

Influence of Teachers, Professional Qualification and Area of Specialization on the Implimentation of Environmental Education Curriculum in Cross River State - Nigeria

Ishiekwen Adie Emmanue, and Benjamin Ayua Ambe

Abstract—The main purpose of this study was to examine teacher's qualification; Area of specialization and the implementation of the environmental education curriculum in Cross River State, Nigeria. Two hypotheses were formulated to guide the study: Teachers' professional qualifications do not significantly affect the implementation of Environmental Education curriculum. There is no significant relationship between teacher's area of specialization and the implementation of the environmental education curriculum in Cross River State. Literature review was carried out according to the variables under study. The ex post-facto research design was adopted for the study. A sample of four hundred and eighty (480) teachers was randomly selected for the study. The selection was done through the stratified and simple random sampling techniques. The questionnaire was the main instrument used for data collection. The reliability estimate of the instrument was established through the split-half reliability method and its associated spearman-brown prophecy formula. The one-way analysis of variance (ANOVA), was the statistical tool employed to test the hypothesis at 0.05 level of significance. The result of the analysis revealed that Teacher's professional qualification, area of study: do not significantly influence the implementation of environmental education curriculum in Cross River State – Nigeria.

Keywords—Teachers' Professional Qualification, Area of Specialization, Curriculum implementation, Environmental Education.

I. INTRODUCTION

A Major strategy for the implementation of the environmental policy goals is through effective dissemination of relevant environmental information for attitudinal change. The Nigerian National Policy on Environment identifies environmental education as a dynamic instrument for change which in both formal and non-formal settings will lead to the inculcation of environmental ethics, values and skills to accept the responsibility of protecting the environment and ensuring rational utilization of natural resources. The policy stipulates that government shall promote comprehensive curriculum reviews that integrate

environment and development concepts in the educational systems.

The curriculum implies all desirable and positive experiences available to learners while undergoing an instructional, training or an educational programmed within a given context. The Baguada conference of 1985 formed the platform upon which the Nigeria Environmental Education Curriculum sprang-up. The pioneering efforts of the Nigeria Conservation Foundation founded in 1982, resulted in the launching of the Nigeria conservation strategy in 1986, Federal Environmental Protection Agency (1988), and the Natural Resource Conservation Council in 1988. The Nigeria conservation foundation also pressed government for the inclusion of conservation education in school curricula. Besides, it promoted conservation Education in Cross River, Borno, Old Bendel and Lagos States; and also prepared the draft proposal for a \National Conservation Education Strategy that was discussed at the Yankari Game Reserve Conference in 1988. The National Conservation Education Strategy, which was discussed at the Conference, was adopted in 1990 by the National Council on Education as part of the National Policy on Education.

Environmental education concept was incorporated into the curriculum of citizenship education course. This process of incorporation was completed at a workshop in 1992 sponsored by Nigeria Educational Research and Development Council and United Nations Education, Scientific and Cultural Organization. The process of the development of the environmental education curriculum engaged several non-governmental Organizations such as Nigeria Conservation Foundation (NCF), World Wide Fund for Nature (WWF), several government agencies such as Federal Ministry of education, individual teachers of secondary Schools, Universities and College of Education Lecturers amongst others, in series of brainstorming, workshops, symposia and seminars.

Nigeria is broken into three regions; the South, the Middle belt, and the Sahel regions respectively. This regionalization is reflected in the design of the environmental education curriculum. Such practice is to allow the implementers the opportunity to include their cultural and

Ishiekwen Adie Emmanuel, Department Of General Studies Education, Federal College Of Education, Obudu, Cross River State – Nigeria.

Benjamin Ayua Ambe, University Of Calabar, Calabar, Cross River State - Nigeria.

local experiences into the curriculum content. The environmental education curriculum is broken down into five categories to meet the various groups of learners at their levels namely: non-formal learners, primary school learners, secondary school learners and secondary school learners, as an ingredient for public awareness and action on the environment, the National Environmental educational Curriculum focuses on the elements of the environment and their interactions and interdependence. Thus, it is an educational intervention 'about' the environment 'in' the environment and 'for' the environment. The environmental education curriculum at all levels is structured into four areas namely: ecological foundation, human environment development, environmental change, and sustainable development to allow for easy infusion of environmental education objectives into existing school subjects.

The activities carried out by a teacher in a school system include: setting objectives, planning instructional strategies, selecting and arranging instructional materials, setting and marking examination questions, motivating students, attempting to infuse discipline and control in the classroom among other functions. To aid the curriculum implementation process, the teachers' responsibilities listed in the 1999 Environmental Education Curriculum existing subject programmed as appropriate, developing students' values and skills through value classification and analysis, group dynamics and decision making, encouraging student participation by involving students in firsthand experiences. No matter the wealth and beauty of the curriculum plan, its implementation determines the success level. Teachers work more closely with the learners, as such they occupy strategic positions in the selection of worthwhile school learning experiences. They implement the curriculum that has been approved by the relevant bodies.

The aim of the work is to examine the effects of teacher's professional qualification and how they predict the implementation of the environmental education curriculum; determine the effects teacher areas of specialization have on the prediction of the implementation of the environmental education curriculum. Several years after the formulation of the Nigerian National Environmental Education Core Curriculum, environmental education is not yet taught as one of the schools subjects in Nigeria especially Cross River State in spite of the State's emphasis on tourism. The curriculum implementers (teachers) seem to be facing challenges that have made the implantation of the environmental education curriculum impossible in the school system.

Despite the combined efforts of Nigeria Educational Research and Development Council and several Non-governmental Organizations such as Nigeria Conservation Foundation, Living Earth etc, aimed at including environmental education as a core subject in secondary and primary school; the course is not yet taught as a school subject. A critical look at primary and secondary schools textbooks reveals that environmental education concepts are

clearly not written.

Due to the time lapse between the curriculum design and implementation of the curriculum, one is concerned about the forces that have worked against this laudable programmed of the Federal Government. Could the problem be that of teachers who are seen as the most crucial link between the target audience (learners) and the environmental education curriculum? Teachers can make or mar the curriculum implantation process. It is in the light of this that the researchers intend to find out why environmental education is not being taught as a subject yet in schools several years after it was supposed to have take off. Is it that teachers do not understand the environmental education curriculum, or is the environmental education curriculum not included in the curriculum of teacher education?

Specifically, the researchers want to investigate two teachers' characteristics that affect the implementation of the environmental education curriculum. The questions the researchers want to answer is: How is the implementation of the environmental curriculum affected by teachers' qualification, and their area of specialization.

Hypotheses

The following hypotheses were formulated for this study:

1. Teachers' professional qualifications do not significantly affect the implementation of environmental education curriculum in Cross River State.
2. There is no significant relationship between teachers' area of specialization and the implementation of environmental education curriculum in Cross River State.

Teachers' professional qualification and curriculum implementation

Many textbooks, encyclopedia and journal articles have been published on teachers professional qualifications and teaching effectiveness. Some authors have advanced theoretical arguments in support of the topic. Among the works are those of Synder, Bolin and Zumuralf (1999), Fullan (2003), Duruamaku (1995), Fennema and Franke (2006), Fatini (2006), Elton (2005) and the laws and guidelines presented by the Teachers Registration Council of Nigeria (2005). Though Brady and Kenny (1999) opinion was against teachers professional qualification and their effectiveness in teaching.

Kantor (2007) and Anyacho (2002) provided empirical perspectives to the topic as did Achunine (2001), Eliot, Kratochill, Cook and Travex (2000), House (2003) and Ifiok (2005). Because teachers implement the curriculum on a day to day basis, they play an enormous role in the effective implementation of any curriculum. Synder, Bolin and Zumuralf (1999) stated that the public is demanding results and holding teachers accountable when the results are not meeting expectations. The teacher has been forced to become

more expert, and more professional. There are still some who believe that anyone can teach. But teachers are having increasing success in demonstrating that persons employed as teachers should know something as well as the subject matter they are going to teach.

Fennema and Franke (2006) opined that the perception of teachers for effective teaching of any subject depends to a large extent on the teachers' understanding of the nature of the subject matter and that perception of proper teaching is a consequence of a teacher being able to pass-on the content of the subject matter. Ifiok (2005) also opined that a lack of required background and orientation relevant to curriculum, on the part of the teacher, leads to poor attitudes towards the implementation of a new curriculum, on matter how expertly the pages of the curriculum were designed and put together.

Ukanupong (2000) affirmed that training has positive statistical significant effect on psychology of a teacher's self efficacy towards teaching. He goes further to state that teachers with lower educational qualifications will definitely implement the curriculum in the wrong way because quacks who jumps into teaching due to lack of job. House (2003), confirms that the shortage of qualified teachers is because the proportion of graduates of Education that work as teachers is low, though it varies, according to the type of teacher education, teachers' attitude and their approach to work; which is determined by the motivation from their employers. Fennema and Franke (2006) in their study of the effect of teachers' behavior and achievement found that highly qualified teachers follow good approaches in teaching and that students taught by this grade of teachers have greater academic performance because of positive attitude of the teachers. Fennema and Franke (2006) also stated that highly qualified teachers present their materials in an interesting way that gives the students a feeling of understanding and mastery of the subject.

In ascertaining the relationship between the qualification of environmental education, teachers and their understanding of the subject matter. Fien (1999) stated that, if it is desired that teachers have better understanding of their functions, consideration needs to be given for the inclusion in their curriculum topics towards Environmental Education.. However, Brady and Kenney (1999) found out that there was no significant relationship between natural science teachers' scores on a test and their educational qualifications. This is to say that though teachers' educational qualification may be very important, teacher's perception of the curriculum contents may not actually depend on those qualifications alone. It is obvious that a teacher cannot communicate the knowledge he does not possess. So, the first responsibility of a teacher is to be thoroughly knowledgeable as well as posses' pedagogical techniques for making teaching effective. This was the view of Gayford and Dorion (2004) who believed that the teachers' principal duty is instructional. Students must be taught what they need to know so that when they leave school

to face the challenges of life, they will brace up to such challenges. Wallace (2003) explained that the main qualities of an effective teacher include good knowledge of the subject, perception of the content and effective methods of presenting the curriculum. Alade (2006) observes that the type of training a teacher receives is a major factor in determining the quality of the teachers' perception of the curriculum implementation and that his performance is a function of the background education he had.

From the foregoing, one may therefore conclude in the words of Elton (2005) that "no teacher can perceive the process of education beyond the limits of his mental culture. It is imperative that a teacher has a broad and liberal education, sound knowledge of the subject, a sound methodology, knowledge of child psychology and be knowledgeable about social factors affecting a child that comes to school. He must continue to read widely and deeply to be able to keep up with new developments. Moreover, he must be academically competent in the subject or subjects he teaches (Achunine, 2001).

Kantor (2007) studied elementary teachers in North and South Carolina to determine if certain professional teaching variables influenced curriculum implementation. One of the professional teaching factors studied was degree earned. He found that teachers employed by schools practicing 'the methods are the key' view (n=101) had (1) more teachers teaching without a College degree (18.8%), (2) more teachers teaching without a degree in education (28.7%), (3) fewer teachers teaching with master in education (40%). Conversely, teachers employed by school practicing the 'teachers are the key' view (n=74) had (1) fewer teachers teaching without a college degree (6.7%), (2) fewer teachers teaching without a degree in education (21.6%), (3) more teachers teaching with master degree in education (8.1%). One of the professional teaching factors studied was degree earned. He found that teacher's professionalism and years in service significantly relates with his success in curriculum implementation.

Teachers' areas of specialization and curriculum implementation

Area of specialization is the course; subject or specific field a teacher studied or majored in while undergoing the teacher training programme. It is common knowledge that a teacher cannot give what he does not have. In the Nigeria school system; due to lack of teachers in some subject areas, any teacher could be assigned to teach any subject at any time and at the principals' discretion. Has this short cut to teaching any effect in the overall curriculum implantation process? Teacher area of specialization has a large body of scholarship spread across the years. Some works like those of Emeh and Enuokoha (1995), which provided theoretical support for the importance of area of specialization and teachers effectiveness. Also, Durojaiye (1986), Ifiok (2005),

Ekpenyong (1990), NERDC (1996), Green (1996), Lawrenz (1995), and Amadi (1987) all argued from a theoretical perspective the importance of area of specialization in teaching. The empirical research findings of Patton (2000) and Okpala (1999) also have a bearing on the teaching area of specialization and teaching effectiveness.

Durojaiye (1986) stated that the major task of a teacher is to guide the students to acquire the knowledge he has acquired, to train his pupils in social, technical and academic skills and to guide the learning process which he has passed through himself. Ifiok (2005) observed that lack of subject based-qualified teachers hampers curriculum implementation in most post-primary schools in Nigeria. Green (1996) opined that the first step in educational reform is to improve the method of training teachers based on their various fields of specialization in order to produce well qualified teachers for efficient curriculum implementation. Green (1996) carried out a research work on the appraisal of the implementation of the National Policy on Education (NPE) in Cross River State: implication for physics teaching in the new millennium. The researcher developed a 15 point questionnaire which was a structured obtain information on qualification (s). Nine schools were used for the study. The findings revealed that most of the physics teachers in the (3) three Local Government Areas sampled were not trained in the subjects they were teaching. Their shallow knowledge in these areas made them to exhibit in effective teaching characteristics as follows: mystification of the subjects, disregard for the curriculum, and test and evaluation are done on familiar questions and marks are generously awarded to give the impression of good teaching.

Green (1996) stated that a strong background in the subject for teachers is a necessary and important indicator of their ability to teach the subject. Lawrenz (1995) observed that teachers' knowledge on the subject matter is positively related to student's achievements. Subject matter specialization is 'sine qua non' for every teacher. Generally, it is assumed and expected that the teacher must acquire a reasonable measure of knowledge of the subject in order to reasonably cope with the demands of teaching. Area of specialization culminates to subject matter knowledge; knowledge is dynamic, and the acquisition of current information in sometimes costly and not easy to come by. The greatest weakness of subject matter specialization of teachers in secondary english lies on their college training. By this statement, the author recognizes that College work serves to adequately equip would-be teachers with sufficient knowledge of the content of their subject of specialization

II. METHODOLOGY

The ex-post-facto research design was used for the study. This is because is a systematic empirical inquiry in which the researcher does not have direct control of the independent variables because their manifestations have already occurred

or because they are inherently not subject to manipulation. Inferences about relationships among variables are made without direct intervention of independent variables. The stratified random sampling technique was used for this study. This is because the population is homogeneous and contains definite subsets. Firstly, to select the sample schools, all the 250 schools in the study area were stratified into three (3) based on the educational zones of Calabar (81 schols), Ikom (91 schools), and Ogoja (78 schools). So, all the schools in Calabar zone formed stratum I, those in Ikom stratum 2 and Ogoja stratum 3. The sample was further stratified into male and female.

A hat-and-draw simple random method was adopted in each zone to select the three schools used for the study giving a total of twelve (12) schools. From each of the twelve schools, forty respondents were selected using the hat-and-draw simple random sampling technique. The forty (40) respondents in each school were again stratified into male and female. Thereafter, each group of respondents (male and female) was subjected to simple random sampling technique to get the desired number of males and females. The sample for this study consists of four hundred and eighty (480) teachers. That is 13.21% of the total number of three thousand, six hundred and thirty four (3,634) teachers spread across the 3 educational zones of the State.

The instrument used for this study was a questionnaire constructed by the researcher titled "Teachers Perception of Environmental Education Questionnaire (TPEEQ)". The questionnaire was made up of three (3) sections; A, and B, there are thirty seven (37) items in all. Section A-seeks demographic data from the respondents such as: gender: (male and female), academic qualification, area of specialization. Section B seeks teachers' perception of the implementation of the environmental education curriculum. The respondents were required to rate the responses as follows:-

- Strongly Agree –SA,
- Agree- A,
- Disagree -D,
- Strongly Disagree –SD

For Section B in order to establish the extent to which the instrument measured what it purports to measure, the instrument was prepared covering the entire variables under study. The instrument was first examined by the supervisor and later face validated by two experts in measurement and evaluation. The initial pool was made up of 60 items. Some items were merged and a few others re-written for inclusion in the instrument. The items were finally cut down to 37. To determine the reliability of this instrument, a trial testing was carried out using the split-half reliability method. By this method, the researcher administered the instrument once on thirty (30) respondents. These respondents were never used for the study again. But at the time of scoring, two sets of scores were derived (odd and even). The scores derived from

the corrected with the Spearman Brown Prophecy Formula. The reliability estimate values of 0.89 and 0.86 were high enough to justify the use of the instrument for the study. The questionnaire was administered to the respondents during academic session to ensure the respondents were in schools. The researcher visited all the selected schools after having sent a letter of introduction to administer the questionnaire to the selected respondents. The researcher and his trained assistants administered the questionnaire after an appeal for unbiased responses had been made by the researcher. The researcher and his assistant stayed back to collect the completed questionnaires from the teachers.

III. TESTING OF HYPOTHESIS

In this section, each of the hypotheses was re-stated in the null form. The variables as well as the statistical techniques employed to test the hypotheses were identified and presented on tables. All hypotheses were subjected to testing at 0.05 level of significance. Teachers' professional qualifications do not significantly affect the implementation of the environmental education curriculum in Cross River State. The independent variable in this hypothesis was teachers' professional qualification, which is categorized into four (PhD, M. Ed, B.Ed and NEC), while the dependent variable was teachers' perception. One-way analysis of variance (ANOVA) was employed to test this hypothesis. The result of the analysis was presented on table 1.

The results in table 1 revealed that the calculated F-value of -2.5.56 was less than the critical F-value of 2.62 at with 3 and 476 degree of freedom. With this result, the null hypothesis was upheld. This result therefore implies that, teachers' professional qualifications do not significantly affect the implementation of environmental education curriculum in Cross River State.

TABLE I
SUMMARY OF ONE-WAY ANALYSIS OF VARIANCE (ANOVA) OF THE EFFECT OF TEACHERS' QUALIFICATION ON THE IMPLEMENTATION OF ENVIRONMENTAL EDUCATION CURRICULUM (N=480)

| Teachers Professional Qualification | N | X | SD |
|-------------------------------------|-----|-------|------|
| PHD | 8 | 47.67 | 3.12 |
| M.ED | 136 | 26.35 | 4.05 |
| B.ED, B.A.ED | 270 | 24.62 | 2.32 |
| NCE | 67 | 26.37 | 3.27 |
| Total | 480 | 29.35 | 4.53 |

| Source of Variation | SS | DT | MS | F.Value |
|---------------------|------------|-----|-------------|---------|
| Between Group | 7819.65 | 3 | -2606.55 | |
| Within Group | 5941388.89 | 476 | 1016.309256 | 2.56 |
| Total | 5869732.23 | 476 | | |

Not significant at 0.05 level, critical F-2.62, df-3,476

The dependent variable involved in this hypothesis was teachers' area of specialization categorized into for (Education, Social Science, Science and Arts); while the

dependent variable was the implementation of environmental education curriculum. The one-way analysis of variance (ANOVA) was adopted to test this hypothesis. In other words The result of the analysis was presented on table 2.

TABLE II
SUMMARY OF ONE-WAY ANALYSIS VARIANCE (ANOVA) OF THE INFLUENCE OF TEACHERS' AREA OF SPECIALIZATION ON THE IMPLEMENTATION OF THE ENVIRONMENTAL EDUCATION CURRICULUM (N=480).

| Area of specialization | N | X | SD |
|------------------------|-----|-------|------|
| Education | 176 | 32.24 | 3.01 |
| Social Science | 120 | 28.45 | 3.62 |
| Science | 85 | 26.98 | 3.09 |
| Arts | 99 | 27.34 | 2.89 |
| Total | 480 | 27.85 | 4.10 |

| Source of Variation | SS | DT | MS | F.Value |
|---------------------|------------|-----|---------|---------|
| Between Group | 71556.66 | 3 | 2385.22 | |
| Within Group | 5941388.89 | 476 | 12481.7 | 1.91 |
| Total | 5869732.23 | | | |

Not significant at 0.05 level, critical F=2.62, df- 3,476

The result in table 2 shows that the calculated F-value of -1.91 was less than the critical F- value of 2.62 at 0.05 level of significance and 476 degrees of freedom. With this result, the null hypothesis was retained. This result therefore means that, teachers' area of specialization does not significantly influence the implementation of the environmental education curriculum in Cross River State.

IV. DISCUSSION OF FINDINGS

After a careful analysis of the study, it was found out that in hypothesis one that Teacher's professional qualifications do not significantly affect the implementation of the environmental education curriculum in Cross River State. This findings is in line with the study of Fennena and Franke (2006) who opined that the perception of teachers for effective teaching of any subject depends to a large extent on the teachers' understanding of the nature of the subject matter and that perception of proper teaching is a consequence of a teacher being able to pass-on the content of the subject matter. Wallace (2003) expresses how important it is to increase the number of qualified teachers in the schools system. Teachers' Registration Council of Nigeria (2005) stated in its handbook that it is an offence for non-professionals to engage in teaching at any level in Nigeria.

The findings of hypothesis two show that there is no significant relationship between teachers' area of specialization and the implementation of the environmental education curriculum in Cross River State. Durojaiye (1996) stated that the major task of a teacher is to guide the students to acquire the knowledge he has acquired, to train his pupils in social, technical and academic skills and to guide the learning process which he has passed through himself. Green

(1996) agreed that the first step in educational reform is to improve the method of training teachers based on their various fields of specialization in order to produce well qualified teachers for efficient curriculum implementation..

V.CONCLUSION

Based on the result of the study, the following conclusions were reached: The professional qualifications of teachers in Cross river State do not affect the environmental education curriculum implementation. It is inferred that this is so because teachers in Cross River State have had some experienced with environmental education concepts or the sampled teachers hold the views that anyone can teach environmental education if he/she has the relevant textbooks.

Teachers' area of specialization has no effect on the implementation of the environmental education curriculum. It is inferred that with the inclusion in the environmental education curriculum document the option of the integration approach to teaching environmental educational all what the teacher needs do is incorporate environmental education concepts into his teaching syllabus. A teacher must not specialize in environmental education as a course before he/she can teach it in the secondary school.

RECOMMENDATIONS

Based on the study, the following recommendations were made:

1. Pre-employment aptitude test should be administered to would be teacher to check for elements of professional competence before they are finally employed and periodic training for teachers should be included in the school calendar.
2. Government agencies responsible for monitoring curricula implementation should make sure the environmental education curriculum is implemented in secondary schools by teachers by carrying out spontaneous checks on teachers' lesson notes, syllabus and observing them as they teach in the classroom, and where necessary revise both the environmental education curriculum and the national policy on education.

REFERENCES

- [1] Achunine, R. (2001). Further issues in school administration. Owerri: Maxjee Publication.
- [2] Akinyemi, J.A. (1998). Teacher Education. In A. adaralegbe (Ed.), a Philosophy for Nigeria Education. Ibadan: Nigeria. (116-123).
- [3] Alade, I.S.O. (2006). Promoting Effective Teaching-learning Process in the Primary School System. Journal of the Lagos State College of Primary Education, 1(1&2), 111-116.
- [4] Amadi, L.E. (1978). Principles of Curriculum Development. Uyo: Nigeria.
- [5] Anyocho, E.C. (2002). Towards Effective Teaching Christian Religious Education for Good Citizenship. Obudu Journal of Education Studies, 1(1), 106-113.
- [6] Awokoya, S.O. (1999). Teacher Education. In S.O. Awokoya (Ed). Perspective of Quantities and Quality in Nigerian Education: A Synthetic Report of the Baguada Seminar. Lagos: Nigeria Educational Research council, 64-81.
- [7] Brady, L & Kenney, K.(1999). Curriculum Construction. Sydney: Prentice Hall.
- [8] Duruamku, G.C.E. (1995). The Task of Teaching. In S.C. uche and O.I Erukoha (Eds.), Professional Skills for Effective Teaching. Aba: Nigeria.
- [9] Durojaiye, M.O.A. (1986). A New Introduction to education Psychology: London: Evans Brothers.
- [10] Ekpenyong, L.E. (1990). Conceptual Basis for Teaching and Method of Improving and Updating Teaching Technology. Business Education Journal, 11(2) 100-110.
- [11] Elliot, S.N., Kratochill, T.R., Cook J. L. & Travex J.F. (2000) Educational Psychology: Effective Teaching, Effective Learning. Boston: McGraw-Hill.
- [12] Elton, L. (2005). Research and Teaching Conditions for Positive Link. Teaching in Higher Education. 6 (1), 43-56. <http://dx.doi.org/10.1080/13562510020029590>
- [13] Emeh, J.U. & Erukoha, O.I. (1995). The Philosophy of Teaching In S.C Uche and O.I. Erukoha (Eds), Professional skills for Effective Teaching Aba: Nigeria.
- [14] Fantini, M.D. (2006). Regaining Excellence of Education. Columbus: Merrill.
- [15] Federal Republic of Nigeria (1999). National Policy on environmental. (Revised Edition) Lagos: NERDC Press.
- [16] Federal Republic of Nigeria (2004). The National Policy on Education (4th Ed). Lagos: NERDC Press.
- [17] Fennema, E. & Franke, M.I. (2006). Teacher Knowledge and its Impacts. In D.A. Grooms (Ed.,) Handbook of Research Mathematics Teaching and Learning. New York: Macmillian, 89-98.
- [18] Fien, J.(1999). Education for the Environment. Victoria: Deakin University.
- [19] Fullan, M. (2003). The Meaning of Educational Change: A quarter of a Century of Learning. In A. Hargreaves., A. Libraman., M. Fullan., and D. Hopkins (Eds), International Handbook on Educational change. Dordrecht: Kluwer, 214-228.
- [20] Gayford, C. & Dorion, C. (2004). Planning and Evaluation of environmental Educational in School curriculum. Reading: University of Reading.
- [21] Green, T.L. (1996). The Teaching of Biology in Tropical Schools, London: Bather and Tanner.
- [22] House, E. (2005). The Perspectives on School Reform. Ibadan: University Press.
- [23] Ifiok, E.e. (2005). Teacher Variable and Teaching Effectiveness among Christian Religious Educators in Calabar Metropolis of Cross river Sate, Nigeria. Unpublished M.ed Thesis University of Calabar.
- [24] Kantor, K. (2007). Reading Hypothesis Generating Research. In R. Brause, and J. Mayher (Ed.), Teacher and Research What the Inquiring Teacher Needs to Know. London: Falmer. 91-111.
- [25] Lawrenz, F. (1995). The Relationship Between Science Teaching, Characteristics, Students' Achievements and Attributes. Journal of Research in Secondary Teaching 13,443-337.
- [26] Nigerian Educational Research and Development Council (NERDC), (1996). National environmental Education Curriculum. Lagos: UNESCO & UNDP. Lagos: Nigeria.
- [27] Okpala, P.N. (1999). Evaluation of Teaching Effectiveness. In R. Obemeata, W. Faleni, and G. Kanniu (Eds), Evaluation in Africa. Ibadan: Stiling – Horden Publishers, (30-95).
- [28] Patton, M. (2000). Qualitative Evaluation and Research Methods. New Bury Park: Sage.
- [29] Synder, S., Bolin, H. & Zumuralf, K. (1999). Curriculum Implementation. In P.W. Jackson (Ed.), Handbook of Research on curriculum. New York, Macmillain, 402-435.
- [30] Teachers' Registration council of Nigeria (TRCN) (2005). Teachers' Handbook. Abuja: Government Press.
- [31] Ukeje. B.O. (2000). The Education of Teachers for a New Social Order. The Nigerian Teachers, 1(1), 4- 12.
- [32] Ukpanupong, R.A. (2000). The Professionalism of Teaching in Nigeria: Problems and Prospects in the 21st century. In A. M. Wokocha, (Ed.), Quality in Nigerian Education: Agenda for action. Pirt Harcourt: Nigeria, 378-390.
- [33] Wallace, M. (2003). Innovations in Planning for School Improvement: In A. Hergreaves., A. Lieberman., M. Fullen., D. Hopkins (Ed.), International Handbook of Educational Change. Dordrecht: Kluwer, 1181-12