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MATHEMATICS CURRICULUM IMPLEMENTATION AND EVALUATION AS PREDICTORS OF MOTIVATION AND PERFORMANCE OF STUDENTS AMONG COLLEGES OF EDUCATION IN NIGERIA

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Abstract

This paper investigates the relationship between mathematics curriculum implementation and evaluation as a predictor of students' motivation and performance at the Nigerian Certificate in Education (NCE) level in Nigerian colleges, specifically focusing on the North-West and North-central regions. The paper employed descriptive survey approach, the study includes 108 mathematics lecturers and 1,518 NCE mathematics students from randomly selected Federal Colleges of Education in the North-West and North-Central zones. Data was collected using questionnaires and session examination records of NCE mathematics students. The findings of the study shows a significant relationship between mathematics curriculum implementation and NCE students' motivation towards learning mathematics which emphasized the critical role played by implementation of the mathematics curriculum in shaping various facets of NCE students' experiences and performance in mathematics. The results further revealed a very strong significant relationship between mathematics curriculum evaluation and NCE students' performance in mathematics which further proven the relationship between curriculum elements and their collective determiner of students' academic performance. The study recommended that lecturers should be provided with continuous professional development opportunities to stay updated on innovative and effective methods for curriculum implementation and evaluation through better strategies for motivation.

Keywords: Mathematics, Curriculum, Implementation, Evaluation, Motivation and Performance.

Introduction

Concept of curriculum is very broad which consists of the totality of experience that pupil receives through the manifold activities that go on in the school, in the classroom, library, laboratory, workshop and play-ground and in the numerous contacts between the teachers and pupils. Curriculum can be considered as a set of specific knowledge, skills and activities for students, or it may be defined as planned activities for foster teachers' teaching and student's learning (Magaji and Peter, 2020). It is neither dogmatic nor rigid in its form and structure. It is neither uniform nor standardized to conform to a prescribed pattern. It is characterized by variety and flexibility and it's tailored to the needs of the students at different age levels. It gives the students an increasing awareness of the environment around them so that they may fit in more definitely in the milieu of community life. It thus secures more integrated group relations. Curriculum implementation entails putting into practice the officially prescribed courses of study, syllabuses and subjects which involves helping the learner acquire knowledge or experience (Kumar, 2015). Curriculum implementation is defined as a number of activities that translate the objectives of the curriculum from paper to practice (Omada, 2014). The implementation of the mathematics curriculum cannot be attained without the supervisory duties of stakeholders.

Despite the noble and sound objectives of NCE programme, mathematics educators collectively lamented that implementation of mathematics curriculum has not been affective and causes problem to students performance (Adedeji, 2017). Furthermore Adedeji (2017) emphasized that curriculum in Nigeria have failed due to lack of compliance to the implementation strategy, this is indeed a terrible situation. The evidence of the statement above can be seen in the poor performance of student in various level of standardize examination in mathematics in our schools. Frequent evaluation of curriculum implementation is very necessary to minimize the challenges faced in the implementation stage.

Adebule (2014) expressed academic performance as a person exhibited of behavior that is noticeable after undergoing a particular programme, the programme could be a course-work for a designated class in teaching and learning process over a period of time. Learning achievement is always influence by some factors that may generally be categorized as intrinsic and extrinsic factors.

Motivation is one of the intrinsic factors that stimulate students and make him/her functions to achieve learning objectives. Mathematics curriculum implementation and evaluation is an effective way to motivate students' attitude by the teachers through the use of appropriate strategies in delivering the lesson. Dika (2002) conducted a study comparing the effect of motivation and academic performance. The study revealed the important influences of motivation on

academic achievements and performance. Motivation is something that is needed in the implementation processes. Motivation act as a potential to direct behavior that is built in the system that control emotion, cognitive, and behavior (Hannula, 2004).

Teacher needs to be encouraged to monitor how to reach the inner concepts in Mathematics as it usually lead to students' deep understanding and improve the academic performance of students in Mathematics (Tan, 2018). If teaching for meaning is prioritized universally in all aspect of educational system at national, state and local education reform, the efficacy of implementation plan which guides the transformation of a school system is worth evaluating in relation with teachers motivating students and performance in Mathematics and this is in line with the present study mathematics curriculum implementation and evaluation as predictors for student's motivation and performance in college of education in Nigeria.

Statement of the Problem

Lack of proper mathematics curriculum implementation and evaluation is one of the major problems facing educational sector in Nigeria. It affects student's motivation and performances in institutions, as a result retard economic growth and development of the society. In essence, lack of proper mathematics curriculum implementation is an indication that the economy is throwing away output by failing to utilize its human capital. This has been against the backdrop of the fact that when mathematics curriculum is not properly implemented and evaluated, inventions, creativity, initiations would be less in the country, and this would become a serious menace to the country as a whole. Although provision of training and retraining programs to facilitate proper implementation of mathematics curriculum is ongoing at various institution yet there is need to involve more experience Teachers in the curriculum planning and development since no one can dispute that curriculum implementation and evaluation is a tool of education to educate and humanize the whole World.

Due to the poor mathematics curriculum implementation and evaluation, the aims of education programme remained virtually inert and dysfunctional. When a new curriculum has been developed, it is essential that the people who will be affected by it whichever way or have some stakes in it are informed so as to understand its relative merit over the previous one. It is very obvious that proper mathematics curriculum implementation and evaluation is the key to the achievement of educational goals and empowers students to build a vision for the future. Motivation has function as stimulant effort for achievement from the teacher to instigate positive attitude towards good performance in mathematics. It is obvious that motivation is a fundamental factor that cannot be ignored.

Objectives of the Study

The main objective of the study is to investigate the relationship of mathematics curriculum implementation and evaluation as predictors of motivation and student's performance in colleges of education in Nigeria. However, the specific objectives are to:

1. determine the relationship between mathematics curriculum implementation and NCE Students motivation towards learning mathematics
2. examine the relationship between mathematics curriculum evaluation and NCE students performance in mathematics.

Research Questions

The following research questions will guide the study:

1. What is the relationship between mathematics curriculum implementation and NCE students motivation towards learning mathematics?
2. What is the relationship between mathematics curriculum evaluation and NCE students' performance in mathematics?

Research Hypotheses

The following null hypotheses are formulated and to be tested at $p \leq 0.05$ level of significant.

Ho_1: There is no significant relationship between mathematics curriculum implementation and NCE students' motivation towards learning Mathematics

Ho_2: There is no significant relationship between mathematics curriculum evaluation and NCE students' performance in mathematics.

Review of Related Literature

Stotsky (2012) defined curriculum as a whole plan of action that is aimed at achieving desired goals and objectives in educational system, it is a set of learning activities meant to make the learner attain and achieved goals as prescribed by the education system. Furthermore, curriculum is program of activities which include courses of studies, curricula and co-curricular activities being followed by students undergoing a course of study at school or university.

Ezeugbor and Obunadike, (2018) see mathematics curriculum implementation as a process that entails putting into practice the official focus as prescribed courses of study, syllabi, teachers and students activities in order to attain the goals of the planned NCE mathematics curriculum. Thus, mathematics curriculum implementation is the process that involves helping the learner to acquire knowledge or experience in accordance with the objectives of any institution.

Mathematics curriculum evaluation must be based on information gathered from a comprehensive assessment system that is designed and monitored for accountability and committed to the concept that all students will achieve at high levels, is standards-based, and informs decisions which impact significant and sustainable improvements in teaching and student learning as stipulated by the objectives of mathematics curriculum evaluation as cited by Farooq (2014) are to: determine the outcomes of a programmes; help in deciding whether to accept or reject a program; ascertain the need for the revision of the course content; help in

future development of mathematics curriculum material for continuous improvement and improve methods of teaching and instructional techniques.

Better curriculum implementation and evaluation may be achieved through motivation. Motivation is a drive (a condition within the organism, which is capable of moving the organism towards a goal) which directs the people to do the purposed job (Islam, 1999). Thus, motivation is a result of processes, internal or external, which arouses enthusiasm and persistence to pursue a certain course of action by an individual (Gary and Starke, 1984) in (Islam, 1999). Several studies have been carried out in several places but rarely covers curriculum implementation and evaluation in relation to students motivation and academic performance.

Magaji and Peter (2020) conducted an evaluation of mathematics curriculum implementation in Nigerian colleges: A case study of Adamu Tafawa Balewa college of Education Kangere. mixed method approach was used. The findings revealed that mathematics curriculum was not fully implemented in the college. The standards based curriculum reforms in mathematics meant to make marked changes in delivery and implementing the new curriculum; a situation where curriculum is not fully implemented would automatically affect students' performance which is contrary to the objective of the educational system and so, should be addressed. The study is in line with the present research with the topic; level; questionnaire; mixed method approach, descriptive and inferential data analyses.

Cevik and Abdioglu (2016) conducted a study on new math curriculum implemented in secondary school by views of teachers and students. The survey model was employed which uses quantitative data instruments, Teachers indicated from their finding that the curriculum should be associated with everyday life with regard to educational attainment, content teaching-learning and assessment processes and that there is lack of observing and creative activities. There is the need for teachers to provide room for concrete examples and more activities to enhance students motivation in learning mathematics. It is obvious that, curriculum that is associated with everyday life will make a change in providing the need of the society, and the necessary content knowledge for students through appropriate methodology. The former study used purposive sampling in secondary school Karaman city of Turkey, while the present study used multistage sampling technique in colleges of education Nigeria, both study are similar with the topic, survey model and percentage for analysis.

Research Methodology

In order to conduct research on mathematics curriculum implementation and evaluation as predictors on student motivation and performance in north-west and north central Nigerian colleges of education. The descriptive survey approach was employed to determine the relationship that exists, the effects that are evident, the opinions that are held, and the trends that are developing on the students and lecturers under study by gathering and analyzing data from a sample that was considered representative of the entire group (Sambo, 2005). There are twenty-seven (27) federal colleges of education, fifty (50) state colleges of education, one

hundred and eight (108) private-owned colleges of education, ten (10) NTI and other NCE awarding institutions, and nine (9) polytechnics offering NCE in Nigeria as at August, 2021 (Okwelle, 2021).

Given the study's geographic dimension, multistage sampling technique was used and two zones north - west and north - central were purposive chosen due to security concerns in Nigeria. Subsequently, the institution was stratified Federal, State, and Private. Following this, Federal College was specifically chosen based on its shared socioeconomic background, admissions standards, personnel, financing, and access to instructional resources. Therefore, the total number of mathematics NCE I, NCE II, and NCE III students were one thousand nine hundred and sixty four (1964), and the total number of mathematics lecturers were one hundred and sixteen (116).

A questionnaire instrument was employed by the researcher which include both lecturers' questionnaire and student questionnaire. The reliability scores of the tools employed were 0.89 for the lecturer's questionnaire and 0.73 for the student's questionnaire. Also students examination records of 1st and 2nd semester were used to obtain their performance. Simple descriptive statistics methods (mean, standard deviations, and percentages) were used in answering research questions while linear regression analysis was used to test the hypotheses.

Results and Discussions

Research Question one: What is the relationship between mathematics curriculum implementation and NCE students' motivation towards learning mathematics?

Table 1: Relationship between Mathematics Curriculum Implementation (MCI) and NCE Students' Motivation

SN	Items	Agree (%)	Disagree (%)	Mean	SD
	Cumulative Aggregate	1910 (88.8)	242 (11.2)	3.861	1.004

The data presented in Table 1 provides insights into the relationship between Mathematics Curriculum Implementation (MCI) and NCE (Nigeria Certificate in Education) students' motivation towards learning mathematics. The table includes various items related to MCI and the percentage of agreement and disagreement, mean scores, and standard deviations for each item. The overall cumulative aggregate shows a high level of agreement (88.8% agree) with a mean score of 3.861. This showed that the relationship between Mathematics Curriculum Implementation (MCI) and NCE Students' Motivation is strong.

Null Hypothesis 1: There is no significant relationship between mathematics curriculum implementation and NCE students' motivation towards learning Mathematics.

Table 2: Regression Analysis Results of Relationship between Mathematics Curriculum Implementation (MCI) and NCE Students' Motivation towards Mathematics (SMM)

Items	R^2	F-value	Df	p-value	Alpha	Decision
MCI and SMM	0.805	436.609	107	0.000	0.05	Reject Ho_1

The regression analysis result above provided valuable insights into the relationship between mathematics curriculum implementation (MCI) and NCE students' motivation towards learning mathematics (SMM). The R^2 value is 0.805 which indicates that approximately 80.5% of the variance in the SMM that is predictable from MCI. The F-value at degree of freedom of (107) is 436.609, the p-value is less than 0.0001 at alpha value of 0.05. The extremely low p-value of 0.000 is below the significance level of 0.05, indicating strong evidence against the null hypothesis 1. Thus, the result suggests that there is a significant relationship between mathematics curriculum implementation (MCI) and NCE students' motivation towards learning mathematics (SMM).

Research Question Two: Which types of relationship exist between mathematics curriculum evaluation and NCE students' performance in mathematics?

Table 3: Relationship between Mathematics Curriculum Evaluation (MCE) and NCE Students' Performance in Mathematics

SN	Items	Agree (%)	Disagree (%)	Mean	SD
	Cumulative Aggregate	988 (91.5)	92 (8.5)	4.07	1.010

The result presented in Table 3 explores the relationship between Mathematics Curriculum Evaluation (MCE) and NCE students' performance in mathematics. The overall cumulative aggregate shows a very high level of agreement (91.5% agree) with a mean score of 4.07. Thus, the relationship between Mathematics Curriculum Evaluation (MCE) and NCE Students' Performance in Mathematics is very strong.

Null Hypothesis 2: There is no significant relationship between mathematics curriculum evaluation and NCE students' performance in mathematics.

Table 4: Regression Analysis Results of Relationship between Mathematics Curriculum Evaluation (MCE) and NCE Students' Performance in Mathematics (SPM)

Items	R^2	F-value	Df	p-value	Alpha	Decision
MCE and SPM	0.677	221.774	107	0.000	0.05	Reject Ho_1

The regression analysis result above provided valuable insights into the relationship between mathematics curriculum evaluation (MCE) and NCE students' performance in mathematics (SPM). The R^2 value of 0.677 indicates that approximately 67.7% of the variance in students' performance in mathematics can be explained by mathematics curriculum evaluation. The F-value of 221.774 at degree of freedom of (107), the p-value is less than 0.0001 at alpha value of 0.05. The very low p-value of 0.000 is below the significance level of 0.05, providing strong evidence against the null hypothesis. The decision to reject Ho_2 is based on the low p-value, indicating there is a significant relationship between mathematics curriculum evaluation (MCE) and NCE students' performance in mathematics (SPM).

Discussions

The study investigated the relationship between MCI and NCE students' motivation towards learning mathematics. The findings, based on respondents' responses, indicate a strong positive relationship. Notably, effective leadership, quality assurance, administrative structures, qualified staff, effective networking, learner-centered approaches, and other factors associated with MCI contribute significantly to students' motivation. The majority of respondents agree that effective leadership, quality assurance, administrative structures, qualified staff, ICT usage, networking, and adherence to standards contribute positively to NCE students' motivation in learning mathematics. The cumulative aggregate suggests an overall positive perception of the relationship between MCI and students' motivation. This finding is supported by Roman (2019) in terms of curriculum implementation compliance and Fuqoha, Budivono and Indriati (2018) who stated that students are motivated.

Considering Table 1, the findings suggest a positive relationship between Mathematics Curriculum Implementation (MCI) and NCE students' motivation towards learning mathematics. Respondents generally agree that effective leadership, quality assurance, administrative structures, qualified staff, ICT usage, adherence to standards, learner-centered approaches, and other factors contribute to students' motivation. However, it's important for educators and policymakers to address specific areas where the level of agreement is lower, as identified through mean scores and percentage agreement. This can help in continuous improvement of the mathematics curriculum and its implementation to enhance students' motivation and learning outcomes.

The regression analysis results in Table 2 strongly support the rejection of the null hypothesis (Ho_1), indicating that there is indeed a significant relationship between mathematics curriculum implementation (MCI) and NCE students' motivation towards learning mathematics (SMM). The high R^2 value further underscores the substantial influence of MCI on students' motivation. This finding suggests that effective implementation of the mathematics curriculum positively contributes to students' motivation in learning mathematics. Institutions and educators should continue to prioritize and enhance the implementation of the mathematics curriculum to foster a positive and motivating learning environment for NCE students. The identified factors related to effective leadership, quality assurance, and learner-centered approaches contribute significantly to motivating students in their mathematical studies in line with Hussain, Yakubu and Salisu (2018).

The study explored the relationship between MCE and students' performance in mathematics. The findings suggest a significant positive relationship, highlighting the importance of comprehensive curriculum evaluation processes in enhancing students' academic performance. The findings in Table 3 suggest a strongly positive relationship between Mathematics Curriculum Evaluation (MCE) and NCE students' performance in mathematics. This finding is supported by the findings of Ruth, Ngasike and Cherekes (2021), Roman (2019), Ibeh (2020) and Bicknell (2009). Respondents express high levels of agreement that the MCE contributes significantly to the success of the program, providing sufficient requirements for completion, aligning work term objectives with knowledge and skills, and motivating students for teaching practice. The overall cumulative aggregate of 4.07 indicates a very high level of agreement, implying that a well-evaluated mathematics curriculum plays a crucial role in enhancing students' performance and preparing them for their future roles as mathematics educators. Institutions should continue to focus on the effective evaluation of the curriculum to ensure its relevance and impact on students' academic and professional development.

The regression analysis results in Table 4 strongly support the rejection of the null hypothesis (Ho_2), indicating a significant relationship between mathematics curriculum evaluation (MCE) and NCE students' performance in mathematics (SPM). The substantial R^2 value suggests that a significant portion of the variance in students' performance is associated with the effectiveness of curriculum evaluation. This finding emphasizes the importance of rigorous curriculum evaluation processes in influencing and improving the academic performance of NCE students in mathematics. This is in line with the findings of Omada (2014), Osokoya (2014) and Ogungbesan (2012). Educational institutions should continue to prioritize and enhance curriculum evaluation practices to foster better academic outcomes in mathematics. A well-evaluated curriculum, including accurate program descriptions and appropriate credit unit allocation, positively influences students' academic performance and this is supported by Tella (2007).

Conclusion and Recommendations

The findings emphasize the importance of collaboration, student motivation, and ongoing assessment in achieving successful mathematics curriculum implementation outcomes. Attention should be given to courses with lower completion rates to identify and address potential challenges faced by students. Continuous monitoring and evaluation of teaching methods can enhance the effectiveness of the courses. Courses like "Research Methodology" and "Teaching Practice" showcase areas of success and can serve as models for effective course design and delivery. The findings revealed several significant relationships that provide valuable insights into the dynamics of mathematics education at the NCE level. The findings consistently highlight the significance of evaluation of the mathematics curriculum in influencing NCE students' motivation and performance in mathematics.

Additionally, the study emphasizes the importance of a robust and regular curriculum evaluation process to identify areas for improvement and maintain relevance. Ultimately, the recommendations derived from the conclusions provide actionable steps for educators and policymakers to enhance the overall quality of mathematics education at the NCE level, fostering a positive learning environment and improving academic performance. This study demonstrates that the effective continuous evaluation of the mathematics curriculum are integral factors in shaping NCE students' motivation and performance in mathematics. The results provide valuable insights for educational practitioners and policymakers to enhance the quality of mathematics education at the NCE level. Based on the findings of this study, the following recommendations were made:

1. Regular Curriculum Evaluation: Implementing a regular and robust curriculum evaluation process can help identify areas for improvement, ensuring that the curriculum remains relevant, challenging, and conducive to positive attitudes and high performance.
2. Student Engagement Strategies: Develop and implement strategies to actively engage students in the learning process, fostering positive attitudes and motivation towards mathematics.
3. Tailored Interventions: Identify and implement targeted interventions based on curriculum evaluations to address specific challenges and enhance overall student performance in mathematics.
4. Similar research should be carried out on other various colleges of education in Nigeria using similar variables in the study, so that it will bridge the existing gap on the research variables.
5. Implement targeted interventions that include providing additional support resources, such as supplementary materials, tutoring sessions, or interactive workshops, to help students

overcome difficulties and enhance their understanding complex topics. Identifying specific areas of struggle and tailoring interventions accordingly will contribute to improving the overall completion rates in these courses.

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