the above mentioned reasons, it will also allow teachers involvement in the overall assessment of students, provide a more valid assessment of the students' overall ability and performance, enable teachers to be more flexible and innovative in their instructions, enable the teacher to give a periodic assessment of the child throughout the course in the various domains, it serves as a monitoring device, giving feedback to the students about their academic performance and also to the teacher about the effectiveness of their teaching, it helps in the easy diagnosis of the strengths and weaknesses of individual students to apply immediate corrective measures and above all, it provides adequate information to the teacher and counsellor about individual children so that the academic and psychological guidance could be necessary (Iyejare, 2022).

Moreover, continuous assessment has its attendant problems as well. According to Akoroda and Ugboh (2012), the problem of implementing continuous assessment in secondary schools are lack of well-trained teachers, costly materials, shortage of time and energy. It also requires up to date record keeping, as well as being complex and difficult to implement, it requires many types of tasks and survey instruments. There is also the problem of coordinating results when a student is transferred from one school to another and the amount of work involved is too much for the teacher among others. In the same vein, the problem of continuous assessment as enunciated by Iyejare (2022) are, poor teacher quality-teachers not professionally trained for the teaching profession, transfer of students from one school to another without moving their records along with them, school enrollment explosion – enrollment of a large number of students into the school system, absence of guidance counsellors in schools to implement continuous assessment effectively, lack of assessment tools making it only to remain as an abstract concept in the school, unmotivated teachers and counsellors with poor welfare and remuneration, lack of standardization of continuous assessment tests across schools; absence of external regulation on the activities of schools, instability of the school calendar and neglect of ICT in continuous assessment.

Moreover, studies like Adeyemi and Esere (2009) have shown that some teachers conduct continuous assessment more on cognitive domain and do not factor affective and psychomotor measure into the overall performance of their students while some claimed ignorance and incompetence in the use of non-test devices. Therefore, there is need for wholistic assessment measure in conducting continuous assessment since it helps to identify students areas of strengths and weaknesses for modification of instruction and guidance and counselling purposes. It is against this background that this study seeks to determine the needs and problems of continuous assessment as perceived by guidance counsellors in Anambra State Secondary Schools.

Statement of the Problem

Many studies have shown that assessments are key component in the learning and training journey, it helps with identifying learning gaps and bridging them in a timely fashion. However, despite all the acknowledgements, it still has its attendant problems because the effectiveness has not been proven to be total in all aspects of the continuous assessment. Ekwe (2015) opines that summative assessment implementation yielded poor results as demonstrated in the poor academic performance of some students while formative assessment yielded more positive results. It is still obvious from the foregoing that continuous assessment has not been effective in its entirety because of haphazard implementation of the policy. There is therefore need to totally implement continuous assessment in its entirety and reduce its problems to the barest minimum so that the

purpose of the policy in the educational system will be fully realized. Hence, the importance of this study on the needs and problems of continuous assessment as perceived by guidance counsellors in Anambra State.

Research Questions

The following research questions guided the study:

1. What are the needs of continuous assessment as perceived by guidance counsellors in Anambra State?
2. What are the problems of continuous assessment as perceived by guidance counsellors in Anambra State?

Research Method

The study adopted a descriptive survey research design to seek for information, opinions and attitudes of the respondents. Descriptive design according to Nworgu (2015) is a research design in which a group of people or items are studied by collecting and analyzing data from only a few people or items considered to be representative of the entire group. The rationale for adopting this design is to determine the needs and problems of continuous assessments as perceived by guidance counsellors in Anambra State. The population of the study consisted of 121 professional guidance counsellors. There was no sampling because the population was small. The instrument used for data collection through direct approach distribution was Needs and Problems of Continuous Assessment as Perceived by Guidance Counsellors Questionnaire (NPCAPGCQ). Direct approach ensured hundred percent return. The instrument was validated by three experts, two from the department of guidance and counselling and one from measurement and evaluation. Their comments enhanced the face and content validity of the instrument to the standard which was finally used for data collection. Test re-test was used to establish the reliability of the instrument and the reliability co-efficient of 0.71 was obtained, which was considered high enough to judge that the instrument is reliable. The data collected was analyzed using the weighted arithmetic mean and are presented in tables. The decision point is 2.50, any item with a mean of 2.50 and above is regarded as agreed, while any item below a mean of 2.50 was seen as disagreed.

Presentation of Results

Research Question 1: What are the needs of continuous assessment as perceived by guidance counsellors in Anambra State.

Table 1

Mean Rating of Respondents on the Needs of Continuous Assessment as Perceived by Guidance Counsellors

S/N	Items	Mean ($\bar{X}$)	Decision/Remark
1	Need to render school-based assessment	2.80	Agreed
2	Improve evaluation of learner's attainment by ensuring that assessment is comprehensive, cumulative, systematic and guidance oriented.	3.50	Agreed
3	Provision of professionally trained teachers to implement continuous assessment.	2.80	Agreed
4	Involvement of teachers in overall assessment of students.	3.11	Agreed
5	Not very relevant for guidance purpose(s)	1.70	Disagreed
6	Giving feedback to the students about their academic performances.	2.96	Agreed
7	Provision of easy diagnosis of the strengths and weaknesses of individual students	3.40	Agreed
8	A monitoring device that give feedback to teachers and counsellors about their teaching and counselling effectiveness.	2.60	Agreed
9	Continuous assessment is time consuming and should be discarded.	2.43	Disagreed
10	The performance of continuous assessments is used as basis to guide students for further growth and development	3.30	Agreed

Data from table 1 reveals that out of the 10 items listed on the needs of continuous assessment as perceived by guidance counsellors in Anambra State, the respondents rated all items as agreed except items 5 and 9 with mean score of 1.70 and 2.43 respectively.

Research Question 2: What are the problems of continuous assessment as perceived by guidance counsellors in Anambra State.

Table 2
Mean Ratings of Respondents on the Problems of Continuous Assessment as Perceived by Guidance Counsellors

S/N	Items	Mean ($\bar{X}$)	Decision/Remark
•	Absence of guidance counsellors in some secondary schools	3.10	Agreed

•	Teachers handling of large classes	2.80	Agreed
•	Poor teacher quality and lack of commitments to duty	2.60	Agreed
•	Lack of continuous assessment tools	2.67	Agreed
•	Unmotivated teachers and counsellors	3.80	Agreed
•	High security measures	1.35	Disagreed
•	Lack of standardization of continuous assessment test across schools	2.70	Agreed
•	Instability of school calendar	3.00	Agreed
•	Provision of ICT	2.20	Disagreed
•	Students enrollment explosion	2.90	Agreed
•	Neglect of ICT in continuous assessment	2.75	Agreed
•	Transfer of students from one school to another	2.80	Agreed
•	Training and re-training of teachers	1.50	Disagreed
•	Absence of external regulations on the activities of the school	2.60	Agreed
•	Funding of schools by the government	1.30	Disagreed

Data from table 2 above reveal that the respondents rated agreed to the majority of the items as the problem of continuous assessment as perceived by guidance counsellors in Anambra State secondary schools, except items 16, 19, 23 and 25 with the mean score of 1.35, 2.20, 1.50 and 1.30 respectively.

Discussion

Continuous assessment is an approach that capture the full range of learner's performance that help teachers and counsellors understand their learners, plan and monitor instruction including establishing viable classroom culture and counselling strategies. This study has identified the needs and problems associated with continuous assessment. The study established the following as counsellors perceived needs and problems of continuous assessment: Need to render school based assessment, improve evaluation of learners attainment by ensuring that assessment is comprehensive, cumulative, systematic and guidance oriented, provision of professionally trained teachers to implement continuous assessment, involvement of teachers in overall assessment of students, a monitoring device that gives feedback to teachers and counsellors about their teaching and counselling effectiveness among others. These align with the studies of Ekwe (2015) and Iyejare (2022) who reported that summative assessment implementation yielded poor results as demonstrated in the poor academic performance of students while formative assessment yielded more positive results. Also,

continuous assessment deliberately allows for periodic assessments throughout the course and takes into account progress toward the goal of the instruction, as well as the success in reaching it.

Additionally, the findings of this study also indicated the following factors as the counsellor perceived problems of continuous assessment in schools: Absence of guidance counsellors in some secondary schools; teachers handling of large classes, poor teacher quality and lack of commitment to duty, lack of continuous assessment tools, unmotivated teachers and counsellors, lack of standardization of continuous assessment test across schools and instability of school calendar. These findings are in consonance with the report of Akporokah (Retrieved, 2023), Ughamadu (1991, 1992), Akoroda and Ugboh (2012) and Iyejare (2022) who found that the problems of continuous assessment are very numerous and that one very important one is the comparability of standard, variations in the quality of tests and other assessment instruments in use in various schools, variations in the procedures for scoring and grading of different assessment instruments in different schools including the statements used by different teachers during assessment of students work may not be the same. Also, according to them the problem of implementing continuous assessment in secondary schools are lack of well-trained teachers in continuous assessment among others.

Furthermore, other problems of continuous assessment found out by this study are students enrollment explosion, neglect of ICT in continuous assessment, transfer of students from one school to another, absence of external regulations on the activities of the school among others. These findings are still in agreement with Akoroda and Ugboh (2012) and Iyayare (2022) who posited that there is problem of coordinating results when a student is transferred from one school to the other and that the amount of work involved is too much on the part of the teacher. Many schools are left to operate on their terms which brings variation in several aspects of the school system, one of which is continuous assessment among others. However, the findings also indicated that high security measures, provision of ICT, training and retraining of teachers and adequate funding of schools by the government with the mean scores of 1.35, 2.20, 1.50 and 1.30 respectively are not part of the problems of continuous assessment as perceived by guidance counsellors in Anambra State.

Conclusion

This study is carried out on the needs and problems of continuous assessment as perceived by guidance counsellors in Anambra State secondary schools. Obviously, the study has observed and concluded that continuous assessment is an ongoing process that measures a student's achievement in a course of study on a particular level, providing information that is used to support a student's development and enable improvements to

be made in the learning and teaching process. Again, a consistent, continuous and regular assessment of students' performance and learning is the key to building a competent and skilled prospective workforce, therefore, there is need to take continuous assessment seriously in our schools with many reasons such as: Giving a true picture of student's abilities in all the domains of learning. Helping teachers and counsellors to assess their teaching and counselling work, helping students identify their strengths and weaknesses early to seek remediation among others.

The study also found out that there are problems being encountered in implementing continuous assessment in schools such as absence of guidance counsellors in some secondary schools, excess workload for teachers, lack of continuous assessment tools, inadequate funding of schools by the government, lack of training and retraining teachers, absence of external regulations among others. Again, continuous assessment can promote plagiarism among students who know that their assignments have a serious impact on their grades.

Recommendations

The following recommendations were made based on the findings of the study:

- The Ministry of Education should recruit more guidance counsellors such that every school should at least have one for proper use of data collected from continuous assessment in schools.

- The Ministry of Education should also be organizing workshops/seminars on test construction and administration as in-service training for new and serving teachers to learn and key in smoothly. This can make the results comparable across all schools.

- A continuous assessment committee should be formed in various schools to clearly determine the type of tests and survey instruments to be used, time to use them and what sort of data should be gathered to aid uniformity of standard.

- Parents should be encouraged to see the need to retain their children/ward in one school but, where it is unavoidable, schools admitting such a new student should demand that they bring all the necessary records from their previous schools as a criterion for admission to aid continuity.

- Government should motivate and encourage teachers by regularly paying them all their benefits – payment of salaries, allowances, increment including promotion and other conditions of service as and when due so that they will be excited to be more dedicated and devoted to their duties and have time to administer continuous assessment.

- Guidance counsellors should ensure that each class has progress register or mark book where continuous assessment marks are kept for immediate and future use.

They should also ensure proper keeping of each student's cumulative record folders, well filled for record keeping purposes.

References

Adeyemi, I.I. & Esere, O.M. (2009). Assessment in Nigerian schools: A counsellor's viewpoint. *Edo Journal of Counselling, 2*(1).

Akoroda, L., & Ugboh, O. (2012). Problem of implementing continuous assessment in secondary schools in Obowo local government area of Imo State, Nigeria. *Journal of Technology and Education in Nigeria, 17*(2).

Bahago, B.A. (2004). *Perspective in education psychology.* Jos: Deka Publishers.

Ekwe, P. (2015). The problem of affecting academic performance of students in secondary schools in the rural areas of Ebonyi state. *The Element School Journal, 80*, 220 – 235.

Falayalo, W. (1986). *Philosophy and theory of continuous assessment*. A Paper presented at a Workshop for Inspectors of Education in Ondo State. Retrieved June 2, 2023 from: https://www.academia.edu>CONTI...

Federal Government of Nigeria (1985). *Federal government handbook on continuous assessment*. Lagos: Evaluation Unit.

Federal Republic of Nigeria (2004). *National policy on education* (4th ed.). Lagos: NERDC Press.

Iyejare, O. (2022). *10 problems affecting continuous assessment in schools and solutions.* Retrieved June 2, 2023 from: https://theselfdiscoveryblog.com>i...

Iyejare, O. (2022). *Continuous Assessment: Purpose, characteristics and Instruments.* Retrieved from: https:theselfdiscoveryblog.com>c...

Nwoko, I. (2016). The factors influencing students' performance at universititeknologi MARA kedah, Malaysia. *Canadian Research Development Centre of Science and Cultures 4*.

Nworgu, B.G. (2015). *Educational research: Basic issues and method*. Nsukka: University Trust Publishers.

Santrock, C. (2016). Correlation between continuous assessment (CA) and students' performance in physics. *Journal of Education and Practice, 4*(6), 6-9.

Shukla, A. (2019). *Continuous assessment: Features and purpose.* Retrieved June 2, 2023 from: https://www.toppr.com>authora...

Ughamadu, K.A. (1991). *Understanding and implementing continuous assessment.* Benin-City: World of Books Publishers.

Ughamadu, K.A. (1992). *Curriculum: Concepts, development and implementation.* Onitsha: Emba.

Ukwuije, R.I.P. (1989). *Educational measurement and evaluation for teachers*. Ibadan: Key Publishers Limited.

Wehmeier, S. (2006). *Oxford advanced learner's dictionary* (7th ed.). New York: Oxford University Press.

Yoloye, A.E. (1984). *Continuous assessment. A simple guide for teachers*. London: Cassel Ltd.

Zook, C. (2021). *Formative versus summative assessments: What is the difference?* Retrieved 2nd June, 2023 from: aeseducation.com Career and technical Education Blog.

Effect of Formative Assessment Technique on Attitude Of Postgraduate Students in Advanced Educational Statistics in Public Universities in Southeast, Nigeria

Chukwuemeka Benedict Ikeanumba[1]
Email: cb.ikeanumba@stu.unizik.edu.ng **Phone No:** 07039370884
Kelechi Lilian Anikpe[2]
Email: kl.ike@stu.unizik.edu.ng**Phone No:** 08034018582
&
Onyebuchi Geoffrey Chidi[3]
Email: gc.onyebuchi@unizik.edu.ng**Phone No:**08037461322

Department of Educational Foundations, Faculty of Education, NnamdiAzikiwe University, Awka, Anambra State

Abstract
This study investigated the effects of formative assessment on the attitude of postgraduate students in Advanced Educational Statistics, as well as how its effect varies across gender. Two research questions guided the study and two hypotheses were tested. A quasi-experimental research design, specifically pretest and posttest non-randomized group design was utilized in the investigation. The population consist of 1,367 postgraduate students of all government owned universities in South East offering Advanced Educational Statistics at the postgraduate levels for the 2018/2019 academic session. A sample of 122 postgraduate students from Nnamdi Azikiwe University, Awka, Anambra State and 112 postgraduate students from University of Nigeria Nsukka, Enugu State were purposively selected. Advanced Educational Statistics Achievement Test (AESAT) was the instrument used for data collection. This instrument was validated by three experts and tested for reliability. A reliability coefficient of 0.94 was obtained using Cronbach Alpha. Mean was used to answer the research questions while Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 level of significance. The findings of the study showed a significant effect of formative assessment on students' attitude in Advanced Educational Statistics. The findings also indicated that both male and female students' attitude was enhanced equally. With the use of formative assessment, there was no significant difference in the mean attitude of male and female students. The study recommended that classroom teachers should use formative assessment to make more time available for in-class active learning and to promote students ownership of the learning process.
Keywords: Assessment Technique, Attitude, Educational Statistics, Evaluation, and Formative Assessment.

Introduction

Assessment covers the ways teachers support, track children's learning, monitor progress and identify next steps in learning process. It is described as a process by which feedback gotten is used by teachers to adjust their teaching strategies, and by students to adjust their plan of action for learning. Assessment is a systematic determination of a subject's merit, worth and significance using criterion governed by a set of standards (Loyce, 2012). Johnson (2009) defined assessment as the use of a variety of procedures to collect information about learning and instruction. Assessment could be summative and formative. Formative assessment is commonly referred to as assessment for learning, in which the focus is on monitoring student response to, and progress in instruction, while summative assessment is carried out at the end of lesson or programme for grading and certification.

Assessments as viewed by Esomonu and Ikeanumba (2021) are said to be formative when the information is utilized in adapting teaching and learning to meet the needs of students, individually or collectively. Popham (2008) defined formative assessment as a process by which assessment-elicited evidences of students' learning are gathered and instruction modified in response to the feedback obtained through the process. The feedback given as part of formative assessment helps learners become aware of any gap that exist between their desired goals and their current knowledge, understanding or skills and guide them through actions necessary to obtain the goal (Sadler, 2006).

Formative assessment is defined by Olagunju (2015) as a strategy designed to identify learners' learning difficulties with a view to providing remediation measures to enhance the performance of majority of students. Nnaji (2018) also defined formative assessment as a diagnostic use of assessment to provide feedback to teachers and students over the course of instruction. Nnaji further opined that formative assessment can take the form of daily work (e.g. essays, quizzes, presentation and participation in class), projects/term papers and practical work (e.g. laboratory work, fieldwork, clinical procedures, drawing practice). Gronlund and Lin in Ajogbeje (2013) stated that formative assessment serves three specific uses namely: (i) to plan corrective actions to overcome learning deficiencies; (ii) to aid in motivating learners and (iii) to increase retention and transfer of learning. According to the author, the sequence for formative assessment is that students are taught with well-defined objectives, assessed during the course of the programme with quiz, tests, and assignment after the lesson, given corrective instruction to those who require additional clarification. These provide feedback to both the students and the teacher about what material was learned well and what was not. Ibrahim (2017) was of the opinion that the key requirements for

successful formative assessment include the use of quality assessment tools and the subsequent use of the information derived from these assessments to improve teaching and learning.

Ajogbeje (2013) opined that the utilization of formative testing in the teaching-learning process involves breaking up the subject matter content or course into smaller hierarchical units for instruction; specifying objectives for each formative test; offering a group-based remediation in areas where students are deficient before moving to another unit and then administration of summative test on completion of all units. Ojugo, (2013) stated that the breaking up of subject or course into small units makes for adequate preparation for the test by the students. Moreover, such frequent testing enables the student to get more involved and committed to the teaching-learning process thereby enhancing their performance. Bloom and Hastings in Philias (2012) were of the opinion that formative assessment is useful to both the students (as a way of diagnosing students' learning difficulties and the prescription of alternative remedial measures) and to the teacher (as means of locating the specific difficulties that the students are experiencing within subject matter content) and forecast summative assessment result.

Formative assessment is designed to be an integral part of the teaching-learning process   that is why it is administered at the close of a unit; thereby, providing an in-depth picture of what skills each student has or has not learned. Consequently, it would suggest ways in which his original instruction must be supplemented if he is to complete his learning before moving to a new instructional unit (Piere, Marion, Gong and Wurzeh, 2007). Formative assessment, as Scriven modeled it, is not graded for judgment; rather it strives to identify un-mastered learning areas early enough to permit the corrections before the final grading or evaluation (Clark, 2011). However, it has been found useful to mark each student's unit test with non- grade designations such as "mastery" or 'more work needed'. The "mastery" marking gives those who receive it positive evidence of the academic achievement while the "more work needed" encourages students to complete their unit learning (Clark, 2011).

In addition, formative assessment practices involve the use of corrective procedures. They are used to meet specific learning goals, identify strengths and weaknesses and also support students' learning. They include the use of tests, re-teaching, and peer and individualized tutoring (Guskey, 2005). Formative assessment is also systematic evaluation procedure done at the end of each unit of instruction to determine the students who have mastered the unit and those yet to master it for remediation. This implies that the normal assessment during and at the end of each classroom lesson can be done by a teacher but at the end of each unit, the teacher formally assesses the students on that unit. The class does not progress to the next unit until about 85% of the class has mastered the unit (depending on the teacher's criterion

of class mastery level). This does not negate the practice of a teacher continuously asking students questions in the class during a classroom lesson.

For students who have thoroughly mastered the unit, the formative tests should reinforce their learning and assure them that their learning and study habits are adequate. Formative assessment tests also help to reduce anxiety about end-of- course achievement for students who consistently demonstrate unit mastery. For students who fail to master a given unit, formative assessment tests should pinpoint their particular learning difficulties. Before assessing students, it is essential to communicate the purpose of assessment to everyone involved. Both formative and summative assessments have impact on the learning process. Ajogbeje (2012) observed that formative assessment serves the educational process better, and as such, helps in improving the student's achievement in school subjects.

In the school setting, part of the reason for which students perform poorly in some subjects is because of the uncertainties surrounding these subjects like a haze. Students want to be rest assured of their competencies in subjects, even before summative assessments and evaluations are made; hence, if they do not think they can succeed at a subject, it is usual for them to be anxious about their performance in the subject out of learned helplessness (attrition due to the inability to cope in a learning activity). It now behooves the teacher to deploy strategies to build students' confidence about their abilities and potentials in a taught subject. This is why formative assessment is crucial to every sound educational system.

In order to achieve the aims of formative assessment, feedback information provided by formative assessment must be translated into specific supplementary instructional procedures which will help each student to pinpoint and correct his particular unit learning difficult. These corrective procedures include the use of follow up tests, workbooks, re-teaching, programmed instruction, audio-visual methods, small group study session and individual tutoring (Guskey, 2005). Formative assessment and its learning correctives are applicable in all school subjects/courses, including Statistics.

Statistics is the science of collection, presentation, analysis and interpretation/conclusion of numerical data under study. It enables us to draw general conclusions and to make prediction about what will happen under certain conditions. Statistics is studied at various fields of endeavour such as education at the postgraduate level and it is called Advanced Educational Statistics. Advanced educational statistics is the method for collecting, analyzing numerical data, interpreting, drawing conclusions and presenting the educationally related information. There are two major types of statistics namely descriptive and inferential statistics.

Descriptive statistics is devoted to the collection, organisation, summarization, and presentation of data. It also entails the construction of graphs, charts, and tables, and

the calculation of measures of central tendencies, measures of dispersion and standard scores (Esomonu, Okoi and Eleje, 2018). Inferential statistics on the other hand is used for generalizing information from samples to population, performing estimations, hypothesis testing, determining relationship among variables and predictions. They are based on probability theory used for drawing and measuring the reliability of conclusions about population based on information obtained from the sample of the population (Esomonu, Okoi and Eleje, 2018).

In higher education in Nigeria, students are required to complete successfully a statistics course to enable them learn how to use statistics as a tool to improve their educational research, interpret research results or statistical data in their field of study as well as to obtain a certificate. An additional goal of teaching statistics is to prepare students to deal effectively with statistical aspects of the world outside the classroom (Nasser, 2004). According to Nworgu (2012), statistics serves a useful purpose in modern life. It helps us to make tentative statements (hypotheses), analyze the problem relating to the stated hypotheses and make conclusions/interpretations of the analyzed problem. It charges its recipients to make wise decisions that will satisfy their quest for answers. Advanced educational statistics is also very useful in analysis and interpretation of result in project, thesis and dissertation of students' work.

Advanced educational statistics is a general course taught at both the undergraduate and postgraduate levels of education at the faculty of education in many Nigerian universities. It is one of the compulsory courses all master's degree students in the faculty of education must pass upon graduation. However, it is the culture of some faculties of education that students pursuing their doctorate degree with a masters' degree from another institution must enroll for the course and have a minimum grade of C.

Despite the importance and usefulness of advanced educational statistics in the field of education and in the society at large, and the efforts instructors of advanced educational statistics make in simplifying the subject, many postgraduate students' performances in the course have been poor over the years (Esomonu, 2018). According to her, most college students view statistics courses as obstacles standing on the way of attaining their desired degree. Advanced educational statistics is viewed as a 'dry' course at the PG level and therefore students' achievement in the course has always been a topic for discussion among lecturers, evaluators, counsellors and researchers. From available statistics from Imo State University Owerri, the credit grade hovers around 32 percent for educational statistics. Uwazie (2018) in support of the above assertion noted that it was only 48.8% of the postgraduate students who sat for the examination in Michael Okpara University of Agriculture, Umuahia in 2016 that had credit grade and above in the course.

The results of advanced educational statistics examination at NnamdiAzikiwe University, Awka also recorded poor performance by students in faculty of education of the institution. For instance, in the 2014/2015, 2015/2016, 2016/2017 and 2017/2018 postgraduate students' results in Advanced educational statistics published in faculty of education, NnamdiAzikiwe university, Awka, only 42.21%, 46.11%, 32.09% and 49.17% respectively of students were able to make C grade and above. Similar data was obtained from Imo State University for 2014/2015 (38.3%), 2015/2016 (42.8), 2016/2017 (48.6) and 2017/2018 (41.0%). This consistent poor performance by PG students in advanced educational statistics has negatively affected their achievement and attitude and calls for serious action to remedy the situation. This is because it has been barely unable to maintain a satisfactory level.

Extensive research has been carried out in respect to attitude and its accruing expectations with a view to improving the status of attitude in the school setting and, ultimately, ensuring that learning outcomes are positive and steady (Akinsanya and Ajayi, 2011; Atovigba, *et al*, 2012). Students' performance in advanced educational statistics could be affected by students' attitude. Attitude is a favourable or unfavourable evaluative reaction towards something, events, programmes exhibited in an individual's beliefs, feelings, emotions or intended behaviours, Rosemund (2009). Attitude means the individual prevailing tendency to respond favourably or unfavourably to an object (person or a group of people, institutions, and events) Salta and Tzougraki (2014). Attitude is also defined as a way a person views something or tense to behave towards it, often in an evaluative way. Attitude can be positive (values) or negative (prejudice). When attitude is positive, it is a value to a learner but when it is negative, it is bigotry to a learner and the course learnt. However, positive and negative attitude have strong immeasurable effect on the outcome of a learning process. Negative attitude has the tendency to build a kind of repulsion in a learner to instruction which affects knowledge acquisition and prowess in a particular area of study.

Attitude is associated to a series of variables like gender, and school location. A study by Ahiakwo (2012) revealed that there is no significant difference in attitude between male and female students taught certain concepts in economics using formative assessment. The influence of gender on attitude is therefore still a controversial issue among researchers. These contradictive evidences in attitude and lack of clear trend on gender influence in the study of statistics has resulted in the need to carry out this study. Several empirical studies have demonstrated the effectiveness of formative assessment technique in many subjects when compared to the teacher-centered method. The works of Awotua-Efebo and Uchenna (2017) and Ajogbeje (2012) are examples of such studies. Upon this background, the study sought to investigate effects of formative

assessment technique on academic achievement of postgraduate students in Advanced Educational Statistics in Public Universities in Southeast, Nigeria.

Purpose of the Study

The main purpose of the study is to determine the effects of formative assessment on the attitude of postgraduate students in advanced educational statistics. Specifically, the study determined:

1. The pretest and posttest mean attitude scores in Advanced Educational Statistics of postgraduate students taught using formative assessment (experimental group) and those taught without formative assessment (control group).
2. The mean attitude scores in Advanced Educational Statistics of male and female postgraduate students taught with formative assessment (experimental group) and those taught without formative assessment (control group).

Research Questions

The following research questions guided the study:

1. What are the pretest and posttest mean attitude scores of postgraduate students taught Advanced Educational Statistics using formative assessment (experimental group) and those taught without formative assessment (control group)?
2. What are the pretest and posttest mean attitude scores of male and female postgraduate students taught Advanced Educational Statistics with formative assessment (experimental group)?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance.

1. There is no significant difference in the mean attitude scores of postgraduate students taught advanced educational statistics using formative assessment (experimental group) and those taught without formative assessment (control group).
2. There is no significant difference in the mean achievement scores of male and female postgraduate students taught Advanced Educational Statistics using formative assessment (experimental group).

Method

The design of the study is quasi-experimental design. Specifically, it used pre-test and post-test non-randomized group design. Non-equivalent control group design was used because the students were not randomly sampled. Rather, intact or pre-existing classes were used which were randomly assigned to experimental and control groups

(Nworgu, 2015). The study was carried out in South East, Nigeria. South East of Nigeria is one of the six geopolitical zones in the country. The South East States of Nigeria comprises Anambra, Abia, Ebonyi, Enugu and Imo States. The population of the study consisted of 1,367 postgraduate students of all government owned universities in South East offering Advanced Educational Statistics at the postgraduate levels for the 2018/2019 academic session.

The sample size of the study was 122 postgraduate students from NnamdiAzikiwe University, Awka, Anambra State and 112 postgraduate students from University of Nigeria Nsukka, Enugu State. The researchers used purposive sampling to select two Federal Government owned universities out of the ten (5) Federal Government owned universities in the five states in the South East, Nigeria. NnamdiAzikwe University, Awka was the experimental group (122 postgraduate students) while University of Nigeria Nsukka was the control group (112 postgraduate students). Advanced Educational Statistics Attitude Scale (AESAS) with 50 multiple-choice items was used for data collection. The Advanced Educational Statistics Attitude Scale (AESAS) with 10 items was validated by two experts.

The scores for AESAS obtained from the 40 students were used to estimate the reliability coefficient of the instrument using Cronbach Alpha which yielded a reliability of 0.94. Before the treatment which involves teaching the experimental group using formative assessment and the control group with the conventional lecture method, pretest was administered to the two groups. After the treatment, posttest was administered to the two groups to measure their academic achievement in advanced educational statistics. Mean scores and standard deviations were used to answer the research questions while Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 alpha level.

Results

Research Question 1: What are the pre-test and post-test mean attitude scores of students taught Advanced Educational Statistics using formative assessment (experimental group and those taught without formative assessment (control group)?

Table 1

Pre-test and Post-test Mean Attitude Scores of Students Taught Advanced Educational Statistics using Formative Assessment and Without Formative Assessment (N=234)

Groups	N	Pretest Mean	Posttest Mean	Gained Mean	Pretest SD	Posttest SD

	N	Pretest	Posttest	Gained	Pretest SD	Posttest SD
Experimental (Formative Assessment) Group	122	33.68	86.00	52.32	7.00	15.96
Control (Without Formative Assessment) Group	112	29.38	58.69	29.31	5.80	7.31

Table 1 indicates that the students taught with formative assessment had a pretest mean score of 33.68 with a posttest score of 86.00 while those taught without formative assessment had a pretest mean score of 29.38 with a posttest score of 58.69. Furthermore, the analysis revealed that mean attitude scores of students taught with formative assessment is higher than students taught without formative assessment. This means that students taught with formative assessment performed higher than those taught with formative assessment.

Research Question 2: What are the pre-test and post-test mean attitude scores of male and female students taught with formative assessment (experimental group?

Table 2

Pre-test and Post-test Mean Attitude Scores of Male and Female Students Taught Advanced Educational Statistics using Formative Assessment (N=122)

Gender	N	Pretest Mean	Posttest Mean	Gained Mean	Pretest SD	Posttest SD
Male	55	30.74	49.51	18.77	6.90	16.46
Female	67	32.09	45.37	13.28	6.61	13.69

Analysis in Table 5 shows that the male students Advanced Educational Statistics taught with formative assessment had a pretest mean score of 30.74 with a posttest mean score of 49.51 while the female students taught with formative assessment had a pretest mean score of 32.09 with a posttest mean score of 45.37. Furthermore, the analysis revealed that mean attitude scores of male students taught with formative assessment is higher than their female counterparts taught with formative assessment.

Hypotheses

Hypothesis 1: There is no significant difference in the mean attitude test scores of students taught Advanced Educational Statistics using formative assessment (experimental group) and those taught without formative Assessment (control group).

Table 3

ANCOVA Test on Significance of Difference between Mean Attitude Test Scores of Students Taught Advanced Educational Statistics using Formative Assessment and those Taught without Formative Assessment

Source of Variation	SS	df	Mean Square	F	Pvalue	Decision
Corrected Model	11121.823[a]	4	2780.456	20.185	.000	
Intercept	9865.850	1	9865.850	71.621	.000	
Pretest	15.638	1	15.638	.114	.737	
Method	8696.161	1	8696.161	63.130	.000	S
Error	15841.377	115	137.751			
Total	294304.000	120				
Corrected Total	26963.200	119				

*p < 0.05

Table 3 shows that assessment mode effect on attitude is significant given that $F_{(1,234)} = 63.130$, and $p < 0.05$ (.000 < 0.05). Therefore, the null hypothesis is rejected, thus, the difference in the mean attitude scores of students taught with formative assessment and those taught without formative assessment is significant. The mean attitude scores of students taught with formative assessment is higher than those taught without formative assessment is significant.

Hypothesis 2: There is no significant difference in the mean attitude test scores of male and female students taught Advanced Educational Statistics using formative assessment (experimental group).

Table 4

ANCOVATest on Significance of Difference between Mean Attitude Test Scores of Male and Female Students Taught Advanced Educational Statistics using Formative Assessment (Experimental Group)

Source of Variation	SS	df	Mean Square	F	Pvalue	Decision
Corrected Model	11121.823[a]	4	2780.456	20.185	.000	
Intercept	9865.850	1	9865.850	71.621	.000	
Pretest	15.638	1	15.638	.114	.737	
Method	8696.161	1	8696.161	63.130	.000	S
Gender	733.571	1	733.571	5.325	.023	S
Error	15841.377	115	137.751			
Total	294304.000	120				
Corrected Total	26963.200	119				

*p > 0.05

The result in Table 4 shows that $F_{(1,119)} = 5.325$, and $p > 0.05$ (.023 > 0.05). This implies that gender effect on attitude is not significant. Therefore, the null hypothesis is not rejected, thus, the difference in the mean attitude scores of male and female students taught Advanced Educational Statistics using formative assessment is not significant.

Summary of Findings

- The mean attitude score of students taught Advanced Educational Statistics with formative assessment is higher than that of students taught Advanced Educational Statistics without formative assessment.
- The mean attitude score of male students taught Advanced Educational Statistics with formative assessment is higher than that of their female counterparts taught Advanced Educational Statistics with formative assessment.
- The difference in the mean attitude test scores of students taught Advanced Educational Statistics with formative assessment and those taught Advanced Educational Statistics without formative assessment is significant.
- The difference in the mean Advanced Educational Statistics attitude scores of male and female students taught Advanced Educational Statistics with formative assessment is not significant.

Discussion

The data obtained in Research Question 1in Table 1 showed that mean attitude scores of students taught Advanced Educational Statistics with formative assessment was higher than that of students taught without formative assessment. The ANCOVA analysis in Table 4 also showed that the difference in the mean attitude scores of students taught with formative assessment and those taught without formative assessment is significant. This implies that, the mean attitude scores of students taught with formative assessment and those taught without formative assessment was highly significant. This goes in line with the studies of Ezeudu, (1995) and Igboegwu (2010) who found that Chemistry students exposed to formative assessment performed very well and had positive attitude in the topic they were taught, than the control group.

There is a no significant gender difference on students' attitude scores in respect to their gender in using the formative assessment method. Male students' performances are not significantly better than their female counterpart in formative assessment method. As revealed in ANCOVA analysis for Hypothesis 1. Table 3 revealed that the difference in the mean Advanced Educational Statistics attitude scores of male and female students taught with formative assessment is not significant.

However, Igboegwu (2010) affirmed this findings that students exposed to formative assessment teaching performed very well and have a positive attitude of

knowledge in the topic they were taught. He made an observation that female students exposed to formative assessment performance was not significantly better than the male students. Which he later recommended due to the findings of his study that both gender of students should be exposed to formative assessment form of teaching.

Conclusion

This study has revealed that formative assessment method of teaching and learning had a lot of significant effect on the students' attitude in postgraduate students' subjects such as Advanced Educational Statistics. In fact, formative assessment has demonstrated its effectiveness in increasing meaningful learning in Advanced Educational Statistics because it is an activity-oriented method which involved assimilation of previous knowledge by learners, checking and assessing individual academic confidence level at every new stage or units in knowledge never leaving a stone unturned.

Recommendations

The following recommendations were made in view of the efficacy of the formative assessment approach.

1. Teachers as agents of educational reforms should be encouraged to make use of formative assessment more to improve academic performance and attitude of students in Advanced Educational Statistics course content

2. Formative assessment technique should be suggested to the Ministry of Education and School of Postgraduate studies of high institutions, so that longitudinal researches be organized and commissioned by the government and their agencies informing all categories of Advanced Educational Statistics lecturers and tutors to further confirm the efficacy of this approach in all areas of Advanced Educational Statistics, this could be done through seminars, conferences and workshops organized by government and professional bodies like the Association of Educational Researchers and Evaluators of Nigeria (ASSEREN) Science Teachers of Association of Nigeria (STAN) and even Curriculum Organization of Nigeria (CON).

3. Advanced Educational Statistics lecturers should be encouraged to include formative assessment process in their instructional approach to check, motivate, stimulate and sustain critical thinking and proper evaluation of self-knowledge level in the students which would help to enhance achievement in Advanced Educational Statistics concepts.

4. Curriculum Planners and developers of Advanced Educational Statistics should adopt formative assessment method perspective in restructuring Advanced

Educational Statistics curriculum in our institutions in other to help the students to see meaning in what they learn and be carried along in the subject as they are being taught.

5. The Ministry of Education should start now to think of a way of adopting formative assessment for the purpose of promoting gender equality in the Advanced Educational Statistics classroom.

References

Ajogbeje, O.J. (2012). Effect of formative testing on student's achievement in junior secondary schools mathematics in Akure South Local Government of Nigeria. *European Scientific Journal, 8*(8), 15-31.

Ajogbeje, S. (2013). Role of physics education for technological development for employment and self-productivity in Nigeria. *Journal of Education   and Social Research, 2*(10)*, 31 – 37.

Akisanya, O., and Ajayi, C. (2011). Relative effects of parents' occupation, qualification and academic motivation of wards on students' achievement in senior secondary school mathematics in Ogun state. *Journal of Education and Practice, 5*(22), 99-105.

Alemu, B.M. (2013). Continuous assessment issues and practices in secondary schools. *Journal of Education,Adama Science and Technology University, 2*(1), 25-32.

Anikweze, C.M. (2005). *Measurement and Evaluation for Teacher Education.* Enugu: Snap Press Limited.

Atovigba, M.V., Vershima, A., Micheal, N., O'kwu, E.I., & Ijenkili, E (2012). Gender trends in Nigerian secondary school students' performance in algebra research. *Journal of Mathematics and Statistics. 4*(2), 42-44.

Clark, I. (2011). Formative assessment: Policy, perspectives and practice. *Florida Journal of Educational Administration and Policy*, *4*(2), 158-180.

Efanga, M. L. (2014). *Effect of mastery learning on the learning of chemistry.* (Unpublished Thesis). Imo State University: University Press.

Esomonu, N.P.M & Ikeanumba, C.B. (2021). Effect of formative assessment on academic achievement of postgraduate students in advanced educational statistics in public universities in southeast, Nigeria. *International Journal of Advanced Education and Research, 6(4), 05-11.*

Esomonu, N.P.M. (2018). Test of achievement in basic statistics for students: Development and validation of a multiple-choice questions using item-response theory model. *Unizik Orient Journal of Education, 8(1), 110-123.*

Esomonu, N.P.M., Esomonu, M.N., Eleje, L.I. & Okoi, A.O. (2018). Test of achievement in basic statistics for students: Development and validation of a

multiple-choice questions using item-response theory model. *Unizik Orient Journal of Education, 8(1), 110-123.*

Guskey, T. (2005). Formative classroom assessment. *Teachers and Teaching,8*(3), 381-391.

Johnson, L.O. (2009). *Effects of inquiry method on academic performance of chemistry students in senior secondary schools in Kaduna State.* A master's thesis, Ahmadu Bello University, Zaria.

Kpangban, T. & Onwuegbu, S. (2008). Effects assessment on senior school   students' achievement in the mole concept. *Journal of Science Education,* 11(4): 1-22.

Mitee, Z. R. & Obaitan, Z. (2015).Effects of learning with cooperative mastery method on elementary students. *Journal of Educational Research*, 86(4), 197-205.

Nnaji A. (2018). *Effect of science process teaching approach on primary school pupils' achievement in basic science and technology in Katsina State, Nigeria.* Unpublished master's thesis, Ahmadu Bello University, Zaria.

Nworgu, B.G. (2012). The power of feedback. *Review of Educational Research, 77*(1), 81-112.

Ojugo, S. (2013). Role of physics education for technological development for employment and self-productivity in Nigeria. *Journal of Education and Social Research, 2*(10)*, 31 – 37.*

Olagunju, J.N. (2015). Effects of investigative laboratory approach and expository method on acquisition of science process skills by biology students of different levels of scientific literacy. *Journal of the Science Teachers' Association of Nigeria 41,*(1and 2), 79-88.

Philias, N. (2012). Effect of guided discovery method on senior secondary school students' achievement in map work. *Journal of WCCI Nigeria Chapter,59*(2), 185-194

Popham, W.J. (2008). Phony formative assessment. *Educational Leadership*, *64*(3), 86-87.

Sadler, P., & Good, E. (2006). The impact of self and peer- grading on student learning. *Educational Assessment, 11*(1), 1-31.

Udo, J.U. & Udofia, M. (2014). Important prerequisites for students   Economics achievement. *Journal of Theory and Practice in Education*. 3, 150-170.

Uwaizie, I. (2018). *MOUAU releases postgraduate results*. This Day Newspaper of 20/08/2017. Retrieved from allafrica.com.nigeria.nig.

Integrating Quality Assurance into Educational Assessment for Schools in Nigeria

Mabekoje, O. Sesan Ph.D
sesanmabekoje@yahoo.com
Olabisi Onabanjo University, Ago-Iwoye

Adepoju Olufemi Adetunji
Emmanuel Alayande
Department of Guidance and Counselling
University of Education, Oyo
olufemiadepoju3@gmail.com
08055165009

Abstract

Educational assessment is a core aspect of teaching-learning process throughout the world. The place of quality assurance in any programme cannot be over-emphasised as it will enable an organisation to fully achieve its stated objectives. This paper has highlighted how quality control through quality assurance can be well integrated into school's educational assessment to make an educational institution achieve the stated objectives as well as maximise the gains of educational assessment in particular. Justification for integrating quality assurance into educational assessment was equally discussed. Recommendations giving include the need to establish a quality assurance unit for assessment in schools which could be under quality assurance office to comprise of experienced teachers and testing, measurement and evaluation experts, and the need to train and re-train such officials to facilitate more effective service delivery.

Keywords: **Educational Assessment, Education Quality Assurance, Quality Assurance Unit**

Introduction

In teaching and learning, the term "assessment" refers to different methods, ways or tools that teachers use to evaluate, measure and document the academic attainment, readiness, learning progress and psychological needs of students.Just as different academic programmes have different functions, assessments are specifically designed to measure specific documents of learning e.g knowledge acquired after a teaching-learning process.

According to Brown (1990), assessment is a process that includes four basic components:

- Measuring improvement over time

- Motivating students to study
- Evaluating the teaching methods
- Ranking the students' capabilities in relation to the whole group evaluation

Falayajo (2004) noted that students' assessment can be either internal or external. Teachers, as part of their professional practice periodically give exercises, assignments, tests, quizzes and the likes for internal assessments of their students. Oyewobi (2010) opined that assessment is a process that deals with both quantitative and qualitative descriptions of the status descripting of the status of an individual in relation to the status of their individuals. Assessment is therefore an integral aspect of education primarily used to evaluate what learners have learnt or achieved before, during and after teaching and learning have taken place.

The Federal Republic of Nigeria attaches so much recognition to assessment that it listed it in the National Policy on Education as:

Assessment shall encompass the broad areas of:
- Assessment for learning; and
- Assessment of learning

Huba & Freed (2000) were of the opinion that:

> *"assessment" is the process of gathering and discussing information from multiple and diverse sources in order to develop a deep understanding of what students know, understand, and can do with their knowledge as a result of their educational experiences, the process, culminates when assessment results are used to improve subsequent learning (p.8)*

The goals of assessment shall be to:
- Accurately measure the abilities of students
- Enhance the global competiveness of the products of the Nigerian educational system
- Improve the credibility of examinations conducted in Nigeria
- Eliminate the intractable problems associated with the traditional Paper Pencil Test (PPT) and
- Improve learning

Elements of the Assessment Process

According to Huba & Freed (2000), assessment process is a cyclical model which revolves around four areas:
- Formulate statement of intended learning outcomes
- Discuss and use assessment results to improve learning

351

- Develop or select assessment measures
- Create experience leading to outcome

This is presented in the diagram presented below
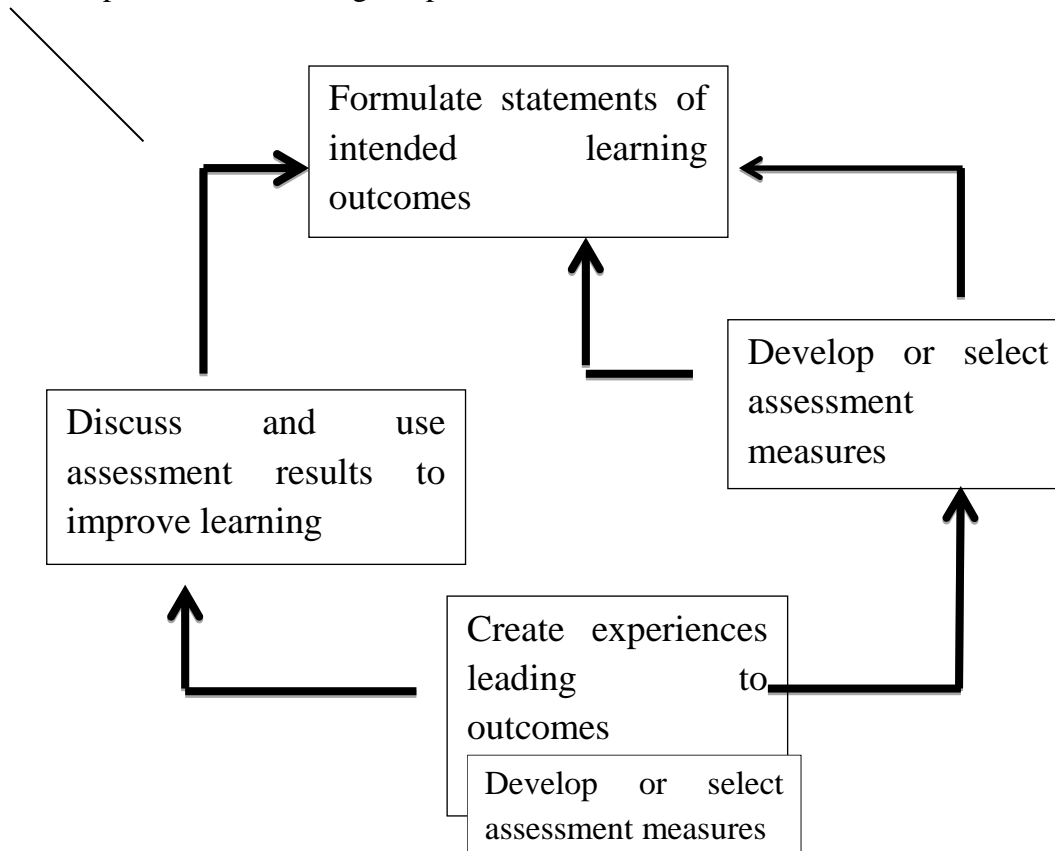
This diagram shows that assessment is cyclical having the key areas independent of one another formulation of learning outcomes, assessment measures, assessment results and results (learning outcomes).

Issues in School Assessment

In teaching-learning process, quality is expected of school assessment because of the challenges that often characterized in assessment. These challenges may include; lack of content validity of test, typographical errors, not meeting the deadline set by appropriate body or authority, administering test in a non-conducive environment, bias in scoring and missing documentation e,g missing grades among others. These challenges have therefore call for the need to integrate quality control into educational assessment for schools.

Concept of Education Quality Assurance

In Nigeria, the need to have uniform and standard quality assurance process and practices for the nation to guide all quality assurance (QA) evaluations necessitated the development and publication of the first quality education quality assurance handbook for Nigeria and quality assurance Instrument for Basic and Secondary Education in 2009 (National Education Quality Assurance Handbook for Basic and Secondary Education in Nigeria 2015). According to Federal Republic of Nigeria (2015), 'Education Quality Assurance (EQA) is a process of monitoring, assessing, evaluating and reporting objectively based on agreed quality standard, all aspects of school life to ensure that acceptable standards are attained maintained and improved upon continually.

Okebukola (2004) noted that Quality Assurance is a continuous process of improvement in the quality of teaching and learning activities that will be achieved through employing mechanism that are internal and external to the universities. In the submission of International Organization for Standardization (1994), Quality Assurance is the sum total of all activities aimed at achieving a required standard; Story, Briggs, Jones and Rusell (2000) argue that Quality Assurance is a management method that is defined as all those planned and supplement activities needed to provide adequate confidence that product, service or result will satisfy given requirement for quality and be fit for use. Ajayi and Adegbesan (2007) posit that quality assurance is related to accountability both of which are concerned with maximizing the effectiveness and efficiency of educational system and service in relation to the contexts of their mission and their stated objectives, while Adepoju (2018) opined that quality assurance is a technique that brings good quality, accountability and effective service delivery to an organization, programme or service.

Quality assurance can therefore be defined as the maintenance of quality in a service or product, especially by means of attention to every stage of the process of delivery or production, in other words it is a systematic process used to determine if a programme or service meets required standard. In African, The American society for quality (2023) likens quality assurance to quality control.It asserted that:

> *"part of quality management focused on providing confidence that quality requirements will be fulfilled". The confidence, the confidence provided by quality provide by quality assurance is twofold-internally to management and externally to customers, government agencies, regulators, certifiers and the third parties. An alternative definition is "all planned and systematic activities implemented within the quality system*

that can be demonstrated to provide confidence that a product
for quality" p5

The European Commission (2018) also highlighted eight guiding principles for schools Quality Assurance to include:

- Coherence: Systems should strive balance and coherence across different stakeholders working within schools and in the wider school education system.
- Professional Learning Communities: Quality Assurance policies should support professional learning communities to make best use of Quality Assurance data for school and system development with the ultimate goal of ensuring the best learning opportunities for all learners.
- Trust and Shared Accountability: Trust and respect between and among internal and external actors are fundamental for effective evaluation.
- Support Innovation: School leaders and teachers need opportunities to take considered risks in order to innovate and develop.
- Shared Understanding and Dialogues: Quality Assurance approaches should support the development of a common language and shared understanding among internal and external actors that the fundamental purpose of evaluation is to support school development.
- Network: Network between schools and with local and wider communities
- Capacity for Data: Investment in building capacity of key actors to generate, interpret and use data are crucial.
- Different Data for balanced view: Different types of data, both qualitative and quantitative and gathered over time and necessary for a balanced understating of school development and learner progress.

As posited by Mentakis (2004), Quality Assurance in schools ensures that:

a. The organization's mission and aims are clear and known to all;
b. The systems through which work will be done are well throughout;
c. Foolproof (will almost) and communicated to everyone;
d. It is always clear who is responsible for what;
e. What the organization regards as 'quality' is well-defined and documented.
f. There are system to check that everything is working to plan;
g. When things go wrong, there are agreed ways of putting them right.

The Federal Republic of Nigeria (2014) stated the following goals of quality assurance agencies as:

- To set, maintain and improve standards in all aspects of the school system;
- Ensure minimum standards and quality assurance through regular inspection and continuous supervision;

- Disseminate on a regular basis information on problems and difficulties of teachers and institutions and offer practical solution to them; and
- Encourage dissemination of information on innovative and progressive educational principles and practices in the school system through publications, workshops, meetings, seminars, conferences etc

The creation of quality assurance is however not limited to Nigeria, it is being done in almost every part of the world. For instance, the southern Australian certificate of Education SACE (2023) reiterates the need for quality assurance to develop a learning and assessment plan (LAP) or select a pre-approved plan.

With the current challenges being faced in education world over such as plagiarism, poor financing of education, inadequate teaching materials, examination malpractice and test –leakage etc.

Quality control in assessment is therefore needed for the following reasons:

- To maintain a desired level of quality in testing, measurement and evaluation
- To find out if assessment or evaluation practices meets required standard
- To prevent mistakes and defects in test development and administration.
- To monitor and evaluate process of educational testing and administration
- To set standard for effective quality control in assessment
- To make student assessment more meaningful
- Quality control will minimise bias in test scoring and evaluation.
- It will add to the quality of assessment.
- Quality control in tertiary institutions or higher education would ensure that there is quality in the knowledge imparted into the learnersi.e the right thing will be taught at the right time.
- Quality control would also ensure that learners are well prepared and adequately motivated for learning
- It would go a long way in making the school or college management to employ adequate quality lecturers/instructors
- Quality control would see to the admission of most qualified candidates for admission in universities and other tertiary institutions
- Adequate record keeping is put in place of adequate monitoring is exercised.
- Quality control makes the school and classroom environment student friendly through the provision of utilities
- If effectively exercised, quality assurance could stimulate quality research which would bring development in all ramifications.

How to Integrate Quality Control into Assessment

If quality assessment is to be fully integrated into quality assurance, the following actions must have to be taken:

- Creating a sub-quality assurance unit which will comprise of experienced teachers or educators, and experts in testing, measurement and evaluation
- Giving the established unit terms of reference to give the unit a focus
- Such a unit should be directly responsible to the school headship e.g the head teachers, principals and the heads of unit/department
- Periodic rendering account of stewardship by the quality assurance unit to the school management.
- Monitoring should start from the stage when test items are being constructed to the end of scoring or grading.

Conclusion

Teaching and learning in tertiary institutions are two primary activities which a college is involved in. The achievement of the goals of teaching and learning hinges on effective monitoring which can be made possible through quality assurance. It drives a programme to success.

Assessment in education is an essential aspect of teaching-learning process. To put this in place therefore requires an effective quality assurance unit to make a school achieve it's objectives of assessment thereby achieve it's overall objectives.

Recommendations

The following are recommended to make educational assessment meaningful and qualitative

- Every schools, colleges and educational units should put in place where not available a functional quality assurance unit to monitor and evaluate their assessment functions.
- Officials saddled with educational assessment like teachers, ministry of education officials, examination bodies like WAEC, NECO, JAMB, NABTEB etc should be adequately trained and re-trained through in-service trainings to ensure quality service delivery.
- The quality assurance unit should make available reports of their activities to appropriate authority which could serve as a feedback to make service delivery more effective.

References

Adepoju, O. A (2018). Setting standard in construction, administration andscoring of Teacher made test through quality assurance. *Journal of Technology, Entrepreneurship and Rural Development* 7.1 77 – 82

Ajayi, T. & Adegbesan, S. O. (2007). Quality Assurance in the teaching profession paper presented at a forum on *Emerging Issues in Teaching Professionalism in Nigeria* (14 – 15 March). Akure, Ondo State.

American Society for Quality (2023).*Quality assurance*. Retrieved from https://asq.org>qualityresources

Brown, D. H (1990). *Language assessment: Principles and classroom practices.* London: Longman

Falayajo, W. (2004). Methods of evaluation for reforms projects and programmes in education. *International Review of Education XXVI*(4), 475-482

Federal Republic of Nigeria (2014). *National policy on education.* Lagos: NERDC Printing Press

Federal Republic of Nigeria (2015).*National education quality assurance handbook for basic and secondary education in Nigeria*. Lagos: NERDC Press

Huba, M. E. & Freed, J. (2000). Learner-Centered assessment on college campuses: Shifting the focus from teaching to learning. *Community College Journal of Research and Practice, 24.*

Mentakis, A. (2004). Quality Assurance Strategies in schools. A case study. *M. A Research Project in Education*. The University of Greenwich, School of Education

Okebukola, P. A. (2004). The choice and balgince between quality assurance in the Nigerian Universities: Admission Quota for 2005/2006 NUC, *Monday Memo 4* (21) 1 – 4

Oyewobi, G. O. (2010). Meaning, scope and purpose of measurement and evaluation. In Adewuyi, J. O., Abodunrin, G. O. &Ojo, O. A. (Eds.).*Fundamentals of Measurement And Evaluation In Education.* Lagos: Toluwani Book Publishers.

South Australian Certificate for Education (2023).*Quality assurance of assessment*.https://www.sace.sc.edu.au>teaching. Retrieved on 20th July, 2023

Story, A., Briggs, R., Jones, H. & Rusell, R. (2000). A practical guide to the design and implementation of assessment and monitoring program. *World Health Organization (WHO)*

The European Commission (2018).Quality assurance for school development. *ET 2020 Working Groups*

Students' Attitude Towards Project Writing In Tertiary Institution

Fadairo, O. O

oyelola.fadairo@yabatech.edu.ng ; +234 8038261777

School of Technical Education, Yaba College of Technology, Yaba, Lagos State

Department of Science Education

Abstract

In tertiary institutions around the world, project writing is a crucial component for every student and one of the requirements for the award of any degree in any program or discipline. Despite, writing projects being an essential component of any higher education program, it still appears like a terrific assignment for students to complete, especially for undergraduate students who are aspiring young researchers. Students also still struggle to write and finish their research report in the allotted time, which may affect their attitudes and success in academics. Furthermore, research on students' attitudes toward project writing is still lacking. Therefore, this study aim to assess students' attitudes towards project writing in tertiary institutions. This study used a survey approach and a descriptive research design. Students in the 400 level of the School of Technical Education at Yaba College of Technology affiliated with the University of Nigeria, Nsukka make up the study population. The random sampling technique was applied to obtain a sample of 188 individuals. This study revealed that most students do not prefer their supervisors to choose their project topics but have a positive attitude toward project writing. This study showed that one of the major difficulties students face during project writing is meeting their supervisor. This study showed that marital status influences students 'attitudes toward project writing. It was concluded that students have a positive attitude toward project writing. It is recommended that supervisors should give students the necessary direction and assistance.

Keywords: Project Writing, Student Attitude, Supervisor, Supervisee

Introduction

With an increase in the number of tertiary institutions, there has been a recent rapid rise in the number of graduates and postgraduates. In tertiary institutions around the world, project writing is a crucial component for every student and one of the requirements for the award of any degree in any program or discipline. Project writing enables students the opportunity to develop skills such as research, information analysis,

and orderly presentation of information. It also enables students to acquire in-depth learning and experience in conducting research in an area related to their discipline of study (Odunze, 2019). Students who begin a course of study must conduct research as part of their project writing. Higher education cannot function without research, which must be conducted under the supervision of a supervisor (Marsh, Rowe, & Martin, 2002). According to Achor, Kurumeh, and Udu (2018), there are also more low-quality theses and dissertations on university shelves than there are high-quality publications. The new researchers frequently struggle with the question of how to approach project writing (Achor & Ejigbo, 2006). As a result, students have a bad attitude about writing their projects and maintaining quality in their write-ups. Furthermore, it is becoming a general belief among students and some staff members in tertiary institutions that project writing and supervision could be challenging and boring. This situation is mostly caused by a lack of competency and a bad attitude on the part of both the supervisee and the supervisor. Anchor, Kurmeh, and Udu (2018) explain that anyone with the requisite research skills and a good attitude toward project writing and supervision will without a doubt find researching to be a simple, engaging, and gratifying activity.

Undergraduates working on a project may have never before written a piece this size and complexity. They frequently have worries about how to move forward at an early period (Murray & Thow, 2001). According to Baker (1995), attitudes are taught over time and are influenced by experience or expectations, even if they are persistent in people. Petric (2002) describes attitudes are more likely to elicit emotions or affection, even though a person's attitude is defined by ideas developed early in life. In this regard, positive attitudes or negative attitudes when addicted to them will likely reoccur with good or bad behaviours (Moris & Maisto, 2001 as cited in Mensah, Okyere & Kuranchie, 2013). The type of feedback and guidance students receive is a significant component that affects how they feel about writing projects. According to Smith (2016), students who receive constructive criticism tend to have a more positive attitude about project writing than those who receive unfavourable or ambiguous comments. Also, Attitude towards research plays a significant role in the whole process of research (Shafqat, Manzoor & Tariq, 2018). Zeinder (1991) asserts that negative attitudes affect performance in research and the learning process leading to low learning outcomes. Students' attitudes toward project writing can impact their motivation, engagement, and success in the writing process.

A deep understanding of project writing skills is a key aspect of tertiary education programs. Despite, writing projects being an essential component of any higher education, it still appears like a terrific assignment for students to complete, especially for undergraduate students who are aspiring young researchers.   Students also still struggle to write and finish their research report in the allotted time, which may

affect their attitudes and success in academics. The crux of the matter is that some student's academic progress was affected because they could not meet up the deadline for project submission. Furthermore, research on students' attitudes toward project writing is still lacking. Therefore, this study aim to assess students' attitudes towards project writing in tertiary institutions.

Objectives of the Study

The specific objectives of this study are to:

1. Examine undergraduate students' attitudes towards project writing.
2. Identify Students related challenges faced by undergraduate students in project writing.
3. Identify Supervisor-related challenges faced by undergraduate students in project writing.
4. Suggest solutions to the challenges faced by undergraduate research students in project writing.
5. Determine the influence of marital status on students' attitudes toward project writing.

Research questions

The following questions were formulated in line with the objective of the study:

1. What are the attitudes of students toward project writing among undergraduates?
2. What are students' related challenges faced by undergraduate students in project writing?
3. What are supervisor-related challenges faced by undergraduate students in project writing?
4. What are the strategies for improving students' attitudes toward project writing?

Null Hypothesis

Ho: There is no significant influence of marital status on student's attitudes toward project writing

Literature Review
Theoretical Framework

The cognitive apprentice and social learning theories provide the foundation of this study. This is because it incorporates both the student's supervisor and supervisee from the cognitive apprenticeship model. It offers a good framework for a writing-centred approach to project writing. The mentor-mentee strategy can be likened to supervisor –supervisee where the supervisor coaches and supports the students' academic writing abilities through feedback. The theory is more focused on the

supervisor than the supervisee learning, even though supervisors may not be proficient writers. Additionally, the cognitive apprenticeship presupposes a task-based learning environment where students are required to put their supervisors' abilities into practice (Wolf, 2010). According to the social influence theory, students' views and behaviours are shaped by the attitudes and actions of those around them. Social influence theory states that students' attitudes may be influenced by the attitudes and behaviours of their peers, professors, and other members of their social network in the assessment of their attitudes about project writing. Students may be more likely to develop a favourable attitude toward project writing themselves if they believe that their peers value and prioritize project writing (Cialdini, 2001).

Additionally, Henson, Hull and Williams (2010) study posits that the negative attitude students have toward project writing emanates from students' lack of knowledge of the benefits of research, the scarce conception of the relevance of research in scholarly activities, or self-efficacy difficulties regarding capability and passion to acquire and complete research related processes. As a result, measures for enhancing students' attitudes and involvement in the writing process can be informed by an awareness of the role that social influence plays in influencing students' attitudes toward project writing.

Challenges of Students towards project writing

Mapolisa and Mafa (2012) discovered that the shared theme of time commitment between the mentor and student was essential to sustaining interest in the research and offering a favourable research experience. The following are the difficulties of project writing.

(a). Challenges for mentors and students: Lack of scientific training, difficulties with monitoring, and content pace: The managers must achieve a balance. According to Bass *et al*., (2018), to solve problems, it is necessary to give students ownership over the procedures; once these methods are learned, they maintain the students' motivation for the research.

(b) Student-Related Challenges: According to Kombo and Tromp (2011), among the many significant issues Tanzanian students encounter when drafting their research proposals is the use of broad titles that lack clear and focused content. Time management, confidence concerns, the calibre of the material, meeting deadlines, data collection, and the interpretation of the literature and the data are all student-related. According to Yiu (2009), the incapacity to build confidence in expressing one's academic voice and the difficulty in presenting ideas are the two biggest obstacles facing undergraduate students in Saudi Arabia.

Strategies to Change Students' Attitude towards Project Writing

Research has demonstrated that effective instructional tactics, creating a good learning environment, and giving students constructive feedback are all effective ways to change students' attitudes toward project writing (Wilson, 2010). Furthermore, several studies have discovered that encouraging student autonomy, and teamwork, and giving students chances to reflect on their learning processes can all be efficient.

Methodology

The goal of the study was to characterize the phenomena of students' attitudes toward project writing and a descriptive research design was used in this study. In the quest to gather information on the students' opinions regarding project writing, a survey method was used. This study concentrated on final-year students at the Yaba College of Technology, in affiliation with the University of Nigeria, Nsukka. It was decided to focus on the group of undergraduate education students who must complete projects as part of their academic programs and their perspectives and experiences are needed. The population of final year students is 353 in the School of Technical Education for the 2021/2022 academic session. The calculation for the sample size is stated below
The researcher employed using the Taro Yamane formula.

$$\mathbf{n} = \frac{N}{(1 + N(e^2))}$$

Where:
n = sample size
N = 353
e = 0.05

$$\mathbf{n} = \frac{353}{(1 + 353(0.05^2))}$$

$$\mathbf{n} = \frac{353}{(1 + 353(0.05^2))}$$

$$\mathbf{n} = \frac{353}{(1 + 353(0.0025))}$$

$$\mathbf{n} = \frac{353}{(1 + 353(0.0025))}$$

$$\mathbf{n} = \frac{353}{(1 + 0.8825)}$$

$$\mathbf{n} = \frac{353}{1.8825}$$

n = 187.52

Consequently, a sample size of 188 was employed through random sampling. The distribution of a questionnaire with 31 items was made simple and effective by using

online Microsoft Forms to deliver the questionnaire. The Microsoft soft forms link was sent to their various WhatsApp group so the students can respond promptly to the items in the questionnaire.   To learn more about the participants' backgrounds, demographic questions concerning their major, gender, and age were also included. This additional information is necessary for understanding the results and the potential effects of these factors on the attitudes of the participants toward the project writing. The reliability of the questionnaire was determined by the Cronbach alpha method, and the reliability coefficient is 0.60. The researchers used the content and face validity approach to confirm this. By confirming the validity of the instruments, the researchers were able to collect data quickly and precisely. The percentage, frequency, and mean were utilized to analyze the data gathered on the assessment of student attitudes toward project writing. The hypothesis was also tested using the chi-square.

Results

Table 1
Gender Distribution of Respondents

Gender	Frequency	Percentage
Male	66	35.1
Female	122	64.9

According to Table 1, it can be observed that out of a total sample of 188 respondents, 35.1 % are male and 64.9 % are female. This means more females were sampled in the study.

Table 2
Age Distribution of Respondents

Age	Frequency	Percentage
21 below	-	-
21 -25	170	90.4
26 -30	18	9.6
30 above	-	-

According to Table 2, it can be observed that out of a total sample of 188 individuals, 90.4 % are in the age range of 21-25 years old, while 9.6% fell into the age range of 26-30 years old.

Table 3
Marital Status of the Respondents

Marital status	Frequency	Percentage
Married	10	5.3
Single	178	94.7

Based on Table 3, it can be stated that out of a total sample of 188 respondents, 94.7% were single, while 5.3% were married.

Table 4
Frequency Distribution on Project Writing

	Yes	No
Do you think a project should be one of the requirements for the award of any degree	148(78.7)	40 (21.3)
Would you say project writing is very tasking and demanding	177(94.1)	11(5.9)
Do you think there are some factors influencing your attitude towards project writing	167(88.8)	21(11.2)

Figures in parentheses are in percentage

Table 4 revealed the students' opinions about the project as a course, 78.7% accepts project should be one of the requirements for the award of any degree, 94.1% accepts that project writing is very tasking and demanding while 88.8% thought that there is some factors influencing students attitude towards project writing.

Table 5
Ranking Student's Preference on Commencement of Project Writing

Semester	Frequency	Percentage	Rank	Remark
Second 300 level	75	39.9	1.0	1st
First 300 level	51	27.1	2.0	2nd
First 400 level	46	24.5	3.0	3rd
Anytime	9	4.8	4.0	4th
Second 400 level	7	3.7	5.0	5th

Table 5 is the ranking of the student perception on when to commence the project writing, the highest proportion 39.9% cites the second semester 300 level rank 1st, 27.1

% cites the first semester 300 level rank 2nd, 24.5% cites the first semester 400 level, 4.8% cites anytime rank 4th while the least 3.7% cites second semester 400 level rank 5th. This means most of the respondents preferred the second semester 300 level to commence their project writing.

Table 6
Students' Attitude to Project Writing

	SA	A	D	SD	Mean	Remark
I like to know the systematic process of writing a project.	88 (46.8)	79 (42.0)	9 (4.8)	12 (6.4)	3.3	Positive
I like to choose my project topic	48 (25.5)	116 (61.7)	6 (3.2)	18 (9.6)	3.1	Positive

Figures in parentheses are in percentage

Table 6 presents the responses of students to five statements related to their preferences for writing a project. 48.4% strongly agree and 45.2% strongly disagree with the statement that they would like to know the systematic process of writing a project. Also, 66.5% strongly agree and 25.5% disagree that they prefer to have all the necessary resources to complete the project. In addition most students 63.8% disagree with the idea of making their own choice of project topic while 26.6% strongly agree. In terms of feeling overwhelmed by the research process, a little above average 55.3% disagree while about one-third of the students 35.1% strongly agree. Overall, the table shows that students generally prefer to have control over their project topics and access to the necessary resources to complete their projects. Additionally, most students do not prefer their supervisors to choose their project topics, and a considerable number of students feel overwhelmed by the research process. The means of the statements that were accepted are 3.5, 3.3, 3.1, and 3.0 and the mean that is rejected is 2.5. The overall mean is 3.08 which implies students have a positive attitude towards project writing.

Table 7
Perceived Causes of Student's Difficulties with Project Writing

	Yes	No
do you face several challenges during the process of writing your project	188 (100)	-
Would you say some of the difficulties is from supervisor	92(48.9)	96 (51.1)
Would you say some of the difficulties is from	148(78.7)	40(21.3)

students

Figures in parentheses are in percentage

Table 7 indicates that all participants faced several challenges during the project writing process, indicating that this response was uniform across all participants. It also indicates that respondents identified difficulty in their path compared to their supervisors. This means the major difficulties students face during project writing are from their supervisor or the students. This implies that most of the students were sincere with their responses and that the whole delay in project writing was a result of their attitude toward project writing

Table 8
Supervisor-Related Challenges on Students' Project Writing

Statements Remark	SA	A	D	SD	Mean
Delay of receiving feedback from supervisor	44(23.4)	88(46.8)	28(14.9)	28(14.9)	2.8
Accept					
Supervisor encouragement and support	44(23.4)	93(49.5)	23 (12.2)	28(14.9)	2.8
Accept					
Inability to choose topic	37(19.7)	62(33.0)	55(29.3)	34(18.1)	2.5
Accept					
Cordial relationship with supervisor	33(17.6)	88(46.8)	35(18.6)	32 (17.0)	2.6
Accept					

Figures in parentheses are in percentage

Table 8 revealed the supervisor-related challenges in project writing, 46.8% agree and 23.4% strongly agree with delay in receiving feedback from the supervisor. 49.5% agree and 23.4% strongly agree with the statement that supervisor encouragement and support while 14.9% strongly disagree. Also, 46.8% agree and 18.6% disagree with a cordial relationship with the supervisor. This means students challenges students face are delays in receiving feedback, encouragement, and support, inability to choose a topic, and cordial relationships with their supervisor.

Table 9
Students Related Challenges on Project Writing

Statements Remark	SA	A	D	SD	Mean
Little or no knowledge of the purpose Accepted or aim	31(16.5)	61(32.4)	65(34.6)	31 (16.5)	2.5
Difficulty at working as a team Accepted	35(18.6)	69(36.7)	37(19.7)	47 (35.0)	2.5
Inability to access up to date research Accepted materials	65(34.6)	83(44.1)	15(8.0)	25 (13.3)	3.0
Having limited time to complete project Accepted	65(34.6)	76 (40.4)	19(10.1)	28 (14.9)	3.0
Combining course work with project Accepted writing is stressful	88(46.8)	62(33.0)	4(2.1)	34(18.1)	3.1
Expectations for the project is unrealistic Rejected	29(15.4)	76(40.4)	55(29.3)	28 (14.9)	2.2
Inability to organize thoughts and ideas Rejected	54(28.7)	90(47.9)	13 (6.9)	31(16.5)	2.4

Figures in parentheses are in percentage

Table 9 revealed the challenges of project writing from the supervisee path, 34.6% disagree and 32.4% agree with little or no knowledge of the purpose or aim. 36.7% agree and 35.0% strongly disagree with the statement that difficulty in working as a team while 19.7% disagree. Also, 40.4 % agree and 34.6% strongly agree to have limited time to complete the project while 14.9% strongly disagree. 46.8% strongly agree and 33.0% agree that combining coursework with project writing is stressful while 18.1% strongly disagree. In addition, 40.4% agree 29.3% disagree that the expectations for the project are unrealistic and 15.4 % strongly agree. Also, 47.9% agree and 28.7% strongly agree with the statement that the inability to organize thoughts and ideas together while 16.5% strongly disagree. This means the challenges from the supervisee path are little or no knowledge of the purpose or aim, difficulty in working as a team, inability to access up-to-date research materials, having limited time to complete the project, and combining coursework with project writing is stressful.

Strategies to improve students' attitude towards project writing.

Only a few of the respondents answered the open-ended questions in the questionnaire but were in line with the stated research question, almost every one of them who responded was able to suggest how to improve students' attitudes toward project writing. For easy and accurate comprehension, each of their responses has been expanded into themes such as communication and supervision from the lecturer, availability of materials needed for project writing, breaking down the project into smaller tasks, cooperation, and tolerance for a group project, sought for advice from lecturers and predecessors, enough time and resources, get feedback from supervisor, research methodology should be taught from 100 level, project writing should commence from 300 level and maximum time should be given when writing project.

Testing of Hypothesis

There is no significant influence of student's marital status on their attitude toward project writing

Table 10

Chi-Square on Influence Marital Status on Attitude

	Value	df	Significant Fig
Pearson Chi-square	17.22a	7	0.02
Likelihood Ratio	20.62	7	0.00
No valid cases	164		

Table 10 shows the results of the chi-square tests conducted to examine the influence of marital status on student's attitudes toward project writing. The Pearson Chi-Square test and the Likelihood ratio test both show that there is a statistically significant association between marital status and students' attitudes toward project writing@ $P<0.05$. This means that marital status influenced students' attitudes towards project writing.

Discussion of Findings

This study revealed challenges students faced from their supervisor were delays in receiving feedback, encouragement, and support, inability to choose a topic, and a cordial relationship with their supervisor. This is in accordance with Mapolisa and Mafa (2012) findings that the difficulties students face are supervisors' level of engagement, supervisor availability, and student interest in the topic. This study showed that most suggested strategies are constant communication and supervision from the lecturer and the provision of materials needed for project writing should be made available and in-

depth research. The findings are in line with Wilson (2010) that the strategies to improve students' attitudes toward project writing are providing constructive feedback.

This study revealed the challenges from the supervisee path are little or no knowledge of the purpose or aim, difficulty in working as a team, inability to access up-to-date research materials, having limited time to complete the project, and combining course work with project writing is stressful. The findings of this study also correspond with Kombo and Tromp (2011) that students' challenges with project writing include time management, confidence, the calibre of the material, meeting deadlines, data collection, and the interpretation of data. Similarly, it conforms with the study of Yiu (2009) that students' obstacles in project writing include the incapacity to build confidence in expressing one's academic voice and difficulty in presenting ideas.

This study showed that students have a positive attitude towards project writing which contradicts the findings of Achor and Ejigbo (2006) that there is a negative attitude of students to write their project and ensure quality is sustained in their write-ups. This study showed the major difficulties students faced during project writing were from their supervisor and supervisee which is in accordance with Anchor *et al*., (2018) that one of the delays in the completion of the course by the supervisee could be a result of either the supervisor or the supervisee not been active.

This study revealed students challenges students faced from their supervisor were delays in receiving feedback, encouragement, and support, inability to choose a topic, and a cordial relationship with their supervisor. The findings are in agreement with Smith (2016) that the quality of feedback and instruction influences students' attitudes toward project writing.

The assessment's results shed light on both positive and negative attitudes toward project writing, including students' eagerness and motivation to do research on and write about personally interesting subjects, as well as their struggles with time management, poor writing abilities, and uncertainty about project guidelines. The examination revealed good opinions toward project writing, suggesting that students value the chance to undertake independent research and communicate their ideas through writing. Many students showed excitement and engagement with their research topics and a willingness to continue learning more about them after the project's deadline.

This suggests that students' project writing can be a relevant and worthwhile learning experience that helps them hone their communication, problem-solving, and critical thinking skills. The assessment did, however, also point up several unfavourable attitudes about project writing, which should not be disregarded. Many students reported having a difficult time managing their time, and some said the project's requirements left them feeling worried and overwhelmed. Others claimed that they had problems with their writing and research abilities, making it difficult to finish the project to a high

standard. Confusion over project requirements was another prevalent problem, with some students finding it difficult to comprehend what was required of them in terms of the structure, subject matter, and presentation style of the project.

Conclusion

The evaluation of undergraduate students' attitudes toward project writing has produced significant insights into these students' thoughts and experiences about this vital component of their academic journey. Project writing may be a fulfilling and engaging experience for students with the correct support and direction, assisting them in gaining the abilities and self-assurance necessary to succeed in their chosen careers.

Recommendations

The following suggestions are given to be put into practice if a significant improvement in project writing is required in light of the findings:

1) supervisors should give students the necessary direction and assistance throughout the project writing process. To assist students in developing their writing abilities, they should be approachable and prompt with their criticism.

2) To provide students with the knowledge and abilities needed for successful project writing, tertiary institutions should host writing workshops. These workshops ought to cover subjects like academic writing, data analysis, and research techniques.

3) To enable students to carry out efficient research, tertiary institutions should offer adequate resources such as textbooks, journals, and internet access. Also, there ought to be plenty of pertinent reading material in the library.

References

Achor, E.E, Kurumeh,.M.S & Udu, T.T (2018). Project writing and supervision and the issue of quality: A practical approach. *Issue of Quality Education in Nigeria*   364 - 371

Achor, E. E. & Ejigbo, M. A. (2006). *A guide to writing research report*. Sam Artrade Ltd.

Baker, T.Z. (1995). *Doing social research (2nd Ed.).* Mcraw-Hill Inc

Cialdini, R.B. (2001). *Influence of science and practice* (4th ed), MA: Allyn & Bacon.

Henson, R. K., Hull, D. M., & Williams, C. S. (2010). Methodology in our education research culture: Toward a stronger collective quantitative proficiency. *Educational Researcher, 39,* 229-240.

Kombo, D.K and Tromp, D.L (2011). *Proposal and thesis writing.* Nairobi: Pauline publications

Marsh, H. W., Rowe, K. J., & Martin, A. (2002). PhD students' evaluations of research supervision. *The Journal of Higher Education, 73*(3), 313 - 348.

Mapolisa,T & Mafa, O.(2012).Challenges being experienced by undergraduate students in conducting research on open and distance learning. *International Journal of Asian Social Science.* 2(10) 1672-1684

Mensah, J.K, Okyere, M., & Kuranchie, A.(2013). Student attitude towards mathematics and performance: Does the teacher's attitude matter? *Journal of Education and Practice, 4*(1) 132 -139

Murray, R. & Thow, M. K. (2001). Facilitating student writing during project supervision: A practical approach. *Physiotherapy*, 87(3) 134 -139.

Odunze, D.I. (2019). *Examining the challenges faced by undergraduate students in writing research project.* Unpublished Thesis submitted to Postgraduate Diploma in Higher Education. National University of Science & Technology, Zimbabwe

Petric, B. (2002). Students attitude towards writing and development of academic writing skills. *The Writing Centre Journal*, *22*(2) 9 - 27

Shafqat,.K. Manzoor,. S & Tariq, K. (2018). An investigation of attitudes towards the research activities of university teachers. *Bulletin of Education and Research*, *40* (1) 215 -230

Smith, C.L. (2016). Privacy and trust attitudes in the intent to volunteer for data-tracking research. *Information Research, 21*(4), paper 726. Retrieved on 5th of June 2023. http://InformationR.net/ir/21-4/paper726.html.

Wolf, L. (2010). Learning through writing: Re-conceptualizing the research supervision process. *International Journal of Teaching and Learning in Higher Education.* 22(3)   229-237.

Wilson, J. (2010). *Essentials of business research*: *A guide to doing your research project*. SAGE Publication

Yiu, R.H (2009). *Disciplinary Writing. A case study of Hong Kong undergraduates undertaking their writing tasks*. Unpublished Thesis submitted for the degree of Doctor of Education at the University of Leicester.

Zeidner, M. (1991). Statistics and mathematics anxiety in social science students: Some interesting parallels. *British Journal of Educational Psychology, 61*, 319-328