MATHEMATICS TEACHERS' WORKLOADS AS A CORRELATION OF QUALITY ASSURANCE IN UPPER BASIC EDUCATION

Adetunji Abiola Olaoye
Lagos State University, Nigeria

Abstract

This study was designed to examine mathematics teachers' workload vis-à-vis the students' performance in Mathematics and as a correlation to quality assurance in upper basic education. As a descriptive study it consisted of four research questions and hypotheses at 5% level of significance. The study sample was comprised of twenty public secondary schools from which thirty-two mathematics teachers and one thousand and two hundred upper basic level 2 students were purposively selected for the study. Two instruments, a Mathematics Achievement Test (r = 0.78) and a "Questionnaire for Mathematics Teachers' Workloads in Upper Basic Education Level 2" (r = 0.83) were used for the study. Data were analysed through simple percentages, Pearson moment correlation, t-test and one way ANOVA. Findings revealed that there was a significant relationship between mathematics teachers' gender and students' performance in Mathematics (t-cal>t-ratio, df = 1198; P<0.05) but there was no significant relationship between mathematics teachers' qualification and students' performance in Mathematics (F-cal<F-ratio, df = {4, 1194}; P>0.05). However, it was found that there was a significant relationship between mathematics teachers' subject(s) taught and students' performance in Mathematics (t-cal>t-ratio, df = 1198; P<0.05). Furthermore, study revealed that there was a significant relationship between mathematics teachers' workload and students' performance in Mathematics (F-cal>F-ratio, df = {7, 1191}; P<0.05). The implications of the findings were discussed and recommendation suggested towards ensuring better quality assurance for Mathematics in upper basic education.

Key words: Workload, Mathematics teachers, Quality Assurance, Upper Basic Education

Introduction

Quality assurance in education is ascertained when the end-products could contribute to meaningful development of the society. This is why education is regarded as a veritable tool that all developing and developed nations of the world may skilfully use to accomplish their national objectives. Universal Basic Education (UBE) as announced in September 1999 by President Olusegun Obasanjo in Sokoto State of Nigeria was conceived as a panacea to the problems associated with the former educational system of Universal Primary Education (UPE) of 1976. Like UPE, the UBE provides free and universal education in a numbers of ways which makes it an improvement. It is educational system that allows children to spend the first six years in primary school, three years in the junior secondary school, called upper basic educational levels. For instance, UPE makes a voluntary enrolment of primary school programme, while UBE establishes a compulsory education programme for all children between the ages of six and fifteen that accommodates pupils from primary to the junior secondary school (JSS) levels. UBE comprises lower and upper basic education and it is expected to accomplish the following objectives:

(i)   Developing in the entire citizenry a strong consciousness for Education and strong commitment to the vigorous promotion.
(ii) The provision of free universal basic education for every Nigerian child of school-going age.
(iii) Reducing drastically the incidence of dropout from the formal school system (through improved relevance, quality and efficiency)
(iv) Catering for the learning needs of young persons who, for one reason or another have had to interrupt their schooling through appropriate forms of complementary approaches to the provision and promotion of basic education
(v) Ensuring the acquisition of the appropriate level of literacy, numeracy, manipulative, communicative and life skills as well as the ethical, moral and civic values needed for laying a solid foundation for life-long learning (Etim, 2003, pg 72).

To actualize these objectives different school subjects are imperative for the learner. Prominent of these subjects is Mathematics whose objectives of learning vary from one level to the others. At the upper basic level of education it includes:

(i)   Generating interest in mathematics and providing a solid foundation level for everyday living
(ii) Developing of computational skills in students
(iii) Fostering the desire and ability of accuracy to a problem at hand
(iv) Development of accurate, logical and abstract thinking
(v)   Development of ability to recognize problems and solve them with related mathematical knowledge
(vi) Provision of necessary mathematical background for further education
(vii) Stimulation and encouragement of creativity (Badmus, 1997, pg 56-57)

Critical analysis of the objectives of learning mathematics point to the actualization of the cardinal objectives as clearly stated in (v) of the UBE as stated above. No wonder mathematics is an indispensable subject and is accorded a premium position among school subjects. It is a subject that every student must register and pass, as well as advance to other levels in future. In spite of the premium position occupied by mathematics at the upper basic level of education, there has not been a remarkable improvement in the students' performance as corroborated by Odubunmi (2006) as revealed in Table 1 below, it shows the trend of students' performance in

_____

Nigeria for the West African Senior School Certificate Examination (WASSCE) before and after the commencement of UBE.

Table 1
Students' Performance in Mathematics from 1991-2004 in the WASSCE

Year	Number of candidates	% of Credit pass	% of failures
1991	294,079	11.10	88.90
1992	265,491	21.69	78.31
1993	291,755	10.93	89.07
1994	518,118	16.50	83.50
1995	262,273	16.50	83.50
1996	514,342	10.00	90.00
1997	616,923	7.60	92.40
1998	756,080	11.15	88.75
1999	756,080	18.25	81.75
2000	643,371	32.81	67.19
2001	NA	36.55	63.44
2002	1,078,961	31.56	68.44
2003	939,506	36.91	63.09
2004	844,525	34.52	65.48

Source: West African Examination Council Annual reports in Odubunmi (2006)

The above dismal performance in a core subject like mathematics as shown above is one of the pointers to non-attainment of quality assurance in the UBE in particular and Nigerian educational system in general. Various research conducted by different scholars indicated some factors that have contributed to this poor student performance in mathematics. According to Olaoye (2004) mathematics teachers' experience in handling the subject with the students was found to exert greater influence on the academic performance of students. It was posited that the more experienced a mathematics teacher was in teaching the course the more they made innovations to make the subject exciting to the learners compared to new entrants into teaching professions. Other reasons advanced that explain the lack of quality assurance in mathematics' learning outcomes included inadequate knowledge of subject matter by the teachers (Onocha and Okpala, 1995), irrelevant and inadequate instructional facilities (Akinlua and Popoola, 1998), some topics perceived to be too difficult (Oyedeji, 1996) and many more. Some of the aforementioned factors indicted mathematics teachers as a cause of non-attainment of quality assurance in the schools' mathematics as a subject in spite of every successive government spending huge amounts of money to facilitate the teaching and learning of mathematics. However, no one has ever considered the nature of workload and its attributes inclusively, which mathematics teachers are subjected to; especially considering the numbers of students taking the subject in most cases outnumbered all other subjects combined. It is against this background that the present study is designed to examine mathematics teachers' course period assignments vis-à-vis the students' performance in mathematics and how it correlates to quality assurance in upper basic education (also referred to as junior secondary school).

_____

Conceptual Framework of Quality

The concept of quality in education is quite relative as everyday use in most cases refers to different interpretations. According Oxford Dictionary of Current English quality is defined as goodness or worth, superior something that is special or that distinguishes a person or thing. Corroborating this Madugud & Guyit (2003) opined that quality could refer to high standard when necessary and sufficient inputs went into the final products for consumption or use, otherwise low quality is achieved when necessary inputs into products are insufficient and thereby not capable of satisfying the needs of the people as required. Referring to quality in education one is trying to transform the degree of performance of teachers in satisfying the needs and curiosity of the learners. This is to say that quality of teachers and other infrastructural facilities available determine the standard of the services rendered.

In the perception of Madugud & Guyit (2003) quality in education has three attributes. The first attribute of quality refers to perception of a school inspector when visiting a school in terms of performance in the 3Rs, acquisition of givens fact in liberal and science concepts by the students, and assessment of idleness, industriousness, and punctuality to mention a few.

From economic and productive angles, quality is seen as the rate of returns to the economy for the investment made in it. The conception being held here is that 100 percent success of students in public examination without any functional satisfaction to them and the society cannot be regarded as quality. By combining these three attributes quality in education is judged by the ways students pass excellently in examination as set by external bodies and at the same time determines the quality of schools and teachers. Furthermore, quality is ensured when the educated students are able to satisfy the needs of a given society's economy and not solely dependent on that society to sustain them. This shows lack of quality in the former UPE which produced educated students that were not self-sustained, but found their lot one of scouting around the street for non-existent white collar jobs. The present UBE is committed to compulsory education as against the previous voluntary one of UPE to address Nigeria's lingering development problems.

Statement of the Problem

The study was designed to examine mathematics teachers' workload vis-à-vis the students' performance in Mathematics and as correlates of quality assurance in Upper Basic Education. Specifically, this study sought to answer to the following research questions:

RQ$_1$: What relationship exists between mathematics teachers' genders and learning outcome of students?

RQ$_2$: What relationship exists between mathematics teachers' qualifications and learning outcome of students?

RQ$_3$: What relationship exists between mathematics teachers' subject taught and learning outcome of students?

RQ$_4$: What relationship exists between mathematics teachers' academic workload and learning outcome of students?

As a result the following hypotheses were generated for the study at the significant level of 0.05,

Ho$_1$: There is no significant relationship between mathematics teachers' gender and students' performance.

Ho$_2$: There is no significant relationship between mathematics teachers' qualifications and students' performance.

Ho$_3$: There is no significant relationship between mathematics teachers' subject taught

and students' performance.

Ho₄: There is no significant relationship between mathematics teachers' academic workload and students' performance.

Methodology

Research Design

The research design for the study was descriptive as the research was not intended to manipulate the independent variables like mathematics teachers' genders, qualifications, subject(s) taught and workload. Rather it tried to assess the influence of these variables on the dependent variable of students' performance in Mathematics at upper basic education levels.

Population

The population for this study involved all the junior secondary schools' mathematics teachers and their students in Ojo and Badagry local government areas of Lagos State public junior secondary schools with focus on Upper Basic Education Level 2 (Junior Secondary School, form 2).

Sample and sampling techniques

Twenty public secondary schools in Ojo and Badagry local government areas of Lagos State were selected based on the available mathematics teachers in all of the upper basic education level 2 (i.e. JSS2). Meanwhile, a sample of thirty-two mathematics teachers and one thousand two hundred upper basic education level II students were chosen purposively based on the criteria that these teachers taught these students during their upper basic education level I term.

Instruments

Two instruments were used for the study. These included an adapted achievement test in mathematics in line with the settings of National Examination Council (NECO), an examining body which conducts entrance examination for all the unity schools in Nigeria. The other instrument was a self-developed instrument for mathematics teachers labelled, "Questionnaire for Mathematics Teachers' Workloads in Upper Basic Education level 2" (Questionnaire). It contained mathematics teachers' bio data and relevant statements to the workload of teachers.

Validation of Instruments

The adapted achievement test was given to five mathematics teachers outside the scope of the study to ascertain that it paralleled to the National Examinations Council (NECO) standards and to make necessary corrections. The draft copy was administered to twenty five upper basic level 2 students over a period of three weeks. A final draft was drawn after incorporating all suggestions made by the mathematics teachers involved. This reduced the achievement test items to forty multiple objectives questions from the original fifty questions due to the deletion of ambiguous questions. In a similar manner the draft copy of the mathematics teachers' Questionnaire instrument was given to two experts in Language and Mathematics to offer constructive criticism to the language pattern and adequate coverage of the study areas. It was later administered on ten mathematics teachers, who were not included in the final selection for the study, to offer constructive criticism to it as a first draft. The final draft of the Questionnaire

was subsequently administered to another set of teachers with comparable attributes, who were not included in the study, to ensure that represented items did not contain double interpretations to the final respondents.

Reliability of Instruments

The first draft of the achievement test in mathematics which contained fifty multiple objective questions which students outside the final selected ones responded to resulted in a final draft of forty multiple objective questions were the ambiguous ones were expunged as presented over an interval of three weeks. The Pearson moment correlation coefficient of the achievement test was computed and found to be at 0.78; while the final draft of the mathematics teachers' Questionnaire showed reliability coefficient of 0.83. The study considered both instruments as appropriate to stand the test of time.

Administration of Instruments

Personal contact was made by the researcher to the affected schools to verify that the selected mathematics teachers had taught the affected students since their upper basic level 1 term (JSS I). Sequential to the school principals' prior permission, the instruments were administered personally to mathematics teachers who in turn assisted the researcher to administer the achievement test which took one week to complete due to logistic reasons.

Procedure for data collection

Direct mode of collection was used in retrieving the instruments from the mathematics teachers, who in turn assisted in collecting the administered achievement test from the students. This was carried out on a specified day by different teachers with all tests collected without exception on that day, time, and location.

Data scoring and analyses

The achievement test was scored at forty points as each right and wrong answers attracted one and zero marks respectively and was coded to identify the mathematics teacher for each test collected to ensure proper alignment. Analysis was carried out using simple percentages, Pearson correlation, t-test and one way ANOVA. Pearson correlation was used to show the extent of relationship between the identified mathematics teachers' attributes and students' performance; and ANOVA was used for more than two variables under consideration and students' performance.

Findings and Discussions

Table 1
Teachers' Gender with Corresponding Number of Students

Teachers' Genders	Males	Females	Total
Number of Students	560	640	1200
Percentages	47	53	100

Table 1 showed that 560 students representing 47% were taught Mathematics by the male teachers and 640 students representing 53% were taught Mathematics by female teachers. This demonstrated that out of thirty two mathematics teachers involved in the study and in spite fewer female teachers, who totalled 14 and represented 44% of the selected teachers compared with 18

male teachers who represented 56%, the female teachers taught greater percentages of students Mathematics. By implication the teaching and learning of Mathematics should not be gendered skewed as having an impact on the performance of students. Instead all the students should be encouraged to embrace its learning with ease as compared to its compulsory tendency.

Table 2

Teachers' Qualifications with Corresponding Number of Students

Teachers' Qualifications	NCE	HND/ PGDE	B.Sc./ PGDE	B.Sc./ED	M.Sc./ED	Total
Number of Students	385	230	320	168	97	1200
Percentages	32	19	27	14	08	100

Table 2 described mathematics teachers' qualifications along with the numbers of students found in each group taught by them. 385 students representing 32% were taught by the National Certificate of Education (NCE) holders who totalled 12 representing 38% of the teachers, 230 students representing 19% were taught by the Higher National Diploma (HND/PGDE) holders who totalled 8 representing 25% of the teachers, 320 students representing 27% were taught by the Bachelor of Science (B.SC/PGDE) holders who totalled 4 representing 13% of the teachers, 168 students representing 14% were taught by the Bachelor of Science in Education (B.SC/ED) holders who totalled 5 representing 16% of the teachers, and 97 students representing 8% were taught by the Masters of Science in Education (M.SC/ED) holders who totalled 3 representing 8% of the teachers. This demonstrated that the study took cognizance of teachers' qualifications as one of the core factors in the determination of assuring the quality delivery of Mathematics contents in the school system. By simple indication the highest number of students taught per teacher of Mathematics seemed to skew towards the least qualifications holders and the least number of students taught per teacher of Mathematics went to the highest qualifications holders, who were also the fewest in number of teachers. It thus seemed that the teachers with higher qualifications had the higher attrition rates or that the lower qualifications holders were yet to obtain the additional qualifications.

Table 3

Teachers' Subject(s) Taught per Term with Corresponding Number of Students

Teachers' Subject(s) Taught	Mathematics Only	Mathematics with Other(s)	Total
Number of Students	630	570	1200
Percentages	53	48	100

Table 3 described subject(s) taught by mathematics teachers in a term along with the numbers of students. For the Mathematics alone 15 mathematics teachers representing 47% were found to teach 630 students representing 53%. For Mathematics with either science and/or social science subject(s) taught there were 17 teachers representing 53% and they were found to teach 570 students representing 48%. For mathematics teachers to handle more than Mathematics alone in the junior secondary school setting with such teeming student populations is an indication that something is quite wrong. Especially in light of the additional burden incurred by teachers who cover content areas of Mathematics with other subject(s) attached. The implication may be an increase in the practice to teach towards the examination as against the subject-matter and knowledge acquisition to foster better understanding of the subject.

Table 4
Teachers' Workload per Week with Corresponding Number of Students

Teachers' workload	6-12	13-18	18-24	25-30	17-22	23-28	29-34	35-40	Total
Subject (s) Taught	Mathematics Only				Mathematics with Other(s)				
Number of Students	66	75	81	67	107	237	206	361	1200
Percentages	5.5	6.3	6.8	5.6	8.9	19.8	17.2	30.1	100

Table 4 described the workload of mathematics teachers in a week along with the numbers of students. Those handling Mathematics alone (15 teachers) had the least and highest workload of 6 and 30 periods in a week respectively, and total students in these categories numbered 289 represent 24%. On the other hand those handling Mathematics with other subject(s) (17 teachers) had the least and highest workload of 17 and 40 periods in a week respectively, and total students in these categories totalled 911 representing 76%. One would see that the numbers of students under those handling Mathematics with either science and/or social science was too extreme to bring about meaningful learning outcomes on one hand and not in conformity the international standard ratio of one teacher to thirty students in a classroom. This suggested the need to make mathematics teachers responsible for teaching Mathematics only and excuse them from teaching additional subject(s). Moreover, it points to an increased attrition rate of leaving the teaching profession to others, where teachers found it too demanding. By implication qualified hands might be lost to other areas of human endeavours, which may turn the education sector to mediocre quality.

Table 5
Academic Performance of Students in Mathematics

Interval Performance	0-39	40-44	45-49	50-54	55-59	60-64	65-69	70 & above	Missing	Total
Students	440	48	71	54	76	62	64	384	1	1200
Percentages	36.7	4.0	5.9	4.5	6.3	5.2	5.3	32.0	0.1	100

Table 5 described the academic performance of students in the administered achievement test in Mathematics. It found that almost half of the entire student sample (440 students representing 36.7%) had scores between (0-39) percent which is considered as failure based on NECO's criterion standards and the WASSCE guidelines. Though quite appreciable numbers of students (384 students representing 32%) had scores between (70 & above) percent; still quality assurance in education is ascertained as when in most cases failure is so minimal as if at all to exist. By implication more attention needs to be given to other salient factors that might have direct and indirect impact on the academic performance of students in Mathematics. As Mathematics often

_____

regarded as the language of technology, the need for improvement is imperative otherwise the pace of national development might take retrogressive form.

Table 6
Relationship between Teachers' Gender and Students' Performance

Variations	Correlation coefficient	Significant
Teachers' Gender	0.062	Strong relationship
Achievement of Students		

RQ$_1$: What relationship exists between mathematics teachers' genders and learning outcome of students? Table 6 described the relationship between teachers' gender and the academic performance of students, and it was found to be positive though with a weak correlation coefficient of 0.062. In other words the academic performance of students in Mathematics is influenced by the gender of the mathematics teachers concerned. This confirmed that the quality assurance in the academic performance of students in Mathematics without any doubt has gender implications.

Ho$_1$: There is no significant relationship between mathematics teachers' gender and students' performance.

Table 7
T-test of Relationship between Teachers' Gender and Students' Performance

Variations	t-calculated	t-ratio	df	Significant
Teachers' Gender	106.425	1.645	1198	P<0.05*
Achievement of Students				

* Significant

Table 7 described the t-test relationship between teachers' gender and the academic performance of students, and it was found significant (t-cal>t-ratio, df = 1198; P<0.05) thereby making the null hypothesis one to be rejected so that there is a significant relationship between mathematics teachers' gender and students' performance in Mathematics. Students taught by male teachers seemed to do better academically than those taught by female teachers.

RQ$_2$: What relationship exists between mathematics teachers' qualifications and learning outcome of students?

Table 8
Relationship between Teachers' Qualifications and Students' Performance

Variations	Correlation coefficient	Significant
Teachers' Qualifications	0.06	positive relationship
Achievement of		

_____

Students		

Table 8 described the relationship between teachers' qualifications and the academic performance of students, and it was found to be positive with a weak correlation coefficient of 0.060. This is to say there is a relationship between the academic performance of students in Mathematics and the mathematics teachers' qualifications, but whether it is significant could not be ascertained for now. As a result, emphasis should be placed on the recruitment and retention of qualified and professional teachers to make the learning of Mathematics reach an optimal level of quality assurance.

Ho$_2$: There is no significant relationship between mathematics teachers' qualifications and students' performance.

Table 9

ANOVA of Teachers' Qualifications and Students' Performance

Variations	Sum of Squares	Mean Squares	df	F-calculated	F-ratio	Significant
Between Groups	4631.816	1157.954	4			
Within Groups	1278053.200	1070.396	1194	1.082	2.370	P>0.05
Total	1282685.016	-	1198			

Table 9 described the one way ANOVA of teachers' qualifications and the academic performance of students, and it was found not significant (F-cal<F-ratio, df={4, 1194}; P>0.05) thereby making the null hypothesis two not rejected so that there is no significant relationship between mathematics teachers' qualification and students' performance in Mathematics. This confirmed the earlier assumption that the relationship might not be substantiated on a general level in research question two. However, this does not translate that teachers without these qualifications should be allowed to teach Mathematics.

RQ$_3$: What relationship exists between mathematics teachers' subject taught and learning outcome of students?

Table 10

Relationship between Teachers' Subject(s) Taught and Students' Performance

Variations	Correlation coefficient	Significant
Teachers' subject taught	-0.035	Negative relationship
Achievement of students		

Table 10 described the relationship between teachers' subject(s) taught and the academic performance of students. It was found to have a negative correlation coefficient (-0.035). There is contrast relationship between the academic performance of students in Mathematics and the number of subject(s) taught by mathematics teachers. This may not be unconnected to inadequate coverage of contents areas in Mathematics as a result of greater responsibility related to covering additional subject(s) on the part of teachers. It also may not be unconnected with the professional qualifications of teachers involved. Meanwhile, it may be inferred that a status quo of subject

specialists' team teaching in a situation of inadequate numbers or qualifications of mathematics teachers be adopted.

Ho₃: There is no significant relationship between mathematics teachers' subject taught and students' performance.

Table 11
T-test of Relationship between Teachers' Subject(s) Taught and Students' Performance

Variations	t-calculated	t-ratio	df	Significant
Teachers' Subject(s) taught	102.276	1.645	1198	P<0.05*
Achievement of Students				

* Significant

Table 11 described the t-test relationship between teachers' subject(s) taught and the academic performance of students, and it was found significant (t-cal>t-ratio, df = 1198; P<0.05) thereby making null hypothesis three rejected so that there is a significant relationship between mathematics teachers' subject(s) taught and students' performance in Mathematics. Students handled by mathematics teachers who teach Mathematics alone performed better than their counterparts who were handled by mathematics teachers that taught Mathematics with either science and/or social science subject(s) in schools. By inference team teaching is one option that may be encouraged among mathematics teachers so that those with additional responsibilities may be assisted to concentrate on their primary assignment of disseminating mathematical knowledge. This does not mean that teachers should not perform some administrative work.

RQ₄: What relationship exists between mathematics teachers' academic workload and learning outcome of students?

Table 12
Relationship between Teachers' Workload and Students' Performance

Variations	Correlation Coefficient	Significant
Teachers' Workload	-0.235	Negative relationship
Achievement of Students		

Table 12 described the relationship between teachers' workload and the academic performance of students and it was found to have a very sharp negative coefficient of -0.235. There is contrast relationship between the academic performance of students in Mathematics and mathematics teachers' workload. This might be connected to improper teaching and inadequate coverage of contents areas in Mathematics that emanated from the additional responsibilities of the teachers. Meanwhile, it may be suggested that a minimum workload should be assigned to the mathematics teachers in order to ensure a good standard regarding students' performance. In addition, the coverage of topics may be shared among the available mathematics teachers so that no teacher is overloaded with other assignments than the teaching of mathematics.

Ho₄: There is no significant relationship between mathematics teachers' academic workload and students' performance.

Table 13
ANOVA of Teachers' Workload and Students' Performance

Variations	Sum of Squares	Mean Squares	df	F-calculated	F-ratio	Significant
Between Groups	89078.571	12725.510	7	12.698	1.94	P<0.05*
Within Groups	1193606.4	1002.188	1191			
Total	1282685.0	-	1198			

*Significant ($F_{\{7, \infty\}} \approx F_{\{8, \infty\}}$)

Table 13 described the one way ANOVA of teachers' workload and the academic performance of students and it was found significant (F-cal>F-ratio, df = {7, 1191}; P<0.05) thereby making null hypothesis four rejected so that there is a significant relationship between mathematics teachers' workload and students' performance in Mathematics. This showed that the more workload mathematics teachers are given the less quality assurance of students' performance in the subject. In fact, this study corroborated the findings of Ashton & Crocker (1987) and Sim (1990) that observed at variant that students' dismal performance could be traced to the number of assigned workload (courses) given to a teacher, stressing the higher the workload (courses) the lower the performance of students.

Conclusion and Recommendation

Findings have shown that dismal performance of students and attainment of quality of Mathematics curriculum depends on quite a number of factors as enumerated above. In view of these it is suggested that the teaching of Mathematics should be given additional attention as its unique position in the contemporary period cannot be overemphasized. More qualified and professional hands should be encouraged to engage in teaching Mathematics in other to avert the perennial dismal performance of students. Furthermore, mathematics teachers' workload should be such that it allows for adequate content coverage, and thus minimizes teaching towards passing the examination alone. Meanwhile, it is recommended that schools implement team teaching of Mathematics so that they may pool knowledge of different mathematics topics to maximize students' understanding. Still this (team teaching) should not compromise addressing the need to establish equitable and effective workloads to attain a high standard of quality assurance in mathematics education.

References

Akinlua A.A. & Popoola A.A. (1998). Evaluation of difficult topics among secondary schools' Mathematics. *Journal of Mathematics Association of Nigeria*, 1, 4-8.

Ashton P. & Crocker L. (1987). Systematic study of planning variations: The essential focus on teacher education reform. *Journal of Teacher Education*, 38, 32-38.

Badmus, G.A. (1997). Mathematics education in Nigeria. *Science Mathematics and Technology Education in Nigeria: Proceedings of the 11th annual congress of the Nigeria Academy of Education, Lagos*, 54-65.

Etim R.E. (2003). Actualising the vision of UBE in Nigeria through effective funding. In Philosophy of Education Association of Nigeria's *Teacher Education and UBE: Annual Book of Reading* (pp. 72), Nigeria: Saniez Publication Nigeria Ltd.

Madugud J.E. & Guyit R. (2003). Preparing teachers for the Universal Basic Education (UBE) programme: An examination of the quality of pivotal teacher training programme (PTTP). In Philosophy of Education Association of Nigeria's *Teacher Education and UBE: Annual Book of Reading*, Nigeria: Saniez Publication Nigeria Ltd.

National Examination Council (2004). Senior School Certificate Examination *General Mathematics-Objective paper I.*

Odubunmi E.O. (2006). Science and Technology Education in Nigeria: The Euphoria, the frustration and the hopes. *21st Inaugural Lecture Series*. Lagos State University, Nigeria.

Olaoye, L.A.A. (2004). *An evaluation of the mathematics curriculum of the Nigerian Certificate in Education programme*. Unpublished PhD Thesis. University of Ibadan, Nigeria.

Onocha C.O. and Okpala P.N. (1995). The effects of systematic assessment procedures on students achievement in Mathematics and science subjects. *UNESCO-AFRICAN (A six-monthly journal of the Dakar UNESCO Regional Office in Africa)*, (10), 55-56.

Oyedeji O.A. (1996). Perceived causes of underachievement in Mathematics among Nigerian secondary school students. *Journal of Educational Discussion and Researc,h* 2(1), 101-106.

Sim, W.K. (1990). Factors associated with job satisfaction in work centrality among Singapore teachers. *Comparative Education,* 26(2&3), 259-276**.**