Effect of Remedial Reading Instruction on Word Recognition Problem: Implications for Inclusive Education in Nigeria.

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Abstract

This study investigated the effect of remedial reading instruction on word recognition: implications for inclusive education in Nigeria. Two research questions were posed and two hypotheses formulated for the study. A quasi-experimental design was used. A sample size of 20 primary school pupils selected out of a population of reading disabled children of grade three streams in Nsukka local government area were assigned to treatment and control groups. All the pupils recommended and identified by grade three teachers and continuous assessment record in reading respectively were pre-tested using adapted diagnostic checklist for oral reading and the grade reader. At the end of the treatment session, the participants were post-tested with the same instrument. The data were collated and analyzed using mean and standard deviations to answer the questions. While t-test statistics was employed to test the null hypotheses. The result of the study among other things revealed that there was mean difference in remedial instruction on word recognition. However, these differences observed are insignificant.

Introduction

Reading is the major problem area of most children who are learning disabled. Research evidence has shown that 85 to 90% of children with learning disabilities have problems in reading. The above view receives the attention of Lerner (1997) when he revealed that opportunities for gainful employment decrease for children with learning disabilities who are poor in reading and in overall educational achievements. Deficits between these children's reading skill and their grade placement may range from a few months to five or six years, depending on the grade level of the children. Furthermore, a reading deficit for several years may drastically affect the children's numerous subject areas because the textbook in these areas may be unreadable for children who are learning disabled. That is why reading problems are often the major concern in the education of children with learning problems.

There is a strong belief that poor reading leads to many other types of problems. However, a great number of children with learning disabilities who have difficulty in reading in Enugu and indeed Nigeria cannot, therefore. be ignored. However research on reading of children with disabilities compared to other children, score consistently lower on word recognition test (Bender, 1985a). Adeolle, (2005), reported that reading disabilities affect 15% or more of children and adolescents with learning disabilities. It has been observed that many children with learning disabilities have severe problems with reading, and that reading deficits are the most common academic deficit among these children. It is this population of children with reading problem that mainstreams teachers have to cope with on daily basis.

Reading disability is a major obstruction impeding the academic development of the school age population, increasing the prevalence of learning problems and resulting in the aggravation of out-of-school syndrome in the Nigerian society (Adeolle; 2005). The National Longitudinal Transition Study (NLTS) examined the school performance of secondary students with learning disabilities and found that one-third drop out of school due to reading deficits, (Wagner & Blackorby, 1996). Youths who drop out of high school have twice the unemployment rate, have fewer opportunities for continued training, and do not have the qualifications for post

secondary school or college (Couutinho, 1995). In the world today, high technology and automation have spurred a demand for highly trained people. Odd jobs rapidly become obsolete, making the process of retraining a necessity. It is predicted that workers in every occupation will have to retrain themselves to prepare for new jobs many times during their work careers. Yet, the ability to read efficiently in view of Lerner (1997) is a key tool for retraining and for maintaining employment. Adeolle (2005) emphasized that reading is the basis of all other academic subjects within the educational setting and as such constitutes the fulcrum on which academics performance pivot. In his words, yet, a larger number of children with learning problem are finding it difficult to read resulting in poor performance of these children in schools. Rubin, (1991) explained that reading is a process in which information from the text and the knowledge possessed by the reader act together to produce meaning. In other words, readers bring their background experiences, as well as emotions into reading in order to understand what they are reading Children with learning disabilities may not be able to bring their background experiences into reading due to their limited vocabularies. They may find it difficult meeting reading milestones for a given age or grade. Adeolle (2005) found out that reading disability/difficulty leads to failure in school since those affected cannot get meaning from printed or written messages. The implication is that children with reading disability who cannot read with understanding often see reading activities as punishment.

Research findings support the efficacy of special instructional procedures on treatment of reading problems (Lerner, 1997). Most initial reading instruction involves the study of phonics, supplemented by sight word approaches. Word recognition according to Lerner deals with the ability to recognize and pronounce words. Some research has indicated that basic lists of 200 to 300 sight words may account for up to 85% of the typical material in the first eight years of school. Rubin (1991) stated that word recognition is necessary to be able to read. She sees word recognition as a twofold process that includes identification of printed symbols by some method so that the word can be pronounced, and the attachment or association of meaning to the word after it has been well pronounced. Consequently, it is very important for all children to master recognition of a set of basic sight words. Lyon (2000) said that scientific research does not support the claim that context and authentic text are a proxy for decoding skills. To guess the pronunciation of words from context, the context must predict the words. But content words, the most important words form text commonly 10 to 20 percent of the time. Instead, the choice strategy for beginning readers is to decode letters to sound in an increasing and accurate manner.

Automatcity is an essential quality of a good reader. It has been demonstrated consistently that good readers rarely skip over words, and readers gaze directly at most content words. In contrast, less skilled readers depend on context for word recognition. The word recognition processes of skilled readers are so automatic that they do not need to rely on context (Stanovich et al, 1981). Good reader employ context to aid overall comprehension, but not as an aid in the recognition of unfamiliar words. Lyon (2000) asserted that an alphabetic cipher must be deciphered, and this requires robust decoding skills.

A good scale for identification of problem readers is based on the philosophy that most oral readers make some errors when they read. The following error types developed by Rubin (1991) not only indicate the kinds of reading errors, but also provide indicators of oral reading problem. They are as follows:
1.	Omissions -leaves out a word, part of a word or consecutive words.
2.	Substitutions - Substitutes a whole word
3.	Insertions - adds a word, part of a word, or consecutive words.
4.	Mispronunciations - mispronounces a word to produce a nonsense word (unlike substitution where an actual word is substituted).
5.	Words pronounced by examiner after a five-second pause by a child.

6. Hesitations - a pause of less than five seconds.
7. Repetitions - a word, part of, word, or a group of words repeated.
8. Reversals - word order is changed.
9. Self-correction - error is spontaneously corrected.

Programmatic research over the past 40 years has not supported the view that reading development reflects a natural process that children learn to read as they learn to speak, through natural exposure to a literate environment. Liberman (1992) established that certain aspects of learning to read are highly unnatural. For example, the linguistic gymnastics in recovering phonemes from speech and applying them to letter and letter patterns. Unlike learning to speak, beginning readers must appreciate consciously what the symbols stand for in the writing system they learn. Reading as an uninterrupted flow in interpreting figures and fact is an outstanding feature of a good reader. But, when we stumble on an unfamiliar word we attempt figuring out how to pronounce them as well as to determine its meaning (Rubin, 1991). Pupils or students who become effective readers must be able to automatically decode written symbols, which represent speech sounds. Inability to do so will prevent readers from bringing anything to or getting any message from the printed page (Rubin, 1991). Such topics as phonics, auditory and visual discrimination, consonants, vowel sounds, special letters and sounds, phonograms, syllabication and skills like phonic analysis, synthesis, structural analysis and synthesis, whole word or "look and say", asking someone and using dictionary were streamlined as prerequisite for word recognition in remedial instruction (Rubin, 1991).

However, Vellutino (1992) observed that at the heart of the debate between code meaning advocates is the question of whether fluency (automacity) in identifying words out of context is a prerequisite for effective and efficient comprehension of what is read. Advocates of code-based approaches believe that being able to identify many words as you read does not depend on using context to guess meaning. Identifying words as you read is a highly automatic process. The more fluent and automatic you are in identifying words, the more effective you will be in getting meaning from context. Many studies support the code-based position. Three different groups reported similar findings. Vellutino (1991) summarizing the results of these investigations states the following generalizations:

a. The most basic skill in learning to read is word identification;
b. An adequate degree of fluency in word identification is a basic prerequisite to successful reading comprehension;
c. Word identification skilled readers is a fast acting, automatic, and in effect modular process that depends little on contextual information for execution;
d. Even skilled readers can predict not more than one word out of four in sentence contexts, indicating that the predictive role of context must be extremely limited;
e. Because of limited facility in word recognition, beginning and poor readers are much more dependent on context than are more advanced readers.

Vellutino further made two more generalizations: that alphabetic coding and awareness of letter sounds are essential skills for acquiring word identification, so some direct teaching of the alphabets and phonics is helpful in learning to read. The best approach in his recommendation perhaps makes sensible use of both phonics and whole language

Corrective reading programme takes place in the regular classroom, while the remedial reading usually takes place outside the regular classroom and is handled by special reading teacher, a therapist, or a clinician. Remedial reading programme is a specialized reading instruction adjusted to the needs of a child who does not perform satisfactorily with regular reading instruction. Again, remedial reading instruction is an intensive, specialized reading instruction for children reading considerably below expectancy. It is a developmental reading instruction set at a different an individual or a selected group of individuals (Read Framework).

It is been noted that remedial readers typically enter high school reading several grade levels below their peers. They have limited vocabulary and few internalized strategic reading skills. Often, remedial readers have stalled at or below a fourth grade reading level and need help reading and understanding information from high school texts. They require reading instruction and intervention in order to succeed in the content area. The special reading teacher works with children having severe reading problem referred by the regular classroom teacher (Rubin, 1991).

Remedial reading as a traditional programme highly individualized instruction that takes place outside the regular classroom in a special class (Harris and Hodges, 1981). Remedial instruction is intended supplement or supplant the regular classroom reading programme. That is, children still participate in the daily classroom-reading programme and receive transition instruction as an extra support system. Special education programmes, also known as resource are intended to supplant or replace the regular classroom programme in reading (Reutzel & Cooter, 1992). Remedial services should not be considered unless the classroom teacher has first attempted corrective instruction (i.e., an instruction offered by classroom teachers to children needing extra opportunities to progress). Reutzel & Cooter 1992), also found that in the United States the overall percentage of school children requiring some form of remedial services ranges from 5 to 12 percent. Undoubtedly, this estimate will be higher in Nigeria due to the dearth of reading specialists and special education facilities in schools among other reasons.

It has been observed that for numerous reasons, some children school already behind in reading and often maintain that reluctant/remedial label throughout their educational careers. Heath, (2007) identified three reasons for reading failure. The identified reasons include: programmes not appropriate for the child, the pace of the instruction too rapid for children to achieve mastery of skills presented and too many children in the reading class. In many homes and schools, reading falls far down the line of priorities and are left solely for teachers. Thus, educational institutions from primary grades to secondary grades work twice as hard to teach large number of student's basic literacy skill. She advised every teacher to structure teaching to aid remedial readers. She explained that those students who are not strong readers often than not, are not as successful as they could be in given content area. Their progress is slow without the help of an observant and efficient teacher.

Student readers according to Health (2007) can be classified into three broad categories: strategic readers, reluctant readers, and remedial readers. Strategic readers are able to use strategies, such as prediction drawing inferences, recognizing cause and effect relationships, summarizing, questioning, and rereading. These strategies permit comprehension of a text on or above the instructional reading level. Reluctant readers usually are able to read any material that is interesting to them. Reluctant readers are frustrated by text they find difficult and do not understand how to effectively apply reading strategies to ease their burden. It showed that remedial readers typically enter high school reading several grade levels below their peers. They have a limited vocabulary and few internalized strategic reading skills. Often remedial readers have installed at or below a fourth-grade reading level and need help reading and understanding information from high school texts. While strategic readers generally need little content reading instruction, reluctant and remedial readers require reading instruction and intervention in order to succeed in the content area.

A lot of efforts have been made to make available and improve educational services offered to children with divers learning challenges in Nigeria. The National Policy on Education (2004) views education in Nigeria as an instrument "par excellence" for affecting national development. The Nigerian philosophy of education posits that education fosters individual's stake and the general development of the society. And that every Nigerian child shall have a right to equal education opportunity irrespective of any real or imagined disabilities each according to his or her ability. In addition, section 18 of the constitution of the Federal Republic

of Nigerian (1999), emphasizes the urgency for government at all levels to strive to eradicate illiteracy and ensure equal and adequate educational opportunities for the citizens of the country. In light of these polices Universal Basic Education (UBE) was instituted to cater for the education of the Nigerian child.

According to Anyakoha (2002), Universal Basic Education is a vital developmental project that is in keeping with both the FGN constitution and National policy on Education. Anyakoha reiterated the goals of the UBE scheme as universalizing access to basic education, engender a conducive learning environment and eradicate illiteracy in Nigeria within the shortest possible time. The Universal aspect of UBE has some of the following implications. Inclusiveness - This implies that persons of all manners and conditions of physical, spatial and psychological existence will benefits from the programme. Special attention to special groups - which implies that the special needs of all sectors of the population, will be taken into account (FGN, 2000).

The principles of inclusion aims at ensuring that most learners with disabilities are educated in the same regular school setting as their peers without disabilities and to achieve education for all (Eleweke & Rodda, 2001). Although Nigerian's National Policy on Education (2004) upholds inclusive education or integration of special classes and units into ordinary /public schools under UBE scheme, evidence suggests that inclusion programmes are not being satisfactorily implemented. Elekwe (2002) identified such factors as the absence of remedial services (in schools), relevant materials and support personnel as the major obstacles to achieving effective inclusion of children with disabilities in Nigeria. The provision of support personnel and services as integral component of UBE scheme is sine qua non to a successful and effective Education for All. In other words, establishment of remedial educational services, and retraining of mainstream teachers on the basic principles of educating children with special needs would go along way abridging the gaps already existing in the UBE implementation in Nigeria.

Purpose of the Study

The purpose of this study is to find out the effect of remedial reading instruction on word recognition problem of children with reading difficulty.

Specifically this seeks to;
1. Find out how remedial reading instruction would improve word recognition of children with reading difficulty.
2. Find out if there would be any difference in word recognition among children with reading difficulty.

Significance of the Study

The result of this study will be significant to school administrators, curriculum planners, teachers, as well as the children. These beneficiaries would be aware of the results of this study through seminars and workshops. It is hoped if they are well sensitized, it would help to reduce reading difficulty among children in Nsukka.

Scope of the Study

This study investigated on pupils identified with reading problems in Shalom International School Nsukka. It is meant to study experimentally the effect of remedial reading instruction on grade 3 pupils. The participants were selected based on their poor performance in reading as documented in the continuous assessment records and by the teacher's nomination. The study also focused on oral reading errors among pupils who have completed the learning to read programme.

Research Questions

The following research questions were posed to guide the study:

1. To what extent would remedial reading instruction improve the post mean word recognition scores of pupils with difficulties in word recognition?
2. Would there be any difference between the post-test scores of treatment and control groups?

Hypotheses

The following null hypotheses were proposed (at 0.05 level of significance) to guide this study.

H_{01}: There is no significant difference in the post-test mean word recognition scores of pupils given reading instruction.

H_{02}: There is no significant difference between the treatment group and control on the word recognition post-test mean scores.

Method

This section is presented under the following subheading design of the study; area of the population of the study, sample and sampling technique, instrument for the study, treatment procedure and method of data analysis.

Research design of the study is quasi-experimental design with a treatment group and a control group. While the treatment group received treatment, the control group did not receive treatment.

Area of study was Nsukka urban, specifically at Shalom International School (Campus A) Nsukka, Enugu State. Nsukka Local Government Area is one of the 17 LGAs in Enugu State, made up of sixteen (16) communities. It is also an educational zone situating the University of Nigeria, Nsukka.

Population of the Study consists of all reading disabled children of grade 3 in Nsukka. The participants have completed learning to read programme. They were identified through the teacher recommendation and the continuous assessment cumulative record in reading.

Sample and sampling technique for the study consists of twenty (20) reading disabled children selected through the screening test process. In assigning to groups, the researcher used proportionate stratified random sampling technique. The first group labelled A is the experimental group (i.e. the group instructed with remedial reading programme), the second group was labelled B – the control group (i.e. the group on conventional instruction). To ensure equal representation of gender in each group, the children were drawn stream by stream using sample balloting of M and F (for male and female); and A and B (for assignment to experimental group and control group).

Instrument used for the study were an adapted diagnostic checklist for oral reading-word recognition errors (DCORWR) developed by Rubin (1991).Word recognition training programme was written to cover the following topics: Auditory and visual discrimination, consonants, vowel sounds, phonograms, phonics and structural analysis and syllabication. Macmillan English course for grade three was also used in course of lesson delivery. As each participant read, the researcher listened, recorded and scored the errors using the diagnostic checklist for oral reading. The first instrument was used during the protest to screen children identified with reading problem and during the post-test for measuring the effect of treatment on reading problem. The diagnostic checklist for oral reading contains such items of word recognition errors as: omissions, insertions, substitutions, repetitions, hesitation, mispronunciations and reversals. The errors were measured and recorded quantitatively using the

following scale: AA (Above Average) 4, Av (Average) 3, BA (Below Average) 2 and BBA (Badly Below Average) 1.

Method of Data Analysis

The data collected from the two tests (pre-test and Post-test) were analyzed in respect of the research questions and hypotheses. The mean of the data analyzed provided answers to the research questions, whereas t-test was employed in testing the hypotheses.

Results

The data are presented in line with the research questions and hypotheses that streamlined the study.

Research Question 1

To what extent would remedial reading instruction improve the post mean word recognition scores of pupils with difficulties in word recognition?

Table 1:   Two-tailed t-test of the treatment group on Word Recognition.

Test	Mean	SD	n	df	t-cal	-crit	Decision
Pretest	10.9	-0.08	10	18	-6.76	2.101	NS
Post test	14.7	17.78	10				

t-cal = Calculated t-value, t-crit. = Critical or table t-value, S = Significant at 0.5 level. NS = Not significant at .05 level.

The results presented in table 1 above show that pupils exposed to remedial reading instruction had a mean post test word recognition score of 14.7 and a standard deviation of 17.78, as against pretest means score of 10.9 and a standard deviation of 0.08. The results in the table; therefore, seem to suggest that the pupils exposed to remedial reading instruction (treatment group) performed better in post test word recognition test than in the pretest.

H_{01}:   There is no significant difference in the posttest mean word recognition scores of pupils given reading instruction.

The results presented on table 1 suggest the observed difference between-the pretest mean and post test mean in word recognition is not statistically significant. This is because the calculated t-value is -6.76, while the critical or table t-value is 2.1 0 1. Since the calculated t-value is less than the critical t-value, we do not reject the null hypothesis. The probability that the observed difference resulted from sampling errors is high (i.e., greater than 0.05). In conclusion, there is no significant difference between pretest and post-test mean word recognition scores of the experimental group.

Research Question 2

Would there be any difference between the posttest scores of treatment and control groups?

Table 2:   Two-tailed t-test of the treatment group and the control group.

Group	$\overline{X}$	SD	n	df	t-cal	-crit	Decision
Treatment	14.7	17.78	10	18	0.59	2.101	NS
Control	11.4	-1.21	10				

The results presented in the table 2 above depicts that the treatment group had the post test mean score of 14.7 and the standard deviation of 17.78. While the control group had the post

test mean score of 11.4 and the standard deviation of -1.21. Results as shown on the table 2 portends that the experimental group, treated with remedial reading instruction performed better in word recognition than the control group (placed on conventional reading instruction). The high standard deviation score seems to suggest a widespread improvement across participants in the treatment condition than negative deviation figure shown in the control group.

H_{02}: There is no significant difference between the treatment group and control on the word recognition posttest mean scores.

Results presented in Table 2 reveal that the effect of remedial reading instruction in word recognition is not significant. This is because the calculated t-valued of 0.59 is less than the t-critical value of 2.l0 1 at 0.05 significant level. The null Hypothesis of no significant difference between the posttest mean scores of treatment and control group in word recognition is not rejected. It is rather accepted. This indicates probability that the observed difference resulted from high sampling error (i.e., greater than 0.05), not due to effects of treatment and gender on word recognition.

Discussion

The results of the research are interpreted and discussed under the following subheadings: discussion of results, conclusions, educational implications, recommendations, limitations, suggestions for further study, and summary.

The research questions and hypotheses served focal points in the discussion.
1. Effects of remedial reading instruction on word recognition.
2. Effect of remedial reading instruction on word recognition performance of the treatment group and the control group respectively.

Effect of remedial reading instruction on word recognition

Evidence obtained from this study proves that remedial reading instruction has no significant effect on word recognition. This shows that teaching learning disabled children identified with reading disability using remedial reading strategies do not significantly improve word recognition. Though, there is observed mean differences between the pre and post treatment scores, yet, it is not statistically significant.

The above result appears to be consistent with previous research findings in other culture on the effectiveness of remedial reading on word recognition strategies of reading disabled children. Such studies as Bender (1985a) indicated that students or children with learning disability score consistently lower on word recognition test. West-Christy (2005) explained that for numerous reasons, some children enter school already behind in reading and often maintain the reluctant/remedial label placed on them throughout their educational careers. Heath (2007) reports also indicated that 75 percent of children who are not proficient readers by the end of third grade never become proficient readers. Likewise, he stress that the reading instruction given to students with special needs should be much like the reading instruction given to all other students. Thus, the non significant result obtained could be due to other errors in the procedure.

Going by the findings of this study, it can be implied that same reading instruction should be given to all learners. Adeolle (2005) blamed poor instruction for the reading problem among children, and recommended high quality instruction. Thus, it is teachers' responsibility to provide high quality reading instruction early to meet with the learning to read challenges posed in lower primary school.

Effect of remedial reading instruction on word recognition of the treatment and the control group

The result of the study revealed that remedial reading instruction has no significant effect on the word recognition of the treatment and control group respectively. However, the mean and

standard deviation result show a reasonably difference. Thus, the measures of central tendency and variability revealed a mean and standard deviation difference between the effect of remedial reading instruction on the treatment and control group.

The above stated finding of no significant difference is consistent with the results of other research studies reviewed. Such as: Bender (1985a) and Heath (2007). These findings already discussed suggested a homogenous reading instruction for all children and adolescent, and that remedial reading instruction would have no significant effect on reading problem. The authors discovered that almost all children could make good progress in learning to read if they receive high quality instruction on comprehension, word identification, vocabulary, and other topics. Form this study it is inferred that with high quality learning to read or correction reading programme (class-bound), every learner would perform better in word recognition and in reading generally.

Conclusions

It based on the premises of these research results, that the following conclusions are drawn.
1.   That remedial reading instruction was not significantly effective in word recognition of primary school children with reading problem. However, marginal mean differences were observed
2.   That remedial reading instruction has no significant effect on word recognition performance of treatment and control groups respectively.

Education Implications

The results of this study have some obvious implications for children in primary schools, teachers, parents, educational planners in schools. The results show that with or without remedial reading instruction children can still benefit from learning to read programme, and also in word recognition. It behoves teachers in primary and post institutions to develop high quality reading instruction that would emphasis learning of skill. Teachers in upper primary classes should adopt correction reading instruction in treating remedial reader. This implies that children identified with reading problem can receive correction instruction within an intact class.

School or education planning and other educational stake-holders should know that labelling of children with reading problem for remedial instruction may be psychological apathetic. This implies that such special reading resource services should be provided in-class, not outside the classroom. It also implies that children have been proven through research to cope and recover educationally in the class.

Finally the finding of this study also reaffirms the importance of learning to read. Programme vice-a-vice remedial reading instruction. Learning to read, correction reading and other in class reading activities classified under control group is equally effective in reading development. Therefore, children with reading changes can receive special intervention -and corrective help from the teacher in site.

Recommendations

Based on the findings of this study and their educational implications, the following recommendations are made.
1.   The result of this study showed that remedial reading instruction is not significantly effective in enhancing word recognition; thus, emphasis should be placed on high quality reading instructional provision in class. Remedial reading remains a better alternative to helping children with reading problem in an integrated school system.
2.   There should also be training workshops on the implementation of learning to read and reading to learn programmes. Such training would encapsulate drills in reading skills and

remedial reading. In-service or pre-service trainings would build the competence of the teacher to intervene effectively on reading problems.

3.   Teachers of children with reading problem should also ensure a maximum number of ten (10) pupils in each remedial reading class. Also instruction should be individualized to address peculiarities of each child with reading challenges.

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Towards an Enhanced Status for Teachers in Africa: Issues and Challenges.

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Abstract

It is hardly possible to overemphasize the importance of teachers in national development and in the long run it is the quality of the teachers that determine the quality of human resources in all other sectors of the economy. Similarly, the future of a nation depends on the quality of its education, which in turn is a factor of the quality of the teachers. Education is so powerful that "it can heal or kill": it can build or tear apart; it can lift or impoverish but much depended on the type provided and particularly on the teacher who is the hub of the education process Ukeje(2002). As a result of the indispensable role of teachers in national development, this paper attempts an examination of the issue of enhanced status for teachers in Africa with a view to getting teachers better placed to discharge more creditably the role which can only be played by them. To this end, effort is made to analyze status as a concept, examine the status of teachers in Africa and discuss the reasons why the present status of teachers in Africa should be enhanced and how this could be done. Some suggestions are also put forward for consideration in order to ensure an enhanced status for teachers in Africa. These include; creating awareness amongst the populace of the importance of teachers, professionalization of the teaching industry, reviewing the remuneration and working conditions of teachers to make it more attractive and an upward review of the qualification and experience necessary for new entrants in to the teaching field.

Introduction

In recent times, there has been a tremendous increase in the demand for formal education in Africa. As a result of this development, individuals, organizations, communities and the government have invested huge sum of money in educational expansion. However, noble as this trend is, the quality of teachers remains one of the major factors that could mar or improve the overall educational results. It follows therefore that if the entire education enterprise in Africa will not be grounded in the distant or nearest future, it is imperative to ensure that teachers are appropriately positioned to play the cardinal roles that belong to them in the educational enterprise. In order to ensure that teachers in Africa are appropriately positioned for this cardinal role that can only be played by them, one of the cardinal issues that need to be addressed is the diminished status of teachers in Africa. With this background, attempt is made in this paper to closely examine the status of teachers in Africa, the need to enhance it and the modalities of doing so.

The Concept of Status

According to Kendall (1996) a status is a socially defined position in a group or society characterized by certain expectations, rights and duties. Status exist independently of the specific people occupying them (Linton 1936); the status of professional athlete, musician, professor, college student, and homeless persons all exist exclusive of the specific individuals who occupy these social positions. For example, although new students arrive on campus each year to occupy the status of first year student, the status of college student and the expectations attached to that position have remained relatively unchanged.

The term status, Kendall (1996) maintains is used to refer to all socially defined positions; high and low rank. For example, both the position of director of the Department of

Health and Human Services in Washington DC and that of a homeless person who is paid about five dollars a week to clean up the dining room at a homeless shelter are social statuses (Snow and Anderson 1993). Statuses are distinguished by the manner in which they are acquired. An ascribed status is a social position conferred at birth or received involuntarily later in life, based on attributes over which the individual has little or no control. On the other hand, an achieved status is a social position a person assumes voluntarily as a result of personal choice, merit or direct effort. Achieved statuses (such as occupation, education and income) are thought to be gained as a result of personal ability or successful competition (Kendall 1996). Most occupational positions including teaching in modern societies are achieved statuses. When people are proud of a particular social status they occupy, they often choose to use visible means to let others know about their position. Status symbols are material signs that inform others of a person's specific status. For example physicians wear long white coats, lawyer also have their regalia. In daily lives, status symbols announce one's status and facilitate one's interaction with others.

The Status of Teachers in Africa

In this paper, the status of teachers is seen as the position of teachers within the social system, the regard which teachers are held and their relative place in a hierarchy of position or value in the society. To a large extent, the status of teachers in African is a reflection of the origin of teacher education in the African continent. For example, the first phase of teacher education in Africa was the period often referred to as that of teacher evangelist. During this period, pupils were trained specifically for religious propagation and the training programme centered on reading, writing and the mastery of the Holy Books. This was applicable both to the Koranic schools established by Moslem Missionaries and the Mission schools established by Christian Missionaries.

These Missionaries made it known to the Africans that their mission was not commercial and they kept to this principle all through. They worked tirelessly and expressed the belief in eternal reward by God for the services rendered. Ever since, this principle has continued to influence in no small way, the perception of most Africans about teaching and teachers in Africa. Somehow teachers in Africa are seen by most people as those who work on earth only to be fully rewarded by God when they meet Him in heaven or in the world beyond some day.

The Missionaries and the first crop of teachers that were produced in Africa were highly respected by all and sundry. However the respect that was accorded them was not because of what they possessed materially but for who they were as custodian of knowledge and the non commercial values that characterized their occupation. They worked passionately; they were satisfied not only with their remuneration but also with the job itself.

In the colonial days teachers were the most educated and sophisticated people around and this further heightened their monopoly of a relatively high status. This however is no longer the case in post colonial era because over the years there has been a rapid and massive development in education. The presence of specialist in diverse field of knowledge after the colonial era actually put an end to the age long monopoly enjoyed by teachers and this not only affected the status of teachers adversely, sending it on a decline but also has since kept it perpetually under pressure brought about by increasing competition from other professions that emerged and are growing rapidly

In a graphic illustration of the plight of teachers in Africa, Moon (2008) has this to say:
Bilkisu is a teacher near Kaduna in northern Nigeria. She typifies 'per excellence' the benefit of open learning. After her ninth child was born, she decided to become a teacher, working unqualified whilst obtaining her National Certificate of Education at the National Teachers Institute. Teresa works in a rural school in Ghana. She is also taking an upgrading course, as is

Sumiya from Sudan, one of the 130.000 teachers studying with Sudan Open University. All of these teachers, including Mrs. Mene from the Eastern Cape, are part of an international research programme. But Bilkisu has few resources. Apart from the world around her she has one, her blackboard. Ninety children are on the roll of her class. They have no books, no writing materials, few desks. There is nothing atypical about Bilkisu or the other teachers. Across Sub-Saharan Africa many teachers have a pretty tough time. Moon (2008:1) asserts that the social status of teachers has dwindled over the years dramatically and it has continues on a downward trend. He observes further that this is a phenomenon across Africa.

The status of an occupation, relative to other occupations is determine among other things by the following: the level of remuneration, general working conditions, qualification and experience necessary for the performance of the job, the importance attached to the occupation measured by the amount of money the state spends on it and the social influence exerted by the occupation as an organized group. Compared to most professions in Africa, the remuneration of teachers in Africa at various levels is low. For teachers in most African countries, the remuneration that the job attracts is not commensurate with the inputs that teachers are expected to make and the conditions of service for teachers in Africa are not geared towards status building. The salaries and status of teachers in many countries in Africa is in freefall (Colclough et al., 2003).

Household surveys show that primary school teachers' salaries usually cannot compete with salaries received by professionals such as engineers and not even with those received by bank clerks or bus drivers (UBS, 2006).As a great issue of concern, in African countries, the Pole de Dakar (2009) finds that teacher salaries have been in constant decline over the past thirty years. This being the case, the status of teachers has also being on constant decline over the years. For example, the salaries of teachers in Malawi have been extremely low and irregular even by sub-Saharan standards (Fozzard and Simwaka 2002: Chirwa et al 2000:47). In Liberia, almost all the teachers interviewed stated that they felt teaching as a profession is not respected in Liberia overall (International Rescue Committee-Child and Youth Protection and Development Unit 2007). The teachers interviewed made linkage between low salary and professional support and the abuse and exploitation of female students by teachers. Examples were given of teachers exchanging "sex for grades". One of the teachers' states for example "the low salary cannot make you feel like an educator. The reason is beyond control that teachers can be encouraged to take money from students or make love with female students" (International Rescue Committee –Child and Youth Protection and Development Unit 2007). The cost of maintaining well qualified and high caliber teachers in the context of mass secondary and primary schools makes it difficult for government in many African countries to reward the large numbers of teachers on the same level as doctors and other professionals. However this should not be the case since the very many teachers are still individuals who carry out well defines schedule.

One of the major problems facing the teaching industry and which has also affected the status of teacher negatively is the very rapid rate of expansion of the industry itself. Both the scale and the rapidity of expansion have meant that there has been an almost continuous shortage of qualified personnel to man the institutions at all times, therefore the teaching industry has had to do with large numbers of unqualified personnel. For example, across the African region, half of all the primary teachers are unqualified, in some countries this run to three –quarters (Commission for Africa Report, 2005).. According to Bennel (2004) teachers in Africa are often only slightly better educated than their students. Bennel cited Madagascar and Malawi as examples of countries where most teachers have only two years of secondary education. In the Democratic Republic of Congo, the qualifications of teachers leave a lot to be desired. While 80% of teachers at the primary level are qualified in all the provinces, a scant 32% of teachers in

secondary schools across the country are qualified to the required level for their post and teaching quality is further compromised by extremely low salaries which are irregularly paid. (AfriMAP and the open Society Initiative for Southern Africa 2009). In Chad, 61% of the teachers are contract teachers and this category of teachers is not required to complete pre-service training (Bonnet 2007). Similarly according to Bonnet, in Lesotho, more than 50% of the teachers have only primary school qualification, while in Guinea and Niger, most teachers have a year or more of training. Mali, Mauritania and Togo all have a significant part of all teachers who received a very short training: 1 to 3 months. Despite the existence of that very short training, more than half of the teachers in Togo have no professional training at all(Bonnet 2007).

According to Education for All National Action Plan for Liberia(2004), about 65% of children in primary schools in Liberia are taught by unqualified teachers and about 41% of teachers have not completed high school(UNICEF, RALS Report 2004 in UNDP 2006). Qualified teachers believe that their work is diminished in the eyes of the public by the employment of unqualified people who are also termed teachers (Halliday 1999:19). This has never been the case in other professions like law, medicine in Africa.

The size of the teaching industry in African therefore is also an important factor that has affected the status of teachers negatively particularly in the extent to which it can expect high rewards for its services and also close its door to those not qualified to teach commonly referred to as "cheaters". Bennel (2004) observes that teaching is a mass occupation and this has continued to militate against "professional" exclusivity. In Uganda, Mozambique, Ethiopia, Zambia among others, Bennel(2004) observes that the teaching force has expanded rapidly. The teaching force has become "employment of the last resort". Around one half of junior (Form 4) Secondary School leavers in Malawi and Tanzania who finished school in 1990 were employed as teachers in 2001. The corresponding figure for Uganda is staggering 81 % (Al- Samarrai, Bennell and CL Colclough 2003)

The fact that teachers in Africa have also not been able to exert appreciable social influence as an organized group has gone a long way to diminish their status. This is because unlike law, medicines, engineering etc that are full-fledged professions in Africa; teaching has been for many years at the 'becoming' stage. According to Varma (1996) the characteristics generally defined as essential to a profession are: that it performs an essential service, that its practice is founded on a distinctive body of knowledge and research, that its members therefore undergo a lengthy period of initial education and training before mastering that knowledge and in developing the skills to execute it, that the initial acquisition of knowledge and skill is complemented by continuing professional growth and development that it exercises a high degree of responsibility for the way it fulfills the objectives formed by the community of which it is a part, that its members act with integrity and conscience primarily in the interest of the client, that its members accept and are governed by a code of ethics underwritten by its organization, that it is well organized with disciplinary powers to enforce ethical practice, that careful control is exercised over entry, training, certification and standard of practice

Datta(1984) in addition to the above features, highlighted the fact that a profession is marked by public recognition and that this comes to the fore when government pass laws extending official recognition to the professional body, and its right to have a say on who can practice the profession and how they should be trained. The fact that teaching as an occupation in Africa is yet to fulfill most of these criteria of these criteria, has made it increasingly difficult for teachers to exert an appreciable influence. This is further compounded by the need for teachers in Africa to have ownership of the teaching industry itself. They need to feel responsible and professionally accountable for the quality of service provided and to be able to protect those they teach at various levels.

Varma (1996) observed that the one most serious weakness from which other weaknesses like that of diminishing status derive is the absence of a professional governing body with authority to articulate and exercise professional standards.

In most African nations, at present some of the functions of professional council that oversees teaching activities are divided between a government department and government appointed agencies. Varma(1996) pointed out further that it is professionally unacceptable that a government department should administer decisions relating to professional competence or personal fitness to teach, without professional supervision. This applies both to the issuing of certificates entitling people teach and to the application of discipline relating to conduct. In no other profession are such professional matters in the hands of civil servants under political authority. Incidentally, this is the rule rather than the exemption concerning teaching in mot African countries.

Moreover, there is no explicit code of ethics or understanding of the professional conduct expected of teachers in Africans countries of which such judgment can be properly exercised and this cannot be without a fully representative body with the authority to develop such understanding. Since there is no competent and recognized professional body for teachers in most African countries, decisions about training and professional development of teachers are taken by government department or government appointed agency exclusively. These government department and agencies are mostly manned by people who started as teachers but "managed to escape" from the system. And since they are not directly involved, they do not see that teachers deserve more than they already have. These loopholes continue to do untold harm to the status of teachers in Africa.

The condition of service of teachers is another factor that has been having negative impact on their status. For example, Moon (2008) observed that many teachers in Africa particularly in the rural communities teach without paper, books or resources. Teachers working environment in Nigeria has been described as the most impoverished of all sectors (Baike 2002). Facilities in most schools are dilapidated and inadequate (Adelabu 2003). The teaching environment in most African schools is dismal. Lack of basic tools such as chalk, chalkboard, desks and chairs abound in many schools. Lumadi (2008) confirms the fact that African teachers in general face tremendous challenges. In a research conducted in South Africa, Lumadi observed that the conditions in the schools in which the research was conducted were far from conducive to learning for sustainable period of time. Classrooms have broken windows, cracked walls, no doors; some buildings were collapsing, whilst those that were incomplete yet available were without roof, which warrant classes to be cancelled during bad weather. Lumadi (2008) pointed out further that if the allocation of resources remains as skewed as it is, where the majority of rural schools are made of grass and thatched grass, with no pipe water, no electricity, no modern technical equipment, no affordable transport for both learners and teachers, effective teaching will not take place. Though this was Lumadi;s experience in South Africa, sadly enough, this is the scenario in most African countries. One cannot talk of an enviable status for teachers "trapped" in a system described above. In some cases teachers have to teach under tress; not because the teacher is so much in love with nature but for the stack reality of not having any other alternative.

According to Lumadi(2008), In a certain region in South Africa, the whole school with 18 classes shares the same duster. Grade 1 and 2 learners share chairs. The textbooks used by most teachers are obsolete. In extreme cases up to ten students share a textbook. Subjects like physical science, which require laboratories with apparatus, are taught theoretically and to think of internet services within the school for the use of teachers and students will be tantamount to asking for the impossible. 41% of students overall in the countries investigated by the Southern

and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) : (Botswana, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Uganda, Zambia, Zazibar) study in schools which are in need either of major repairs or of complete rebuilding, and only 12.8% in schools which are said to be in good conditions (Bonnet 2007). Similarly, most primary schools across Southern Sudan do not have basic and essential facilities and services for creating a conducive environment for teaching and learning (Deng 2006). Working in an environment with dilapidated structures and without basic facilities, apart from giving teachers a diminished status is also tormenting to say the least.

The absence of continued professional development opportunities through sponsored conferences and workshops is another factor that is yet responsible for the unimpressive status of teachers in Africa. Qualification upgrading programme, where they exist for teachers in Africa, usually provide a passport out of primary teaching (Moon 2008). In Ghana schemes that allow teachers to avail themselves of paid study leave are very popular. Each year, there are 4000 on study leave while 6000 new teachers leave teachers colleges (Hedges 2002:361). However many of those on study leave do not return to teaching. The system is therefore unintentionally promoting a steady flow of teachers out of the profession (Hedges 2002:356). Little wonder that teachers in Africa are accorded very low status.

Societal attitude towards teachers and the teaching industry generally is another factor that has kept the status of teachers in Africa on the downward trend. In the public mind whilst few would want to be treated or advised by doctors or lawyers with 'out of date' knowledge, there is little perception of what a teacher should know(Moon 2008:2). A South African research project focusing on Grade 11 learners, who at this stage are seriously considering different career options obtained valuable results highlighting specific attractors and deterrents that might influence their decision to consider teaching as a career, the prospects of working with children, sharing knowledge with others, playing an important contribution to community development were expressed as strong attractors (Park 2006). In contrast, strong deterrents identified by the study were: the respondents' perception that pupils no longer respect teachers, their negative assessment of teachers, remuneration, the perceived unpleasant working conditions caused by poor discipline in schools, their observation that teachers do not look very happy in their jobs and the perceived extent of violence in Schools (Park 2006). Park (2006) rightly adduced that student perception reflects an accurate picture of the current experience of teachers. Incidentally what the research shows as the situation in South Africa is also what operates in most other African countries. The fact that teaching as a job is seen by most people in African as the very last resort after every other option has proved impossible shows how low the status of teachers in Africa has gone.

According to a research carried out by Mulkeen et al (2005) many teacher trainees in Africa do not perceive teaching a high status profession. Similarly many of the teachers on the field in Africa are victims of low self esteem and most of them also feel that society is rightly dismissive of them as teachers. The perception that the status of teachers in society is declining is encouraged by the use of shorter teacher training programs and lower entry qualifications (Gaynor 1998:14) Similarly, Waitshega(2005) also reported that teaching in Botswana has suffered from general negative comments. The Botswana National Commission on Education (1977:5-6) expressed concern in these words "teaching is regarded as a profession of low status in Botswana and some Batswana (citizens) enter teaching as a second or third choice or because nothing else is available". Botswana National Commission of 1993 expressed the same concern that "low morale and declining status" of the teaching profession is still evident across the country. In Nigeria, Dr. Nwosu, the then leader of the accreditation team of the National Commission for Colleges of Education remarked that the teaching profession in Nigeria has been relegated to the background and that teaching is not accorded the respect it deserves (Punch

2004) In Africa, teaching is perceived as a path to further education or an exit strategy. As one Tanzanian student put it, "it is the only profession which will allow me to advance to higher levels of education"(Towse et al 2002:644).

While professional misconduct is as old as professions themselves (Anangisye and Barrett 2005), unprofessional behavior by teachers in Africa is relatively on the very high side and this has also gone a long way in throwing the status of teachers in Africa to the dogs. Some of the kinds of misbehavior that are rampant ranges from charging students for compulsory "extra tuition" to"ghost teachers" who appear on the payroll but do not exist(Gaynor 1998:25) and "remote teaching", the practice of writing notes on the board or using a class prefect to read out a textbook while the teacher is elsewhere(VSO 2002:25). Other misbehavior issues include drunkenness and sexual relations with students. Preliminary research in junior secondary schools in Zimbabwe found that male teachers in particular have engaged in violent and sexual intimidation and abuse of girls in a manner that became institutionalized and considered "normal"(Leach et al 2000). Extortion of students or favoritism in assigning or selling grades were also reported as occurring occasionally particularly in Guinea and Madagascar. In Tanzania, reports of teachers sexually abusing females and less often male students are widespread and range from verbal harassment to rape (Chumi 2001; Mwero 2004; Telli et al 2004)

In Tanzania, concerns have repeatedly been raised regarding the prevalence of misconduct among College and School teachers over the years (see for example Mosha 1997; Kuleana 1999; Warioba 2000; Sambo 2001; Boimanda 2004; Telli et al 2004). Similarly, Teachers complicity in examination irreqularities has been observed in various sub-saharan African Countries (Bumpoh 2002; Maunda 2002:219; Ondongo 2002). Occurrences and behavior described above cannot but keep the status of teachers in Africa perpetually low.

According to Anangisye and Barrett (2005), teachers' dress was viewed as sending strong messages to colleagues, students and the community. Hence teachers were expected to dress in a manner that befit white-collar workers and distinguished them from peasants or manual workers. This meant wearing clothes that were neither too casual nor too smart and that were clean and not crumpled or torn. Women were expected not to dress provocatively in partial transparent materials or short skirts. However, in some African countries especially in the rural areas, many teachers raise extra income through farming and may in a single day move between the classroom and their farming plot. Hence, it is not uncommon to hear accusations of school teachers or college tutors appearing in class dirty and shabby, with crumpled clothes and dirty shoes. This to some extent confirms the findings that unethical practice tends to be more common and most extreme in conditions of economic scarcity (Bennett 2001; Hallak and Poisson 2005:2).

In the light of the discussion in this paper, it is obvious that the status of the teachers in Africa leaves much to be desired. Similarly, Moon and O'Malley (2008) also pointed out that teaching is in a crisis in many parts of the world. The said crisis, one observes is not only ongoing in many African countries but it is worsening and leaving the status of teachers in an increasingly battered state. While, Moon (2008) rightly observed that teachers and teaching need urgent attention, the issue of teachers' status in Africa needs very urgent attention. Foxley(2004) however attributed a large proportion of the rescue of the Chilean economy in the 1990's to the investment in teachers. Teachers specifically, not education in general. If Foxley's assertion is anything to go by, it is only wise that urgent steps be taken to redeem the diminished status of teachers in Africa. Furthermore if one is to go by the dictum that no educational system can rise above the quality of its teachers, then one can say without contradiction that if effort is not made and quickly too, to rise up and face the various issues responsible for the diminished status of teachers in Africa, the future of teachers in Africa and by implication the future of education and

development in Africa cannot be said to be an enviable one. This is because if the status of teachers continue on the downward trend it will become increasingly difficult to retain the best of the teachers on the job and also very difficult to attract others who are capable to join the team. If this becomes the case, even the full fledged professions in Africa will soon begin to have problems. This is because at one point or the other in order to qualify as a member of any of these accredited and well acclaimed professions that are enjoying relatively high status in Africa, one will need to pass through teachers. An enhanced status of teachers in Africa will therefore not just be beneficial to teachers alone but to the entire educational system of the various countries and the key aspects of the nations. In agreement with Varma and McClelland (1996), the one most serious problem with the teaching industry from which other problems like that of diminishing status of teachers derive, is the absence of a well structured and competent professional governing body. A very critical issue therefore is the professionalization of the teaching industry in Africa in the real sense of the word. This however cannot be done for teachers in Africa; the initiative must come from within the rank and file of those in the industry. When the issue of professionalization of teaching in Africa is fully taken care of, the stage would be set to address other factors that are responsible for the not so encouraging status of teachers in Africa. In addressing these other factors, the role and importance of a virile professional governing body cannot be over emphasized. Therefore until this body is fully in place in the various African countries, nothing serious can be done. To do otherwise would be tantamount to placing the cart before the horse.

Conclusion

There is hardly any occupation that is a full fledged profession in Africa that is plagued with the magnitude and varieties of problems that have bedeviled teaching in Africa and turned it into an occupation of very low status. It stands to reason therefore that the professionalization of teaching in Africa will take care of the many problems that have been forcing the status of teacher to nose down over the years. It is therefore suggested that the professionalization of teaching fully in the various African countries be used as a platform for seeking necessary attention, cooperation and assistance from government on issues that have been affecting the status of teachers negatively. These among others are: conditions of service, remuneration, working environment, promotion and promotion modalities, public perception of teachers and teaching and on the job professional training etc. With the professionalization of teaching fully in place in various African countries there would be a *locus standi* for making meaningful, centrally coordinated and officially recognized effort geared towards normalising the issues of unqualified people in the teaching industry, the self image of teachers themselves, misconduct by teachers etc. This when successfully done, will give teachers in Africa the necessary enhanced status and also give education in Africa a secured future.

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Infrastructural and Human Challenges in Teaching Business Studies in Rural Schools Implication for Counselling

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Abstract

The study investigated the human and infrastructural factors that militate against teaching business studies in rural secondary schools in Enugu State. The result showed that infrastructure such as typewriters, computer and laboratories for teaching and learning pose problems to teaching of business studies. All the human factors such as students, teachers and school administration pose problems except student population, frequent transfer of teachers, teachers work overload and non specialization of teachers in business studies. It was recommended that all the stake holders- the parents, school administration, old students associations and the Ministry of Education should be involved in solving the problems by providing needed facilities, and building the capacity of the teachers. It was also recommended that School counselors attend the meetings of all stake holders to enlighten stakeholders on the need to provide needed teaching and learning materials. Students' interest should be aroused through giving guidance to alleviate the teacher's problems.

Introduction

Human beings are adjudged the fastest in reasoning, coordination and learning besides being the only organism that can control and manage his environment through his reasoning process and learning.

Learning according to Hockenbury and Hockenbury (2000) is a relatively enduring change in behaviour or knowledge as a result of experience. There are simple forms of learning such as sensitization and habituation which occur at the levels of stimulus and response learning. The complex forms require satisfaction of academic, social, political or economic needs. Learning is important to human beings because knowledge is acquired through it and there is also the possibility of civilization of human kind (Nnachi, 2007).

Learning opportunities are offered both in the home and school. At home parents teach their children many types of skills or habits besides the norms and mores of the society. In the school, learning opportunities are those additional programs that are provided by teachers during the regular school day. These learning opportunities provide students with intellectual enrichment, academic support or both.

Teaching can be conceptualized as a means of instruction which involves teachers guiding students to learn, it also helps people acquire knowledge (through discovery, probing and examining activities) which they need to earn a living and lead a useful and rewarding life. Teaching provides a veritable environment for people to relate and pass knowledge from one generation to another.

Teaching can also be conceptualized as a profession. In this case, certification is needed which requires going through the processes of formal education or training, acquiring specialized

knowledge in particular subject areas and maintaining standards of performance that are constantly redefined and expanded by the profession. This is the concept of teaching used in this study.

Professional responsibilities of teachers vary from country to country and according to the age and level taught. The general responsibility includes active and sometimes conflicting roles in the school and community. Teachers act as parent substitute, confidant, disciplinarian, community leader and exhibit acceptable behaviour model. Approximately two thirds of the world's teachers are women, the great majority being employed at the elementary level (Goetz 2005).

Teacher's skills and attitudes influence everything that happens in their classrooms and good teachers who know their subjects and understand the topics they are teaching, present lessons in creative ways that help students of different ability levels and learning styles master the topics thus enhancing students' interest in the various subjects. Teachers equally help students as much by personal examples as they do by offering instructions. Students who see their teachers demonstrate patience, trustworthiness, attention to work and love of learning may be encouraged to develop similar qualities in themselves and may also accept assistance more readily from a teacher whom they respect and admire.

Teaching opportunities exist in both urban and rural areas. Urban or central cities according to the Bureau of the Census Standard Metropolitan Statistic (2005) is an area of a population greater or equal to 400,000 or a population density greater than or equal to 6000 per square mile. A rural area on the other hand, is a place with a population of less than 2,500. In a National Education Association (NEA) 2008 research, it was found that about half of the nation's public schools and approximately 40 percent of public school students are in rural areas and small towns. In terms of student population, the ratio is 17:5 in central city schools or urban areas and 16:1 in rural schools. In effect, the population in rural schools is lower than urban schools.

For most teachers (Urban or Rural), practical day to day aspects of their jobs include preparing to teach the students and guiding and assisting student learning. To enhance this work, infrastructure, (both physical and administrative) have to be made available. The physical infrastructure includes a comfortable classroom with seats to enable students write effectively, laboratories for science, technical and business studies among others. Textbooks and other teaching materials such as computers and typewriters are equally necessary especially for business studies. There is also need for power supply and access roads to and from the school.

In a report by the National Education Association (NEA), (1998) rural schools recorded lower rates of internet access and the use telecommunications to access information and keep records. Buildings are inadequate in three out of 10 rural and small town schools while approximately one half of the schools have unsatisfactory environmental conditions. Rural schools also face additional challenges related to the non-availability of high quality instructional staff, access to professional development opportunities, among others (Forbes, 2008)

Administrative infrastructure have to do with provision of school curriculum from where teachers prepare their daily and weekly teaching plans, and capacity building of staff members. In terms of capacity building,when teachers in rural schools are compared with those in urban schools, rural teachers are less likely to have participated in in-service or professional development programs in educational technology, teaching methods and students' assessment (NEA, 1998). Rural teachers however have participated in school or district workshops, extension, adult education or college courses with their urban counterparts.
For effectiveness and up to date information to the students, a good teacher needs to update his/her knowledge (Dean in Uya, 2004). This is confirmed by Nwagbara (2002) who posit that if

teachers as human resource developers do not undergo on-the-job training or orientation periodically, their knowledge will become obsolete.

Business studies is one of the integrated courses at the junior secondary level and business education at the tertiary level that contribute significantly to economic self reliance through entrepreneurship.

This self reliance is made possible according to Osuala (2004) because, business studies consists of two parts namely

(a.) office education which include subjects like typewriting, bookkeeping, business management, shorthand and office practice which equips students for office careers and eventual employment (Self and Government)

(b). General business education which is a program that provides students with information and competencies needed in both managing personal businesses and affecting the business world.

The study will examine the problems based on gender and type of school- boys/girls.
The counseling implications will equally be highlighted.

Statement of the problem;

It is generally believed that school conditions are adverse in rural schools than in urban cities. In many rural schools therefore, provision of funds is inadequate and teachers are not engaged in in-service training. From the researchers' experiences as business studies teachers, students were not enthusiastic about business studies subjects. From the NEA (1998) report, three out of ten rural and small town schools have inadequate buildings and approximately one-half have unsatisfactory environmental conditions. The question then is; what are the conditions in the rural schools; what are the infrastructural and human challenges in teaching business studies in Enugu State and their implication for Guidance and Counseling..

Purpose.

The main purpose of the study was to determine the problems experienced by business studies teachers in the rural schools. Specifically, the study

1. determined the human and infrastructural problems encountered by in Business Studies teachers in rural schools.
2. determined the human and infrastructural problems based on gender and type of school (boys/girls).

Significance.

The findings of this study would be significant to the Principals as it would sensitize them to the problems the teachers have and spur them on to take appropriate action.

The Ministry of Education and other stakeholders like the Parents/Teachers Association (PTA) will equally be sensitized to the problems in teaching business studies. It will also enable them to take steps to ameliorate the problem encountered by business studies teachers. The teachers themselves stand to benefit from this study if disseminated, will attract intervention from the school administration, PTA, and even the Ministry of Education which will make their work easier. The study is further intended to sensitize curriculum planners and implementers on the need to put more emphasis on teachers' competence on utilization and improvising of instructional materials.

Research questions

The following research questions were formulated for the study;

1. What are the human and infrastructural problems encountered by business studies teachers in rural schools.
2. Are the human and infrastructural problems encountered by business studies teachers based on gender?

3. Are the human and infrastructural problems based on type of school- boys/girls?
4. What are the Counselor's strategies to alleviate the problems?

Hypotheses

Two null hypotheses were formulated for this study.

Ho_1 There is no significant difference between female and male teachers on human and infrastructural processes encountered by Business studies based on gender.

Ho_2 There are no significant differences between female and male teachers on human and infrastructural problems encountered by business studies based on school type- boys/girls.

Methodology.

Design of the study

The study adopted a survey research method. Survey research method is used when a study centers on individuals and their opinions, beliefs, motivations and behaviour that helped to explain the behavior of the entire population (Osuala, 2004)

Area of the study:

The study was carried out in Nsukka Education zone of Enugu State. It is characterized by both urban and rural schools

Population of the study:

The population for the study was 400 respondents made up of business studies teachers and school guidance counselors drawn from the educational zone. No sampling was drawn as the entire population was studied.

Instrument for data collection

The instrument for data collection was researcher's constructed questionnaire titled 'Business Studies Teachers Problem Inventory' (BSTPI) and comprising 51 items in an open ended structural format, with sections on students, teachers, school and equipment. The instrument was subjected to face validity by three experts, two from the Department of Vocational Teacher Education and one from Educational Foundations Department, University of Nigeria, Nsukka.

Data collection technique

Four hundred copies of the 'Business Studies Teachers Problem Inventory' (BSTPI) questionnaire were distributed to respondents by the researchers with the help of three trained research assistants who also helped in the collection of the questionnaire.

Data analysis

Mean and standard deviation was used to answer the research questions while t-test was used to test the hypothesis at 0.05 level of significance

Results

Research question 1. What are the human and infrastructural factors militating against teaching of Business Studies in rural schools?

Table 1: Mean responses on infrastructural and human factors militating against teaching business studies.

Items	x	SD	remark
Human Factors – Student			
1. Too many students in the class	2.32	1.11	Not Accepted.
2. Students are too few	2.48	1.05	Not Accepted
3. Students lack interest in Bus. Studies	3.10	1.16	Accepted
4. Student don't buy learning materials	3.16	.99	Accepted
Teacher factor			

5. Few teachers handling all the classes	2.48	1.01	Not Accepted
6. Teachers are not bus Studies specialists	2.30	1.07	Not Accepted
7. Teachers are not regular to school	3.04	1.14	Accepted
8. Teachers are not computer literate	2.74	1.17	Accepted
School factor			
9. The period for teaching is not adequate	2.72	1.06	Accepted
10. There are no textbooks to guide teachers	3.08	.98	Accepted
11. Teachers knowledge are not updated	2.52	1.19	Accepted
12. Frequent transfer of teachers	2.38	1.20	not "
Infrastructure			
13.There are no typewriters in the school	3.34	.93	Accepted
14. Computers are not available for teaching	3.46	.99	Accepted
15. There is no teaching lab for learning and practice	3.08	1.12	Accepted

Table 1 showed that 10 out of 15 factors pose problems in teaching Business Studies in rural Schools. Items 3, 13, and 14 pose the highest problems while items 1, 6, 12, 2 were not accepted as problematic.

Research question 2: Are the human and infrastructural problems encountered based on gender?

Table 2; Mean responses on the human and infrastructural factors militating against teaching business studies based on gender.

Items	Males				Females		
Student factor		x	Sd	Rem	x	SD	Rem
1. There are too many students in a class	1.89	.93	NA		2.83	1.10	Accepted
2. The students are few	2.52	.97	A		2.43	1.15	Not Accepted
3. Students are not interested in bus Stud.	2.96	1.18	A		3.26	1.12	Accepted
4. Students don't buy learning materials	3.26	.77	A		3.04	1.21	Accepted
Equipment factor							
5. There are no typewriters in the school	3.41	.96	A		3.52	.89	Accepted
6. Computers are not available for teaching	3.22	1.04	A		3.48	.89	Accepted
7. There is no teaching lab for students	3.26	1.05	A		2.87	1.17	Accepted
Teacher factor							
8. The teachers are few.	2.56	.93	A		2.39	1.11	Not Accepted
9. The teachers did not study Bus.studies	2.41	1.07	NA		2.17	1.06	Not Accepted
10. Teachers are not regular at school	3.11	.97	A		2.96	1.32	Accepted
11. The teachers are not computer literate	2.78	1.11	A		2.71	1.25	Accepted
School factor							
12. Few periods for business education	2.70	.98	A		2.74	1.16	Accepted
13. There are no Teacher textbooks	2.78	1.08	A		3.43	.72	Accepted
14. Teachers are not sent for in-service training to update their knowledge	2.56	1.14	A		2.48	1.26	Not Accepted

From table 2, males see all the items as factors militating against quality teaching of business studies except items 1, and 9. The females on the other hand, see all items except items 2, 8, 9 and 14 as militating factors.

Research question 3; are the human and infrastructural problems encountered based on type of school- Boys/Girls.

Table 3; Mean responses on the human and infrastructural factors militating against teaching business studies based on type of school - Boys/Girls.

Items	Boys			Girls		
Student factor	x	Sd	Remark	x	Sd	Remark
1. There are too many students in a class	2.,00	1.01	NA	2.57	1.13	Accepted
2. The students are few	2.41	1.04	NA	2.54	1.06	Not Accepted
3. Students are not interested in bus.Stud.	3.14	1.07	A	3.07	1.23	Accepted
4. Students don't buy learning materials	3.41	.90	A	2.96	1.03	Accepted
Equipment factor						
5. There are no typewriters in the school	3.86	.35	A	3.14	1.10	Accepted
6. Computers are not available for teaching	3.36	.89	A	3.32	1.05	Accepted
7. There is no teaching lab for students	3.26	1.24	A	2.87	1.17	Accepted
Teacher factor						
8. The teachers are few.	2.56	1.16	A	2.39	1.11	Not Accepted
9. The teachers did not study Bus Stud	2.41	1.03	NA	2.17	1.06	Not Accepted
10. Teachers are not regular at school	3.11	1.22	A	2.96	1.32	Accepted
11. The teachers are not computer literate	2.78	1.17	A	2.71	1.25	Accepted
School factor						
12. Few periods for business education	2.70	1.11	A	2.74	1.16	Accepted
13. There are no teacher's textbooks	2.78	.99	A	3.43	0.72	Accepted
14.Teachers are not sent for in-service	2.56	1.28	A	2.48	1.26	Not Accepted

From the table, all the items are problematic except sending teachers to in-service training and the population of the students offering business studies.

R**esearch question 4:** What are the strategies to be adopted by counselors to alleviate the problems of teaching business studies?

Table 4. Mean responses on the strategies to be adopted by counselors.

ITEMS	X	SD	REMARK
1.Organise career talks for the students on various business Studies subjects by entrepreneurs (fashion designers, accountants, confectioners, etc)	3.24	.40	accepted
2.Attendance to PTA meetings in the school to educate them on career opportunities in business education.	3.84	.37	accepted
3. Use of cognitive restructuring to get students interested in business education	3.88	.33	accepted
4.Organise group guidance activities for students On study habit and taking examinations to spur and encourage them unto good performance.	3.24	.43	accepted
5. Organize workshops for teachers internally in the school in conjunction with the principal on teaching method, improvisation of teaching materials and student/teacher relationship.	3.72	.60	accepted
6.Organise a "home coming" for old students to give them on the spot situation of their alma matter.	3.92	.27	accepted

It will spur them to provide needed teaching materials.

7. Regular campaigns for community participation   3.12   .33   accepted
(through traditional rulers and community leaders)
in the provision of needed learning facilities to
alleviate the problems of teaching business studies in their schools

8. Gathering and giving information to students on sources
of loans and grants to establish private business after school   3.12 .33   accepted
to sensitize and encourage them.

From the table, all the strategies are accepted by counselors with educating the PTA and other stakeholders through attending their meetings on career opportunities in business education, restructuring the student's perception of business education and, old students' participation in providing needed teaching materials as the highest accepted practice.

Ho1 – There is no significant difference in the human and infrastructural problems militating against the teaching of business education based on gender. Table 5

Table 5: t-test statistical analysis of the significant difference between mean ratings of male and female teachers on problems militating against quality teaching of business education based on gender.

Respondents	x	sd	df	t-cal	t-crit	remark
Male	55.33	.764	88	1.16	1.96	rejected
Female	54.17	10.31				

From the table, the t calculated value is less than the critical value of t. The hypothesis is hereby rejected.

Ho2 – Type of school will not significantly influence the problems militating against quality teaching of business education.

Respondents	x	sd	df	t-cal	t-crit	Remark
Boys	53.45	9.47	98	-1.339	1.96	rejected
Girls	55.86	8.43				

From the table, the t-.calculated is less than the critical t value; the null hypothesis is hereby rejected.

Discussion

The results showed that human and infrastructural factors such as students' lack of interest in business studies and lack of requisite textbooks for teachers' guide, pose problems in rural schools. On teachers' factors, it was found that teachers are not computer compliant and most of them do not come to school regularly. On school factor, it was found that inadequate time allocated to business studies, teaching materials and lack of in-service training militate against teaching of business studies in rural schools. The report also shows that there are neither typewriters nor computers for teaching business studies. As a result of this lack, there are no teaching labs or typewriting/computer rooms. This tend to support the National Education Associations (1998) report that funding in schools has been an issue of concern as it hinders provision of necessary physical infrastructure needed for teaching. For instance, the NEA (1998) research reported that 37.5 percent and 40.3 percent of funds from State Governments in 1995 went to urban and urban fringe schools while 22.1 percent went to rural and small town schools. This implies that there was low and unequal funding of secondary schools which may have affected the provision of needed learning facilities and consequently, created problems for business studies teachers.

Result of gender difference on problems encountered by business studies teachers in rural schools, show that while the males see all the factors except student population and non

business qualification of the teachers as problematic, the females see students population, non qualification and irregularity of business studies teachers to school, and teachers not being sent for in-service training as problematic. The difference is however, not significant. When type of school is considered, while the boys felt that students population – too many or too few, and the teachers not being business studies specialists as problems, those in girls' schools see few students, few teachers and non business studies specialists teachers, as being problematic. The difference is also not significant.

The results are not surprising as people's interests and values differ (especially on gender lines). What one individual may find problematic may not be so for another individual. Besides these teachers in the field know which areas in their work that poses problems for them.

What is the implication of these findings for counseling? If the situation is allowed to continue, the entrepreneurial vision of the Federal Government of Nigeria through education will be aborted. The counselor, whose counseling services are for the students as the primary target, equally reaches out to the parents, school administration, teachers and other significant agencies that will influence or enhance the students' welfare. So the counselor is in a better position to interact and reach out to educational stake holders through regular attendance to their meetings in order to spur them to provide the necessary materials that will alleviate the teachers' problem in the schools and consequently, enhance the welfare of the students. Counseling services include information sourcing and dissemination. This service comes handy in this situation, as giving information on sources of soft loans for entrepreneurial activities after school to students and even their parents will encourage them to study and do well in business studies. The school can also benefit from the informational aspect of counseling because, the counselor can equally provide information on sources of funds for the school that will help them to provide necessary needed teaching and learning materials. For instance in schools with home economics, fine and applied arts and technical and woodwork, the counselor can source for periods and location of exhibitions where the school's products can be exhibited and sold to get funds. The counselor can equally organize one in the school in collaboration with the teachers and stakeholders in the school participating.

Conclusion and Recommendations.

Business studies teachers experience problems in rural schools which range from human, in terms of teachers irregularity to school, lack of in-service training for teachers among others; infrastructural in terms of unavailability of typewriters and computers. The physical problems include lack of text books and laboratory for teaching business studies.

This has been attributed to lack of funds to provide the basic materials and build the capacity of the teachers. It was revealed by school counselors that the situation can be remedied by their engaging in aggressive campaigns on parents/teachers association, old students, the principal and the Government to provide the materials. Fund raising activities in the school can also be pioneered by them.

]   It is therefore recommended that the school counselors be empowered to wade into the issue of business education teachers to alleviate the problems they encounter in the course of their work. Their intervention will equally enhance the study of business studies thereby equipping the nation with needed entrepreneurs. The findings also highlight the importance of having guidance counselors in all secondary schools in the country.

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Situation Analysis of In-service Teacher Training in Selected States in Nigeria: Options and Strategies:

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ABSTRACT

This study examines the capacity of teachers in the six states and explores the in-service training (INSET) opportunities available to them. Undertaken under the girls' education project (GEP), a joint project of the Federal Ministry of Education (FME) and UNICEF and implemented in 16 Northern states of Nigeria, the major goal of the project is to increase the participation of girls in schooling in these states. The study addressed the wider issues hindering the participation of girls in education and identified ways of strengthening the role of teachers in the process while developing a support strategy for teachers in the states. The study looked into the appropriateness of initial training of teachers with a view to identifying any systemic weaknesses. The study was undertaken six GEP states: Bauchi, Borno, Katsina, Niger, Jigawa and Sokoto. Findings show that teacher capacities are extremely low and there seemed to be no systemized capacity building process for redressing this. In sum, less than a quarter of the 559 teachers in the sampled schools in the six participating states had received any form of INSET and showed a persistent interpretation of INSET as merely certificate upgrading. Recommendations include the need to institute a teacher professional development strategy adopting the cluster-based in-service option. The study was funded by UNESCO and UNICEF.

BACKGROUND

Teacher issues are often central in national discourse on education. The assertion in the National Policy on Education (NEP) that no nation can rise above its teachers justifies the need for such a focus. Since the 1999 declaration of a universal right to basic education by the present democratic government, and subsequent upon computation of the gap of 279,411 in teacher needs at the time (FGN/UNICEF, 2001), now estimated at 1,400,000 (NCCE, 2011) viable solutions have been, and are still being, sought to current concerns about the teacher. Varying from teacher welfare through to demand and supply and teacher effectiveness, depending on which side is doing the analysis – teachers themselves, employers of teachers, or beneficiaries of teachers' services – the issues in question have remained teachers' welfare (from the teacher's point of view); recruitment, demand and supply (employees of teachers); and teacher effectiveness (beneficiaries of teachers' services). Although these concerns are germane to all discussions on teachers, the question of which dominates depends on who is doing the analysis. From which ever angle the analysis is being done, however, teachers' problems have remained intractable, constituting national issues but often requiring localized responses and actions. The fiscal tangle in the legislative process for basic education, whereby education is placed on the concurrent legislative list, has not helped matters having introduced a constant squabble over how teachers should be paid.

Determining what constitutes an appropriate curriculum for teacher education also assumes critical importance. The concern here is whether the teacher education curriculum is adequate for the kind of competences and skills required by teachers to teach at the basic level of education, and whether gender is sufficiently mainstreamed into the Teacher Education curriculum.

Although the teacher education curriculum in principle advocates the use of a range of pupil-centred, interactive and participatory methods, observations in studies in three African countries (DFID, 2003) reveal predominantly teacher-centred transmission modes predominating even in 'methods' classes. In Nigeria, increased advocacy and mobilization continue to yield overflowing classrooms, and so the capacity of teachers to respond to new and challenging demands in pedagogy assumes greater importance. This challenge is no less real at the post-primary school level where teachers are also expected to devise learning experiences that should make schooling more enjoyable and relevant for the adolescent. With the dominant use of ideal situations in the teacher training curriculum, teachers are required to make major pedagogical shifts in order to cope with the real issues which confront them in practice. It is perhaps time to include contextual situations (over-crowded classrooms, hungry children, children tired from walking long distances, ill-motivated learners etc) in teacher education practices.

The issue of teacher glut and drought in different regions in Nigeria is also a serious problem, especially biased against the northern states: teacher-pupil ratios are quite high in these states (1:111 in some cases) while 56.3% of 5,057 NCE teachers who qualified between 1998 and 2003 are unemployed (NCCE, 2004). A matter arising from this problem is that there are not enough teachers to supply the existing schools and classes. Schools and class sizes often have to be shrunk according to the number of teachers available and so girls are cramped with boys and facilities are indiscriminately managed, thus making the school environment unattractive to children, especially girls, in these states and indeed all the GEP states. Although the teacher issue is merely one of the contributory factors to low girls' enrolment in these states (others being socio-cultural and economic), the teacher problem if adequately addressed can contribute significantly to girls' enrolment and participation in schools in the states.

This study was aimed at making recommendations for boosting girls' enrolment in specific target states where the participation of girls is particularly low. It was proposed as a comprehensive package involving a survey of teacher training modalities in Nigeria, a review of the status of INSET for teachers and agreeing on cost-effective, sustainable, state-specific strategies for continuous INSET for teachers in the six focal states. The role of supervision as a viable support system for teachers was also recognized as a strong component of the research.

Objectives of the study

The objectives of the study were:
To identify modalities to ensure cost-effective systems for in-service training in the six GEP states (namely Bauchi, Borno, Katsina, Niger, Jigawa and Sokoto) including logistic, finance, curriculum content, methodology and monitoring and evaluation.

To review existing teacher training curricular and materials (especially in the six GEP states) in terms of their relevance to the objectives of GEP and recommend an in-service teacher training package to ensure that GEP achieves its objectives.

To identify methods whereby teacher training can address the teacher supply and distribution problems, especially the lack of female teachers in the areas where they are most required to attract girls to school, including open and distance learning and pivotal training.

To identify linkages between school support strategies, including the inspector and supervisor cadres and their role in supporting teacher training.

To develop a framework to ensure the effective monitoring and evaluation of in-service under GEP.

The research process

The research process involved the following activities:

- preliminary literature review;
- instrument development;
- training of data collectors;
- data collection;
- national key stakeholder consultations;
- national key stakeholder workshop; and
- national Workshop to present the report and develop a framework for school-based INSET.

Limitations of the study

Non-generalisability of findings is part of the limitations of this study. It was pointed out that generalizations could not be made on the basis of the data presented in the study. This was because the sample size was not robust enough and was drawn from a very limited population representing only one region of Nigeria. Generalizations were, however, possible for the states participating in the GEP project since they share similar characteristics. Although information was eventually received from the other 30 states, caution is still required in the interpretation of data.

The states exhibited a lot of enthusiasm in the project. This led to concerns about the sustainability of such zeal. It was clear that the states would require on-going support to continue their work on the plans and the study funders were alerted to this.

Another major challenge therefore is the cost of implementation of the INSET framework in the 6 states. While all of the 6 GEP states are committing time and resources, additional funding would be required for a high quality, school-based, distance learning INSET package is to be developed.

LITERATURE REVIEW

2.2   Teacher Education and Training

This review documents existing information on significant areas of concern in the teacher discourse, with particular attention to current approaches to teacher education and the teacher training curriculum. Attention is focused on such factors as the curriculum and gender sensitivity in training, modes of focus of INSET and utilization of skills acquired after training with a view to showcasing viable ideas that would then be subjected to field analysis. The review examines modalities for teacher recruitment/deployment; teacher effectiveness; availability and use of pedagogic materials; quality and effective delivery of the curriculum for core subjects; teacher preparedness in gender and girls' education. The role of ICTs in teacher education and ICT use among practicing teachers will be analyzed in terms of teacher effectiveness and learning outcome.

In Nigeria, teachers are trained in the Colleges of Education (CoEs). Teachers are also trained in the faculties and departments of Education of Universities while the upgrading of teachers from Grade II to NCE is done by the National Teachers' Institute (NTI) by distance learning. In recent times, NTI also began to conduct initial training of teachers (also by distance learning) through the Pivotal Teacher Training Programme (PTTP) in order to meet the teacher needs of the Universal Basic Education (UBE). The products of this training hold the Pivotal Teacher Training Programme Certificate which equates to Grade II but which, in the National Policy on Education (NPE) specification, no longer has a place in the structure for teachers. This function has apparently now been reviewed by the National Council on Education (NCE) implying that NTI has to revert to its original mandate of upgrading Grade II teachers to NCE. CoEs are variously owned (Federal, State and private proprietors) but all come under the overseeing/regulatory functions of the National Commission for Colleges of Education (NCCE). CoEs award the Nigerian Certificate in Education (NCE) which is a sub-degree, albeit professionally demanding, diploma obtainable after three years of full-time study in a CoE. The CoEs can therefore be said to be the core of the teacher training system, expected to produce teachers for the primary and junior secondary levels.

2.3   Entry Requirements into Colleges of Education

Since its establishment in 1989, the NCCE has three times set "Minimum Standards" for the CoEs, the most recent edition reviewed in 2002. The process for another review has just been launched. The admission requirement of the NCE programme under the Minimum Standards (2002) specify a Senior School Certificate (SSC), NECO, or GCE 'O'Level with passes in five subjects with English, including three credits at the same sitting or four credits at two sittings. Two of the credits must be relevant to the course the candidate wishes to follow. Mathematics may be included in courses to meet departmental requirements. A Grade II Teacher's Certificate (TCII) with at least five years of post-qualification teaching experience, with or without the required number of credits, is also acceptable. Candidates can also apply for admission with an Associate Certificate in Education (ACE) at merit level and candidates who are successful in the pre-NCE final examinations are also admitted. The selection process into CoEs is done through the Joint Admission and Matriculation Board (JAMB).

2.4   Enrolment in Teacher Education Programmes

The conditions of the teaching profession in Nigeria are rated as unattractive and so enrolment into teacher training colleges is very low resulting in serious gaps between teacher demand and supply in every area of the curriculum. According to the Education Sector Status Report (ESSR) (2003), the situation is partly explained by low and poor quality enrolment in university faculties of education for which JAMB records of 2001/02 sessions show that only 2.2% of candidates in the UME applied to study Education. This number compares miserably with 25.8% for Administration and 20.3% for Social Science. This situation encourages Education to recruit mainly those who were denied access to their fields of choice.

To get around this problem and to beef up teacher production, the NCCE has introduced various remedial programmes which now constitute major sources of recruitment of candidates for the colleges. Entry requirements into teacher training programmes have also been reviewed

downwards to 3 credits. With 3 credits, therefore, interested candidates can get into the CoEs and then, after the remedial course, get into the teacher training programme proper. This has increased supply. This solution is regarded as a problem in itself as some quarters opine that this strategy only targets weak candidates, already rejected in other courses. Literature shows that this is contrary to the trend of attempting to raise standards in teaching by beefing up entry requirements as is being done in other countries (LEAP, 2003). However, this mode of entry into NCE programmes has indeed become dominant. NCCE collated figures depict the prevailing trend as presented in Table 1.

Table 1: Distribution of NCE 1 Students by Mode of Entry

Year	Total Enrolment in NCE 1	No of Candidates for Pre-NCE.	% Admitted through Pre-NCE
2000/01	17,182	13,860	80.66
2001/02	25,491	17,821	69.91
2002/03	30,638	23,898	78.0
2003/04	31,087	19,409	62.43
2004/05	25,272	20,314	80.38

Source: NCCE Primary Data Collected from Colleges of Education, 2004.

As shown in Table 1, over 80% of the candidates in the 2000/01 and 2004/05 sessions came in through the Pre-NCE programme. As a matter of fact, the table indicates a consistently higher percentage of candidates being admitted into the programmes through this means for each year.

Research, however, also shows that increasing course and entry requirements for teacher training and certification lower the possibility of enrolling in and completing a teacher training programme, and that when completing a programme that becomes more difficult and demanding, student teachers consider pursuing other university degrees where future earning might be higher. The argument is summed up with the submission that raising entry standards increases overall teacher quality but reduces the supply of prospective teachers and affects racial, ethnic (but not gender composition) of teachers (DFID, 2003). For Nigeria, this remains a big problem – striking the balance between attracting quality candidates for training as teachers and risking reduced enrolment in teacher training colleges.

2.5   Pre-service Teacher Education Curriculum

The curriculum for teacher education is centrally determined by the FME through the NCCE and other relevant parastatals such as the Nigeria Education Research and Development Council (NERDC). The teacher education curriculum covers major requirements: general studies; studies related to students' intended field of teaching and teaching practice. These essentially conform to what obtains in other African countries as shown in the DFID MUSTER project where the content of teacher education incorporates: subject content (adequate knowledge and understanding of the subject to be taught in school); pedagogic content knowledge (knowledge of how to teach the subject); education and professional studies; a practicum; and in some cases, general education. As shown in that study, however, the thrust of training is often tilted in a delicate balance between pedagogic and content knowledge and subject methods. Research into current practices in teacher education processes shows that the lecture mode dominates even in

methodology classes (LEAP, 2003). This has led to the conclusion that teachers trained this way cannot ever promote active forms of learning in their methodology unless they are retrained.

The DFID MUSTER project also notes a dilemma on whether to give the trainees just the content needed to teach the syllabus, or to teach them the discipline to as high a level as possible, a situation that is in turn constrained by students' entering levels and the time available. A related problem also pointed out in the project is whether subject content and subject methods are taught separately or together, and what balance obtains between them. In Nigeria, the problem is no less real as observed by Aarons (2003). Using data from CoEs over a three year period, Aarons found that despite the structuring of the NCE programme in such a way that every teacher can teach in a primary school, the fact that these teachers may be mostly subject specialists leads to the conclusion that their focus and interest is subject matter rather than methodology. Owing to limited chances of admission into the Universities, most student teachers prefer to specialize in other areas than Primary Education Studies (PES). Therefore their methods orientation is very limited. Aarons noted that the primary school teacher ought to be well grounded in methodology as well as subject matter in order to handle the delicate task of teaching children at that level.

How gender responsive is the curriculum? According to NCCE sources, there was almost no training on gender issues in the curricular of pre-and in-service teacher training institutions prior to a study conducted by NCCE in 1995. More recently, the UBE Commission has undertaken a study of Pre-service Teacher Education curriculum as part of six other studies designed to inform a proper teacher professional development package for the country. The result of this study is yet to be published, although gender sensitivity of the curriculum was not part of the terms of reference for the study.

Some insights are provided on the gender elements that a relevant teacher education curriculum should incorporate in another study conducted by NCCE with support from UNESCO (2005). In the study in which questionnaires were administered among tutors of CoEs, primary and secondary school teachers in the three Northern States with the lowest female enrolment (Yobe, Zamfara and Niger), 89.3% of the respondents supported the inclusion of gender issues into the curriculum of initial teacher education. Respondents also suggested that focus areas should include relationships that encourage girls' education (92% of responses), cultural and traditional practices that benefit girls in communities (88.2% of responses), orientation of teachers on recognising factors which hinder girls' education and measures to eliminate them (86.5% of responses), and methods that teachers could use to mobilize school communities and families to send their girls to school (90.5%).

An additional concern is on how teachers apply the new skills that they acquire when they do attend (rarely) INSET. Nothing in the literature examined shows whether teachers indeed attempt to put into practice the skills they acquire after training or how the teacher values their own performance. Literature is also silent on how much of an enabling environment is created for effective application of training outcome and utilization of the acquired skills.

The provision for INSET in the NPE makes a strong justification for adopting a rights-based approach for delivering INSET to teachers. The wide array of partners in the provision and administration of teachers' concerns brings to the fore a need for harmonization as these complexities compound the teaching and career progression of teachers. The fiscal tangle created

by concurrent legislation in basic education has variously been debated but the teacher is strongly caught in the middle of this debate. This issue must be resolved somehow and teachers' welfare and other concerns situated in an appropriate agency that can effectively speak for all teachers at different levels.

2.7   INSET and Teacher Support/Certificate Upgrading

According to the National Policy on Education (2004) "teacher education shall continue to take cognizance of changes in methodology and in the curriculum". The Policy also specifies that "teachers shall be regularly exposed to innovations in their profession" and the need for INSET is seen "as an integral part of continuing teacher education". Reality establishes the need to distinguish between opportunities for teacher upgrading and those for continuing professional development. The ESSR notes that whereas programmes to upgrade qualifications are available and easily accessible to teachers, from a variety of institutions, this is not so for professional development. In the area of professional support through school-based INSET workshops, seminars and training programmes, there appears to be very limited opportunities.

What stands for INSET programmes take the form of short courses organized by government and non-governmental agencies with support from the private sector and development partners. Courses are often mounted with preconceived ideas of the competency gaps of teachers and are so thinly spread that the overall impact is negligible. The results of a survey coordinated by the Education Sector Analysis (ESA) Unit of the Federal Ministry of Education shows that less than 50% of teachers nationwide have been exposed to any such training. Because most teachers have never been exposed to any form of such support programmes, for many there is a feeling of abandonment in the classroom, letting the teacher cope unsupported with the frustrations that teaching in today's classrooms have become for most. This creates room for loss of self confidence among teachers and allows for the easy development of negative attitudes towards the pupils. Aarons (2003), notes that "a system of teacher development at school and school cluster level is at the core of improving teaching and learning, and could be the main source of professional development opportunity".

The equation of teachers' professional development with certificate upgrading appears to have a historical origin. The policy of NCE as the minimum qualification for teaching in a primary school in Nigeria was enacted in an education sector with a preponderance of Grade II category teachers in primary schools. The National Teachers' Institute (NTI), established initially to upgrade teachers in primary schools to Grade II, also took up the conducting of Grade II certificate examinations for all teacher colleges. Recognizing in 1991, through the results of a survey conducted by National Primary Education Commission (NPEC), that as many as 50% of the states could not meet the 1995 NCE target, the National Council on Education issued a directive that all states must comply with the NCE target by 1998. The NTI subsequently expanded its programme to include NCE by Distance Learning System (DLS), the CoEs introduced NCE (Primary) for already serving teachers, while University institutes and faculties of education also mounted similar programmes. However, by 1992 no state had more than the 24% of the required (NCE) category of teachers, with 22 states and the FCT having merely 10% (FME, 1991). The publication concludes that:

It is not surprising that as of 2002 neither the 1995 Grade II target nor the 1998 NCE target {were} met. Indeed, when the Universal Basic Education Programme (UBE) was introduced, a new teacher qualification termed "Pivotal Teachers' Certificate" which at best approximates the

Grade II teachers' certificate was introduced and crash programmes, The Pivotal Teacher Training Programme (PTTP) was mounted to produce teachers with this qualification to meet the needs of UBE. So the problem of NCE minimum qualification remains unresolved and becomes even more remote (FME/UNESCO, 2003: 93).

Perhaps the most striking feature of this historical account is that in the spirited attempt to solve the teacher qualification problem, no mention is made of INSET professional development, leading to the conclusion that little distinction is made between certificate upgrading and skills and competency development as should be addressed in a typical INSET programme. So teachers remain deficient in pedagogical skills.

This is demonstrated by the result of a project designed to empower teachers of English, Mathematics, Science and Social Studies in primary schools to acquire the necessary skills and competences for effective curriculum delivery and classroom management. Adopting the cluster schools approach, the project aimed to provide basic, intensive professional schools-based support to teachers in the areas of lesson preparation and in active approaches to the teaching of reading, writing, mathematics, primary science and social studies. The project covered three clusters of 5 schools, each with one school serving as the focal school.

This project conducted by Niger State College of Education, Minna, consisted of professionally trained persons in the selected core subjects conducting a SWOT analysis on the schools selected for the project. Weaknesses observed among the practicing teachers included inability to state lesson objectives beyond the cognitive level; misconception of what is meant by previous knowledge, teacher-centred modes of teaching; lack of and inappropriate use of instructional materials; non-use and lack of curriculum modules; and incoherent and sometimes total absence of records. It is informative that all the teachers observed were professionally qualified! The subsequent workshop package was designed to meet these needs. The project had very positive ratings and was reported to have impacted strongly on the participating schools and teachers. The project has long been concluded and final report written with possibilities of wider replication not only in Niger States but in other states throughout Nigeria. Perhaps Niger State could build on this initiative in their plan development as the College of Education is a strong partner in the INSET research.

The question that remains pertinent is: who is responsible for the professional development of teachers after the initial training? The mandates of NTI and Teachers' Registration Council of Nigeria (TRCN) cover this aspect. Whereas the TRCN focuses largely focuses on quality assurance, the NTI is specially positioned to reach teachers at all levels. Charged with the responsibility for upgrading teachers from Grade II and other lower qualifications to NCE through the distance learning mode, the NTI has developed strong rural and urban links through its study centres around the country. Another mandate of the NTI is to provide INSET for teachers and it has admitted the need to pay closer attention to this aspect of their mandate.

2.8   Availability of Pedagogic material

It is generally noted that the dearth of learning and teaching materials that currently plague the education system is also an issue in teacher training colleges where the teacher trainee is often taught to use facilitative and participatory methods in a lecture style format!

2.9   Quality and Effective Delivery of the Curriculum

The ESSR notes that overall teacher quality at the primary level seems to be low and this reflects on the various part-time and sandwich programmes in which many are trained. There has been a lot of debate on the quality of the various upgrading programmes for teachers, and according to the report, most teachers in these programmes have to struggle with very simple assignments as a result of the poor entry backgrounds and perhaps ineffective training programmes. .

Teachers often do not apply in their day-to-day teaching routine the few methodologies that they have acquired. Lesson notes are often not written and where they are written, are only kept for inspectors to see (if any shows up).

2.10   Teacher Qualification Status in the GEP States

Studies have shown that despite the policy stipulation of NCE as the basic teaching qualification, less than 30% of teachers around the country held this certificate in 2003 (NCCE/UNESCO, 2005). The situation in the GEP States is presented in Table 2.

Table 2: Number of Teachers with NCE in the GEP States

State	2000	2001	2002	2003
Bauchi NCE	22,606 1,726 (7.64%) (1,365 M/361F)	13,464 1,520 (11.29%) (1,223F/ 297F)	22,606 1,726 (7.64%) (1,365M/361F)	15,497 2,624 (16.93%) (1,822M/802F)
Borno	21,601 2,839 (13.14%) (1,626M/1,213F)	11,083 2,274 (20.52%) (1,410M/864F)	21,601 2,839 (13.14%) 1,626M/1,213F)	13,637 4,208 (30.86%) (2,334M/1,876F)
Jigawa	21,519 2,150 (9.99%) (1984M/166F)	11,286 1,939 (14.40%) (1,791M/148F	21,519 2,150 (9.99%) (1,984M/166F)	13,368 3,100 (23.19%) (2,253M/847F)
Katsina	25,678 2,118 (8.25%) (1,454M/664F)	14,606 2,103 (14.40%) (1,440M/663F)	25,678 2,118 (8.25%) (1,454M/664F)	18,101 3,778 (20.93%) (2,387M/847F)
Niger	28,639 4,958 (17.31%) (2,833M/2,125F)	15,739 4,566 (29.01%) (2,531M/2,035F)	28,639 4,958 (17.31%) (2,833M/2,125F)	23,556 7,026 (29.83%) (3,888M/3,138F)
Sokoto	23,291 1,825 (7.84%) (1,335M/490F)	11,343 1,652 (14.56%) (1,267M/385F)	23,291 1,825 (7.84%) (1,335M/490F)	17,956 4,457 (25.82%) (2,887M/1,570F)

As shown in Table 2, consistently less than 30% of primary school teachers in the six states held the NCE qualification in the years 2002-3 with Bauchi as low as 7.64% in 2002. Although the 2003 figure shows a sharp surge across the states and the findings of the present study show an increase of 42% holding the NCE, the fact remains that qualified teachers are still in short supply in these states.

2.13   Teacher support manuals

In spite of the numerous training arrangements (ad hoc majorly) institutionalized for teachers, attempts to build a coherent support base for teachers in the classroom have, remained few and far between. Outstanding in this area are the projects supported by UNICEF and JICA for the Federal Ministry of Education (using the NCCE and NTI as focal points respectively) to develop teacher support strategies that can translate into better teaching and learning.

2.14   School-based INSET

One of the main challenges facing Nigeria, therefore, is the improvement of its primary education system. Research suggests that in developing countries the influence of the school on pupil learning is more important than the effect of home and other external factors compared with developed countries (Scheerens, 2000; Verspoor, 2005). Intervening at the school level and classroom level will be crucial in raising the quality of primary education in Nigeria as ultimately educational quality is obtained through pedagogical processes in the classroom: through the knowledge, skills, dispositions and commitments of the teachers in whose care pupils are entrusted. Therefore, managing the quality of classroom interaction is seen as the single most important factor in improving the quality of teaching and learning, particularly in contexts where learning resources and teacher training are limited (Carron & Chau, 1996; Alexander, 2000; Feiman-Nemser, 2001; Farrell, 2002).

Professional development therefore involves transforming teachers' beliefs, knowledge, understandings, skills, and commitments, in what they know and able to do in their individual practice as well as in their shared responsibility in order to have any real impact in the classroom (Feiman-Nemser, 2001; O'Sullivan, 2004). Changing pedagogic practices suggests the need for powerful professional development programmes as many teachers are unprepared or under prepared to teach and thus developmentally handicapped at the pre-service phase. Research suggests such programmes need to focus on the school as the best level of intervention for improving the quality of teaching and learning by involving the school head and all the teachers in creating a genuine teaching community through ownership of the process (Carron & Chau, 1996; Craig et al, 1998, Anderson, 2002; Verspoor, 2003). It also involves bringing the school closer to the community it is supposed to serve (Heneveld & Craig, 1996; Dembele, 2003).

Research also suggests that INSET, which builds on existing systems and structures and supports teachers' reflection on their own practice, can have a significant impact. It seems that for INSET to be effective, support needs to be provided to teachers to encourage them to reflect upon their beliefs and pedagogic practice, and to consider the implications of their classroom discourse practices and to explore alternatives. Therefore teachers need extended opportunities to think through new ideas and to try out new practices, ideally in a context where they get feedback from a more expert practitioner, and continue to refine their practice in collaboration with colleagues (Costa & Garmston, 1994; Joyce et al; 1997; Hopkins, 2002).

However, more time and resources for school-based INSET will be needed if observation, coaching and talk-analysis feedback are to play a useful role in teacher professional development.   It also requires a change in the role of the head teacher that goes beyond the traditional role of administrator to include the leading of pedagogic change, and requires enabling conditions being in place such as smaller classes, teacher materials and equipment, and adopting an adaptive approach to ensure that the introduction of new pedagogic approaches take into consideration the realities within which teachers work (Verspoor, 2003; O'Sullivan, 2004).

The practice of having 'expert' teachers and head teachers collaborate with other educational professionals, such as inspectors and school supervisors, to examine what is taking place in classroom and schools, and provide constructive and non-directive feedback, will also play a crucial role (Dembele, 2003).

2.15   Critical Issues for GEP

The attempt in this review has been to establish what exists in teacher education with particular focus on training and professional development through INSET. It is clear that little exists by way of INSET in a planned, coherent and sustainable manner. It is also clear that certificate upgrading cannot take the place of INSET programmes focused on developing pedagogic skills. This mix up of professional competency, development and certificate upgrading must be clearly understood and sorted out by policy makers in order for INSET to be better focused on teacher professional development. INSET should address the actual competences and skills which teachers at the basic education level of education need. This is a different issue from the certificates that a teacher possesses.

As stated in the introductory part of this study, teacher discourse is often dominated by welfare and status issues from the teacher's point of view. The general outcry is that teachers are looked down upon and receive the dregs of whatever welfare package public servants enjoy. It is also generally accepted that teaching has very low status and does not attract good quality applicants from the beginning. For the purpose of the innovations that are expected from this research, it is important to examine accountability issues on the part of teachers. In other words, how does the teacher rate their own performance? How does the society hold the teacher accountable for subsequent performance output?

The issue of girls' enrolment, participation and completion and the role of the teacher in the process are paramount. A UNICEF commissioned classroom interaction study shows that the gender dimension in teacher-pupil interaction must be neutralized in order to have a major impact on girls' participation in the classroom. Research should be conducted to identify classroom practices that would encourage the equal participation of girls in whole class, group-based and individual teaching activities. Beyond the role of teaching, the teacher must act as a role model and mentor in order to show that there really is a future for girls in public life. The INSET research should adequately incorporate this expanded image of a teacher.

The INSET research should also concern itself with addressing the shortage of women teachers in the participating states. Some viable strategies for attracting and retaining women teachers in the participating states should be explored and experimented with.   Finally, the INSET package developed must be easily replicable within the states' contextual realities and keyed into appropriate laws on teacher professional development.

3.0   METHODOLOGY

3.1   Sample

The sample included 6 GEP states (Bauchi, Borno, Jigawa, Katsina, Niger, Sokoto).
In each state, SMOE, SUBEB/LGEA, 4 representative schools (2 urban/2rural) and a College of Education were visited.

A questionnaire survey was used to gather data on the scale and range of INSET provision in the 6 states and attitudes of primary school teachers to INSET (n=559).

Semi-structured interviews were conducted with head teachers (n=25), teachers who had received INSET (n= 37), policy makers (n=11), education administrators (n=26) and college provosts (n=6).

3.2   Research design

The study, designed as a situation and capacity gap analysis for the 6 GEP states, attempted to answer the general question: what provision is there for INSET in the 6 GEP states and what do the key stake holders think of the provision?

From this, several closely related questions were derived:

What impact has the INSET provision had on teachers' pedagogical thinking, planning and classroom practice, and how have they responded to the training?
What are the strengths and weaknesses of the INSET provision in terms of its impact on teaching, learning and assessment practices?
What impact has the INSET training had on the role of head teachers in terms of providing pedagogic leadership and support?
To what extent is the current INSET curriculum for primary school teachers developing pedagogic skills and knowledge?
On the basis of the evidence gathered, what advice can be given to the FME and 6 GEP states for evolving a more coherent model of INSET for Nigeria over the next 2 years?

The study used a mixed-method approach (interviews, questionnaire survey and documentary analysis) to allow for methodological triangulation to achieve greater validity and reliability. Each of the research instruments was related to each other, ensuring a fully integrated research design. Table 3 shows how each method related to the specific research questions of the study.

Table 3: Research methods used and objectives addressed

Method used	Research objective/question				
	i	ii	iii	iv	v
Semi-structured interview with teachers	✓	✓	✓	✓	✓
Semi-structured interview with head teachers	✓	✓	✓	✓	✓
Semi-structured interview with policy makers	✓	✓	✓	✓	✓
Semi-structured interview with administrators	✓	✓	✓	✓	✓
Teacher questionnaire survey	✓	✓		✓	✓
Documentary analysis	✓	✓		✓	✓

Semi-structured interviews

Semi-structured interviews with teachers, head teachers, policy makers, education officers and CoE provosts from each of the 6 GEP states were conducted. The interviews explored their perceptions of the effectiveness of the INSET provision in their states in terms of their mode of delivery and impact on teaching, learning and assessment.

Teacher questionnaires

A questionnaire was administered to all the teachers in the 24 schools selected for the study. It explored the general provision of INSET in the states and the attitudes of teachers towards INSET for those had/had not undergone such training. Information about the teachers was gathered through the preliminary section of the questionnaire; this related to the gender of respondents, years of teaching experience and the classes they taught.

Limitations to the study

Care must be taken throughout not to suggest that the findings are generalisable to Nigeria as a whole. The 6 GEP states chosen for the study have low education indicators, particularly with regard to girls' education, which are affected by a variety of social, economic, cultural and religious factors. Further research is required in other geo-political zones to see if the patterns of INSET provision are replicated.

4.0   FINDINGS

4.1 Questionnaire Analysis

A teacher questionnaire (N=559) exploring the uptake, type and teacher attitude to INSET provided in each of the 6 GEP states was distributed to teachers working in a cross section or urban and rural schools (Table 4). Overall, the ratio of teachers from urban and rural schools was 2:1, reflecting the fact that it was easier to distribute the questionnaire to schools in urban areas where there was less of a geographical spread.

Table 4: Type of school

State	Urban	rural
Bauchi	59 (60%)	40 (40%)
Borno	72 (89%)	9 (11%)
Jigawa	79 (85%)	14 (15%)
Katsina	74 (75%)	25 (25%)
Niger	26 (29%)	63 (71%)
Sokoto	68 (69%)	30 (31%)
Total	378	181

Table 5 shows a gender breakdown of the teachers who completed the survey. Overall, male teachers outnumbered female colleagues by a ratio of 2:1, with Sokoto and Jigawa showing the poorest ratios at nearly 4:1.

Table 5 Gender of teachers

State	Male	Female
Bauchi	70 (71%)	29 (29%)
Borno	40 (49%)	41 (51%)
Jigawa	74 (80%)	19 (20%)
Katsina	73 (74%)	26 (26%)
Niger	49 (55%)	40 (45%)
Sokoto	80 (82%)	18 (18%)
Total	368	173

Table 6 shows the mean of years spent in teaching for the sample of teachers in each of the 6 states. The mean for all 6 states was 11 years.

Table 6: Mean of years spent in teaching

State	Mean of years in teaching
Bauchi	10
Borno	11
Jigawa	14
Katsina	12
Niger	10
Sokoto	10
Total	11

Table 7 shows a breakdown of the teaching qualifications held by the sample of teachers from each of the states. Less than half of the teachers surveyed (42%) held an NCE qualification which was set in the 1990s as the minimum standard qualification for primary and junior secondary school teachers.

Table 7: Teacher qualifications by state

State	NCE	Grade II	Diploma	Degree	Other
Bauchi	36	49	11	3	0
Borno	44	18	3	5	11
Jigawa	35	43	4	2	9
Katsina	34	33	9	2	21
Niger	55	29	3	1	1
Sokoto	32	42	4	5	15
Total	236 (42%)	214 (38%)	34 (6%)	18(3%)	57 (10%)

Table 8 shows a breakdown of those who reported they had taken/not taken part in INSET. Only those who had taken part in INSET following an initial course of training were counted: unqualified teachers who had received initial training while in service were not included.

Table 8: INSET taken by teachers

State	INSET	Non-INSET
Bauchi	4 (4%)	95 (96%)
Borno	5 (6%)	76 (94%)
Jigawa	21 (23%)	72 (77%)
Katsina	44 (44%)	55 (56%)
Niger	21 (24%)	68 (76%)
Sokoto	31 (32%)	67 (68%)
Total	126 (23%)	433 (77%)

Overall, less than a quarter of teachers in the sample had received INSET. However, across the states there was a large degree of variation: only 4 and 6 per cent of teachers in Bauchi and Borno respectively reported that they had taken part in INSET compared to 44 per cent in Katsina. However, 20 (20%) teachers in Bauchi and 15 (19%) in Borno reported they had taken part in NCE upgrading programmes.

Teachers were asked to report on the provider, nature and length of their INSET. Table 9 gives an overall break-down of INSET providers.

Table 9: INSET providers

Provider	Number	Percentage
CoE	7	6
LGEA	24	19
NTI	20	16
Private company	8	6
SUBEB	11	9
UNICEF	53	43
Other	1	1
Total	124	100

Of the 4 teachers who had taken part in INSET in Bauchi, 2 had taken short NTI courses on developing teaching aids and the other courses were provided by UNICEF on subject teaching and a CoE also on teaching aids.

In Borno, 2 teachers had taken courses provided by a CoE on class management, 2 by a private company on the use of computers in the classroom, and 1 by NTI on class management.

In Jigawa, 7 teachers had taken courses run by NTI covering the development of teaching aids, class management and subject leadership, 5 had taken SUBEB courses on teaching materials, 1 on class management and 1 teacher had taken a course on early childhood education. Of the remaining 7 teachers, 2 had taken courses offered by private providers covering health education and class management, 1 had taken a mathematics association course and the other 4 had followed a UNICEF supported course on the teaching of core subjects.

In Katsina, 20 teachers reported that they had been on courses organized by the LGEA covering subject teaching, teaching aids, class management and 1 teacher stated she had attended a women's teacher forum. Sixteen teachers reported they had attended courses run by UNICEF, sometimes run in conjunction with a CoE, on core subject teaching, teaching aids, assessment and record keeping, class management, gender sensitivity and health education.   Four teachers reported they had attended courses on subject teaching run by a CofE, and 4 teachers had attended short courses run by NTI on subject teaching and the development of teaching aids. Overall, the findings suggest Katsina is investing more in the INSET of its teachers at LGEA level and is receiving more input from UNICEF compared to the other 5 states.

In Niger, 13 teachers had attended courses organized by UNICEF, some of which had been run in partnership with a CoE, covering subject teaching, the development of teaching aids, class management, gender issues, record keeping and health education. Four teachers reported they had been on SUBEB courses covering subject teaching and record keeping, and 4 had attended NTI courses on subject teaching and class management.

In Sokoto, 19 teachers reported they had attended UNICEF courses covering subject teaching, the development of teaching aids, gender sensitivity and health education. Four teachers stated they had been on LGEA organized courses covering subject teaching and record keeping, and 2 had attended courses organized by SUBEB on subject teaching, class management and the development of teaching materials. Four teachers stated they had attended courses organized by the private sector on class management and 2 had attended NTI courses.

In terms of coverage, it was reported that some courses covered more than one topic such (e.g. subject methodology and teaching aids) so it was not possible to give a precise breakdown of course content. Overall, however, the findings suggest nearly 40% of the INSET courses were in subject methodology and just over 20% were in the development of teaching aids. Class management accounted for nearly 12% and health education, gender sensitivity and record keeping accounting for just under 10%.

Attitudes to INSET

In order to measure the attitudes of the teachers towards INSET, respondents were given a series of statements and asked to indicate their agreement/disagreement using a 5-point likert scale. A similar set of statements were given to both the teachers who had and those who had not received INSET. The analysis of the results showed overwhelming support for INSET with most items generating a modal score of 5 (strong agreement) or 4 (agreement) from both groups of teachers.

4.2 Teacher Interview Analysis

Thirty seven teacher interviews were analyzed from 11 urban and 7 rural schools from across the 6 states. Thirty of the teachers were male and 7 were female, their average age was 32 years and they had been in post for an average of 11 years. Twenty four of the teachers reported that they had attended UNICEF courses, ranging from 2, 3, 4 and 6 days, covering the teaching of core subjects, lesson planning, record keeping, continuous assessment, teaching aids, class management and gender sensitive teaching. Fifteen teachers reported that they had attended SUBEB courses of 2 – 3 days in length mainly covering teaching methodology, and 2 reported they had attended SMOE courses. Three teachers had attended 3 day courses on subject

methodology offered by NTI and CoE, and 3 teachers had attended courses offered in the private sector on classroom management and use of computers. Ten teachers had attended more than one INSET course.

INSET training needs

When asked about their current INSET training needs, 22 of the teachers reported they would like more training in subject methodology and 4 stated they would like more input on subject knowledge. Six teachers said they would like more training in class management and 5 in the production of teaching aids. Record keeping, continuous assessment, training in the use of computers and running a school library were mentioned by 2 teachers. A further 2 said they would like to see more school-based training for all teachers in their schools.

School-based INSET

When asked about whether they had taken part in any form of school-based training during the last year, 31 teachers reported that they had not received any such training. Of the 6 who did report they had taken part in school-based INSET, 2 reported it had been led by the head teacher and the other 4 reported that it had taken the form of 'cascade' training whereby those who had been on courses reported back to the rest of their colleagues.

How INSET had improved teaching

When asked if their INSET had improved their teaching, 20 teachers reported that it had improved their understanding of how to teach their subject and their effectiveness in the classroom. Ten teachers stated it had led to a greater use of teaching aids which had improved the quality of their teaching and pupil learning. Improvements in class management were reported by 4 teachers, and 2 teachers reported it had improved their pupil record keeping and continuous assessment. One teacher stated INSET had improved the quality of his interactions with pupils and another that the use of radio had improved the listening skills of his pupils.

Improvements in pupil achievement

In answer to the question on how their involvement in INSET had improved their pupils' learning, 14 teachers reported it had led to improved learning outcomes measured by examination performance, and 11 reported it had led to greater pupil understanding. Six teachers also reported improvements in class assignments and greater pupil participation and attendance in lessons; 2 mentioned improvements in the reading ability of their pupil and listening skills.

INSET specifically addressing the needs of girls

When asked about whether they had attended INSET specifically addressing girls' education, 8 reported they had attended UNICEF workshops on child friendly methods and gender sensitive teaching. However, 29 teachers reported that they had not attended such courses.

Effectiveness of INSET addressing the educational needs of girls

Of the 8 teachers who had attended the GEP workshops on girls' education, all felt they had been effective in raising awareness of the educational needs of girls to improve enrolment, retention and completion and in improving girls' participation in class work.

Gender disparity

In answer to the question as to why girls are less likely to come to school and complete their education, 19 teachers thought that parental attitudes towards girls' education were contributing to the problem as many parents considered it more important to educate boys. Fourteen teachers stated that early marriage contributed to girls dropping out of school and a further 5 referred more generally to cultural and religious attitudes impacting on enrolment, retention and completion rates. Other contributing factors mentioned were poverty (8), hawking (5) poor sanitary facilities (4) and distance of the school from the children's homes.

INSET needed to improve girls' education

In a follow up question the teachers were asked about what kinds of INSET were needed to improve girls' enrolment, retention and participation in classroom activities. Eight teachers thought there should be more workshops on teaching methodology targeted specifically at training in gender sensitivity and actively involving girls in class activities and 5 advocated guidance and counselling courses. Twenty two teachers thought that work shops on gender equality aimed at parents, teachers and community leaders were important to emphasise the importance of girls' education, and to bring the school and the local community closer together.

Follow up observations to INSET training
When asked if there has been any follow up observations following their INSET, 29 teachers reported that there had not been any. Of the 8 who reported they had been observed, 3 said they had been observed by state inspectors, 3 by the GEP state coordinator and 2 by their head teachers. One teacher reported that he had been interviewed about his training by a LGEA officer.
Timing of INSET
In response to the question as to when they attended INSET, 28 of the teachers reported that it had taken place during school hours through day release from the school. Of these 28 teachers, 4 reported that most of the INSET took place after the examination period had finished. Eight reported their INSET took place during the holidays and 3 said they attended at weekends.
Head teacher's role in INSET
When asked if their head teachers had played an important role in leading the school's INSET, 16 teachers stated that their head had offered no curriculum leadership. Of the 21 teachers who did report that the head teacher was involved in directing the school's INSET, most reported it was at the level of administration: selecting and encouraging teachers in consultation with the LGEA to go on courses. Only 4 teachers reported their head teacher had taken an active role in leading school-based INSET by cascading training they and other teachers had received to the rest of the teachers in the school.
Head teacher's support in addressing INSET needs
In a follow up question, the teachers were asked if their head teacher had been supportive in addressing their INSET needs. Ten teachers stated that they did not feel supported and 25 reported that they felt supported in that the head teacher allowed and encouraged them to attend INSET. Three teachers stated that responsibility for INSET lies with the LGEA and SUBEB officers in terms of nominating teachers, therefore the head teacher could not directly address their INSET needs.
Key players in deciding school's INSET needs

In response to the question asking who decides the school's INSET needs, 15 teachers thought the SUBEB training officers were the key players and 12 thought it was the LGEA school supervisors. Eight teachers thought Education Secretaries were key players and 1 teacher stated it was SPEB officers and 1 GEP coordinators. Fifteen teachers stated the head teacher also played an important role in consultation with local SUBEB and LGEA officers.
Impact of class size on the effectiveness of INSET
When asked if class size limited the impact and the usefulness of the INSET they had received, 10 reported that class size did not affect their teaching methodology and 6 stated that training in the use of group work provided a means of coping with large classes. However, the remaining 27 teachers felt that class size did impact on the introduction of new teaching approaches and that classes of more than 35 pupils often led to traditional rote learning. Three teachers also stated that large classes made it difficult to implement group work practices because of problems with class management and overcrowding in the classroom.

Impediments to teachers taking part in INSET

In response to the question exploring the teachers' views on what they thought were the main impediments to teachers taking part in INSET, 15 teachers mentioned problems with the unding of fees and 11 reported problems with travel costs and distance from the training venues. Thirteen stated that there were problems with the system whereby teachers were nominated to go on courses, and 11 saw the main problem as the lack of availability of INSET courses and lack of information.

Design of INSET to address teachers' professional needs

When asked what type of INSET they would like to address their current professional needs, courses on teaching methodology, particularly in the core areas of English, maths, science and social science, featured very highly: 26 teachers wanted subject-based courses to develop their knowledge of how to teach their subjects more effectively. Courses covering the production of teaching aids, particularly those which drew on the local environment, were seen as a priority by 8 teachers and class management by 4 teachers. Guidance and counselling was seen as a priority by 2 teachers, and mother tongue teaching and use of computers were mentioned once.

Other comments

Asked whether they had any further comments, 20 teachers stressed the need for regular INSET to be provided in order to address the needs of all teachers and to enhance their professional status and keep teachers up-to-date with modern innovations. Five teachers thought it could be more effectively delivered through school-based training and 3 talked about the need to bring schools together into clusters so that teachers can share their professional practices. Two teachers thought there should be proper supervision and monitoring of INSET so as to evaluate its impact on classroom teaching.

4.3 Head teacher interview analysis

Twenty five head teachers were interviewed from the 6 states. Fourteen of the schools were from urban areas and 11 were rural Twenty two of the head teachers were male and 3 were female, their average age was 49 years and they had been in post as head teachers for an average of 9 years. The average number of boys for the 25 schools was 920 and for girls it was 627. The average number of male teachers employed in the schools was 18 and for women it was 12.

Principal training needs of teachers in school

When asked about the principal INSET needs of their teachers, 17 of the head teachers stated that developing subject methodology was a major priority, particularly in the teaching of English, maths and science, and 8 mentioned the need to develop teachers' subject knowledge. Lesson planning and the production of schemes of work were mentioned 9 times and record keeping 6 times. The development of teaching aids was mentioned 3 times and the need to develop continuous forms of assessment 2 times. Class management was also thought to be a priority by 3 head teachers. Two head teachers thought upgrading Grade II teachers to NCE was a priority and 1 thought the management of pupils' health should be addressed.

General provision of INSET in State/LEAG

Sixteen head teachers stated that there was no general provision for INSET within their authority and 3 felt it was satisfactory. However, all the head teachers felt there was a need for a major expansion of INSET provision to develop teacher capability and raise standards. Two head teachers went on to discuss the ad hoc arrangements for INSET within their authorities and the

need for a coherent policy and framework setting out quality benchmarks for providers. The situation was summed up by 1 head who stated INSET is provided as an ad hoc arrangement: '… there is no proper framework and the provision is never regular … the LGEA mainly provides certificate upgrading courses'.

INSET programmes attended by teachers

When asked about the INSET attended by their teachers in the last year, 17 head teachers stated that their teachers had attended courses provided by UNICEF covering the teaching of the core subjects, lesson planning, record-keeping and health education under the Child Friendly Schools initiative. Six head teachers said their teachers had taken NTI courses and 5 mentioned Colleges of Education. SUBEB provision was mentioned 3 times and UBE courses were mentioned twice. Courses provided by the SOME, STAN, NUT and the private sector were mentioned once and 1 head teacher admitted that none of his teachers had been on courses..

School-based INSET provided this last year

When asked if there had been any school-based INSET during the last year, 6 head teachers stated that there had not been any such provision. The rest of the sample claimed there had been some form of school-based workshop covering: teaching methodology (5), lesson planning (4), record keeping (2), instructional aids (1), mother tongue teaching (1), class management (1), continuous assessment (1), subject knowledge (1). Three heads specifically mentioned that school-based workshops had been provided by UNICEF, SUBEB and the LGEA. Four also mentioned that they had organised workshops so that those who had been on INSET could 'cascade' their training back to other colleagues in the school.

INSET providing greatest benefit to pupils

In response to the question about which of the INSET activities had had the greatest benefit to pupils through increased teacher capability, improvements in lesson planning was mentioned 7 times, followed by use of teaching methodology (5), teaching aids (4), class management (2), assessment (1) and record keeping (1). The quality of UNICEF provision in these areas was specifically mentioned by 12 of the head teachers, while 3 referred to NTI provision and 1 to CoE and LGEA courses.

How INSET has improved teaching effectiveness

In a follow up question, the head teachers were asked to give specific examples of how the INSET had improved teacher effectiveness. Nine mentioned that they had observed improvements in the teaching of the core subjects and 4 mentioned the greater use of teaching aids in lessons and greater pupil understanding. Improvements in assessment practices were mentioned 3 times and record keeping twice. Two head teachers referred to the introduction of child friendly methods leading to improvements in teacher-pupil relationships and pupil motivation. Two head teachers stated they had noticed no visible improvements in teacher effectiveness. However, a head teacher summed up his position on the benefits of INSET by stating '… my best teacher has received the most training'.

How INSET has improved pupil achievement

In answer to this question, 7 head teachers referred to improvements in academic performance in the common entrance exams, 4 mentioned improvements in pupil understanding and 3 mentioned improvements in class assignments. One head teacher also mentioned improvements in reading standards.

How INSET has addressed girls' educational needs

In response to this question 12 head teachers felt the UNICEF supported GEP INSET initiative was raising the importance of girls' education and was having an impact on enrolment, retention and completion rates of girls, leading to improvements in their educational achievement. They also felt that parents were being educated in the need to send girls to school. Four head teachers

reported that teachers were paying more attention to girls in class and creating more of a child friendly environment by discouraging girl segregation in class. Four head teachers also reported that they were targeting women teachers to send to GEP workshops. However, 4 head teachers stated that girls' educational needs were not being addressed.

Usefulness of INSET for meeting training needs of teachers

Twenty of the head teachers thought the content of the INSET programmes were useful and addressing the pedagogic needs of teachers because of their emphasis on teaching and learning. Only 2 stated that they did not think them useful. Many felt that while the programmes were useful, there was too few of them to address the real needs of teachers.

Effectiveness of the delivery methods for INSET

Many head teachers talked in very general terms about the effectiveness of the delivery methods and 17 thought they were effective when offered as practical, interactive workshops with supporting materials for the teachers to take away. Only 2 head teachers thought the delivery methods were not effective because of the short duration and lack of follow-up.

When teachers undertake INSET

When asked about when the INSET took place, 12 head teachers reported it was taken during school holidays, 16 during school hours, 3 after school and 2 at weekends. Many head teachers pointed out it that it was often determined by the sponsors with, for example, UNICEF/SUBEB courses taking place during the working day and NTI courses taking place during the holidays.

Increasing the involvement of staff in INSET

In response to the question as to how more staff could be encouraged to take part in INSET, 18 head teachers mentioned the need for more provision and nomination of teachers to go on courses. Within this group of head teachers, 7 mentioned the need for more school-based INSET involving all of the staff through specific staff training days being provided throughout the school year.   Four head teachers also discussed the need for financial incentives and career enhancement opportunities being linked to INSET to encourage teachers to take part.

Impediments to providing staff with the best possible INSET

In answer to this question, the cost of fees was mentioned by 14 of the head teachers and costs of travel by 6, particularly from schools located in rural areas. Not being nominated was mentioned 4 times and lack of LGEA support was mentioned twice, together with teacher workload. Lack awareness of INSET was seen as being a problem by 2 head teachers and 2 mentioned the unwillingness of teachers to participate in such training.

Head teacher training in providing INSET

When asked if they had received any training in providing curriculum leadership and directing school-based INSET, 17 stated they had received some form of training from UNICEF and 2 from their LGEA and SUBEB. Five head teachers reported that they had received training in school management. Four head teachers reported they had received no training.

Key players in deciding the school's INSET needs

In response to the question about who decides the school's INSET needs, 11 head teachers mentioned their LGEA committee, and 10 stated that it was SUBEB officials. The MoE was mentioned 5 times and SPEB and GEP coordinators were mentioned 3 times. Only 4 head teachers thought that they were key players in deciding the school's INSET needs.

School development plan and the prioritising of INSET

When asked if there was a school development plan and whether INSET featured as a priority, 8 head teachers claimed there was and that INSET did feature. Three reported that they had a

development plan but that INSET was not listed as a priority, and 14 reported that they did not have a school development plan.
Other comments
Asked if they had any other comments to make on INSET and how it could be improved, 9 head teachers stated that there was a need for more systematic and coherent provision, and greater financial support from state government, and that SUBEBs and LGEAs should be expected to draw up INSET development plans. Four head teachers stressed the need for more school-based training with training days being provided throughout the school year. Two mentioned there was a need to involve school management committees in INSET and that head teachers should be more fully consulted on the training needs of their teachers. It was generally felt that all teachers should receive some form on INSET to keep them up-to-date and to enhance their professional development.

4.4   College provost interview analysis

Five college provosts and one deputy provost were interviewed from each of the 6 states. All were male, their average age was 52 years and they had been in post for an average of 11 years.

A breakdown of the reported gender of students on NCE courses in each of the colleges is given in Table 10 below.

Table 10: Gender of Students in 6 Colleges of Education

College of Education	Male	Female
Bauchi	2742	841
Borno	2219	1294
Jigawa	NA	NA
Katsina	6409	621
Niger	3879	2233
Sokoto	7146	2903
Total	22395	7892

The ration of men to women training for the NCE was nearly 3:1 reflecting the general ratio of men to women teachers across the 6 states. The gender disparity was far worse in Katsina CoE where the ration of men to women was 10:1.

Gender disparities were also reflected in the numbers of men and women employed as lecturers in each of the colleges as shown in Table 11. Overall, men lecturers outnumbered female lecturers by a ratio of nearly 5:1 with Katsina CoE having the greatest disparity (a ration of 21:1 men to women).

Table 11: Gender of Staff in Colleges of Education

College of Education	Male	Female
Bauchi	126	24
Borno	NA	NA
Jigawa	NA	NA
Katsina	297	14

Niger	212	68
Sokoto	292	89
Total	927	195

INSET training needs of primary school teachers in the states
When asked about the training needs of primary teachers in the states, all 6 provosts cited the need to update teachers' pedagogical knowledge of how to plan and teach the core subjects and to upgrade the qualifications of Grade II teachers. Three provosts discussed the need to development teachers' subject knowledge and language skills, and 2 discussed the need to develop teachers' ability to make and use teaching aids in the classroom, particularly from the local environment, to enhance and make the curriculum more relevant to the children.

Provision of INSET for primary school teachers

When asked about the provision their colleges were making for INSET, 4 of the provosts stated that their colleges provide courses for those teachers who want to upgrade to a NCE/DL qualification at weekends and during the holidays (Bauchi, Borno, Jigawa, Sokoto).   One Provost said his college (Niger) offered methodology courses on request through its consultancy unit, and another (Katsina) said his college offered 2 – 5 day subject methodology workshops in English, maths and guidance and counselling. In addition to it upgrading programmes, Sokoto offered workshops in the teaching of the core subject, gender sensitive teaching and school management.
Provision for follow-up evaluation of INSET in schools
When asked if they carried out follow up visits to the schools to evaluate the effectiveness of their INSET programmes, 1 provost (Sokoto) admitted his college makes no such provision, two (Borno, Katsina) said they did but did not describe the means by which they carry out such evaluation, and 2 (Bauchi, Jigawa) said it was the responsibility of the SUBEB or LGEA. Only one provost stated that his director of assisted programmes carried out follow-up visits to schools.
How INSET had improved teaching effectiveness
In response to the question asking how they knew their programmes were adding to teacher capacity within their states, 1 provost (Niger) admitted his college carries out no impact assessment and 2 (Borno, Jigawa) talked in general terms about improvements in teacher effectiveness indicated by increases in the number of primary pupils going on to secondary schools within the state. Two provosts said they measured it through the examination success of Grade II teachers and 1 (Katsina) stated that his sponsoring LGEA indicated improvements in teacher effectiveness, especially in the teaching of English and mathematics.
How INSET was addressing girls' educational needs
When asked how the programmes were addressing the educational needs of girls, all of the provosts talked in very general terms about how they were trying to address such needs through greater gender awareness, although few mentioned how it was specifically being addressed in their programmes. However, 3 provosts (Bauchi, Niger, Sokoto) stated they offered gender awareness workshops in collaboration with UNICEF as part of its CFS initiative.
Usefulness of the content of the INSET for meeting the training needs of primary teachers
When asked to comment on the usefulness of the content of their INSET programmes in addressing the needs of primary teachers, all 6 provosts thought the content was useful and relevant in covering the subject content of the primary curriculum and in providing training in lesson planning, record keeping and class management. In addition, 1 provost (Katsina) discussed how the content is also determined by the sponsors (i.e. LGEAs, SUBEBs, NGOs).

Effectiveness of the delivery methods of INSET
When asked how effective they thought the current delivery methods of INSET programmes were, 4 provosts (Bauchi, Jigawa, Katsina, Niger) talked in general terms about the adequacy of their facilities and the ability of their staff to train primary teachers, with 1 provost (Jigawa) stating that they only use primary specialists to deliver the training. Only 2 provosts (Borno, Sokoto) interpreted the question more broadly by discussing the need for more varied forms of delivery of courses beyond the traditional lecture format through the introduction of distance learning supported by multi-media facilities, and for the need to move towards activity-based workshops and course materials to support independent learning.

Monitoring and evaluating the quality of INSET
In answer to this question about how they assure the quality of their primary INSET courses, 2 provosts (Katsina, Sokoto) stated that there is no formal monitoring of such courses and 1 provost (Bauchi) stated that it came under the brief of the NCCE when it carries out its 5 yearly review of the college. Two other provosts (Borno, Jigawa) stated they monitor the quality of courses through student evaluations and monitoring of student assessments.

Timing of INSET provision
When asked about when they put on INSET course for primary teachers, 3 provosts (Borno, Jigawa, Niger) stated they only provided them during school holidays, while the rest catered for day release, weekends and holidays. One provost (Katsina) stated that the timing is often determined by the sponsor: for example MoE, SUBEB courses often took place on a day release basis whereas ETF courses took place during holidays.

Impediments to providing teachers with INSET

In answer to the question as to what they thought were the main impediments to the colleges providing effective INSET, 3 provosts (Borno, Jigawa, Niger) cited the lack of funding made available for such courses. One provost (Niger) stated that Education Secretaries were not prioritising INSET and one (Katsina) also thought there was a lack of commitment on the part of head teachers to release teachers as they did not see it as a priority for their schools. In addition, sponsors (LGEAs, SUBEBs) were failing to make use of the provision on offer. Three provosts (Bauchi, Borno, Sokoto) thought the costs of travel and the remoteness of many schools, particularly in rural areas, from the colleges made it difficult for teachers to attend, and 1 (Bauchi) cited teacher workload as a problem. One provost (Borno) thought that the lack of information and communication technologies were making it difficult for his college to develop distance learning approaches to cater for the teachers in remoter areas.

Key players in deciding teachers' INSET needs
All 6 provosts saw LGEA officers or Education Boards as key players in deciding the INSET needs of their teachers and 4 provosts (Bauchi, Borno, Jigawa, Katsina) mentioned SUBEBs. Two provosts (Borno, Katsina) thought that the head teacher played an important role in determining a school's INSET needs and in selecting who went on INSET courses.

Addressing the shortage of women teachers
When asked about how they were specifically addressing the shortage of women teachers in their states, particularly in rural areas, 2 provosts (Bauchi, Born) said they had been running campaigns to recruit more women teachers and 3 (Borno, Katsina, Niger) operated special quotas for women by giving preference to female applicants. Katsina was also actively trying to recruit more women lecturers to address the gender balance. One provost (Jigawa) also stated that the SUBEB was giving preference to women applicants for sponsorship on the NCE. Two colleges (Borno, Katsina) were also offering special accommodation arrangements to women students and 1 (Sokoto) was running gender sensitization workshops for women teachers.

Making teacher training more accessible to women in rural areas

Building on the previous question, provosts were asked how they could make their teacher training courses more accessible to women in rural areas. Two provosts (Jigawa, Katsina) stated that more extensive public campaigns involving religious and traditional leaders on the importance of girls' education were needed to change cultural perception along with a greater political will to improve the situation. They also thought school-based training had the potential to recruit more women into the profession and that much greater resources were needed to address the problem. Similarly, 4 provosts (Bauchi Borno, Niger, Sokoto) thought that more flexible arrangements (e.g. part-time training, distance learning, outreach centres, cluster groups) were needed for training women in rural areas and that there needed to be greater collaboration between the colleges and LGEAs and SUBEBs.

Other comments

Asked if they had any other comments to make, 4 provosts (Borno, Jigawa, Katsina, Niger) mentioned the need for the prioritising of INSET at national and state level through increased funding and sponsoring of teachers from government and donor organisations. Two provosts (Katsina, Sokoto) emphasised the need for a national framework for INSET against which to benchmark standards for training provider and for monitoring the impact and quality of INSET. Two provosts (Borno, Katsina) also called for better pay, induction and career development opportunities so as to make teaching a more attractive profession.

4.5   Education administrator interview analysis

Twenty six SUBEB/LGEA administrators were interviewed. Twenty of the administrators were male and the average number of years spent in post was 9 years.

Principal INSET needs of primary teachers in authority

In response to the question about what they thought were the principal training INSET needs of their teachers, 21 education administrators mentioned subject methodology and 19 mentioned improving teachers' subject knowledge. Like the provosts, 10 administrators mentioned the need to improve teacher competence to teach through the medium of English. Record keeping and lesson planning were mentioned twice and training in class management, continuous assessment, use of instructional materials and certificate upgrading were mentioned once.

General provision of INSET in State/LGEA

When asked about the general provision of INSET in their state and LGEA, 24 of the administrators thought it was inadequate due to lack of funding and all talked about the need for regular courses to enhance teachers' pedagogic skills. One administrator in Jigawa thought provision had improved since the intervention of the GEP project but thought the state should be doing more.

External INSET programmes taken by teachers in State/LGEA

When asked about what external INSET provision they were aware of the state/LGEA, 5 of the education administrators mentioned UNICEF courses, and NTI, CoE and UBE/World Bank courses were mentioned once.

INSET engaged in by teachers in authority which has had the greatest benefit to pupils

In response to the question asking which INSET activities have impacted the most on teacher effectiveness, there was general agree that where INSET had been provided there had a positive impact, particularly the workshops on teaching methodology. However, it was felt that the

general lack of INSET provision meant that there was little overall impact on teacher effectiveness.

Examples of how INSET had improved teaching effectiveness

When asked about how INSET had improved teacher effectiveness, the administrators spoke generally about improvements in examination scores and the number of pupils going on to secondary school. Several also mentioned improvements were reflected in school inspections and in observations of teachers' practice.

Examples of how INSET had improved pupil achievement

Again, in response to the question exploring how INSET had improved pupil achievement the administrators spoke in very general terms and few could provide specific examples beyond perceived improvements in examination performance.

How INSET had addressed girls' educational needs

Very few of the administrators could give specific examples how INSET within the authority had addressed the educational needs of girls and most talked generally about teacher being more gender sensitive. Two administrators mentioned increased girl enrolment in primary schools.

Usefulness of the content of INSET for meeting the training needs of teachers

In answer to the question on how useful they thought the content of the INSET was in meeting the training needs of teachers, most were very vague about the content and spoke in general terms about the benefits of the training on subject methodology and subject knowledge.

Effectiveness of delivery method of INSET for meeting the training needs of teachers

Again, the administrators spoke in general terms about the effectiveness of the delivery of INSET; however 4 administrators thought the NTI distance learning mode was effective in reaching a greater number of teachers, particularly in rural areas.

When teachers in districts undertake most of their INSET

Most of the administrators reported that the majority of INSET took place during school hours through day release. Fifteen of the administrators also reported it took place during the holidays and 5 mentioned weekend provision.

Major impediments to providing teachers with the best possible INSET

When asked about the major impediments to providing teachers with the best possible INSET, 20 education administrators mentioned lack of funding and 10 mentioned the cost of the fees deterring teachers. Travel time and costs were mentioned by 6 administrators and 5 discussed the unwillingness of teachers to participate because of the personal costs involved. The absence of suitable INSET and training materials were seen as a problem by 4 of the administrators.

Extent to which the quality of INSET provided in authority is affected by location and existing resources

Twenty of the education administrators thought the quality of the existing INSET was being affected by the low level of funding for INSET, and 15 thought schools in rural areas were disadvantaged because of their distance from zonal training centres making it difficult for teachers to attend INSET.

Ways in which access to INSET could be improved

Fifteen education administrators thought there was a need to develop school-based training through distance learning supported by cluster training centres so that all teachers could participate in INSET. Five talked specifically about the Pivotal Teacher Training Programme

with its combination of distance learning, face-to-face tutorials and integrated school experience as proving a useful model for improving teacher access to INSET.

Effectiveness of head teachers in leading and supporting INSET

Head teachers were generally seen as being effective in administering the INSET provision in their schools and supportive of teachers going on courses. Five administrators also saw the head teacher as having a key role to play in leading school-based training.

Effectiveness of SMOE in supporting administrator's role in providing INSET

The SMOEs were generally seen as being supportive of the education administrators in the provision of INSET. However, four administrators were dissatisfied with the support they were receiving from the state ministry with regard to INSET.

Training received for providing INSET in authority

When asked about the training they had received in delivering INSET within their authority, 15 administrators said they had attended SUBEB courses or UNICEF courses. Most said they would welcome further training to support them in their roles.

Key players in deciding INSET needs of teachers in authority

SUBEBs, Education Boards and management staff of the LGEA were seen as being key players in deciding the INSET needs of teachers by most of the education administrators. Four administrators also mentioned the role of the Education Secretary in deciding policy on INSET. Extent to which INSET features in education development work plan of the LGEA Education administrators working in 3 of the states reported there was no strategic plan for the provision of INSET in their authority and therefore the provision was ad hoc. Administrators working in the other three states reported that there was some form of planning with regard to the provision of INSET.

4.6   Policy maker interview analysis

Eleven policy makers were interviewed (i.e. 5 Permanent Secretaries, 3 Executive Chairs, 2 Directors of School Services, 1 Executive Secretary). Ten of the policy makers were male with only one of the Permanent Secretary posts being held by a woman. The policy makers had been in post for an average of 3 years. .

Policy of organisation towards the provision of INSET for primary school teachers

When questioned about their policy on the provision of INSET for primary school teachers, policy makers from 2 of the states reported that there was no strategic policy. For the other 4 states, the policies set out the categories of teachers who could attend INSET (e.g. teachers who had been in service for two years). For 2 states, the priority was the upgrading of teachers. Only two states reported that they were trying to develop school-based training as a way of involving all teachers in INSET.

Principal INSET needs of primary teachers in state

Asked about the principal INSET needs of primary teachers in the states, 9 of the policy makers thought subject methodology, particularly in the core subject was a priority followed by the updating of teachers' subject knowledge. Two policy makers stated the priority was the upgrading of certificates and 2 mentioned training of head teachers. The use of instructional materials, record keeping, class management and guidance and counselling received a single mention.

Role in shaping INSET strategy.

When asked about their role in shaping INSET policy, 5 policy makers talked about their role in ensuring policy is implemented and in overseeing the administration of the implementation. Four policy makers also discussed their role in monitoring the implementation and impact of INSET through quality assurance procedures and inspection. Two policy makers discussed their role in working with partners in the provision of INSET and 1 specifically mentioned working with donors to develop school-based training in the state.

Providers of INSET in State
In response to the question exploring who were the providers of INSET in the state, 7 of the policy makers referred to the support they received from development partners and 2 specifically mentioned UNICEF. The role of CoEs in providing INSET was discussed by 6 of the policy makers and universities were mentioned 3 times. Professional associations were mentioned twice, and UBE, SUBEB and NTI were mentioned once.

Aspects of teacher development covered in INSET

When asked about what aspects of training were covered in the INSET provided by the state, 8 policy makers discussed subject knowledge and teaching methodology. Five discussed training in gender awareness and 3 mentioned head teacher training. Certificate upgrading, guidance and counselling and special educational needs were mentioned once.

How INSET is delivered to teachers

In response to the question on how INSET is delivered, 10 policy makers discussed the use of seminars, workshops and conference to provide short courses to teachers through day release and in the holidays. Two discussed the use of full-time study at CoE/university and 2 mentioned the use of school-based training which involved mentoring and classroom observation.

Most and least successful elements of INSET provision

When asked to comment on what they thought were the most successful elements of their INSET provision, 3 policy makers thought the workshops covering teaching methodology and subject knowledge were having the most impact. Two discussed the use of full-time study to upgrade teacher skills and 1 mentioned the use of refresher courses. One policy maker thought the collaboration with donor partners and UBE was the most successful element of the states provision, and 1 referred to the monitoring and implementation of INSET as being the most successful element.

When asked about the least successful elements, 2 policy makers thought the workshops were too short, 1 mentioned the poor provision of science training due to the lack of science apparatus,

and another thought the distance learning approach had not worked. One policy maker thought the financial and logistical support had been the least successful element.

How implementation of INSET policy is monitored

In response to the question on how INSET is monitored, 6 policy makers referred to the use of evidence from inspectors and school supervisors, and 2 mentioned the use of audits to check on the number of teachers attending courses.

Role school inspectorate and LGEA supervisors should in improving the quality of INSET

In a follow-up question on the role of inspectors and school supervisors in improving the quality of INSET, most policy makers referred to the importance of inspection in monitoring the quality and impact of INSET. Two policy makers talked about the role inspectors could play in providing follow-up to school-based INSET and in providing feedback on classroom performance. Similarly, 2 policy makers talked about the role inspectors could play in promoting and providing INSET and identifying the training needs of teachers for policy makers.

How the issue of the under recruitment of women teachers is being addressed

In response to this question, most policy makers talked in general terms about the need to improve girls' enrolment, participation and completion of education so that more could be trained as teachers. Four talked specifically about the sponsoring of women to go on to train as teachers at CoEs and universities, and the priority given to the appointment of women at the interview stage.

In a follow-up question on how the shortage of women teachers in rural areas is being addressed, most spoke generally about the need to encourage women to take up rural post by providing financial incentives and giving automatic employment to women who are trained. Two spoke specifically about the need to train women in rural areas through distance learning modes and the creation of training clusters.

Recommendations for improving the quality of INSET over the next two years

When asked for their recommendations for improving the quality of INSET over the next 2 years, 6 mentioned the need to increase funding so that there was more regular provision. Four mentioned the need for more strategic planning at federal and state level so as to arrive at a more coherent policy on INSET. Two spoke about the need to develop school-based training, supported by distance learning materials and zonal training centres so as to reach more teachers, and 1 spoke about career incentives for teachers to participate in INSET.

Recommendations for improving the quality of initial teacher training over the next two years

In answer to this question, 4 policy makers thought there should be greater emphasis on primary teaching methodology and school experience in the initial preparation of teachers and better training of lecturers in primary school methodology. Similarly 3 policy makers referred to the need for higher entry standards and standardised performance criteria against which to measure the performance of newly qualified teachers. Two policy makers called for the upgrading of all teachers to the NCE level, while 2 wanted to see the reintroduction of the Grade II training. One policy maker called for increased funding of initial training and for better training materials and learning facilities.

Recommendations for harmonizing INSET for primary teachers in Nigeria over the next two years

In response to this question, 5 policy makers thought there should be a national strategy and framework for INSET, and 2 discussed the need for national training materials to ensure consistency and quality. Two policy makers also thought INSET should be an entitlement of all teachers.

Other comments

Asked if they had other comments, most policy makers reiterated the importance of further funding being made available for INSET so that it was offered on a regular basis and became an entitlement of all teachers. The need for continuing professional development of teachers through a national INSET framework was also discussed together with the need to create more flexible forms of training to attract women in rural areas into the teaching profession.

5.0   DISCUSSION AND CONCLUSION

The findings of this study suggest INSET provision within the 6 states is poorly funded and often ad hoc. There is an absence of strategic planning, coherent policies, regular provision and monitoring of INSET, and confusion between the federal and state and local governments over role and responsibilities with regard to teacher employment, professional development and accountability for performance. Where it does take place, INSET often takes the form of certificate upgrading rather than school-based INSET and workshops focusing on teaching and learning in the classroom. Therefore less than a quarter of the teachers in the sample had been exposed to any such INSET since they entered teaching.

Improving the quality of primary education in the 6 GEP states presents a considerable challenge. Many of the teachers interviewed were working in an environment of genuine constraints caused by poverty: schools lacked electricity, learning resources and other facilities. Where material conditions are poor in terms of the availability of teaching and learning resources and classrooms are often overcrowded, there are clearly limits on what teachers can do to change their teaching practice. However, despite these challenges, the findings of the current study support the view that transforming teachers' beliefs, knowledge, understandings, skills, and commitments, in what they know and able to do in their individual practice as well as in their shared responsibility, through school-based INSET is central to teacher professional development.

In order to address the wide gap in INSET provision, the findings suggest there is a need to:

reconceptualise what is meant by INSET (i.e. shifting the emphasis away from paper qualifications towards a focus on subject methodology);
clarify roles and responsibilities at the different levels of INSET provision by creating a national organisation to manage the professional development of teachers after their initial training;
review the current teacher education curriculum so that it places greater emphasis on the development of pedagogic content knowledge;
enhance the capacity of government institutions charged with the responsibility for providing and inspecting initial teacher education and INSET;
review current funding arrangements so as to develop INSET provision at the school level;

5.1   Reconceptualising INSET

The confusion that exists between certificate up grading and INSET - thinking that because teachers are upgrading their qualifications and reading for higher certificates they are developing their professional skills - must be addressed. It is clear that the current system of certificate upgrading cannot take the place of INSET programmes, a fact that often gets confused by policy

makers. INSET should focus on the actual competences and skills which teachers at the basic level of education should possess. This is a different issue from the certificates that a teacher possesses.

5.2   Clarifying roles and responsibilities

The study found that the roles and responsibilities for the management of primary school teachers' career development and INSET at federal, state and LGEA level are not entirely clear. Better management systems, suited to the needs of states and local government, need to be put in place through a national strategy and a career long professional framework developed covering initial education and the provision of INSET.   The mandate of the Teachers' Registration Council (TRC) covers this aspect making it the most suitable body to take on the responsibility for INSET at a federal level with INSET units being created at state and LGEA level. A national framework setting out quality benchmarks against which INSET can be evaluated also needs to be developed with input from all key stake holders.

5.3   Teacher education

International research suggests that for teacher education programmes to be effective they need to combine sound theoretical knowledge with frequent opportunities to practice the craft of teaching in the classroom (Dembele, 2003; Hopkins, 2002; Lewin & Stuart, 2003). The current NCE teacher education curriculum is perceived as being is inadequate for the kind of competences and skills required by teachers to teach at the basic level of education, and gender is not sufficiently mainstreamed into the teacher education curriculum. The transmission model of lecturing which dominates even in methodology classes in CoEs has led to the conclusion that teachers trained this way cannot promote active forms of learning unless they are retrained (Aaron, 2003; Hardman & Abd-Kadir, 2005).

Similarly, there is almost no training on gender issues in the curricular of pre-and in-service teacher education programmes despite the UNESCO (2005) research carried out among tutors of CoEs, primary and secondary school teachers in the three northern states with the lowest female enrolment. This research supported the inclusion of gender issues in the curriculum of initial teacher education focusing on relationships that encourage girls' education, cultural and traditional practices that benefit girls in communities, orientation of teachers on recognizing factors which hinder girls' education and methods that teachers could use to mobilize school communities and families to send their girls to school. The issue of girls' enrolment, participation and completion and the role of the teacher in the process are paramount. The gender dimension to teachers-pupil interaction must be neutralized so as to encourage girls' equal participation in whole class, group-based and individual teaching activities.

5.4   Women teachers

The reform of initial education and INSET should also concern itself with addressing the shortage of women teachers in the participating states. The issue of teacher glut and drought in the GEP states is a serious problem, as teacher-pupil ratios are quite high in these states. Therefore there are not enough teachers, particularly women teachers, to supply the existing schools and classes so classrooms are cramped, thus making the school environment unattractive to children, especially girls. Some viable strategies for attracting and retaining women teachers in the participating states should be explored and experimented with.   To meet the demand for

large numbers of additional women teachers in rural areas, more flexible entry requirements should be introduced and different approaches to initial teacher education adopted similar to the NTI's PTTP programme with its combination of distance learning, face to face tutorials and school-based mentoring. New distance education and school experience modules that are gender sensitive would need to be developed and linked to other school-based professional development activities. It would also require modularization of the NCE so as to recognize and accredit prior experience and training of teachers so as to lead to a full teaching certificate.

5.5   School-based INSET

Within Nigeria, Aarons (2003) argues that a system of teacher development at school and school cluster level should be at the core of improving teaching and learning and the main source of professional development opportunity as research suggests that INSET, which builds on existing systems and structures and supports teachers' reflection on their own practice, can have a significant impact (Hopkins, 2002). It seems that for INSET to be effective, support needs to be provided to teachers to encourage them to reflect upon their beliefs and pedagogic practice, and to consider the implications of their classroom discourse practices and to explore alternatives. Therefore teachers need extended opportunities to think through new ideas and to try out new practices, ideally in a context where they get feedback from a more expert practitioner, and continue to refine their practice in collaboration with colleagues (Costa & Garmston, 1994; Joyce et al; 1997; Hopkins, 2002).

This is supported by action research carried out by UBE aimed at improving teaching and learning in a variety of contexts by developing alternative school-based models for INSET. Through school-based mentoring and support it tried to build technical capacity for teacher educators in core areas of primary teacher education. The strategies adopted by UBE in the project involved trying out a series of classroom interactive activities followed by out-of-class analysis, discussion and preparation of lessons, and instructional techniques and materials. These were all facilitated by teacher educators who served as mentors and school teachers who served as facilitators, thereby contributing to their own professional development in primary pedagogy. The 3-year action research which covered 10 states showed that teachers need to be supported in the teaching-learning process. It was found that school-based INSET based on the actual needs of teachers provided better on-the-job training than the traditional, top down, one-size fits all NCE model, and teachers were willing to change and make sacrifices for the good of the children in their care.

However, more time and resources for school-based INSET will be needed if observation, coaching and talk-analysis feedback are to play a useful role in teacher professional development.   It also requires a change in the role of the head teacher that goes beyond the traditional role of administrator to include the leading of pedagogic change, and requires enabling conditions being in place such as smaller classes, instructional materials and teaching aids, and adopting an adaptive approach to ensure that the introduction of new pedagogic approaches takes into consideration the realities within which teachers work (Verspoor, 2003; O'Sullivan, 2004). The practice of having 'expert' teachers and head teachers collaborate with other educational professionals, such as inspectors and school supervisors, to examine what is taking place in classroom and schools, and provide constructive and non-directive feedback, will also play a crucial role (Dembele, 2003).
5.6   Inspection

The suggested reforms to initial teacher education and INSET will also bring with them greater demands for accountability and monitoring of performance. The FIS department retains the statutory mandate of ensuring quality and maintaining standards. However, most schools have never been inspected and the inspectorate service is itself is in need of reform. As part of the ESA project, the FME is embarking on a repositioning process for the FIS for which a committee has been set up. The committee has articulated a framework for repositioning the FIS to meet the challenge of quality assurance and to empower the inspector to be more supportive of teachers through better training in classroom observation and feedback techniques.

5.7   Teacher Development Policy

It is obvious that there is every justification to put in place a Teacher Development Policy that can be legally backed and implemented. This view was popularly expressed and upheld at the workshop. The proposed policy would incorporate participation at a given number of training as prerequisites for professional growth. The TRCN would be key to this process.

5.8   Towards a National Framework

The idea of a framework was acceptable as long as it recognizes the variety of needs at each state. Participants were agreeable to the fact that there was indeed a need for a framework on teacher development that would specify competences expected of teachers. The competency grid of novice to experienced and expert was accepted as one that can provide a working basis. The proposed framework would also define the characteristics of the ideal Nigerian Teacher.

5.9   Summary

Overall, the findings of the current study suggest a model of INSET which builds on existing systems and structures, and supports teacher reflection can impact significantly on pedagogical beliefs and classroom practice. This study does not, however, conclude by seeing school-based INSET as the panacea to the problems faced by Nigerian teachers and learners. It acknowledges that the education system is likely to continue to face many constraints. However, the quality of the teacher is essential to raising standards in Nigerian primary schools and the findings suggest school-based INSET could contribute to teachers' sense of professionalism and practice, and raise educational achievement.

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THE EFFECT OF TIMING OF TEACHING RELEVANT MATHEMATICS PRINCIPLES ON ACHIEVEMENT IN CHEMISTRY

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ABSTRACT
The study is on influence of prior knowledge of mathematics principles on achievement in Chemistry. The researcher investigated if students' achievement in chemistry could be improved by teaching them selected mathematical principles before teaching chemistry or teaching them selected mathematical principles simultaneously with chemistry. The study was carried out in Anambra State Nigeria. The design is quasi-experimental involving three hundred senior secondary 2 students from six secondary schools distributed into three groups. Group one was taught mathematics before chemistry, group two, was taught mathematics simultaneously with chemistry, while group three received no special mathematics lesson. The groups were pre-tested with the instrument comprising of fifty multiple choice questions in chemistry and post-tested with a reshuffled edition of the pre-test after experiment. The researchers used ANCOVA to analyze the result and results revealed that the students taught mathematics before chemistry outperformed other groups.

INTRODUCTION
The global market competition has been one of the driving forces for enhancing educational accountability in many countries. As a result, professional guidelines have been developed over the last decade to strengthen mathematics and science curriculum standards. Both developing and developed countries of the world are clamoring and placing emphasis on development of sciences and technology. Science and technology are pillars for industrialization. In this regard, it must be noted that mathematics is a core subject for any advancement in sciences and technology. On the other hand, the importance of teaching and learning of chemistry cannot be over emphasized. Chemistry is at the core of every technology we enjoy today, the power of the chemical science is what creates as a whole, an enabling infrastructure that delivers the food, medicines, and materials that are the hallmarks of modern life.

According to Etukodo and Nnaobi (2002), the place of mathematical skill in teaching chemistry for sustainable development should be emphasized as lack of requisite mathematical skills would make it impossible to produce the type of chemistry graduates of diverse educational programmes that can fit properly into the world of work and real life practical of what was learned.

STATEMENT OF PROBLEM
Mathematics has been identified as one of the problems militating against students progress in chemistry (Webb 1973, Ali 1984, Akpan 1988). Some mathematical tasks and principles occur

frequently in secondary school chemistry and their knowledge is essential for the understanding of secondary school chemistry principles.

The problem of the study is when is it most appropriate to teach the student the mathematical principle essential for understanding chemistry?

PURPOSE OF STUDY

The researchers want to find out if students achievement in chemistry can be improved by teaching them selected mathematical principles before chemistry is taught or by teaching them selected mathematical principles simultaneously with chemistry.

SIGNIFICANCE OF STUDY

The finding of this study will lead the curriculum planning experts in determining the stage at which the relevant mathematical concepts important for particular topics in chemistry should be studied. It will motivate mathematics and chemistry teachers to engage in team teaching.

SCOPE OF STUDY

Chemistry requires a number of mathematics principles and concepts for easy comprehension. In this work, only the following mathematical concepts were considered.

Significant digits

Scientific notations

Unit analysis

Structured problem solving approach.

The above mathematical concepts were taught the students using the following mathematics topics.

Significant figures

Simple equations

Statistical treatment of data

Change of subject formula

Mensuration

The chemistry topics covered in this study are Electrolysis

Energy and chemical reactions.

Gas laws

RESEARCH QUESTIONS

For the purpose of carrying out effective study, the researchers formulated the following research questions.

1. To what extent do students who received prior lessons on selected mathematics principles (SMP) before receiving chemistry lessons and those who received lessons on selected mathematics principles and chemistry simultaneously differ in their achievement in chemistry?
2. To what extent do students who were taught SMP and chemistry simultaneously and those who received lessons in chemistry only differ in the achievement in chemistry?
3. To what extent do students who received lessons on SMP prior to lessons in chemistry and those who received lessons in chemistry only differ in their achievement in chemistry?

HYPOTHESES

The following hypotheses were formulated at 0.05 level of significance.

1. There is no significant difference in the achievement in chemistry between students who received prior lessons on SMP before chemistry lessons and those who received lesson on SMP and chemistry simultaneously using their posttest scores.
2. There is no significant difference in the achievement in chemistry between students who received chemistry lessons only and those who received SMP and chemistry simultaneously using their posttests.

RESEARCH DESIGN

The design is quasi-experimental, intact classes of students were used. Pre-test and post-test were incorporated in the design. There were two experimental groups and one control group was one group.

Group I:- These are students who were taught selected.

                Mathematics principles before chemistry lessons were taught.

Group II:-   Those students who were taught selected

                Mathematics principles and chemistry simultaneously.

Group III:- Those students who were taught chemistry

                Lessons only with no special mathematical principles.

AREA OF STUDY

This study was conducted in Awka Education zone of Anambra State, Nigeria which is made up of five local government areas namely:-

1. Awka South Local Government Area
2. Awka North Local Government Area
3. Anaocha Local Government Area
4. Dunukofia Local Government Area
5. Njikoka Local Government Area

All the five Local Government Area were covered in the study.

POPULATION

The population of the study consisted of all senior secondary 2 students studying chemistry among other sciences in all state government owned secondary schools in Awka Education Zone.

SAMPLE AND SAMPLING TECHNIQUE

This study involved 300 SSII students from six secondary school in Awka Education Zone. Intact classes of 50 students in each class were used. The selecting of schools and classes used was by random sampling with replacement.

INSTRUMENT USED FOR DATA COLLECTION

The instrument for the data collection for this study was Chemistry Achievement Test (CAT). All the questions in the CAT were based on chemistry concepts and principles taught to the SSII students in the study.

The Chemistry Achievement Test (CAT) comprised of 50 objective test items. In designing the multiple-choice questions, effort had been made for good and clarity of expressions. Each question has plausible destructors and a minimum of four options are used for every questions because the larger the number of plausible destructors the greater the reliability of the test items. The table of specification of the test is shown below.

Course	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation	Total
Electroly-sis	1(2%)	2(4%)	2(4%)	2(4%)	2(4%)	1(2%)	10(20%)
Energy Chemical Reaction 58%	3(6%)	2(8%)	6(12%)	6(12%)	5(10%)	5(10%)	29(58%)
Gaslaws 22%	2(4%)	2(4%)	2(4%)	2(4%)	2(4%)	1(2%)	11(22%)
Total 100%	**6(12%**	**8(16%)**	**10(20%)**	**10(20%)**	**9(18%)**	**7(14%)**	**50(100%)**

	)						

The marks allotted to the objective test are 100 marks. The validity of the CAT were further ensured by subjecting the CAT to a panel of experts for critique, considering the content coverage, clarity and appropriateness to the level.

TREATMENT PROCEDURE

The three groups which were used in the study were found to be academically equivalent before the commencement of the treatments. Two major treatments were given to the groups. The first is the mathematics teaching referred to as selected mathematical principles (SMP) the mathematical principle were significant digits, scientific notation, unit analysis, equation transposing and a structured problem solving approach. They were taught using the following topics:- significant digits, simple algebraic equations, statistical treatment of data, change of subject formula and mensuration. The second teaching treatment given to the groups is chemistry teaching. The following topics which are part of the SS2 scheme of work for senior school chemistry were covered.

They are

1.   Electrolysis
2.   Energy and chemical reaction
3.   Calculation on gas laws.

The three groups, I, II, III were all given pre-test of CAT before commencing work. The study lasted for six weeks.

Group I: The first two weeks. This group was taught selected mathematical principle (SMP) by their mathematics teachers using two double periods per week (i.e 4 periods per week) totaling eight period per week of 40 minutes each period. From the third week, chemistry was taught to the students by their chemistry teacher using two double periods per week, totaling 16 periods within four weeks.

Group II: This group was taught selected mathematical principles by their mathematics teacher also. However, the mathematics lesson precedes the chemistry lesson each day. At the end of the mathematics lesson, the chemistry teacher starts her chemistry lesson. One mathematics period was taught per week for the first four weeks of the study and two periods per week in the last two weeks of the study that is the fifth and the sixth week. Chemistry was taught from the beginning of the first week to the last week of the study. Thus chemistry was taught along side mathematics.

A total of eight periods of mathematics was taught while a total of sixteen periods of chemistry was given to this group just like group I. The difference here is that the three periods of chemistry were taught per week for the first four weeks and at the last two weeks two periods of chemistry were taught per week.

Group III: This was the control group. They were not taught any selected mathematics principle (SMP). From the third week, this group was taught chemistry at the rate of four periods per week. At the end of six weeks, all members of the three groups were given three days for revision and the post-test then administered to each of the group.

DATA ANALYSIS

TABLE 1 Pre and Post test mean score of students who received SMP before chemistry lesson (Group I) and those who received both lessons simultaneously (Group II).

Source of variation	Pretest mean	Post test mean	Mean gain
Group I	10.22	66.52	56.30
Group II	11.32	52.36	41.04

TABLE II: Pretest and posttest mean scores of students who received lessons on SMP and chemistry simultaneously (Group II) and those who received lessons in chemistry only (Group III).

Source of variation	Pretest mean	Post test mean	Mean gain
Group II	11.32	52.36	41.01
Group III	11.49	43.50	32.01

TABLE III: Pretest and posttest mean scores of students who received lesson on SMP prior to chemistry (Group I) and those who received lessons on chemistry only (Group III).

Source of variation	Pretest mean	Post test mean	Mean gain
Group I	10.22	66.52	56.30
Group III	11.49	43.50	32.01

ANCOVA comparison was used on the posttest mean scores of the groups. This is used to test the hypotheses 1 and 2.

TABLE IV
ANCOVA of the mean scores of students in chemistry after receiving treatment.

Source of variation	sum of squares	df	Mean square	Cal. F	Crit. F	P >0.5
Corrected models	38368.90	6	6394.82			
Intercept	170985.53	1	9714.75			
Experimental group	29397.37	2	14698.68	207.93	3.00	0.05
Error Residual	20712.29	293	70.69			
Total	937990.00	300				

The Table IV indicates that at 0.05 level of significance, 2 df numerator and 299 df denominator, the calculated F, 207.93 is greater than the critical F, 3.00. the researchers then concludes that there is significant difference in the achievement of the chemistry students after receiving treatment in their various groups.

SUMMARY OF FINDINGS

From the analysis, the following major findings were made.
- Chemistry students who were taught mathematical principles prior to chemistry lessons performed better than those who received both SMP and chemistry lessons simultaneously.
- Students who received lessons on SMP and chemistry simultaneously performed better than those who were taught only chemistry.
- Students who received lesson on SMP prior to chemistry lessons performed better than those who were taught only chemistry.

DISCUSSION AND CONCLUSION

The study has revealed that giving students prior lessons on SMP before the students are taught chemistry has significant effect on students achievement in chemistry.

Looking at the achievement of the two experimental groups, it is clearly seen that the group which was taught SMP weeks earlier before chemistry was taught performed better than the group that was taught SMP and chemistry at the same time. The researchers concluded that the timing of the teaching of the SMP is a main factor of the variation in achievement.

The result of this investigation shows that completing teaching in mathematics before receiving lessons in chemistry will give better students achievement than when the essential mathematics and chemistry are being taught simultaneously.

Thus for maximum student performance and passes in chemistry at senior secondary school, essential mathematics should be made a pre-requisite for student who wish to study chemistry.

RECOMMENDATION

1. In the senior secondary school system, teachers in science department and those in mathematics department should be made to work as a team.

   The teachers should ensure that all the required mathematics principles essential for chemistry, physics etc taught in SSI and the students should master these concepts before they are enlisted for chemistry or other sciences.

2. The chemistry teacher must ensure that any of this essential mathematics for chemistry that has not been covered by mathematics teacher must be taught by the chemistry teacher himself before the actual teaching of chemistry begins.

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Econometric Gender Analysis of the Structure and Effects of Access to Financial Services among Rural Farmers in Anambra State, Nigeria

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Abstract.

Studies on econometric gender analysis of the structure and effects of access to financial services in rural villages of Anambra state,t of Nigeria was undertaken to review its effect on the rural community. Data collection was through the use of structured questionnaires. Descriptive statistics, probit analysis and regression models, these were used to estimate the structure and effects of farmers access to financial services. Results showed varying effects of access to financial services between male and female farmers in the rural areas of Anambra State. Probit analysis indicated that educational attainment and income from farming had positive effect on probability of access to financial services for the male farmers. Comparatively, the co-efficient of educational attainment and membership of farmer's society had some positive and significant effect on probability of access to informal financial services for female farmers. However, result of the regression analysis showed that there are significant differences in the effects of access to financial services between male and female farmers with males having more access to formal financial services than females.

Introduction:

The ever increasing food security in Nigeria urgently requires total mobilization and prudent utilization of all available opportunities and potentials towards corresponding development of our national agricultural production system with the purpose of achieving sustainable food security in the country .Before now, both Federal and State government have through several programmes pursued rural and agricultural development in Nigeria; the rural environment being always the target of such programme (Udoka 1997). The rural male and female farmers should be the centre piece of increased agricultural production (CBN, 2003) .The impact of rural farmers in agricultural and economic development cannot be overemphasized. Many studies acknowledged this (Areetey and Udry, 1997; Okpukpara 2005; Ugbajah and Orji, 2006). However, the rural farmers are faced with different constraints in their course to meet food production target. Many researchers have conclusively acknowledged that access to financial services is a major constraint militating against the rural farmers' agricultural productivity (Deaton, 1997; Udry, 1990; Zeller, 1994; Idachaba, 2006). Major problem concerning access to financial services in rural areas is that the income generation and expenditure do not occur at the same time because the type of production engaged in by the

smallholder farmers is always seasonal. The failure of agriculture in developing world to move forward is one of the major factors contributing to widening the gap in the income earning capacities of the rural farmers (Holden et al 2004). Therefore, recent economic reforms and development programmes in Nigeria have drawn greater attention to the pressing need for rural sector transformation where the bulk of agricultural products are produced.

Efforts made by the rural farmers to get financial assistance are always constrained by unnecessary strings attached to the financial services, especially collaterals used for assessing the borrower's credit worthiness. Past research results have identified collateral requirements as a major determinant of the financial institutions decision to provide financial services to farmers (Falchamps and Quisumbing, 2005; Esson, 2003).

These criteria often places unlimited limit on credit requirement for smallholder farming in developing countries including Nigeria (Areetey and Udry, 1997). The majority of formal financial institutions in developing and developed countries demand physical collateral such as land. This policy is regressive for the small – scale rural farmers who produce the bulk of food in Nigeria. On the other hand, the informal financial institutions use collateral substitutes but the credit obtained from them is not always enough to carry out a meaningful production. In spite of the strategies to increase access to formal financial institutions in rural areas the problem still persists (CBN 2002). However, access to financial services is affected by socio economic characteristics of the rural farmer institutional incentives and constraints that define the financial environment (Ugbajah, 2000). Efforts should be made by the formal institutions to provide friendly customer services, such as reducing bureaucratic bottlenecks, transaction cost, and long waiting period (Okpukpara 2005). In view of this therefore, this study was undertaken to examine the comparative econometric gender analysis of the structure and effects of access to financial services on rural farmers. Previous studies by Van Horne (1988), CBN (2002), Adeyemo and Bamire (2005), Ohaka, Arene and Mkado (2005) have pointed that emphasis is placed on micro – finance and credit which require stipulated minimum savings instead of collateral. However none of these studies dealt with the effects and structure of access to financial services by the rural male and female farmers, the gap the present study is designed to fill.

Materials and Methods

The study was conducted in the rural setting of Anambra State, Nigeria. The dominant criterion for selecting Anambra State is the prevalence of formal and informal financial institutions in most of the rural areas of the State. The state is comprised of four agricultural zones. Four local government areas were randomly selected from the four agricultural zones. One community was selected from each of the selected local government area. Fifteen male and female farmers were selected. In all, 60 male and 60 female farmers were selected; this gave a total of 120 respondents that was used for the study.

Data for the study was generated from both primary and secondary sources. Structured questionnaires and oral interview were used in collecting the primary data. The questionnaire collected information on socio – economic characteristics and institutional variables. This included family size, level of education, asset index, index of modern technology, amount of financial services (Credit and Savings) received, membership of saving/credit group among others. Secondary data was collected through review of related literature.

Data was analyzed using descriptive, probit and regression analysis. The model for the probit analysis is implicitly specified as:

$Fs = Fsa + b_1 FsEd + b_2 FsFs + b3 Fs Mf + b_4 FsHs + b_5 FsIc + e$

InF = Infa + b_1InFEd + b_2InFs + b_3InFmf + b_4InFHs + b_5InFIc + e
Where Y = total amount of savings and credit in both institutions.
Fs = formal financial services (₦)
Inf = Informal financial services (₦)
PF =Pooled formal financial services (₦
PinF =Pooled informal financial services (₦)
Ed = Level of education attainment in years
Fs = farm size in hectares (ha)
Mf = Membership of farmers society (dummy)
Hs = Household size in numbers
Ic = Income (₦)
e = Error term
t – test was used to test the stability of the probit coefficient and it is given as:

$$T = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\dfrac{S_1^2}{n_1} + \dfrac{S_2^2}{n_2}}}$$

$$S_n^2 = \frac{\Sigma\,(\bar{X}_n - \bar{X})^2}{n}$$

Where X_n = mean score
S_2 = variance
n = Sample size

Results and Discussion

Results of the study are presented in tables 1, 2 and 3. It was observed that the co - efficient of educational attainment and income from farming has a positive relationship with probability of access to financial services and significant at 0.05 probability level.

Table 1: Probit model Estimates of the Effects of factors Affecting probability of Access to formal financial Services by male farmers.

Variable	Coefficient	Standard Error	Coefficient / Standard error = tcal	
Ed	0.014229	0.04790	2.971	0.05
Fs	-0.025545	0.02102	-2.215	Ns
Mf	0.073326	0.4587	1.599	Ns
Hs	0.028891	0.01461	0.198	Ns
IcF	0.000003794	0.00000221	1.709	0.05
Constant	-2.9761	1.220	-2.439	

NB
NS= Not significant at 0.05 probability level.
A likelihood ratio value of – 27.85845 results to the rejection of the null hypothesis that there is no significant difference in the effect of access to financial services between male and female farmers. The result of the coefficient of educational attainment and membership of farmers'

society were statistically significant, indicating positive relationship between the two variables and access to financial services

Table 2: Probit Model Estimates of Effects of Factors Affecting Probability of Access to Formal Financial Services by Female Farmers.

Variable	Coefficient	Standard Error	$\underline{\text{Coefficient}}$ - tcal Standard error	
Ed	0.031883	0.009302	3.427	0.05
Fs	-0.05355	0.03952	-1.355	Ns
Mf	0.16121	0.08766	1.839	0.05
Hs	0.0013770	0.341	0.045	Ns
Icf	0.0000062598	0.000004071	1.537	Ns
Constant	-0.16121	0.2324	0.694	

Ns = Not significant at 0.05 probability level.

A livelihood ratio value of –27.85845 is significant and results to the rejection of the null hypothesis that there is no significant difference in the effect of access to financial services between male and female farmers. The results of the multiple regression analysis revealed that the coefficient of multiple determinations of 78% and 63%, 84% and 71%, and 73% and 81% was obtained for the male, female and pooled analysis respectively. This implies that the three explanatory variables explained 78% and 63%; 84% and 71%; and 73% and 81% of Y (total amount of savings and credit in the formal and informal financial institutions) for male, female and pooled data respectively. The model has a good fit for the test.

Table3 a and b: The Empirical Regression line for male female and pooled regression for formal and informal financial.

Table 3a: The empirical Regression line for male, female and pooled regression analysis formal and informal financial services.

Dependent Variable = Total Amount of savings and credit in formal financial institutions

	Male farmer formal financial services	Female farmer formal financial services	Male farmer informal financial services	Female farmer informal financial services	Pooled formal financial services	Pooled informal financial services
Constant term	2.9010 (0.1545)	10.759 (4.596)	7.7190 (2.2274)	5.4765 (2.552)	10.243 (3.8140)	6.1013 (1.9242)
Hs	4.823 (-1.709)	16.707 (-6.5177)	13.2335 (-6.5177)	3.2846 (-0.519)	6.0376 (1.0335)	10.684 (1.9184)
Ed	3.6167 (1.2846)	21.277 (9.447)	15.794 (6.2206)	8.1627 (4.0577)	4.4301 (2.1151)	10.489 (1.1621)
Fs	4.0519 (1.9483)	18.882 (7.141)	5.5123 (2.0531)	6.1510 (2.6403)	1.7351 (0.3743)	16.805 (3.8809)
R^2	0.78044	0.83662	0.633857	0.712584	0.7254081	0.80891
R^2	0.73714	0.77354	0.58717	0.74228	0.71900	0.84341

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( )   standard error coefficient

Table 3:b The empirical Regression line for male, female and pooled regression analysis formal and informal financial services.

Dependent Variable = Total Amount of savings and credit in formal financial institutions

	Male farmer formal financial services	Female farmer formal financial services	Male farmer informal financial services	Female farmer informal financial services	Pooled formal financial services	Pooled informal financial services
Constant term	2.9010 (0.1545)	10.759 (4.596)	7.7190 (2.2274)	5.4765 (2.552)	10.243 (3.8140)	6.1013 (1.9242)
Hs	4.823 (-1.709)	16.707 (-6.5177)	13.2335 (-6.5177)	3.2846 (-0.519)	6.0376 (1.0335)	10.684 (1.9184)
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R^2	0.73714	0.77354	0.58717	0.74228	0.71900	0.84341

.   ( )   standard error coefficient

The result of the analysis revealed that the coefficient of multiple determinations of 78% and 63%, 84% and 71% and 73% and 81% was obtained for the male, female and pooled analysis respectively. This implies that the three explanatory variables explained 78% and 63%, 84% and 71%, and 81% of Y (total amount of savings and credit in the formal and informal financial institutions) for the male, female and the pooled data respectively. The chow test was significant with 1.64714 formal and 1.8464 informal male, 1.63809 formal and 1.8171 informal female and 1.7854 formal and 1.5333 informal financial services for the pooled regression analysis.

The chow test result for the formal and informal financial services was less than the chow test result from the pooled data in the access to financial services between male and female farmers. Therefore this implies that the null hypothesis which stated that the there is equal access between male and female farmers in both formal and informal financial institutions is rejected. It also confirms earlier results that male and female respondents have unequal access to formal financial services. It also means that the regression equation based on the pooled data set is not statically significant and that male and female access to formal financial services cannot be reasonably explained by a single equation. In the same vein, the chow test for pooled model based on access to informal financial services shows the pooling of data for male and female access to informal financial services is not significant. This means that the regression equation for male access to informal financial is significantly different from the regression equation for female access to informal financial services.

The Implications of the Study for Sustainable Financial Services and Food Security.

The result of study revealed that access to financial services in both formal and informal financial institutions had significant effect on rural male and female farmers' agricultural productivity. The role of rural farmers access to both formal and informal financial services in agricultural development such as increasing investment possibilities, resource allocation, and

enabling rural farmers to adopt modern and more efficient agricultural technologies for production, processing and storage among others cannot be over emphasized The study also revealed that the male farmers' access to formal financial services is higher than the female farmer's access to formal financial services. On the other hand, female farmers' access to informal financial services was significantly higher than male farmers' access to informal financial services. The major problems encountered by the rural male female farmers were collateral assets required by the formal financial institutions which were more peculiar for the female farmers than

 the male farmers. Also there were problems of filling up of detailed and lengthy and hardly understood by the farmers, and traveling very long distances to get to the financial institutions. It also takes the financial institutions very long period before the financial services are provided to the farmers.

    The government should be involved in the provision of financial services to the rural male and female farmers bearing in mind the socio – economic factors when providing financial services to them. Informal financial institutions should be encouraged by providing occasional grants to enhance their performance in terms of amount of credit they give to rural farmers as well as expand their institutional base. This is because they control larger segment of rural farmers. Formation of informal saving financial groups should be encouraged because distance is also one of the factors responsible for low access to formal financial services. In addition, the government should promulgate and effectively implement laws that could enforce formal banks to establish certain percentages of their branches in the rural areas. Also, it is important to encourage farming activities by providing that improve the income of the rural farmers.

Conclusion and Recommendations
The study aimed to achieve among other objectives the structure and effects of access to financial institutions and to compare the effects between male and female farmers in Anambra State. The Nigerian
 governments have made continuous effort through various programmes and project to improve access to financial services by the rural farmers. However, results have been disappointing. Particularly, rural
 farmer's access to formal financial institutions is constrained by a number of factors such as accessibility, bureaucratic bottlenecks and long waiting periods and financial service instrument.

        Several results emerged from the probit analysis result, but the important issue to note is that effects of access to formal financial services among the male farmers is significantly greater/higher than that of the female farmers. While the effects of access to informal financial services is greater for the female farmers. Informal financial institutions should be equipped by providing them with occasional grants to enhance their performance in terms of amount of financial services they give to rural farmers. This will help to expand their institutional base since they have the largest control of the rural female farmers.

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Job Satisfaction Issues and Contributions of Technology and Engineering Instructors in Nigeria: Strategy for Poverty Reduction.

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Abstract
This research was conducted to find out the possible strategies and professional measures that could be adopted to enhance job satisfaction of technology and engineering instructors in Nigeria. The research sought answers to two research questions. And one null hypothesis was tested at 0.05 level of significance. Twenty nine item questionnaire organised into two sections was used for data collection. A population of 109 technology and engineering instructors randomly selected from tertiary institutions in South-Eastern Nigeria responded to the questionnaire. Data collected were analysed utilizing frequency counts, mean and t-test statistics. Based on the findings of the research, some recommendations were made.

Key words: Expressions   degree of freedom (df), poverty reduction, job satisfaction, professional measures.

Introduction

For the past four decades, modern technology has appeared to become the primary source of national power, prosperity, and strategy. As such, every nation scrambles for technological and

developmental capabilities among nations. These gaps between nations have given rise to international political controversies as various nations seek to exercise control over science and technology (Mclntyre, 1986). This control, Mclntyre (1986) further stated, is achieved through the costly and sustained investment in national civilian/military research and development establishments designed to generate, develop, and diffuse new inventions. Nations that lack such an autonomous capability for technological development merely rely on the technology transfer process and eventually diffusion and assimilation of foreign technologies, with constraints often times attached.

It is important to note that most nations have professionals who could impart the state of the art technologies through instruction and designs. These professionals could most likely comprise the technologists and engineers. Therefore, a means to enhance job satisfaction of this calibre of professionals in any work environment should occupy a pride of place in any nation's economic plan.

Work can be seen as an activity such as a job, in which individuals use their intellect and hands to produce something, of economic value (Procter, 1996). That is to say, human-kind in a capitalist society does not freely consent to do work but is constrained to do so in order to earn a living. Therefore, to achieve success in matters involving work and work environment, some basic job attributes must be met. For instance, work in itself should be satisfying. This implies that an individual should be proud of the work done and not necessarily only for the material benefits that accrue there from (Federal Government of Nigeria, 1993).

Like any other worker, job satisfaction of the technologist and the engineer hinges on physiological, psychological, economic and social needs which manifest in a work environment. If a work environment transcends positive psychological and physiological feelings in the worker, it is likely that the worker would develop positive attitude towards the environment and subsequently become mentally and socially fulfilled. Thus job satisfaction is favoured when workers have interest in what they do and also when the job and the work environment are pleasant to the worker. To evoke such interest, many scholars for example, Eze (1981) posited that, attractive salaries, job security, fringe benefits, promotion opportunities, recognition of long service in terms of awards, provision of good working facilities and equipment promote job satisfaction. Good relationship with superiors and subordinates could also enhance job satisfaction among workers (Eze, 1990).

Unfortunately, one of the major defects in the educational system of most developing countries like Nigeria is the low priority accorded to institutional instructors (Heathers, 1971). However, a common phenomenon is that if technology and engineering instructors experience job satisfaction in Nigeria, more efforts will be made for greater efficiency in the fields of technology and engineering education. With adequate investment in technology and engineering studies and research, it is obvious that poverty among the people will reduce to appreciable extent in Nigeria. It is possible because there is every likelihood that this set of professionals will gain more insight and improve on their creative abilities and entrepreneurial skills which in turn would increase productivity. For instance, most part of American economy depends on technology. The assumption is that if technology and engineering instructors in Nigeria are made to experience job satisfaction the same height of technological advancement in America could also be attained in Nigeria. It is expected that when this crop if instructors are happy with their jobs, greater positive impact would be made on the economy of Nigeria (Hodkinson and Issitt, 1995). Thus, this research is carried out to determine the strategies that could necessarily enhance job satisfaction of engineering and technology instructors as a means for poverty reduction in Nigeria.

Conceptual Framework on Job Satisfaction

Job satisfaction refers to a pleasurable and positive emotional state resulting from the appraisal of one's job experiences (Ani, 1987; Egbule, 1995). One's job experience can be appraised in relation to some independent variables of the work environment which may include the individual's relationship with co-workers, dignity of job done, opportunity for promotion and the pay package accruing from job services (Ukeje, Akabogu & Ndu, 1992). Ukeje et al (1992) were of the view that individuals feel satisfied with the job they do if the pay package is commensurate with the job services they render and also when compared with the pay package of others who are in a similar job condition in other job apartments. They concluded that people become dissatisfied if any difference is experienced. This is the case in Nigeria where Federal government employees go home with fat envelops as salary and far bigger than the pay package of the state and local government employees. Most state and local government workers express dissatisfaction in comparison to Federal workers.

In another instance, popular views postulate that work itself gives joy to the engaged workers if the job offers adequate mental challenge by way of creating opportunity for utilization of skills and allowing some measures of autonomy for expression of personal initiative and ingenuity. Booth (2005) and Buchmann & Dallton (2002) maintained that when these attributes are rewarded, it tends to bring satisfaction to people engaged in a job. This is to say, workers feel fulfilled when they perceive that their job permits the attainment of their desire and needs and as well reward them. Therefore, the level of job satisfaction depends on the differences between workers' expectations from an organisation and what the organisation offers. According to Egbule (1995) and Ogwumike (1996), job satisfaction consists of factors which range from satisfaction with the extrinsic (materials) and intrinsic (non-materials) aspects of the job to interpersonal relations, work environment and educational provisions. In this understanding, one assumes that the dignity of work/job done and the provision specified of such job offering to fulfil an employee's occupational needs form part of the source of job satisfaction to the employee. As Isoun (2006) put it, the degree of worker's satisfaction while at work determines the productivity rate. In other words, job satisfaction is a function of the similarity between the welfare scheme of the work environment and the employee's needs, provided that the employee possesses the ability and academic qualification demanded by the work environment.

Work Ethics in Nigeria: Brief Overview

Ethics is primarily concerned with human conducts, in which human actions are guided by set standards as may be stipulated in an organisation to provide order and peace therein (Dike, 2003). Work ethics border on the right or wrong ways of doing work. Only men of virtue can persistently work on the path of the good and right avoiding the path of evil and wrong.
In Nigeria, some Nigerians who occupy public offices possess poor work ethics. Some resort to looting public belongings while in office and some never put in their best as a result of poor conditions of service (Isoun, 2006). Isoun (2006) was of the opinion that commendable work ethics will be expressed by workers if they are guided by moral instincts and at the same time adequately remunerated. The issue of moral instinct is referred to because even some top leaders in Nigerian government like governors, senators, ministers, directors and Vice chancellors at one time or the other get involved in large scale economic fraud. For instance, in the recent past, the former Nigerian President Chief Olusegun Obasanjo during his regime dismissed a minister of education Prof. Fabian Osuji from office for money scandal to the tune of N5.5million involving a one time Senate President Late Chuba Okadigbo and other top men/women in his government (Champion Newspaper; October 27,2007). Also a former governor of Plateau State Mr. Joseph

Dariye was reported to be arrested in London for money laundering and he faced trial with economic and fraud crime commission (EFCC) in Nigeria. Former Bayelsa State governor, Dambriye Alymelsia was also dismissed out of office for looting the government treasury in his state. Again former governor of Enugu State Dr. Chimaroke Ogbonnia Nnamani was reported by Onoh (2007) and Guardian Newspaper (2007) to have amassed wealth to himself from his state's public fund to tune of N3.1 billion and other physical infrastructures established in the country and abroad. He has been arrested on different occasions to defend himself in the court of law. More so, in 2009, two university Vice Chancellors were dismissed out of office for alleged poor work ethics, misappropriation of fund and gross misconduct after some panel of enquiries into their administrative conducts. In these cases, one would neither say that it is because of poor condition of services nor poor pay package. It would, therefore, be better expressed to incline or lean more on moral disposition of individuals. Iheanacho (2005) believe that adequate work environment and gratification would model majority of Nigerian workers to becoming faithful and morally upright in the execution of their jobs. He further expressed that if one is faithful and morally upright, such individual would always be positive in his thinking and doings. Peschke (1978) noted that positive work ethics connotes industry, reliability and fidelity which in turn would promote the welfare of an employee visa viz his community.

In the industry, some engineers and training technologists/managers resign their position and some abandon their jobs. Many university lecturers (instructors) most of whom are engineers and technologists abandon their jobs as instructors to seek employment at the oil production sectors (Momoh, 2008). Most of these attitudes have always been blamed on poor work conditions and meagre net pay (Okorie & Ezeji, 1988) as cited in Ogwumike (1996). With the manifestation of these work ethics attributed in part to poor remuneration and work conditions in the country, the author subscribes to the view that the action of these top office holders constitutes negative work ethics which has far reaching implication on the economy of Nigeria. Therefore, a research on what could promote job satisfaction of Nigerian workers (employees) to forestall these poor work attitudes especially among the engineering and technology instructors appears to be well thought out.

Research Objective
The Purpose of this research is to investigate how to enhance job satisfaction of technology and engineering educators in Nigeria. Specifically, the research is conducted to elicit the opinion of technology and engineering educators on
how the condition of service of the technology and engineering instructors could be improved in Nigeria.
What could be done to ensure job satisfaction of the technology and engineering instructors in their instructional work environment in order to enhance their effectiveness and productivity in Nigeria.
The possible ways relating to the technology and engineering instructors to enhance their career prospects with a view to gaining job satisfaction.

Research Questions
What reasons make you feel satisfied or dissatisfied in your work place?
What strategies could be adopted to improve on the motivation of the technology and engineering instructors in Nigeria tertiary institutions?
What professional measures could be implemented to enhance job satisfaction of technology and engineering instructors with respect to their career prospects?

Justification for the Study – the Nigeria Perspective

Nigeria runs federal system of government. In this system, there are three tiers of government – the federal, state and local governments. Accordingly, staff employment is based on these three tiers of government. So, there are the federal, state and local government employees in Nigeria. In the same manner, institutions of learning are established and run at the various levels of government. As such, institutions up to the university level are established by law and run by the Federal government or by the state government. Consequently, there are Federal and State Universities in the country as well as Federal and State Post primary schools in Nigeria. A federal or State university could also run its staff's children primary school and automatically the teachers in such schools become federal or state employees as the case may be.

Majority of primary schools in Nigeria are sponsored at the state level but organised and managed at the local government level. The primary school teachers thus receive their salary guided by the local government administrative formula.

At the Federal and State levels, the salary structures are not the same in Nigeria. In all ramifications, the take home package (net pay) of the Federal staff (employees) is far larger than the net pay of the state and local government employees. The difference may not be in qualification but on established policy in the country. Hence, people of the same qualification and rank go home with different net pays monthly as determined by the level of government at which they are employed. In Nigeria, therefore, many people clamour to become federal government employees. It is then clear that the job satisfaction of these different categories of employees may also be different since the working condition, environment and many other factors are different too. The privately owned institutions in some cases adopt the work conditions as packaged at the state level. As a result, the employees of the privately owned institutions are categorized as state employed workers.

At a very great extent, the different work conditions of workers in the country has influenced job interest of Nigerian technologists and engineers. For instance, many Nigerian technologists and engineers who could not secure job positions at the federal level troop out of the country in search of job outside the country. Some rather condescend to accepting low paid jobs overseas and in comparison, the pay packages from such overseas jobs turn out to be far better because of exchange rate of Naira to other foreign currencies as; Dollar, Pound Sterling, Euro, Yen, Dutch mark and others. Thus, many Nigerian engineers/technologists become more homely overseas rather than receiving a peanut as net pay at state and local government levels in Nigeria.

The engineers/technologists, who could not find their way out appear to be lukewarm at research and development efforts. From time to time they protest against their poor salaries and welfare conditions in Nigeria. And since the number of workers is more at the state and local government levels put together, there are structural weakness, absence of entrepreneurial spirit and lack of creative expression among the majority workers. The manifestation of these short comings become more visible in manufacturing and industrial sectors in Nigeria. For instance, Nigerian Telecommunication (NITEL) Services, Power Holding Company of Nigeria (PHCN), Nigerian Postal (NIPOST) Services, Nigerian Railways, Nigerian Airways, Aladja Steel Mill, Ajaokwuta Steel Complex, and many other establishments have witnessed serious set backs. Some have ceased to exist due principally to dearth of technologists and engineers even when Nigeria could boast of qualified many. The institutions/universities where the technologist and engineers receive their training are greeted with instability.

For instance, the academic staff union of universities (ASUU) has on several occasions called out for strike action in protest against poor salaries and conditions of service. In 2009, ASUU went on 6 months strike action asking for improved conditions of service. Many instructors in technology and engineering faculties use the opportunity to find alternative or better jobs leaving students to their faith. As a result, students who enrolled in the engineering and technological programs had few contacts with their instructors and thus become half backed at graduation.

Though there are many factors that could affect job satisfaction of workers other than pay package, one would want to find out what should be done to achieve job satisfaction of Nigerian technologists and engineers. It is the author's opinion that adequate measures taken to address the situation will go a long way to forestall the mass drift of potential Nigerian technologists and engineers out of the country. This achieved, will impact on the economy of the country and the poverty level of the country might as well improve since this set of professionals would stay on to work for the nation's economic stability.

Research Method
Descriptive survey research design was adopted to conduct this study. A sub-set of Nigerian professionals (the engineering and technology instructors in the university system) were studied by collecting and analyzing data from them in respect to the objective of the study. As descriptive survey research suggests, the professionals were considered to be representative of the entire people (Akuezuilo & Agu, 2003).

The study was conducted in South Eastern zone of Nigeria. The South Eastern zone is made up of five states. There are nine (9) universities in the zone. Five (5) out of the 9 are state established universities while 4 are of Federal status (see table 1). Though there are many private owned universities in the zone, they are still undergoing national universities commission (NUC) accreditation assessment. As a result, employees of the private institutions were not used for the study. Also employees of the private institutions were not used to avoid biased data since most of such employees bargain their conditions of service. In essence, conditions of service vary among the private owned institutions in Nigeria.

 The population comprised 109 technology and engineering instructors selected from Federal and State established universities in the zone. Forty six (46) of the instructors were selected from the Federal universities and 63 from the state universities, however with restricted guide on years of teaching experience. In this guide, instructors below 10years of teaching experience were not given the questionnaire to complete. The 10 years of teaching experience purposefully guided the selection to ensure that a respondent might have witnessed at least two different regimes of his/her institution's administration or has put in some appreciable number of years in the system to make valid opinion/judgement.

The researcher intended to select 10 respondents each from state and Federal institutions, but in some of the older institutions, the number of qualified instructors to complete the questionnaire out-numbered the intended number. This observation was more at the Federal institutions. In such institutions, more than 10 instructors were selected to participate. The selection was made randomly among the oldest instructors available at the time of the study. Another observation was that the Federal university employees appear to be more comfortable and thus the rate of migration in search of better jobs is minimized among them.

At both state and Federal institutions (universities), respondents were drawn from engineering and technology faculties and from related practical oriented departments such as technology and vocational education department where offered. Table 1 shows the population distribution.

Table 1

Population Distribution Among Institutions Selected for the Study

S/No.	Name of Institution	Status	No. of Respondents
1.	University of Nigeria, Nsukka (UNN)	Federal	16
2.	Federal University of Technology, Owerri (FUTO)	Federal	11
3.	Imo State University Owerri (IMOSU)	Federal	13
4.	Michael Okpara University of Agriculture, Umudike	Federal	07
5.	Abia State Univeristy, Uturu (ABSU)	State	13
6.	Ebonyi State University, Abakaliki (EBSU)	State	11
7.	Anambra State University, Uli (ANSU)	State	11
8.	Nnamdi Azikiwe University, Awka (UNIZIK)	Federal	12
9.	Enugu State University of Science & Technology, Enugu (ESUT)	State	15
	Total		109

Instrument used for data collection is questionnaire. The questionnaire was presented in two sections with respect to the three research questions that guided the research study. The respondents were made to respond to the items utilizing the five-point likert scale response pattern of Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD) representing 5,4,3,2, and 1 respectively. The instrument was validated in respect of its contents and its reliability established using test-retest reliability formula. The reliability co-efficient was found to be 0.99.

The data collected were analysed using, frequency counts, mean and t-test statistics. Pattern of responses were collated using frequency counts and mean statistic was used to answer the three research questions. Decision was taken applying the principles of real lower and real upper limits of the scale values 1 to 5 on the five-point Likert Scale as follows:

0.50 – 1.49   -   Strongly Disagree   (SD)
1.50 – 2.49   -   Disagree   (D)
2.50 – 3.49   -   Undecided   (U)
3.50 – 4.49   -   Agree   (A)
4.50 – 5.00   -   Strongly Agree   (SA)

The t-test statistics was employed to test the null hypothesis formulated at 0.05 level of significance. The t-test formula for unequal samples was used in this case as given by Vernoy and Vernoy (1997).

Research Findings

Research Question 1

What reasons make you feel satisfied or dissatisfied in your work place?

Data presented in Table 2 provide answer to this research question.

Table 2
Reason for job satisfaction or Dissatisfaction Among Engineering and Technology Instructors in Nigeria.
Agree or Disagree with the item statements to indicate reason for your job satisfaction or job dissatisfaction respectively.

S/No	Reason	Federal University Instructors			State University Instructors		
		X	SD	Remark	X	SD	Remark
1	Pay package is commensurate to the quality of job you do.	1.33	0.63	Disagree	1.48	0.74	Disagree
2	Adequate job security is provided for your vocation.	2.63	0.64	Agree	2.73	0.6	Agree
3	Refresher course occasionally organised for instructors to improve	1.3	0.7	Disagree	1.29	0.68	Disagree
4	Teaching load does not permit your personal involvement in research studies.	1.26	0.53	Disagree	2.73	0.51	Agree
5	Students' assessment and grading are independent of bureaucratic intervention by the management.	2.54	0.74	Agree	2.63	0.68	Agree
6	Management of your institution treat staff problems with affection and humanism.	1.87	0.62	Undecided	1.27	0.54	Disagree
7	Management occasionally conduct performance supervision on staff	1.2	0.5	Disagree	1.17	0.46	Disagree
8	Teaching facilities are adequately available for instruction.	2.541.24	0.52	Disagree	1.17	0.55	Disagree
9	Management provides opportunity for research studies by awarding research grant or research subsidy.	2.85	0.42	Agree	1.30	0.59	Disagree
10	There are much challenges in the teaching/course outlines.	2.74	0.49	Agree	1.24	0.44	Disagree
11	Staff achievements are recognized by the management in form of incentives and gratification.	1.26	0.53	Disagree	1.22	0.52	Disagree
12	Staff versus management and staff versus staff relationships are cordial in your institution	2.33	0.56	Undecided	1.97	0.31	Undecided
13	Management usually co-opt instructors during the planning stage of educational activities in your institution.	2.78	0.47	Agree	2.84	0.45	Agree
14	Technology and engineering instructors enjoy autonomy to operate as to facilitate their personal initiative and ingenuity.	1.15	0.47	Disagree	1.24	0.53	Disagree
15	Management occasionally assign you to job responsibility	2.7	0.59	Agree	2.46	0.71	Undecided
16	Salary is regularly paid in your institution.	2.83	0.53	Agree	1.41	0.75	Disagree

The respondents were asked to attest to the 16 item reasons (questionnaire) using 3-point likert scale. In analysis, the following findings were made, in respect of the state and Federal employees as shown in table 2.

Federal employees derive job satisfaction because;

Adequate job security is provided for their vocation.

Students' assessment and grading are independent of bureaucratic intervention by the management.

Management provides opportunity for research studies by awarding research grant or research subsidy.

There are much challenges in the teaching/course outlines.

Management usually co-opt   instructors during the planning stage of educational activities in their various institutions.

Management occasionally assign them to job responsibility.

Salary is regularly paid in their institutions.

However, the state employees have only 3 reasons that give them job satisfaction. These reasons include items 2,5, and 13 which also are in common with the Federal employees' opinion.

Research Question 2

What strategies could be adopted to improve on the motivation of the technology and engineering instructors in Nigeria Tertiary Institutions?

The answer to this research question is presented in Table 3.

Table 3. Mean response opinions of the respondents on the Strategies to improve the motivation of technology and engineering instructors.

Item no. $\bar{X}$	Strategy	FUI** n1 = 46		SUI** n2 - 63	
			Decision		Decision
17	Organising end of year award parties.	3.31	U	3.41	U
18	Provision of car refurbishing loan to technology and engineering instructors.	3.54	A	3.72	A
19	Promulgation of laws ensuring job security of technology and engineering instructors	4.87	SA	4.57	SA
20	Provision of adequate medical health care for technology and engineering instructors and their immediate family members.	3.61	A	3.76	A
21	Payment of special honourarium to technology and engineering instructors for reputable journal article publications.	4.59	SA	4.61	SA
22	Payment of entertainment allowance to all categories of technology and engineering instructors.	3.69	A	3.76	A
23	Introduction of annual research grant to hardworking technology and engineering instructors.	3.11	U	2.16	D

FUI** = Federal University Instructors   SUI** = State University Instructors

Data presented in Table 3 show that both FUI and SUI have strong opinions that the technology and engineering instructors would be motivated to achieve extra feat in engineering and technology fields if;

Laws are promulgated ensuring job security of technology and engineering instructors and Special honorarium is paid to technology and engineering instructors; for reputable journal article publications. These findings reflect and confirm the respondents' opinion on items 2 and 11 in table 2. They had agreed that adequate job security gives the job satisfaction and that lack of recognition of staff achievement gives them job dissatisfaction.

Also both parties agree that;

Provision of car refurbishing loan;

Provision of Adequate medical health care to the instructors and their immediate family members and

Payment of entertainment allowance to all categories of technology and engineering instructors would serve as motivation strategy encouraging the instructors to put more efforts in their research studies. In-so-far, therefore, there would be job satisfaction derived by the instructors.

Research Question 3

What professional measures could be implemented to enhance job satisfaction of technology and engineering instructors with respect to their career prospects?

Answer to this research question is presented in Table 4.

Table 4: Mean response ratings of the respondents on professional Measures to enhance job satisfaction of technology and Engineering Instructors.

Item No $\overline{xx}_1$	Professional Measure	FUI** n1 = 46		SUI** n2 - 63	
			Decision		Decision
24	Government/Management should… Create opportunities enabling technology and engineering instructors participate in international conferences, seminars, workshops and symposia for mastery and intellectual advancement.	3.608	A	3.746	A
25	Provide various in-service training programmes (refresher course) for technology and engineering instructors.	3.847	A	4.142	A
26	Create avenues enabling technology and engineering instructors participate in decision making on technological and scientific affairs.	2.630	U	3.936	U
27	Create involvement opportunities within the country or over-seas country for technology and engineering instructors to learn the art in design of modern technology equipment.	4.543	SA	4.682	SA
28	Grant over-seas country sponsorship to technology and engineering instructors for broader knowledge in	4.521	SA	4.619	SA

	related fields of interest.					
29	Make selections of best technology and engineering instructors every year to become head of various sectors of the country's technology industries/departments.			4.319	A	3.517	A

Group mean (FUI) = 3.923;   Group mean (SUI) = 4.116;   Grand mean = 4.02

Data presented in Table 4 show that the Federal University Instructors (FUI) strongly agree with two professional measures, agree with three and were undecided on one. On the other hand, the State University Instructors (SUI) Strongly Agree with two measures and Agree with three other measures. They were undecided on one of the measures.

On average and with grand mean of 4.02, both groups have generally agreed that all the six professional measures identified for this study should definitely enhance job satisfaction of the technology and engineering instructors if Nigeria government should consider implementing such measures.

Test of Statistical Significance of Hypothesis
Hypothesis
Ho: There will be no statistical significant difference between the mean ratings of the Federal University instructors and the State University Instructors on the Professional measures to enhance job satisfaction of technology and engineering instructors in Nigeria tertiary Institutions ($P < 0.05$).
The test of this hypothesis was conducted applying the t-test formula for unequal samples utilizing items 24-29 on the instrument and presented in Table 5.

Table 5: t-test analysis on Professional measures to enhance Job Satisfaction of Technology and Engineering Instructors in Nigeria Tertiary Institutions

Item No	Professional Measure	Mean Response Rating		Standard Deviation		2 - Tail Test	Decision
		FUI	SUI	FUI	SUI		
		n1 = 46	n2 = 63	S1	S2		
	Government management should…						
24	create opportunities enabling technology and engineering instructors participate in international conferences, seminars, workshops and symposia for mastery and intellectual advancement.	3.608	3.746	1.3248	0.9994	-0.589	Ho; Accepted
25	provide various in-service training programmes for technology and engineering instructors.	3.847	4.142	1.1731	0.7374	-1.489	Ho; Accepted
26	create avenues enabling technology and engineering instructors participate in decision making on technological and scientific affairs.	2.63	3.936	1.4041	0.7593	-5.678	Ho; Rejected
27	create involvement opportunities within the country or over-seas country for technology and engineering instructors to learn the art in design of modern technology equipment	4.543	4.682	0.7213	0.7582	-0.965	Ho; Accepted
28	grant over-seas country sponsorship to technology and engineering instructors for broader knowledge in related fields of interest.	4.521	4.619	0.5864	0.6822	-0.796	Ho; Accepted
29	make selections of best technology and engineering instructors every year to become head of various sectors of the country's technology industries/departments.	4.391	3.571	0.5765	1.0582	5.157	Ho; Rejected

t-cal value < t-table value; decision: Accept Ho

t-table = 1.960 at P < 0.05 and df = 107

t-cal value > t-table value; decision: Reject Ho

Refer also to the Appendix

Result of the t-test analysis presented in table 5 reveals that the Federal University Instructors (FUI) and State University Instructors (SUI) did not differ significantly in their ratings to 4 professional measures to enhance job satisfaction of technology and engineering instructors in Nigeria tertiary institutions. The null hypothesis of no significant difference was thus accepted with regards to the 4 items given at $P < 0.05$, df = 107 and t-table value of 1.980. The result also indicates that there was significant difference between the two group respondents with reference to two professional measures given at the same conditions. As a result, the null hypothesis of no significant difference in the mean response ratings of the respondents was rejected in relation to the two items.

Summary of Major Findings
In table 2, it is shown that the respondents used for this study generally disagreed with items 1,3,7,8,11 and 14. In other words, the reasons why engineering and technology instructors do not have job satisfaction in Nigeria are that;
Pay package is not commensurate to the quality of job they render/do.
Refresher course is not occasionally organised for instructors to improve.
Management does not occasionally conduct performance supervision on staff.
Teaching facilities are not adequately available for instruction.
Staff achievements are not recognised by management in form of incentives, and gratification.
Technology and Engineering instructors do not enjoy autonomy to operate as to facilitate their personal initiative and ingenuity.

Table 2 also confirm that the reasons for job satisfaction are different in many respects among the Federal and State University employees. What is prevalent in the interest of the Federal government employees is not attributable to the State government employees in Nigeria. For instance (see table 2), the State employees do not have job satisfaction because;
Management does not treat staff problems with affection and humanism.
There are much challenges in the teaching/course outlines.
Management does not provide opportunity for research studies by awarding research grant or research subsidy.
Salary is not regularly paid.

The findings also highlight that at State level, salary is not regularly paid and management never provides opportunity for research studies through research grant or subsidy. This shows the picture of what it is like in all works of life at State and Local government levels in Nigeria. It is then not surprising that many state and local government employees disappointed engage in some poor ethical job/work habits and scramble to get Federal government job in Nigeria or quit their jobs and condescend to do any kind of job overseas.

The research questions posed and the hypothesis formulated for this research were used to organize the presentation of the summary of the major findings as follows:
Promulgation of laws ensuring job security of technology and engineering instructors could boost their morale and could also stimulate them to develop some sense of responsibility and to work with optimum effectiveness (Table 3).
Payment of special honourarium to technology and engineering instructors for reputable journal article publications would enhance their job satisfaction and would also encourage them for more in-depth research and break-through (Table 3).
3. Payment of entertainment allowance to all categories of technology and engineering instructors would motivate them to a great extent for greater achievements (Table 3).
4. Provision of car refurbishing loan to, and adequate medical health care provided for the technology and engineering instructors would ensure that the instructors develop positive attitude towards their job and enjoy professional satisfaction (Table 3).

5. The respondents used for this research generally agreed that all the six professional measures identified for the research were adequate measures that could enhance job satisfaction of technology and engineering instructors with a grand mean of 4.02 (Table 4).
6. The t-test analysis conducted for confirmatory decision reveals that
i. Participation in decision making appertaining to technology and scientific affairs by the technology and engineering instructors, and
ii. Selection of best technology instructors to become head of various sectors of technological industries, were not adequate enough or were not very necessary to be adopted as professional measures to enhance job satisfaction of technology and engineering instructors (Table 5).

Discussion of the Major Findings
Table 2 reveals that Federal employees derive job satisfaction because "there are much challenges in teaching/course outlines" while the state employees do not have job satisfaction because of the same reason. This reason/factor is of peculiar interest because it refers directly to instructional contents and the instructors' reaction to it. The disparity in opinions among the Federal and State employees caused the researcher to conduct oral interview with a few of the respondents (Federal and State employees) and was able to make out the following.

The Federal employees were of the opinion that learning is everyday and as such, when they are thrown open to difficult and new areas, they become inspired to gain more knowledge which other wise they might not have gained if the course outlines are not challenging. The state employees also admitted that it is good that the course outlines are challenging but their regret is that after toil at gaining more knowledge in order to teach well, at the end of the month they angrily go home with almost nothing as salary showing no regards to their hardwork. They did not consider the knowledge they acquire for themselves, rather their interest was in what they benefit after, in terms of their welfare in comparism with their Federal counterparts.

This finding is in conformity with the view of Ukeje, Akabogu & Ndu (1992) that individuals feel satisfied with the job they do if the pay package is commensurate with the job services they render and also when compared with the pay package of others who are in a similar job condition in other job apartments. As Ezugu (2007) put it, job satisfaction is not simply a matter of need fulfilment, it depends on whether the individual involved thinks that the condition for fulfilling his/her needs in a particular job compares favourably with that of other people in similar job positions or places (Eneasator, 1993). The finding also agrees with equity approach to job satisfaction presented by Cameroun (1985) that even when an individual's needs are fulfilled by his job offering, such individual might not express satisfaction if he feels that some comparable jobs;
satisfy his needs better.
satisfy his needs with less or minimal effort.
are more fulfilling to known colleagues who engage in such kind of jobs.
This justifies the earlier assumption by the researcher that the dignity of work done and the provision specified of such job offering to fulfil an employee's occupational needs form part of the source of job satisfaction to the employee.

Further, it is discovered that lack of occasional refresher course for instructors to improve is another reason for job dissatisfaction among Nigerian University instructors. This informs that if refresher course is occasionally organised to enable instructors' improvement, they would be happy at work. This observation supports Madu (2003) who asserted that employees feel happy and satisfied at work when the job management occasionally organise refresher course for them. Ogwumike (1996) earlier stated that prospective industrial workers need to be guided in their occupational engagement by vocational experts who should subsequently give the workers some refresher course on the job. He maintained that when workers are thus managed or guided, they tend to be painstaking at work especially when demands at the work station are within the workers' capabilities. It is the researcher's view that retraining employees and provision of in-service training to employees keep

them abreast of the latest conduct and activities in their job. Ordinarily, Okorie and Ezeji (1988) noted that employees who are not satisfied with their jobs are more likely to take some days off their jobs not because of illness or any cogent reason but because they do not derive what they expect from the organisation. In another dimension, instructors become lackadaisical at work when the facilities for effective teaching are lacking (Dike, 2003). Deductively, it is then clear that the provisions made at the work environment to enable workers perform their job effectively and creditably too, form part of the strong holds of job satisfaction.

Another finding by implication shows that if workers achievements are recognized and rewarded through incentives and gratification, they would derive job satisfaction. This finding buttressed up an assertion by Anele (2005) that an employee tends to be energized into greater dedication to duty as a result of good state of mind due acknowledgement that his worth is valued by the organisation that employed him by rewarding his effort. Supporting this view, the human relations management theorists averred that workers tend to react more positively to accomplish organizational goals (objectives) if their role is recognized and if they are part of the group that mapped out the goals. According to Dike (2001), such workers are more conscientious at work. A conscientious employee is always conscious of his responsibility at work and would always long for doing his job carefully and honestly (Putman et al, 1976). Emekwue (2000) admitted that sense of responsibility at work is duly inspired in a worker if the employee is treated to adequate gratification over his good efforts in an organisation. This contentment/belief goes a long way to confirm one of the findings of the study (see Table 3) that payment of special honorarium to technology and engineering instructors will enhance their job satisfaction and encourage then for greater achievements.

These findings appear to make an emphatic premise which gives support to what was earlier suggested by Okoye (1999), that showing gratification to technologists and engineers through award of national honours will to a reasonable extent encourage them to become more conscientious, morally dedicated and painstaking in their job offerings. For instance, one of the work ethics is the belief that work is morally good and satisfying (Procter, 1 996). It is obvious then that work ethics will be very strong in technology and engineering instructors when they are guided by moral instincts. In this respect, it is expected that they would develop more positive attitude towards work. This positive attitude towards work will definitely propel them into performing optimally and also subject them to longing for innovative breakthrough in technology and engineering fields. When this is achieved, the country would go an extra mile in meeting up with the current day rapid changes and development in science and technology.

Conclusion and Recommendations
In respect of the findings of this research bothering on strategies and professional measures to enhance job satisfaction of technology and engineering instructors, and the need for professional advancement among engineers and technologists in Nigeria, a collective efforts of the governments, industries and institutions of higher learning are required to set in motion the strategies advanced in this research. It is obvious that success in evoking job satisfaction in technology and engineering instructors and making them become professionally adequate by implementing the professional measures identified in this research will to a high degree pave ways for Nigeria to join the band-wagon of the developed countries for technological know-how. It is therefore, recommended that,
1. Every effort should be made by the governments to ensure job security of the technology and engineering instructors and special honorarium paid to them for any reputable journal articles published based on research and/or gratify their good efforts. In this process, they could conceive a deserving sense of self-worth and pride, hinged on strong conviction that hard work, integrity and a high sense of moral value are the hallmarks of success.
2. Opportunities should be created by the state and federal governments especially for the technology and engineering instructors. Such opportunities should enable these crop of instructors attend seminars, workshops, symposia, conferences and also make industrial trips within the country and to over-seas countries for professional enhancement.

3. The state and federal governments should jointly consider it an issue of great priority the provision of all the necessary infrastructures, equipment, machines, tools and other consumable materials needed to implement an effective technology and engineering instruction in the country's tertiary institutions.

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Utilizing ICTS in Adult Literacy Programmes for Sustainable Development in Nigeria

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Abstract

The paper looked at utilizing ICTs in Adult Literacy Programme in Nigeria ICT was seen as having convoluted and expanded to include such issues as cyberspace, information age explosion and information resource management. Four discrete understanding of literacy were deciphered to include; literacy as an autonomous set of skills, literacy as applied; practiced and situated; literacy as learning process, and literacy as text. Furthermore, sustainable development of ICT for literacy programmes was described as where adult literacy groups in their various communities strengthen or speed up their literacy development through ICTs without essentially relying on outside help. Benefits of ICT in adult literacy were highlighted and its effect on Adult learners described. Consequently the roles of ICT in promoting Adult literacy were tabulated and explained.. Strategies for sustainability of ICT in literacy programmes were discussed, and a model for stainable ICT project for adult literacy development presented. Problems of ICT for suitable literacy programme were raised and recommendations made. The paper concluded by stating that ICTs can be of great use in helping to achieve literacy development through the reduction of digital divide between the adult literates and illiterates in the rural and urban areas.

Introduction

Information and Communication Technologies (ICTs) are often associated with high-technology devices, such as computers and software, but ICT also encompasses more conventional technologies such as radio, television and telephone technology. As a result ICT has come to become essential to work and everyday life.

However, policy makers, planners, administrators and researchers hold highly polarized views on the impact of ICTs and their role in promoting objectives such as poverty alleviation, universal education, reduction in mortality and health hazard, sustainable development and in bridging the digital as well as socio-economic divides in the world. Thus, many consider the possibility of technological leapfrogging whereby ICTs would be able to achieve the above mentioned objectives within a short time-frame. The critics and the skeptics, on the other hand, are of the view that ICTs have little value and that they would cause more harm to the less developed world, particularly for populations that are economically and socially disadvantaged.

The debate rages on and has been inconclusive so far. However, it is important to recognize that due to the significant interconnected economic, social and technological changes that are taking place, literacy and education have become even more important for personal, social and national development than ever before. On one hand, while rapid technological changes are fast creating what is now known as information technology; on the other hand, there are an estimated 18% adults or 771 million globally, who are still illiterate, (UNESCO, 2006).

While ICTs have generated considerable interest, the interconnections between literacy and ICTs are still not well understood by policy makers, administrators, or practitioners around the world. This is true at least in part because those working in developing countries are not necessarily familiar with the manner in which ICTs have been used in other parts of the world (Dighe and Reddi, 2006). Also, few literacy practitioners are highly trained in new technologies and those professionals who understand technology, are unfamiliar about the potential of ICTs in addressing problems of non-literacy adults. Yet it is only in the integration of technological skills and cognitive skills, such as traditional literacy, numeracy, and problem solving, that one can adequately define ICT literacy (International ICT Literacy Papel, 2002).

In Nigeria, almost half of the national population, do not have the basic skills of reading, writing and computation that are required for productive existence. Undoubtedly mass illiteracy has been identified as one of the factors crippling the achievement of societal needs and desire for rapid socio-economic and political empowerment. This is where the use of ICT for literacy can catalyze and dramatically facilitates mass literacy programmes in Nigeria. Regrettably, use of ICT in literacy can be said to be non-existent or poor. However, the National Mass Education Commission (NMEC) signed a memorandum of understanding (MOU) with the state governments to establish literacy by radio in all the states in 2007. This programme has not started in any of the states. It was in keeping this background in mind that the author wishes to look into the utilization of ICTs in literacy programmes in Nigeria.

Information and Communication Technology (ICT)S

Recently the definition of ICT has convoluted and expanded in terms of the scope of what ICT is, so that ICT now includes, such issues as cyberspace, information age explosion and information resource management and development. Thus, for instance, information technology is seen or defined now as a vital resource for personal and national strategic uses rather than as a product merely available for use in training, the health transportation, education (Ali, 2004). For example, specializations and variations informational and communicational uses and structures have led to the redefinition of which has become more specialized and targeted that they form their own realms of existence, such as the ICT that utilizes Geography Information Science (GIS), Global Positioning System (GPS) and Remote Sensing and Messaging System (RSMS) coupled with such structural definition are increasing in quality, quantity, clarity, variety and speed of ICT. With time-space conquests, new structures, hardware, functions, changes in operational procedures in the ICT realm new definitions are bound to emerge. Having defined ICT, a central focus of this paper is to think through on the utilization of ICT in literacy programmes. But before this, it is important to operationalize the concept of literacy.

WHAT IS LITERACY?

The definition of literacy has been changing over the years. The earliest definition of literacy rested on the ability to encode and decode written words. Hence literacy was conceived as the ability to read and write a simple message in any language (Obi, 2006). The strength of this definition is that it accepts that one can be literate in any written language.

However, the Global Monitoring Report on Literacy in 2006; identified four discrete understanding of literacy:
(i) Literacy as an autonomous set of skills
(ii) Literacy as applied, practiced and situated.
(iii) Literacy as a learning process.
(iv) Literacy as text

The multiple socio-cultural and political nature of literacy make it very permeable and for possible integration of ICT in adult literacy programme. This is because adult literacy programme helps man to become a conscious agent and master of himself. This correlation gave rise to the idea of functional literacy as an educational, social and economic activity in areas regarded as priorities for development. These areas happen to be key areas for ICT intervention.

Sustainable Development

The concept of sustainability means the continuance, by insiders, to use and maintain a new idea, such as ICTs, after the majority of inputs from outsiders have ceased (Sahyoun, 2005). The focus here is maintaining ICTs. Another way to understand sustainability here is when a particular adult group has increased capacity to cope with change. For example the adult group may develop new literacy skills, but then, if the pace of the literacy programme decreases or there is less post literacy programme, the adult group is able to either adapt their way of learning or find another more appropriate way. The focus here is on the potential of the adult group to adapt.

Sustainable development of ICTs for literacy programmes, therefore, is where the adult groups in their various communities strengthen or speed up their literacy development through ICTs without essentially relying on outside help. This is because development plans based on their own resources and capacities will be more sustainable.

Information and Communication Technologies (ICT) in Adult Literacy

Attempts to encourage full and effective adult participation in literacy programmes now form a central part of current countries education and economic policy making all over the world. Hence, UNESCO (2008) highlights the following benefits of ICT in literacy programmes.
1. ICTs are used to develop livelihood literacy skills.
2. ICT is a tool for literacy capacity building
3. ICT facilitates literacy documentation and information sharing
4. ICT for Networking among organizations engaged in design and delivery of literacy programme
5. ICT can improve the effectiveness of monitoring and evaluation

The Role of ICT in Promoting Adult Literacy

By transcending physical and special constraints, ICTs bring unprecedented literacy education opportunities to adult illiterates of all levels. The five key ways in which ICT can support literacy are shown in the diagram below:

Table 1: ICTs roles and processes in promoting literacy

Roles	Type of ICT	ICT Strategies	Literacy Outcomes	Salient Potentials
1: Enhancing ng	Radio, TV, Video, Video compact Disk (VCD), Digital Video Disc (DVD)	Words, images movement, and animation, in combination with audio	Facilitate reading comprehension, accelerated literacy learning, stimulate discussion and critical thinking:	Entertainment motivation
2: Broadening s to Literacy tion	Radio, TV, Internet	Close ties with learners community local language, culture needs and literacy requirement of the local people	Articulation of literacy requirements of the local people which make for successful implementation of literacy projects. Bringing literacy to the local people	Entertainment, Easy accessible and affordable.
3: Creating Local nt	Computer	Interactive computer programme based on local themes and subject matter word processing soft ware	Creation of learning literacy content	Easily and cheaply Distributable personalized approach
4: Professional opment of ctors	TV, Video, DVD computer and computer programs teleconferencing	Interactive training, Training teachers in certain subjects	taking training to teacher in remote areas	Support teachers and reduce their work to all making inservice training affordable
5: Cultivating a y conducive onment	TV, short message service (SMS) through mobile phone	Text screened in conjunction with images on TV screen such as sub-titles on TV programmes. Use of dial pads to type and send	Readily available and accessible of written materials	It reinforces and promotes the development of literacy skills in reading and writing.

		text based messages through the mobile phone		

Source: From the Author

  Explanation

The roles stated in the table above are hereby explained:

Role 1: Enhancing Learning

ICT can be used as a tool for acquisition of adult literacy skills. For example, radio, when used in combination with printed course material, can make adult literacy classes more true-to-life and interesting. Furthermore the use of television (TV) as a literacy delivery tool allows the combination of audio and visual stimuli which is more effective than visual stimuli alone in enhancing vocabulary and sentence construction skills. It can also aid information processing and memory (International Development Research Centre, 2003).

Role 2: Broadening Access to Literacy Education

Access to adult literacy education may be limited, or may be denied, for a number of reasons. These include social, cultural, political and geographical factors, as well as lack of time to attend classes, lack of qualified instructors, lack of adult literacy materials in local languages and issues such as delay in receipt of feedback and results.

ICT can help to overcome these barriers. Radio, TV and the Internet can help overcome geographical barriers by facilitating distance learning. This will help to bring adult literacy education to the adults who live in areas that are difficult to reach.

Role 3: Creating Local Content

ICT can enable the rapid and cost effective creation and distribution of socially, culturally and linguistically appropriate learning content. For example, word-processing can be used to modify literacy education material that has been developed elsewhere, to make it available in local languages and on locally-relevant topics. Similarly, desktop publishing technology is useful in creating local teaching and learning materials and it eliminates the problem of outdated learning content in adult literacy since it makes production of printed matter much more timely and relevant.

Role 4: professional Development of Instructors

Qualified and trained instructors represent the key to quality teaching and learner motivation. However, in Nigeria, professional expertise is limited and thinly distributed, particularly for the provision of non-formal literacy education. While ICT cannot be substitutes for instructors, it can supplement and support instructors by reducing their workload and enhancing their lessons.

Role 5: Cultivating a Literacy Conducive Environment

For literacy to become wide spread in any society, written material should also be readily available in daily life and accessible to all. Such an environment cultivates opportunities for coming into contact with, and creating, written material and thereby reinforces and promotes the development of literacy skills. ICT can be utilized to help make written information part of every day life. For example, TV can be a tool for bringing written material into daily life when text is screened in conjunction with images on the TV screen, such as subtitles on TV programmes. .

Strategies for Sustainability of ICT in Literacy Programmes

The key issues in sustainability of local literacy programmes and project is that there must be a focus on developing the capacity of the local people for future management and continuity of such literacy projects (Agha 1992). However, the following issues must be considered if any programme or project for literacy must be sustained.
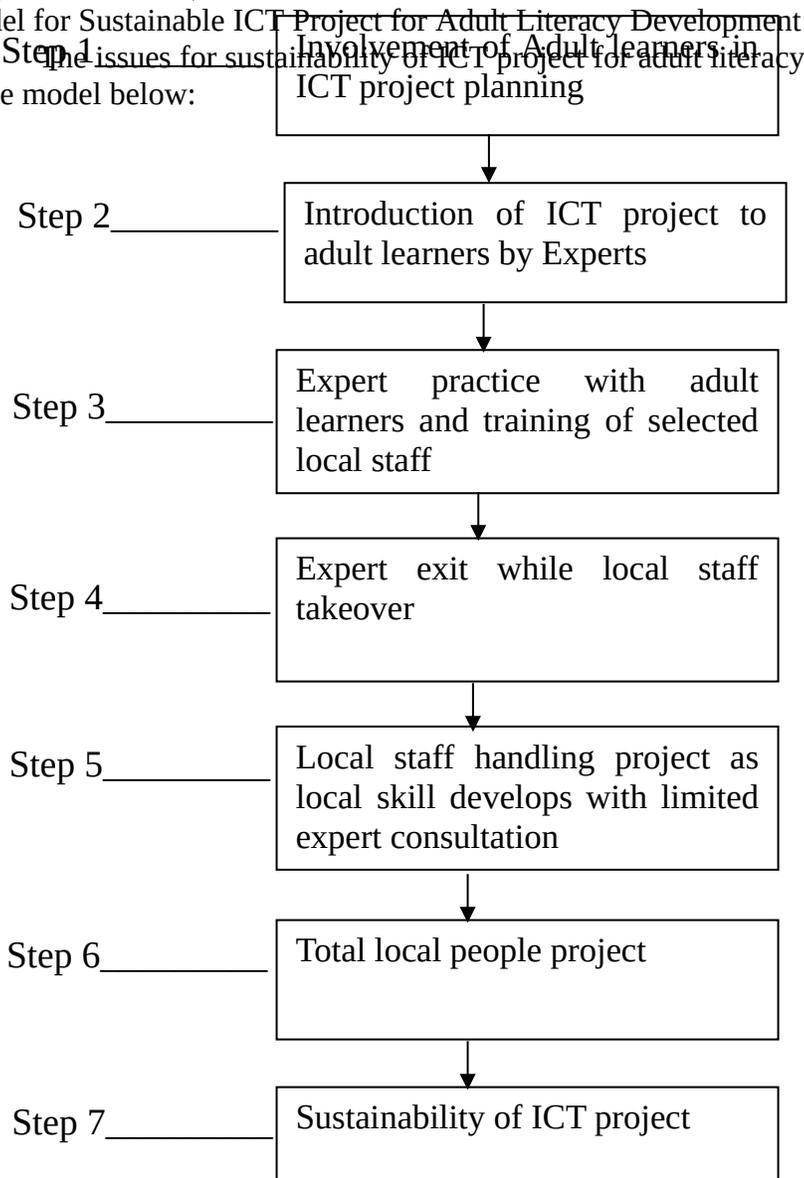
1. Appropriateness to Local Situation and Resources: ICTs for any literacy programme must be responsive to the local situation and resources. It must take the nature of the learners into consideration. It must be learner centered and mindful of the local resources available. Most literacy projects have failed because their media for delivery is not locally responsive. As result such project end as the external experts and resources are no more. Appropriateness to local situation, in terms of the relevance and adaptiveness of the ICT to the local people, maintenance

etc, must be considered; while resources, in the aspect of developing local resource skills and funds that will take over from the experts at the end of project installation and introduction. So the ability of local staff and presence of local skills should be carefully considered, rather than bringing in outside funding or staff.

2. Magnitude of the ICT project: Sustainability of ICT project for enhancing literacy will be difficult to achieve if the ICT project is gigantic and requires a lot of funding, or special skills to maintain. Rather a small and simple ICT project is more likely to be sustainable.

3. Full participation of local people and local ownership of the project: It is important that the local staff and programme beneficiaries- the adults- share and contribute to the vision from the start as this encourages local ownership of the project. Involvement of the adults in the initial design and planning of the whole project cycle and in the decision making help to make sure that planning is relevant to the local situation.

4. Clear plans for local takeover: Conditions and timing of the ICT project must be clear from the start. This helps provide a sense of security and direction for the future. The project providers must set out and agree with the local people on a time frame for the handover of roles and responsibilities to the local staff.

5. Local staff capacity development: In every local government in Nigeria, there is adult education unit. Staff of these units and some beneficiary community members can be trained in leadership and management skills. This will help develop the capacity of the local staff for the ICT project management. This is because training in managing finances is particularly important in a context where people may have little previous experience of handling even small sums of money (Goddard, 2005).

Model for Sustainable ICT Project for Adult Literacy Development

The issues for sustainability of ICT project for adult literacy development are hereby reduced in the model below:

Step 1 _____ | Involvement of Adult learners in ICT project planning

Step 2 _____ | Introduction of ICT project to adult learners by Experts

Step 3 _____ | Expert practice with adult learners and training of selected local staff

Step 4 _____ | Expert exit while local staff takeover

Step 5 _____ | Local staff handling project as local skill develops with limited expert consultation

Step 6 _____ | Total local people project

Step 7 _____ | Sustainability of ICT project

Source: From the Author

Problems of Utilizing ICT for Sustainable Literacy Programmes in Nigeria
The problems of utilizing ICT for sustainable literacy programme in Nigeria are numbers but few of them are discussed hereunder.
1. Lack of ICT Based Adult Literacy Policy: In Nigeria various policies on literacy programme emphasized the use of ICT in the delivery of literacy programme. But this is hardly the case at the implementation stage. The Nigerian National Blueprint on Adult and Non-Formal Education in its section two number 2.2.1 (xi) states that the federal government through the National Mass Education Commission (NMEC) is to introduce information communication technology (ICT) in the implementation of literacy education in Nigeria. But this has not been realized. Again the NMEC signed a memorandum of understanding with the state governments on the use of Radio for literacy programmes (NMEC, 2008), but this has not taking off in any of the states of the federation, since five years of agreement. This confirms the report that though there was a national level ICT strategy or programme, there was no specific ICT in adult literacy education policy (ICTEIA, 2010).
2. Improper articulation of the responsibility of ICT in Adult literacy education policy: The present practice of different parts of government being responsible for ICT in literacy education in Nigeria is a big problem to the development of appropriate ICT for literacy development. There does not appear to be a standard coordinating body responsible for the formutation of Nigeria's ICT literacy policies. The ministry of education through NMEC, ministry of science/technology, or the providing agencies claims responsibility for providing ICT for literacy development.
3. Lack of statistical database: Nigeria lack the required statistics on the number of illiterates that may be provided with relevant literacy programmes. This is important because the question of "who" to provide a particular programme for precedes "how" to provide such programmes. One cannot provide a programme for the people one does not know. This has been a cog in the wheel of progress in literacy development in Nigeria. Again, there is no standard repository for existing ICT in literacy-related national policies, although there have been stray instance and attempts towards it by various agencies.
4. Inadequate Infrastructure: The inadequate or even total lack of infrastructure such as electricity, telephone connections and hardware, cyber cafes etc is still the major challenges for instructing ICT in Nigeria, especially in the rural areas. For example public access to ICT is available to various extents in most of the larger urban centres in all countries through cyber café's, but access is largely non existent in rural areas in Nigeria.
5. Cost and Sustainability: The costs associated with setting up ICT infrastructure are forcing many governments, especially in developing countries, to make difficult choices (ICTEIA, 2010). Attention is given to primary education system more than adult literacy programme. Ironically, the objectives to achieve Education For All (EFA) goals should go beyond the provision of primary education to providing education to out-of-school youths and non-literate adults. Consequently, meeting the ongoing tests of maintaining equipment, staff training, connectivity, content materials acquisition, and development and consumables is a major problem to ICT in literacy development in Nigeria.

Recommendations
The following recommendations for utilizing ICT in literacy programmes for sustainable development in Nigeria, are hereby made:
1. Need for Coherent ICT in Literacy Policy: There is need for promulgation of a coherent policy regarding the production, provision and the utilization of ICT for the development of literacy programmes. NMEC as the umbrella body of adult and non-formal education should champion this course by pushing for proper policy regulations through the ministry of education. This will

help ICTs, for literacy education to be relevant and adequate to the learning needs of the adult learners. It will also reduce costs and efforts inherent in haphazard provision of such ICT programmes.

2. Adequate Provision of Infrastructure: Provision of adequate technology infrastructure is another factor for the success of ICT-supported literacy development. ICT-based adult literacy programmes have often suffered from inadequate infrastructure and technical support (INESCO, 2006). It is important that Nigerian government should set up the required phone lines, reliable electricity supply and connectivity that will not only serve the few adult illiterates in the urban areas but also the majority in the rural areas of the country.

3. Adult Illiterate Drivers rather than Technology Driven ICT: There is need for the ICT for literacy development in Nigeria to be people driven rather than technology driven. There has always been a tendency to invest in technology without making a parallel investment in the people. The import of this is that the adult learners should be adequately trained in the use of the ICTs provided so that the ICTs are not under utilized or waste as the experts tenure ends.

4. Effective Coordination and Programme Design: There is need to take stock of existing infrastructure to enable effective plans for appropriate hardware and software requirements. This should be done taking into consideration, issues of connectivity affordability, capability and relevance. There is also need to understand the interplay of ICT and culture. This is because cultural factors can be a hindrance to ICT adoption in some rural areas.

5. Relevance of Content to the Learners: ICT has the potentials for stimulating interest and engaging learners in literacy programmes. ICT also can be useful tool in developing literacy learning materials that are culturally and linguistically appropriate. These great potentials of ICT should be adequately harnessed in providing and utilizing ICT for literacy development. This calls for a bottom up information on the nature of the adult illiterates, the type of literacy programme and other environmental factors which affect the production and provision of proper ICTs for literacy development.

6. Planning for Sustainability: The problem of sustainability should be addressed and incorporated in the overall programme planning. This is to make sure that sustainable issues such as training of local staff, generation of funds for maintenance and general management operatives, are adequately addressed. This is because majority of ICT projects tend to close down as soon as the project funds are used up due to high costs.

Conclusion

ICTs can be of great use in helping to achieve literacy development. The focus of ICTs for literacy should be to reduce digital divide between the adult literates and adult illiterates in the rural and urban areas, and endangering literacy development and sustainability. ICT tools are very powerful and can go a long way in addressing certain issues like adult illiteracy, education for school dropouts and literacy for women empowerment.

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Mathematics Teachers' Workloads as Correlates of Quality Assurance in Upper Basic Education

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ract

study was designed to examine mathematics teachers' workload vis-à-vis the students' performance in
ematics and as correlates of quality assurance in Upper Basic Education. As a descriptive study it made up
r research questions and hypotheses at 0.05 level of significant. Sample to the study comprised of twenty
c secondary schools from which thirty-two mathematics teachers and one thousand and two hundred
nts of upper basic level II of education were purposively selected for the study. Two instruments namely
ematics achievement test (r=0.78) and 'Questionnaire for mathematics teachers' workloads in Upper Basic
ation level II'(r=0.83) were used for the study. Data were analysed through simple percentages, Pearson
nt correlation, t-test and one way ANOVA. Findings revealed that there was a significant relationship
een mathematics teachers' gender and students' performance in Mathematics (t-cal>t-ratio, df=1198;
05) but there was no significant relationship between mathematics teachers' qualification and students'
rmance in Mathematics (F-cal<F-ratio, df={4, 1194}; P>0.05). However, it was found that there was a
ficant relationship between mathematics teachers' subject taught and students' performance in Mathematics
l>t-ratio, df=1198; P<0.05). Furthermore, study revealed that there was a significant relationship between
ematics teachers' workload and students' performance in Mathematics (F-cal>F-ratio, df={7, 1191};
05). The implications of the findings were discussed and recommendation suggested towards ensuring better
ty assurance in Upper Basic Education.

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

duction

ty assurance in education is ascertained when the end-products could contribute meaningful to the
opment of the society. This is why education is regarded as a veritable tool that all developing and
oped nations of the world could use skilfully to accomplish whatever national objectives that they wish.
rsal Basic Education (UBE) was conceived as a panacea to the problems which the former educational
m of Universal Primary Education (UPE) of 1976 as announced in September 1999 by President Olusegun
anjo in Sokoto State of Nigeria. Like UPE, the UBE provides free and universal education which makes it an
ovement in a numbers of ways. For instance, UPE makes a voluntary enrolment of primary school
ramme while UBE compulsory education programme for all children between the ages of six and fifteen, and
nmodates pupils from primary to the Junior Secondary School (JSS) levels. As a result UBE is expected to
mplish the following objectives such as:

eveloping in the entire citizenry a strong consciousness for Education and strong commitment to the
ous promotion.

he provision of free universal basic education for every Nigerian child of school-going age.

Reducing drastically the incidence of dropout from the formal school system (through improved relevance,
ty and efficiency)

Catering for the learning needs of young persons who, for one reason or another have had to interrupt their
oling through appropriate forms of complementary approaches to the provision and promotion of basic
ation

nsuring the acquisition of the appropriate level of literacy, numeracy, manipulative, communicative and life
as well as the ethical, moral and civic values needed for laying a solid foundation for life-long learning
, 2003).

ctualize these objectives different schools subjects are imperative and planned for the learners to undergo.
ninent of these subjects is Mathematics whose objectives of learning vary from one level to the others. At the
basic level of education it includes

enerating interest in mathematics and providing a solid foundation for everyday living

eveloping of computational skills in students

Fostering the desire and ability of accuracy to a problem at hand

Development of accurate, logical and abstract thinking

evelopment of ability to recognize problems and solve them with related mathematical knowledge

Provision of necessary mathematical background for further education

Stimulation and encouragement of creativity (NPE, 2001)

al analysis of the objectives of learning mathematics point to the actualization of the cardinal objectives of
BE as clearly stated in (v) of the UBE. No wonder mathematics is an indispensable subject and at same time
ded premium position among the school subjects, which every student must register and pass; and as
quisite to advance in future endeavours. In spite of the premium position occupied by mathematics at the

basic level of education there has not been a remarkable improvement in the students' performance as borated by Odubunmi (2006) as revealed in the table 1 below

1: Students' performance in Mathematics from 1991-2004 in the WASCE

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

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

The above dismal performance in the core subject like mathematics as shown above is one of the rs to non-attainment of quality assurance in the UBE in particular and Nigerian educational system in ral. Though various research conducted by different scholars had indicated some factors to have contributed is poor performance of students in mathematics. According to Olaoye(2004) mathematics teachers' rience in handling the subject with the students has been found to exert greater influence on the academic rmance of students. It was posited that the more experienced a mathematics teachers in the course of ing the more they made innovation to make the subject exciting to the learners compare to new entrants into ing professions.

Other reasons advanced to have denied the quality assurance in learning outcome of mathematics de inadequate knowledge of subject matter by the teachers (Onocha and Okpala, 1995), irrelevant and quate instructional facilities(Akinlua and Popoola, 1998), some topics perceived to be difficult (Oyedeji,) and many more. Some of the aforementioned factors indicted mathematics teachers as cause of non- ment of quality assurance in the school mathematics as a subject in spite of huge amount of money every ssful government pump to facilitate the teaching and learning of mathematics. However, no one has ever dered the nature of workload which mathematics teachers are being subjected to especially that the numbers dents offering the subject in most cases outnumbered combined other subjects. It is against this background he present study is designed to examine mathematics teachers' workload vis-à-vis the students' performance athematics and as correlates of quality assurance in Upper Basic Education presently Senior Secondary ol (SSS) level.

ceptual framework of Quality
The concept of quality in education is quite relative as everyday use in most cases refers to different retations. According Oxford Dictionary of Current English quality is defined as goodness or worth, superior thing that is special or that distinguishes a person or thing. Corroborating this Madugud & Guyit (2003) ed that quality could be referred to high standard when necessary and sufficient inputs have gone into the products for consumption or use, otherwise low quality is achieved when necessary inputs into products are ficient and thereby not capable of satisfying the needs of the people as required. Referring to quality in ation one is trying to transform the degree of performance of teachers in satisfying the needs/curiosity of the ers. This is to say that quality of teachers and other infrastructural facilities available determine the standard e services rendered.

In the perception of Beeby(1966) and Coomb(1968) as quoted by Madugud & Guyit (2003) quality in ...ation has three attributes. The first attribute of quality refers to perception of a school inspector when visiting ...ool in terms of performance in 3Rs, acquisition of a given fact in liberal and science concepts by the ...nts, assessment of idleness, industrious and punctuality just to mention a few.

On the other hand quality could be viewed from economic and productive angles, where quality is seen ...e rate of returns to the economy for the investment made in it. The conception being held here is that 100 ...nt success of students in public examination at the detriment of education making no immediate functional ...action to them and the society is no longer 'quality'. The last use of the term 'quality' refers ordinary use of ...erm in education to mean' now that one has finished schooling, what next?' By combining these three ...utes quality in education is judged by the ways students pass excellently in examination as set by external ...s and at same time determine the quality of school and teacher.

Furthermore, quality is ensured when the school's products are able to satisfy the needs of economy of a ...n society and not solely depended on that society to sustain. This shows the lack of quality in the former UPE ...lve the societal problem, instead it added to it and this is one of the main reasons why the present UBE is ...mitted to compulsory education as against the previous voluntary one of UPE towards addressing the ...ring problems of Nigeria as country.

...ment of the problem

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

What relationship exists between mathematics teachers' genders and learning outcome of students?
What relationship exists between mathematics teachers' qualifications and learning outcome of students?
What relationship exists between mathematics teachers' subject taught and learning outcome of students?
What relationship exists between mathematics teachers' academic workload and learning outcome of ...nts?

As a result the following hypotheses were generated for the study at significant level of 0.05,
There is no significant relationship between mathematics teachers' gender and students' performance
There is no significant relationship between mathematics teachers' qualifications and students' performance
There is no significant relationship between mathematics teachers' subject taught and students' performance
There is no significant relationship between mathematics teachers' academic workload and students' ...rmance

...nodology
...arch Design

The research design for the study was descriptive as the research was not intended to manipulate the ...pendent variables like mathematics teachers' genders, qualifications, subject taught and workload and but it ...to see the influence of these variables on dependent variable students' performance in Mathematics at upper ... education level.

...ulation

The population to the study involved all the secondary schools mathematics teachers and their students ...gos State public secondary schools. It focussed on the upper basic education (senior secondary schools) ...h was viable for comparison of the students' performance in terms of general ordinary level examination.

...le and sampling techniques

Twenty public secondary schools in Ojo and Badagry local government areas of Lagos State were ...ted based on the available mathematics teachers in all arms of the upper basic education level II. Meanwhile, ...le of thirty-two mathematics teachers and one thousand two hundred students of upper basic education level ...ere chosen purposively due to their familiarity of these teachers at the inception of upper basic education ...I.

...uments

Two instruments were used for the study. These included an achievement test in mathematics (NECO, ...) and self-developed instrument for mathematics teachers tagged 'Questionnaire for mathematics teachers'

loads in Upper Basic Education level II'. It contained mathematics teachers' bio data and relevant statements
e workload of teachers.

lation of Instruments

The adapted achievement test was given to five mathematics teachers outside the scope of the study to
hat it conformed to NECO/WAEC standard and make necessary corrections. The draft copy was
nistered on twenty five students of upper basic education level II over a period of three weeks, and final draft
ensured. This made the achievement test items reduced to forty multiple objectives questions from the
al fifty questions due to the ambiguous questions deleted. In similar manner the draft copy of the
ematics teachers' instrument was given to two experts in Language and Mathematics to offer constructive
ism to the language pattern and adequate coverage of areas of the study, and it was later administered on ten
ematics teachers that were not eventually included in the final selection into the study to offered constructive
ism to it as first draft, and subsequently represented to ensure that items of the instrument were not given
le interpretation to the respondents.

bility of Instruments

Following the first draft of the achievement test in mathematics which contained fifty multiple objective
ions which students outside the final selected ones responded to and subsequent forty multiple objective
ions after the ambiguous ones had been expunged as presented over interval of three weeks Pearson moment
lation coefficient of the achievement test was computed, and found to be 0.78 while that of mathematics
ers showed reliability coefficient of 0.83, which the study considered as appropriate to stand the test of time.

inistration of Instruments

Personal contact was made by the researcher to the affected schools due to the reason earlier stated that
ted mathematics teachers should have started teaching the affected students since their upper basic education
d sequel to the prior permission of the school principals the instrument was administered personally to
ematics teachers who in turn assisted the researcher to administered the achievement test which lasted for
week due to logistic reason.

edure for data collection

Direct mode of collection was used in retrieving the instruments from the mathematics teachers who in
assisted in collecting the administered achievement test from the students. This was carried out on a specified
y different teachers though it was on the spot collection on a chosen day.

scoring and analyses

The achievement test was scored over forty as each right and wrong answers attracted one and zero
s respectively but strictly attached to the mathematics teachers where it was collected so as to ensure proper
ment. Analyses were carried out using simple percentages, Pearson correlation, t-test and one way ANOVA.

ings and Discussions

e 1: Teachers' gender with correspond number of students

chers' genders	Males	Females	Total
nber of Students	560	640	1200
centages	47	53	100

e 1 showed that 560 students represent 47% were taught by the male teachers the Mathematics and 640
nts represent 53% were taught by female teachers. This demonstrated that out of thirty two mathematics
ers that were involved in the study and in spite few female teachers numbering 14 and represent 44% of the
ted teachers (18 male teachers represent 56% participated in the study), they taught greater percentages of
nts Mathematics. By implication the teaching and learning of Mathematics should not be gender' s skewed
might have impact on the performance of students, instead all the students should be encouraged to embrace
arning with ease as compared to its compulsory tendency.

e 2: Teachers' qualifications with correspond number of students

chers' qualifications	NCE	HND/PGDE	B.SC/PGDE	B.SC/ED	M.SC/ED	Total
nber of Students	385	230	320	168	97	1200

centages	32	19	27	14	08	100

2 described mathematics teachers' qualifications along with the numbers of students found in each group to been developed by them. 385 students represent 32% were taught by the NCE holders that were 12 though sent 38% of the teachers, 230 students represent 19% were taught by the HND/PGDE holders that were 08 epresent 25% of the teachers, 320 students represent 27% were taught by the B.SC/PGDE holders that were t represent 13% of the teachers, 168 students represent 14% were taught by the B.SC/ED holders that were ough represent 16% of the teachers and 97 students represent 08% were taught by the M.SC/ED holders that 03 though represent 08% of the teachers. This demonstrated that study took cognizance of teachers' fications as one of the core factors in the determination of assuring the quality delivery of Mathematics nts in the school system. By simple indication the highest teaching of Mathematics seemed to have skewed rds the least qualifications holders and least went to the highest qualifications holders. It thus seem that the r the qualifications teachers have in the teaching profession the higher the attrition rate or that they were yet tained the additional qualifications.

3: Teachers' subject taught per term with correspond number of students

chers' subject taught	Mathematics only	Mathematics with other(s)	Total
nber of Students	630	570	1200
centages	53	48	100

3 described subject taught by mathematics teachers in a term along with the numbers of students. For the ematics alone 15 mathematics teachers represent 47% found teaching 630 students represent 53% and for ematics with either science/ social science subject there were 17 teachers represent 53%, and they were to have engaged in 570 students represent 48%. For mathematics teachers to have handled more than ematics alone in the secondary school settings with the teeming students' population is an indication that thing is quite wrong knowing fully the need to cover content areas of Mathematics and other subject ned. The implication might be the teaching towards examination as against the subject-matter and knowledge sition to foster better understanding of the subject.

4: Teachers' workload per week with correspond number of students

chers' workload	6-12	13-18	18-24	25-30	17-22	23-28	29-34	35-40	Total
ject taught	Mathematics only				Mathematics with other(s)				
nber of Students	66	75	81	67	107	237	206	361	1200
centages	5.5	6.3	6.8	5.6	8.9	19.8	17.2	30.1	100

4 described workload of mathematics teachers in a week along with the numbers of students. For those ing Mathematics alone (15 teachers in all) had the least and highest workload of 6 and 30 periods in a week ctively, and total students in these categories numbered 289 represent 24%. On the other hand those ing Mathematics with others (17 teachers in all) had the least and highest workload of 17 and 40 periods in a respectively, and total students in these categories numbered 911 represent 76%. One would see that the ers of students under those handling Mathematics with either science/ social science was too outrageous to about meaningful learning outcome on one hand and not in conformity the international standard of one er ratio to thirty students in a classroom. This suggest the need to make mathematics teachers saddled with nsibility of teaching Mathematics only and be excused from teaching additional subject. Moreover, it points e increase attrition rate of leaving teaching profession to others where teachers found not too much nding. By implication qualified hands might be lost to other areas of human endeavours which could turn ation sector to mediocre avenue.

5: Academic performance of students in Mathematics

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

5 described the academic performance of students in the administered test in Mathematics where it was that almost half of the entire students (440 students represent 36.7%) had between (0-39) percent which is

dered as failure in the criterion standard of National Examinations Council (NECO) or West African
mination Council (WAEC) guide. Though quite appreciable numbers of students (384 students represent
had between (70 & above) but quality assurance in education is ascertained when in most cases failure is so
mal if at all if it exist. By implication more attention need to be given to other salient factors that might have
t and indirect impact on the academic performance of students in Mathematics that is regarded as the
nage of technology, otherwise the pace of the nation development might take retrogressive form.

What relationship exists between mathematics teachers' genders and learning outcome of students?

e 6: Relationship between teachers' gender and students' performance

iations	Correlation coefficient	Significant
chers' gender		
ievement of students	0.062	Strong relationship

e 6 described the relationship between teachers' gender and the academic performance of students, and it was
d to be strong with coefficient of 0.062. In other words the academic performance of students in Mathematics
eatly influenced by the gender of the mathematics teachers concerned. This confirmed the fact that the much
expected in the quality assurance in the academic performance of students in Mathematics without any
t has gender implication.

There is no significant relationship between mathematics teachers' gender and students' performance

e 7: t-test of relationship between teachers' gender and students' performance

iations	t-calculated	t-ratio	df	Significant
chers' gender	106.425	1.645	1198	P<0.05*
ievement of students				

nificant

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

What relationship exists between mathematics teachers' qualifications and learning outcome of students?

e 8: Relationship between teachers' qualifications and students' performance

iations	Correlation coefficient	Significant
chers' qualifications		
ievement of students	0.06	positive relationship

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

There is no significant relationship between mathematics teachers' qualifications and students' performance

e 9: ANOVA of teachers' qualifications and students' performance

iations	Sum of Squares	Mean Squares	df	F-calculated	F-ratio	Significant
ween groups	4631.816	1157.954	4			
hin groups	1278053.200	1070.396	1194	1.082	2.370	P>0.05
al	1282685.016	-	1198			

e 9 described the one way ANOVA of teachers' qualifications and the academic performance of students,
t was found not significant (F-cal<F-ratio, df={4, 1194}; P>0.05) thereby making the null hypothesis two
ejected so that there is no significant relationship between mathematics teachers' qualification and students'
rmance in Mathematics. This confirmed the earlier assumption that the relationship might not be
antiated on a general level in the research question two. However, this does not translate that quack should
owed to take the affair of teaching students Mathematics.

What relationship exists between mathematics teachers' subject taught and learning outcome of students?

Table 10: Relationship between teachers' subject taught and students' performance

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

Table 10 described the relationship between teachers' subject taught and the academic performance of students, and it was found to have negative coefficient of -0.035. There is contrast relationship between the academic performance of students in Mathematics and mathematics teachers' subject taught. This might not be unconnected to inadequate coverage of contents areas in Mathematics as a result of greater responsibility on the part of the teachers. Meanwhile, it could be inferred that status quos of subject specialist/ team teaching in a situation of inadequate mathematics teachers be adopted.

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

Table 11: t-test of relationship between teachers' subject taught and students' performance

Variations	t-calculated	t-ratio	df	Significant
Teachers' subject taught	102.276	1.645	1198	$P<0.05*$
Achievement of students				

*Significant

Table 11 described the t-test relationship between teachers' subject taught 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 three rejected so that there is a significant relationship between mathematics teachers' subject taught and students' performance in Mathematics. Students handled by mathematics teachers who teach Mathematics also performed better than their counterpart being handled by mathematics teachers that taught Mathematics with either science/ social science in schools.

RQ: 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		
Achievement of students	-0.235	Negative relationship

Table 12 described the relationship between teachers' workload and the academic performance of students, and it was found to have 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 unconnected to non-proper teaching and inadequate coverage of contents areas in Mathematics that emanated from the greater responsibility of the teachers. Meanwhile, it could be suggested that minimum workload should be assigned to the mathematics teachers in other to ensure good standard in terms of students' performance.

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			
Within groups	1193606.4	1002.188	1191	12.698	1.94	$P<0.05*$
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 the null hypothesis four rejected so that there is a significant relationship between mathematics teachers' workload and students'

rmance in Mathematics. This showed that the more workload mathematics teachers are given the less quality ance of students' performance in the subject. Infact, study has corroborated the findings of Ashton & ker (1987) and Sim(1990) that observed at variant that students' dismal performance could be traced to er of assigned workload give to the teacher to handle, stressing the higher the workload the less the rmance of students such subject.

clusion and recommendation

Findings have shown that dismal performance of students and attainment of quality of Mathematics culum depends on quite numbers of factors as enumerated above. In view of these it is suggested that the ing of Mathematics should be given additional attention more that its unique position in the contemporary d cannot be over-emphasized. More qualified and professional hands should be encouraged to up the ing of Mathematics in other to avert the perennial dismal performance of students.

Furthermore, mathematics teachers' workload should not be more than necessary in order to allow for uate content coverage, and minimize teaching towards passing examination alone. Meanwhile, it is mmended that team teaching of Mathematics in our schools be recommended so that pool of knowledge of rent topics be given by different Mathematics for students' understanding but the issue of workload should e compromised so as to attain meaningful goal at the end.

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A Study on the Development of Organic Manure from Household Waste to Improve the Soil for Vegetable Production by Homemakers in Southern Nigeria.

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Abstract

This study was carried out to develop process skills that could be used to train Homemakers in conversion of household wastes into organic manure for vegetable production in southern Nigeria (Enugu and Ekiti States). Three research questions were developed and answered by the study. The study adopted experimental design and was carried out in four phases which included identification of skill items, training of extension agent and their practice, training of Homemaker and their practice and determination of cost benefit of application of organic manure. The population for the study was 129 made up 80 homemakers and 49 extension agent. The sample for the study was 60 homemakers and 24 extension agents who were purposefully selected, trained and allowed to practice the identified skills. They were rated using a 4 point rating options of high performance (4), average performance (3), low performance (2), and no perfection (1). A mean rating of 2.50 or above on each item was judged as acceptable standard of efficiency (ASE). The study found out that 25process skill items were required for converting household wastes into organic manure and the Extension agents and Homemakers performed efficiently during practice. It was also found out that application of organic manure had less cost than application of chemical fertilizer. It was therefore recommended that the Homemakers should be regularly trained either through association, co operatives or non- governmental organisation (NGO's) using the training package (page 11 and 12) for converting household waste into organic manure for growing crops such as vegetables by making use of the process and training skills developed by this study.

Introduction

Vegetables are edible plant parts that are consumed to provide the body with vitamins and minerals. In the view of Redmond (2008), vegetables are edible products of herbaceous plants which are grouped according to their edible parts into leaves, stalks, roots, tubers, bulbs, flowers, fruits and seeds with their respective examples as lettuce, celery, carrot, potato, onion, broccoli, seeds and tomato that is of concern to this study. Tomato fruits can be consumed in either raw or cooked form because of the dietary importance. Rolly (2007) said that dietary experts recommended the eating of fruit vegetables everyday for healthier lifestyle as they lower the risks of cancers, heart diseases and other chronic diseases and conditions. The growing of vegetables in Southern Nigeria is carried out by Homemakers.

A Homemaker in the view of Bullon (2007) is a person who works at home cleaning, cooking, parenting and may or may not engage in any other job. A Homemaker in the context of this study is a matured individual in a home who is mainly involved in the cleaning, cooking for members of the home, caring the house members and engaging in growing of some vegetable crops such as tomato in the backyard garden. It was observed by the researchers that the daily activities of the Homemakers generate some household wastes which are dumped in incinerators or heaped at the back of the house.

Household wastes refer to materials generated in the home which are no longer needed and are thrown away (Hornby 2006). Examples of household wastes include food scrapes pieces of papers, green leaves polythene materials, broken bottles, glasses, bones, among others. Some of these like food scrapes, green leaves, bones household wastes and so on are allowed to rot and decay without much interest in their value; but they could be recycled to produce soil nutrient for the garden soil through composting. Composting is the act of piling a mixture of plants and animal parts in a place to decay for the purpose of adding it to the soil as organic manure (Hornby, 2006). As regards this study composting means the process of piling degradable household wastes in a heap or pit to decay for the purpose of adding the decomposed or decayed materials to the soil in form of organic manure. Organic manure in the view of Wikipedia (2008) refers to the materials used for improving (making better) the fertility and productivity of the soil. As applied to this study, organic manure means the decayed plants and animal parts which are used to improve the fertility of the soil. Organic manure prepared from household wastes is very beneficial to the Homemakers as it supplies the soil with nutrient for the growth of tomato and it is also easier to prepare than chemical fertilizer:.

Despite the above benefits, the Homemakers practice the growing of tomato continuously in the backyard garden with little attention to improving the soil nutrient with organic manure while neglecting the utilization of household wastes. The consequence of continuous growing of vegetable in the backyard garden at the expense of applying organic manure to the soil result to low yield of tomato fruits; many Homemakers therefore spend part of their merge income to buy tomato fruits which could have been produced locally by them if the nutrient of the soil was improved. The observation of the researchers revealed that the conversion of household wastes into organic manure require certain skills which could be identified and developed for the training of Homemakers who allow their household wastes to rot away without use

Development in the view of Hornby (2006) means the process of creating something new. In the context of this study, development means the process of converting household wastes into organic manure by the homemakers for the purpose of applying it to the garden soil to improve the fertility of the garden soil for better tomato production. The purpose of this study was to develop the process skills that could be utilised by Homemakers to convert household wastes into organic manure for the improvement of garden soil for better tomato production. Specifically, the study sought to

1. identify the skills required for converting household wastes into organic manure
2. determine the performance of Homemakers in utilizing the skills identified for converting household wastes to organic manure.
3. determine the cost benefit of organic manure and chemical fertilizer when applied to the soil by Homemakers for production of tomato fruits.

Methodology

Three research questions were developed and answered by the study. The study adopted experimental design of two groups (treatment and control groups). The area of the study was Enugu and Ekiti states of Nigeria. The population for the study was 129 made up of 80 Homemakers and 49

Extension agents. (An Extension agent is an individual that is trained in the technique of identifying farmers' problems and taking them to the research institute for solution and bringing the solution to farmers for adoption. In this study, Extension agents were those individuals who were trained in the utilization of identified skills of converting household wastes into organic manure, they also served as trainers and ratters of Homemakers) The sample for the study was 84 made up of 60 Homemakers and 24 Extension agents. Purposive sampling technique was used to select the 60 Homemakers (30 each from Enugu and Ekiti states). The Homemakers were selected based on their location in the city and those with land area in their compound for backyard garden. The 24 extension agents (12 from Enugu and 12 from Ekiti) were randomly selected from Agricultural Development Project Offices in the two states. The experiment was carried out as follows;

Experimental procedure
  A. materials required: the materials used for the experiment were household wastes, cutlass, shovel or digger, head pan or barrow which were easily obtained from the environment.
  B. Phases of the experiment: The first part of the study involved the identification of step by step (process) skills of converting household waste into organic manure by the researchers. The researchers made use of their expertise and related literature to identify the skills in converting household wastes into organic manure. The identified skills were validated by three lecturers from the department of soil science, University of Nigeria, Nsukka. These skills were used by the researchers in transferring the procedures in making organic manure from household wastes to the Homemakers in the following phases discussed below.

Phase I: identification of process skills for Converting household wastes into organic manure.
    The validated skills were tried by the researchers to determine their efficacy in preparing organic manure from household wastes. That is, the researchers wrote down the skills that were followed logically in converting household wastes into organic manure during their practice to ensure logical and orderliness of the steps in preparing organic manure from household wastes (table 1)

Phase II: Training of the selected extension agents on the process skills and their practice
    24 extension agents, 12 from Enugu and 12 from Ekiti States participated in the training. The researchers organised the training at two locations for them. That is one in Enugu state and the other at Ekiti state. The researchers made use of the process skills and essential materials during training to produce organic matter. The Extension agents were requested to practice on their own after the normal training and they were rated by the researchers on use of the process skills (table 1). The researchers converted the skills identified in phase I into rating scales and used them to rate the extension agents for proficiency during practice. The rating scales consist of 4 options of high performance (4), average performance (3), low performance (2) and no performance (1). A mean rating of 2.50 or above on each item was judged as an acceptable standard of efficiency (ASE) as reported in table 1

Phase III: Training of Homemakers on the Process Skills and their Practice
    10 Homemakers each from Enugu and Ekiti States were trained by 3 extension agents for each state on the use of the process skills to produce organic manure from household wastes. After the training, the Homemakers were requested to use the process skills to produce organic manure from household wastes. They were rated by 3 trained extension agents per state. The rating scales consisted of 4 options of high performance (4), average performance (3), low performance (2) and no performance (1).The data collected from the ratters in each state was analysed using mean. A mean rating of 2.50 or above on each item was judged as an acceptable standard of efficiency (ASE) and reported in table 2.

Phase IV: Cost Benefit Analysis of Organic Manure for Growing Vegetables by Homemakers
    The researchers carried out an experiment with one treatment and two control groups in order to determine the cost benefit of organic manure for growing vegetable (tomato) by Homemakers. In each state, the treatment group was made up of 10 trained Homemakers while the control groups were 10 Homemakers that used chemical fertilizer and 10 Homemakers that depend on normal soil fertility. The

experimental group made use of organic manure prepared by them to grow tomato while the control groups made use of either chemical fertilizer or no manure at all. The data collected from the three groups in each state were analysed and presented in table 3.

Results: The results of the study **w**ere obtained from the research questions answered; they were presented in tables 1-3 below

Research Question 1:

What are the process skills required in converting household wastes into organic manure?

The data for answering the research question were presented in table 1.

Table 1

Analysis of Researchers' Ratings of the Performance of Extension Agents on the use of the Process Skills in for Converting Household Wastes into Organic Manure.

N=3

S/N	Item statement	$\overline{X}$	Remark
1	Select the edge or corner where the garden is situated	3.07	ASE
2	Clear the place of weeds if any	2.75	ASE
3	Dump the refuse at a corner	2.67	ASE
4	Mark the remaining portion into 4pits each of 0.5m x0.5mx30m	2.84	ASE
5	Label the pits A,B,C and D	2.73	ASE
6	Sort the refuse into degradable , metals, bottles and polythene	3.04	ASE
7	Spread the degradable inside pit A	3.51	ASE
8	Put a starter (ash, dung of ruminant animals)in the pit	3.24	ASE
9	Sprinkle with water	2.67	ASE
10	Repeat the action 6-9 daily or every other day until the pit is filed up	3.02	ASE
11	Pack the undegradable materials into a pit	3.56	ASE
12	Carry or resell the metal for re-use elsewhere	2.67	ASE
13	Burn the polythene if not fire proof	3.51	ASE
14	Turn the residues in pit A to Pit B	3.31	ASE
15	Repeat action 6-10	3.69	ASE
16	Repeat action 11-13	3.50	ASE
17	Turn pit B to pit C and pit A to B	2.78	ASE
18	Leave pit A empty	2307	ASE
19	Repeat action 15 for pit A	3.37	ASE
20	Repeat action 11-14	2.73	ASE
21	Empty pit C to D, B to C and A to B	3.24	ASE
22	Observe pit C for Decay and empty to D	3.51	ASE
23	Spread the organic manure in pit D on the vegetable beds as manure	3.27	ASE
24	Repeat the cycle	2.77	ASE

25		3.02	ASE
	Make a rain proof shed on pit D to prevent leaching of nutrients		

The data in table 1 showed that all the 25 process skill items had their mean values ranged from 2.67-3.56. This showed that the 25 skill items were required for converting household wastes into organic manure.

Research Question 2

How competent are the homemakers in the use of the process skills in converting household wastes into organic manure?

The data for answering the research question were presented in table 2

Table 2

Analysis of Extension Agents' Ratings of the Performance of Homemakers on the use of the Process Skills in Converting Household Wastes into Organic Manure.

S/N	Skills Rated by the extension agents	$\overline{X}$	Remark
1	Select the edge or corner where the garden is situated	3.19	ASE
2	Clear the place of weeds if any	3.48	/ASE
3	Dump the refuse at a corner	3.33	ASE
4	Mark the remaining portion into 4pits each of 0.5m x0.5mx30m	2.87	ASE
5	Label the pits A,B,C and D	3.29	ASE
6	Sort the refuse into degradable , metals, bottles and polythene	3.24	ASE
7	Spread the degradable inside pit A	3.24	ASE
8	Put a starter (ash, dung of ruminant animals)in the pit	3.19	ASE
9	Sprinkle with water	3.38	ASE
10	Repeat the action 6-9 daily or every other day until the pit is filed up	3.06	ASE
11	pack the undegradable materials into a pit	2.56	ASE
12	Carry or resell the metal for re-use elsewhere	3.07	ASE
13	Burn the polythene if not fire proof	3.88	ASE
14	Turn the residues in pit A to Pit B	3.01	ASE
15	Repeat action 6-10	3.01	ASE
16	Repeat action 11-13	2.92	ASE
17	Turn pit B to pit C and pit A to B	2.89	ASE
18	Leave pit A empty	3.21	ASE
19	Repeat action 15 for pit A	2.87	ASE
20	Repeat action 11-14	3.48	ASE
21	Empty pit C to D, B to C and A to B	2.88	ASE
22	Observe pit C for Decay and empty to D	3.11	ASE
23	Spread the organic manure in pit D on the vegetable beds as manure	3.96	ASE
24	Repeat the cycle	2.96	ASE
25	Make a rain proof shed on pit D to prevent leaching of nutrients	2.99	ASE

The data in table 2 showed that all the 25 items had their mean values ranged from 2.87-3.48. This showed that the homemakers had acceptable performance of efficiency (ASE) practicing the conversion of household wastes into organic manure.

Research Question 3

What was the cost benefit of the application of organic manure and other forms of manure to the soil for production of tomato fruit by Homemakers?
The data for answering the research question were presented in table 3

Table 3

Cost Benefit Analysis of Organic Manure and other forms of manure in growing vegetable (tomato by Homemakers (labour and materials remaining constant)

Group	Cost of Manure() (♯)	Yield in Kg/hec. (♯)	Selling Price (♯)	Gain (♯Naira)
Vegetable (tomato) + organic manure	Nil	12kg	3080	3080
Vegetable (tomato) + chemical fertilizer	1,500	15kg	4,200	2,700
Vegetable (tomato) without any manure	Nil	6 kg	1540	1,540

The data presented in table 3 revealed that organic manure if well prepared and utilized produces the highest profit than the use of chemical fertilizer which attract cost resulting from the purchase of fertilizer.
The skills in converting household wastes into organic manure (table 1) and the training steps required for mastery of these skills were developed into package as reported in page 11 &12
Training Package for converting household wastes into organic manure: The training package is made up of two parts

Part A: skills in converting household wastes into organic manure

1   Select the edge or corner where the garden is situated

2   Clear the place of weeds if any

3   Dump the refuse at a corner

4   Mark the remaining portion into 4pits each of 0.5m x0.5mx30m

5   Label the pits A,B,C and D

6   Sort the refuse into degradable , metals, bottles and polythene

7   Spread the degradable inside pit A

8   Put a starter (ash, dung of ruminant animals)in the pit

9   Sprinkle with water

10   Repeat the action 6-9 daily or every other day until the pit is filed up

11   Pack the undegradable materials into a pit

12   Carry or resell the metal for re-use elsewhere

13   Burn the polythene if not fire proof

14	Turn the residues in pit A to Pit B
15	Repeat action 6-10
16	Repeat action 11-13
17	Turn pit B to pit C and pit A to B
18	Leave pit A empty
19	Repeat action 15 for pit A
20	Repeat action 11-14
21	Empty pit C to D, B to C and A to B
22	Observe pit C for Decay and empty to D
23	Spread the organic manure in pit D on the vegetable beds as manure
24	Repeat the cycle
25	Make a rain proof shed on pit D to prevent leaching of nutrients

Part B: The training steps required for mastery of the skills in converting household wastes into organic manure

1	State the objective of the training	3.50	required
2	Develop training unit and time schedule	3.50	required
3	Determine the level of learners	3.94	required
4	Develop lesson plans	3.32	required
5	Use appropriate skill training method like demonstration	3.57	required
6	Demonstrate the skills following the identified steps	3.69	required
7	Request the trainees to practice	2.94	required
8	Supervise trainee practices	3.69	required
9	Evaluate learned skills through rating cale step by step	3.69	required
10.	Provide knowledge of results	2.94	required
11	Repeat failed practices	3.32	required
12	Follow up trainee in the establishment	3.94	required

The data in table 3 showed that all the 12 skill items had their mean values ranged from 2.94-3.94. This showed that these skill items were required in training for converting household wastes into organic manure.

Discussion of Results

It was found out from the study that 25 process skill items were required for converting household wastes to organic manure. The findings of the study were in agreement with the finding of Olaitan and Lombin (1985) who carried out a study on how to prepare organic manure in the tropics through composting. The authors found out that organic manure (composting) can be prepared by utilizing 21 process skills such as selection of site, mapping out plots A,B,C,D, filling the plots with degradable materials in alternative layers and turning the materials fortnightly among others.

It was also found out from the study that the Homemakers' performance in converting household waste into organic manure was at acceptable standard of efficiency (table 2). The finding of the study were in conformity with the finding of Onuka (2008) who carried out a study on the development of entrepreneurship skills and training module for enhancing youths participation in regulated cassava processing occupations in Southern Nigeria. The author found out that the women trainees in processing

of cassava into garri, chips and flour using the identified skills and developed training modules performed efficiently.

It was further found out from the study that using organic manure to grow tomato was better than using chemical fertilizer or no manure at all. The finding of the study was in consonant with the finding of Folorunso, Agboola and Adeoye (2000) that carried out a study on evaluation of maize for potassium, phosphorus and organic manure. The study found out that maize grown with organic manure performed better than those grown with either potassium or phosphorus with reference to cost. The authors recommended the use of organic manure as against the use of chemical fertilizer.

The views of the authors helped to validate the results of this study on the use of the process skills in converting household wastes to organic manure and the use of the manure for growing tomato by the Home makers.

Conclusion/Recommendation

Homemakers in Enugu and Ekiti states generate a lot of wastes while taking care of the family members. These wastes were dumped in incinerators or in heaps at the back of their houses. The Homemakers also grow vegetables continuously in their gardens without maintaining the soil consequently resulting to low yield of vegetables. It was observed that the wastes generated by the Homemakers could be recycled to produce organic manure for the improvement of garden soil for better production of vegetables using certain skills. This study through literature and practice identified 25 process skills which could be used by Homemakers to produce vegetables (tomato) in their home gardens continuously with very little cost. The process skills were developed into a training package for the training of Homemakers. It was therefore recommended that the process skills and the training package (pg12) identified by this study be used to train Homemakers for competence in converting household wastes into organic manure for the benefit of their garden soil in producing vegetables in the gardens. This can be achieved through training by extension agents, co operatives or farmers. Educated homemakers could also use the package to train themselves in step by step of making organic manure from household wastes for their own vegetable garden.

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Effect of Theoretical Knowledge on Practical Skill Acquisition in Agricultural Science in Senior Secondary Schools in Gombe State, Nigeria.

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Abstract

This study was an experiment conducted to find out the effect of theoretical knowledge on practical skill acquisition in agricultural science among senior secondary school students of Gombe State. The objective was to assess students' performance in acquiring the skill of vegetative propagation when taught by three different methods, theory/practical, practical alone and theory alone. The study was based on pragmatic theory of learning; 3 by 3 groups, randomized subjects; post-test-only type of true experimental design was used. The population of the study was 4320 senior secondary school two (SSSII) students offering agricultural science in the year 2004. Cohen's sampling size approach was used to draw a sample size of 360 students and systematic probability sampling technique was used to select the sample in three selected schools. Data was collected by teaching experiment and teacher made test, face validated by experts, field tested using 30 SSSII students and Kudar Richardson formula (K – R 20) was used to estimate the reliability co-efficient, 0.65 was obtained. Scores of the sampled students in the performance examinations was analyzed using means, analysis of variance (ANOVA) and Scheffe's test. There was difference in the mean scores of groups and significant differences exist in performances of students taught by theory/practical, practical alone or theory alone in demonstrating the skill of vegetative propagation $p<.05$. Recommendations were made based on the findings of the study.

Introduction

The main focus of Agricultural Science education is the learning of skills, that is, to ensure youths leave school as better citizens with skills sufficient to obtain employment, pursue additional career training in post secondary school or further their academic education; and also train skilled workers (re-training) to function better in their place of employment. Agricultural Science as an aspect of Vocational Education is designed to develop skilled workers for industries, agriculture and commerce. The specific subject disciplines are agricultural education, trade and industrial education, business and office education, home economics education, distributive and health occupation education. Candidates for this type of education are selected based on their interests and aptitudes to benefit from training programs.

Every society needs efficient and well trained workers. Poorly trained workers are costly in terms of time and equipment; so, vocational education is particularly relevant to the needs of Nigeria because of advancing technology and occupational mobility in the workforce. The future of technical and vocational education is bright, because Nigeria is planning to industrialize herself; industrialization will make Nigeria one of the powerful nations of the world.

Technical and vocational education is being tasked to save Nigeria's technological development. This task called for a closer look in to its operations and features. According to FRN (2004), technical education as vocational education offered in three types of schools namely: (a) Prevocational education offered in senior secondary schools, technical colleges and vocational centers; (b) Craftsman education offered in technical colleges; and (c) technical education offered in the polytechnics, colleges of technology and Universities. The goal of technical and vocational education (FRN, 2004) is to provide:

a. trained manpower in the applied sciences, technology and business;

b. technical knowledge and vocational skills necessary for agricultural, commercial and economic development; and

c. training and impart necessary skills to individual who shall be self-reliant economically.

This study looks at technical education as a prevocational education offered in senior secondary schools to create interest and skill awareness in the students at secondary school level, which later in life will earn him/her a living after school. The skills learned at this level of Agricultural Science cover wide areas of the subject, namely, skills of book keeping and accounting in agricultural marketing; brooding, castration, sexing in animal production; planting, pruning, vegetative propagation in crop production; soil profile, compost making, soil particle analysis, soil mapping in soil science; tractor driving and maintenance in agricultural mechanization; produce grading and storage, control of insects/pests/diseases of crops and animals using chemicals and tools like knapsack sprayers. Specifically, the skill considered in this study is vegetative propagation.

Conceptual Framework

Vocation may be defined as a career (Campbell & Martin, 2003), that is a life time profession or trade which one begins to develop from young age, and grow in it as one adds age. Career according to Mamman (2002) may be in form of a behavior or an activity like participating in a mentoring relationship. Vocational education are well designed, planned and developed to achieve optimum development of an individual's ability, capacity and potentials; to cultivate attitudes required for efficient performance in any specific or selected vocation.   The design, planning and development of vocation is achieved through proper guidance and counseling services (Mamman, 2002).

Vocation can also be defined as any paid or unpaid job, career, profession, occupation or work for which an individual assumes duty because he/she is trained and has some abilities, capability or potentials (Summers, 2000). So, a vocation can be regarded as work, which is any mental or physical activity directed towards achieving goals. Vocational skills are achieved through vocational technical education as training or retraining programs in a career one engages in or has chosen to do.

Vocational Education is training for all occupations, providing skills, knowledge and attitudes necessary for effective employment in a specific occupation. Vocational education is designed to develop skilled workers for industries, agriculture and commerce. The basic scientific knowledge associated with skill acquisition makes theoretical knowledge in the pursuit of practical skill an important issue.

Agricultural Education (AE) encompasses the study of applied sciences (e.g., biology, chemistry, physics), and business management principles. One of the major purposes of agricultural education is to apply the knowledge and skills learned in several different disciplines to AE for production of food and fibre (Campbell & Martin, 2003). Agriculture is highly intensive and technologically sophisticated industry   today. External changes such as standardized testing and increased graduation requirements necessitate that agricultural educators be prepared and ready to articulate how the programs of study can meet established requirements for preparing youths to be future citizens and members of the workforce by using agricultural education as a vehicle for the instruction of transferable skills – both academic and identified skills crucial for the workforce (Dailey, Conroy & Shelley-Tolbert, 2001).

According to Campbell and Martin (2003), the basic core of agricultural education instruction consists of three intra-curricular components:

(1).   Classroom instruction

(2)   Experiential learning through supervised experiences, and

(3).   Leadership activities

When these three components are actualized through a well – designed integrated program, they provide a context for learning necessary content and life skills to prepare students for adulthood, regardless of their ideal career areas.

So, agricultural education as a vocation is very versatile; you get a taste of a wide variety of leaning. The learning of transferable and life skills helps you to focus on your career, the main purpose is getting students ready for life and they learn things incidentally which change their

attitudes, personal and communication skills. Agricultural education also cater for all categories of students (best, bright, average and below average students). However, for it to be more effective, students should be involved in laboratory work to provide concrete experiences with objects and concepts in an atmosphere that is conducive and goal directed. Akale and Usman (1993) reported that laboratory experience is an indispensable factor for the understanding of concepts, principles and application of knowledge in the sciences, including agricultural science education.

Formal education and training play a significant role in career development and advancement in working life (Marjo – Riita, 2002). Eraut (2001) argue that formal education affects occupational success to a greater extent than is usually realized. Individuals who lack basic education often end up working as family helpers in unattractive trades. Furthermore, the lack of these basic skills (3R's) often impedes workers from participating in training later on during their working life. The occupational success of individuals and upgrading of technical skills are linked to the possession of basic formal education (Marjo – Riita, 2002) – basic education is the key for further vocational training. However, nowadays it requires that the formal schools are given more autonomy to deliver training that is responsive to the local needs. So, to improve agricultural skills acquisition among secondary school students, the curriculum must be adequate and relevant for students to learn and perform the demonstration processes better.

Dailey et al (2001) emphasized that the curriculum should be relevant, balanced, functional and integrative. Relevance in terms of pertinence, useful in meeting needs in the existing circumstances. Balance implies planning and developing a curriculum that will reflect national priorities. Functionality includes workability, adequacy and practicability of the curriculum, judging it to be clear, practicable and acceptable to beneficiaries. Integration refers to the relatedness of the school curriculum to relevant body of knowledge in agriculture. So, AE curriculum should be learner centre and school/community based.

The knowledge of agriculture is vital and its teaching should start early in life of students. Learning about agriculture should begin at younger ages and all students should receive at least some systematic instruction about agriculture beginning from elementary school through secondary education which should include both hands-on learning activities and instructional materials in schools. For this reason agricultural literacy becomes vital for citizens via agricultural education.

Vegetative Propagation

Vegetative propagation involves reproduction from vegetative parts of plants, and is possible because the vegetative organs of many plants have the capacity for regeneration. Stem cuttings have the ability to form adventitious roots. Roots cuttings can regenerate a new shoot system. Leaves can regenerate new roots and new shoots. A stem and a root can be grafted together to form a graft. A single, living, vegetative cell contains all the information necessary to regenerate a complete new plant. So, new plants can start from a single cell.

The Columbia Electronic Encyclopedia (2003) defined vegetative propagation as the ability of plants to reproduce without sexual reproduction, producing new plants from existing vegetative structures. Iversen, (1995) reported that whenever plants reproduce either by natural or induced means, it is vegetative propagation. It is a process that uses plant materials (vegetative tissues) to produce more new plants.

Vegetative propagation is the term given to any asexual means of starting new plants. It is the process of producing more plants using vegetative parts of existing plants, and no sexual reproduction is involved (no male and female sex cell nor meiosis). The aim is to successfully start a new plant by selecting a propagation method which is most appropriate for the plant to be propagated. It is based on mitosis. Asexual propagation is possible because normal cell division (mitosis) occurs during growth and regeneration in plants.

The Columbia Electronic Encyclopedia (2003) explained that mitosis occurs in growing points of the plants when callus forms to produce growth. These points are the shoot apex, root apex, cambium and intercalary zones, when callus forms on a wounded plant part and when new growing points are initiated on root and stem pieces. Callus parenchyma consists of new cells proliferating from cut surfaces in response to wounding, forming adventitious roots or adventitious stems as the case may be. So, mitosis is the basic process of normal vegetative growth, regeneration and wound

healing which makes possible such vegetative propagation techniques as cuttage, graftage, layerage, separation and division. This method is vital because it permits large scale multiplication of an individual plant into many separate plants as the parent material will permit, producing genetically identical offspring as the parent plant.

The plant parts used for asexual propagation are root, stem, leaves, suckers, bulbs, buds, runners, stolons and tubers (Iversen, 1995). Outline of the methods for plant parts used for vegetative propagation are layering, budding, grafting, cutting, division, separation, and propagation by suckers, runners and apomictic embryos for citrus (Iversen (1995), he grouped all these methods in to four, namely, cutting, layering, grafting and budding and tissue culture.

Specialists in the fields of agriculture and horticulture take advantage of the regenerative ability of plants through such techniques as rooting of cuttings, grafting and budding of fruit trees, layering or inducing the tips of branches to produce new plants. The vegetative propagation of economically important and useful plants is now so widespread that most horticultural varieties are now only reproduced clonally, especially since many of them breed true to type (Columbia Electronic Encyclopedia, 2003).

Concept of Clone

Clones are genetically uniform material derived from a single individual and propagated exclusively by vegetative means, such as cuttings or grafting. A discovery with any individual member of the clone applies in the same manner to all other members of that clone. Clones of horticultural interests have been discovered and perpetuated by man. Clones exist in nature reproducing naturally by vegetative propagation structures like rhizomes, bulbs, and stolons. The concept of clone does not mean that all individual members are necessarily identical in all characteristics. The actual appearance and behavior of a plant (phenotype) results from the interaction of its genes (genotype) with the environment in which the plant is growing. So, within a clone, appearance of plant or fruit and flower on different plants, may vary somewhat because of climate, soil, disease and the like.

The life of the clone is theoretically unlimited, but evidence now shows that modification, sometimes leading to deterioration, can occur in particular clones and must be guarded against in propagation especially viral infection. Ability of clone to tolerate virus prolongs the lifespan of clones (Stern, 1998). Stern further explained that genetic changes (mutation) may occur in clones, which may not always be degenerated but can cause off-type individuals that will reduce the value of clone. Also, an unfavorable environment may lead to progressive deterioration of a clone like decline in vigor and productivity. Therefore, if a clone is maintained in proper environment, and procedures are carried out to prevent virus, pathogens and off-type mutants, a clone could be perpetuated indefinitely, such that permanent genetic changes in clone material do not occur.

Basic Principles of Vegetative Propagation

The pillar and foundation of vegetative propagation is based on the transport systems of materials in plants, that is, phloem (downward flow) and xylem (upward flow) (Columbia Electronic Encyclopedia, 2003). According to this document, the phloem transport of materials by leaf, stem, and nodes gives rise to accumulation of IAA – indole acetic acid (auxin) at the base of any shoot vegetative propagation material, forming callus which finally concentrates to initiate root formation to support the shoot vegetative propagation material. Likewise, the xylem transport of materials (upward) by roots produce cytokinins (CK), which also accumulates in the callus to stimulate shoot formation in any root vegetative propagation material. In the end you have a shoot with roots or roots with shoot, that is, a whole plant. Either of these processes can be accelerated by dusting the last centimeter of shoot or root planting material with synthetic auxin (indole butyric acid) or rooting hormones like Rootone & 174 and Hormodine & 174.

So, vegetative propagation is possible because shoot materials (leaves, nodes, stem cuttings etc) accumulate auxins which stimulate formation of callus and ultimately roots. Also, root cuttings accumulate cytokinins which stimulate formation of callus and consequently, shoot. Once, we have a stem with roots, or root with stem, a plant has been cloned and the process of vegetative propagation is complete.

Theoretical Framework

The philosophical thought germane to Agricultural Education generally is pragmatism. It was propounded by John Dewey **(**1859-1952). Dewey stated that education is the means of "social continuity of life" given the facts of birth and death of each one of the constituent members in a social group. Education is therefore a necessity, for "the life of the group goes on" (Stanford Encyclopedia of Philosophy, 2011) Dewey was a proponent of <u>Educational Progressivism</u> and was a relentless campaigner for reform of education, pointing out that the <u>authoritarian</u>, strict, pre-ordained knowledge approach of modern traditional education was too concerned with delivering knowledge, and not enough with understanding students' actual experiences (Neil, 2005)

In the pragmatic view, education is a tool for solving individual problems, and as individuals improve in skills acquisition, education and income status, his society is also improved; the central aim of education should be to teach people to think rationally, independently and learn to live intelligently. As a theory, pragmatism has had a far-reaching impact because "knowledge is valuable only if it provides data in the problem solving process without sacrificing self discipline and individual differences; the universe is dynamic and evolving; truth is relative and based on experience. Education should be student centre, directed towards solving problems to create new social order" (Neil, 2005). This study was based on educational theory of pragmatism because the art of vegetative propagation involves solving problem through the skill which is learned and developed through training, practice and experience.

Empirical Framework

There have been studies on how theory and practical are related. Appraising the mode of implementation of Nigerian secondary school curriculum, Ofoha, Uchegbu, Anyikwa, Nkemdirim and Ekwueme (2009) found from their survey of 380 students and 120 teachers that the implementation was weak mainly due to theoretical teaching methods adopted by teachers, neglecting practical. They reported that there were no facilities for practical and student's entrepreneurial capability was significantly low. Though, students have learnt significant self-employable entrepreneurial skills in few vocational subjects; there is no significant production of goods and services to show for their practical knowledge. They recommended entrepreneurial education for students and equipping of workshops with facilities that can engage teachers/students in practical teaching and learning. They used mean, percentage and Chi square to analyze the data generated in their study.

Olowa (2009) reported that problem solving approach teaching method (practical) is more effective than the subject matter approach in increasing problem solving ability of agricultural education students in the secondary schools. He obtained this result from a quasi experiment using cluster sampling technique to select 150 agricultural education students in ten schools in Ikorodu Local Government Area of Lagos state, Nigeria. He used one-way ANOVA, mean and percentage to analyze the data collected; results showed that, student's ability to solve problems increase by class level and can be accelerated through problem solving approach than the subject matter approach of teaching. These reports will serve as compares for this study.

Purpose of the Study

The main purpose of the study was to determine the effect of theoretical knowledge on practical skill acquisition in agricultural science among secondary school students in Gombe State. The specific objective is to determine the effect of teaching a combination of theory/ practical, practical alone and only theory lessons on students' ability to demonstrate the skill of vegetative propagation.

Research Question

What is the mean performance of the students taught vegetative propagation using theory/practical, practical alone and theory alone?

Hypothesis

Ho_1:   There is no significant difference in the performance of students taught
          Theory/ practical, practical alone and those taught theory alone in demonstrating the skill of
          vegetative propagation. The hypothesis was tested at.05 level of significance.

Methodology

Design of the Study

The study was 3 X 3 groups, randomized subjects; post-test-only experimental design. The three random samples from the population are obtained by lottery and drawn individually and assigned alternatively in to the three experimental groups. The first experimental group was taught the skill of vegetative propagation by theory/practical lessons, the second group was taught by practical lessons alone while the third group was taught using theory lessons alone. At the end of the experiment, all the three groups are measured on the dependent variable. The means of the three groups were compared with the help of appropriate test of significance. The experiment was carried out in three different senior secondary schools in Gombe State.

Population of the Study

The population of the study was 4320 senior secondary school two (SSSII) students offering agricultural science in the year 2004.

Sample and Sampling Technique

A total of 360 senior secondary school students in year two (SSS II) was drawn from the population using Cohen's (1988) sample size approach (both alpha and beta at 0.5, large size effect and power at 0.95). The sample was randomly selected using systematic probability sampling technique. To prevent biasing, the selection was controlled by lottery.

In conducting the lottery, a set of 120 entry tickets were thoroughly mixed up in N-population of the students in senior secondary school year two (SSS II) in any school selected for this study. Then the 120 entry tickets were drawn one by one to obtain the 120 sample of students required for the experiment. Thus, one hundred and twenty (120) SSSII students were drawn in each school by simple systematic random selection by the researcher or his assistants. A random sample of 40 students was obtained from the 120 sampled students using paper wrap of 1, 2 and 3, and the sampled students were assigned alternatively in to the three strata which formed the experimental groups. All students that picked 1 were in group A – theory/practical, all that picked 2 were in group B – practical alone, and all students that picked 3 formed group C – theory alone. These steps were carried out in each of the three selected schools in the three senatorial zones of Gombe State.

Three schools were selected at a range of count five fixed by the researcher based on the three senatorial zones in Gombe State. This was done to attain experimental equivalency and control all extraneous variables (Ratnawati and James, 2004).

Instrument for Data Collection

Lesson plans were prepared to teach the skill – vegetative propagation using three approaches: theory/practical, practical alone and theory alone. The teaching approaches formed the treatments in this study, at the end of the teaching; all the students who participated in the experiment were pooled together for skill demonstration using a Teacher Made Performance Test (TMPT) developed by the researcher for this teaching experiment and students' performance were rated and recorded. The marking scheme for the teacher made test was under the headings– materials/tools, process and product. Under these three headings, students were assessed. The students' performance ratings for each of the skills were categorized in to five point grade as follow:

Excellent	- 70 and above
Upper Credit	- 66 to 69
Lower Credit	- 60 to 65
Merit	- 50 to 59
Pass	- 40 to 49
Fail	- below 40

The scores of the students in the test at the end of the teaching/learning process formed the data used in this study.

Validation of the Instrument

The lesson plans and teacher made test used to evaluate the subjects of the experiment were face validated by experts in the Department of Technology Education, Federal University of Technology, Yola.

Reliability

The instrument was field tested using 30 SSSII students divided in to three experimental groups who were not to be part of the experiment. Kudar-Richardson formula (K-R 20) was used to estimate the reliability coefficient of the instrument, which was 0.65.

Data Analysis

The data collected was analyzed using Mean, ANOVA and Scheffe's Test.

Decision Rule

To draw statistical inferences on the hypothesis tested at .05 levels of significance, if computed value of F-ratio exceeded the table value of F-ratio for a hypothesis, the null hypothesis was rejected; otherwise, the null hypothesis is accepted.

Results

Research Question

What is the mean performance of students taught vegetative propagation using the three teaching methods: theory/practical, practical alone and theory alone?

Table 1: The mean performance of students taught vegetative propagation using
          Three teaching methods:

Method	Group	Mean Score	Grand Mean Score	Remark
Theory/practical	A	62.55	56.39	L/credit
Practical alone	B	56.09		Merit
Theory alone	C	50.52		Merit

Hypothesis: There is no significant difference in the performance of students
          Taught Theory/ practical, Practical alone or Theory alone in
          Demonstrating the skill of vegetative propagation

Table 2: Analysis of Variance (ANOVA) for the Scores of Groups A, B and C

Source of variation	Degree of freedom	Sum of Squares (SS)	Mean Square (MS)	F ratio calculated	F ratio on table	Decision	Remark
Between groups	2	928.8	464.4	6.99	3.0	Reject H_O1	Sig.
Within groups	357	23715.66	66.43				
Total	359	3300.46					

The calculated value of F ratio is 6.99 while the table value is 3, the null hypothesis is rejected. The test indicates that there is significant difference in the mean performances of the students taught by the three teaching methods in demonstrating the skills of vegetative propagation at .05 level of significance As ANOVA is significant, Scheffe's test was used to make post-hoc multiple compares of the performances of the groups A, B and C for the skill of vegetative propagation.

Table 3: Scheffe's test for the skill of vegetative propagation

Groups compared	Fs (F-cal) = Scheffe's test	F critical = F table	Decision	Remark

A and B	3.85		Fs < F table	n/s different
A and C	9.88	6	Fs > F table	Sig. different
B and C	2.12		Fs < F table	n/s different

From Table 3, groups A and B, B and C are not significantly different in their performances of the skill of vegetative propagation but groups A and C differ significantly, this gives the impetus to conclude that group C which is theory alone is the least; while group A (theory and practical) performed better than the other groups in demonstrating the skill of vegetative propagation.

Major Findings
The major findings of this study in order of research question and hypothesis are:
1. Group A (theory/practical) had a mean score of 62.55, group B (practical alone) had a mean score of 56.09 while group C (theory alone) had a mean score of 50.52; the group C performed lower than the other two groups in the experiment with group A, having the highest performance.
2. There is significant difference in the performance of students taught both theory and practical, practical alone or theory alone in demonstrating the skill of vegetative propagation with the group taught by theory/practical performing better than the groups taught by practical alone and theory alone. The theory alone group performed least among the three experimental groups.

Discussion
Finding reveals that there is significant difference in the performances of students taught theory/practical, practical alone or theory alone in demonstrating the skill of the use of the knapsack sprayer. The differences in the performances are as a result of the various treatments given to the students in each group.

The students taught theory/practical (group A) had the opportunity of learning the basic principles, tools and materials in the classroom before getting in to the laboratory to learn practically how to perform vegetative propagation. This group showed more keen interest to learn especially during the practical session after the theory class. This may be because the theory lesson provided entry behaviour for them in to the practical class. Also, students in this group showed higher internal motivation which might have accounted for their higher scores. This finding agrees with the report of Akale and Usman (1993) that laboratory experience is an indispensable factor for the understanding of concepts, principles and application of knowledge in the sciences as in agriculture

The students taught by practical alone (group B) were exposed only to the real tools, materials and processes of carrying out vegetative propagation. They defined the term in their own words. This group scored most of their points in the second and third aspects of the general performance examination which required them to list the steps and carry out the process of using knapsack sprayer. Most of them could not define the term very well, may be due to the absence of the theory lesson which has created a deficiency, however, they were able to demonstrate the skill taught to/learned by them. This finding agrees with the report of Olowa (2009) who found that teaching of practical is more effective than teaching theory in increasing problem solving ability of students.

The students taught theory alone (group C) performed lower than their counterparts in the other groups A and B. This may be because the learners in this group were taught only the basic knowledge and principles of the skill of performing vegetative propagation;   but due to lack of practical knowledge of the skills, they end up with no proficiency. This finding agrees with the report of Ofoha et al (2009) who found that theoretical teaching methods mainly used by Nigeria Teachers reduce practical skills acquisition. Another reason may be the evaluation approach used in this study, in which the theoretical aspect of the evaluation carried lower marks than the practical aspect. That is, group C are not equally favoured by the skill demonstration examination. This is due to the focus of the study.

The role of practical work in the teaching of science and vocational subjects cannot be over emphasized. For effective teaching of science and vocational subjects, the learner must be involved

in the rigors of scientific and vocational processes (theory and practical) and adequate ratio of theory and practical lessons should be combined and adopted. This study recommends 30% theory and & 70% practical lesson combination.

Conclusion

The findings of this study serve as the basis for making the following conclusions:

Teachings of theoretical knowledge enhance students' performances in demonstrating new skills better. Practical skills may be learned at low levels without theoretical instruction but it is not advisable because of the risks of trial and error associated with self-discovery learning. Learning of skills by students are attributed to some factors, one of which is teaching methods; the teacher's pedagogic skills and style, and the amount of theory or practical lessons students are exposed to affect learning of skills by students. Apart from teaching students the theoretical aspect of a topic, engaging students in practical have the value for motivating them in the subject and in vocational technical education in general. In teaching or learning of skills, theory and practical lessons should be properly combined in the proportion that can enhance the performances of students, to produce the desired effect and behaviour in learners.

Recommendations

The following recommendations have been made based on the findings and conclusions:

1. Stakeholders in education and teachers in particular must stop paying 'lip service' to practical work in Nigeria schools. Increasing school enrolment should not prevent teachers from teaching practical lessons/skills to students.
2. Schools should be adequately equipped, financed and prepared for practical lessons. Dissatisfaction from lack of facilities and equipment can be frustrating to staff.

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IMPLEMENTATION OF SPECIAL EDUCATION CURRICULUM IN 21ST CENTURY IN NIGERIA, A MISSING LINK IN REBRANDING PROCESS.

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Abstract

This study sought to investigate the implementation of special education curriculum in 21st century in Nigeria, a missing link in rebranding process. Descriptive survey design was used. The sample for this study comprises of 164 students and 32 teachers/supervisors drawn through random sampling technique. Structured questionnaire was constructed by the researcher using strongly agree, agree, disagree and strongly disagree options. The data collected were analyzed using mean and standard deviation for answering the research questions. A mean of 2.5 and above was accepted, while any mean less than 2.5 was rejected. The study revealed among other things that initiative skill, creative, critical, self-efficacy, project (research), collaboration and self-productive entrepreneurship skills are needed in the implementation of special education curriculum in this 21st century. Also, positive mindset, self-reliance, planning, managerial, accountability, supervision and monitoring entrepreneurship skills are needed in the implementation of the special education curriculum in this millennium.

Introduction

In the late 1990's the propaganda was "education for all" by the year 2000. Reflecting on the deteriorating situation of Nigeria education, Ezeani (2002) remarks that the dream for "education for all" in Nigeria will eventually become" education for none" in the nearest future if care is not taken. In the year 2000, not much was achieved in the area of mass literacy and even functional education generally. Education is still on borrowed technology, could not be able to record several economic,

political, technical and socio-cultural feats and prowess. Worst still and most irritating is the collapse of the power sector and its resultant negative impact on education and on the nations economy. The under estimating of educational capacities is clearly observed in the poor and erratic disbursement of funds to education. UNESCO recommends that 26% budgets of any nation's allocation should be given to education. In the year 2008, 12% of Nigerian's resources were allocated to education and yet there is the hope of emerging as one of the best 20 leading economic countries in 21set century.

Education is a veritable instrument of social change, reconstruction, revolution and development. According to Onyiliofor (2010), education is the most important tool in the development of productive and sustainable nations and human kind in general. The first broad aim of education in Nigeria as stated in "The national policy on education" (1981 and revised) is the preparation for useful living within the society (FRN, 1981).

Special education is specially designed instruction which is structured to meet the unique needs of the exceptional individual. It may require some additions to or modifications of the existing normal school programmes in order to enable the exceptional individuals to realize maximum potential (Ikpaya, 1989). The federal government of Nigeria recognized the importance of integrating the handicapped when it declared: Integration is the most realistic form of special education since handicapped children are eventually expected to live in the society. National policy in education (Federal Republic of Nigeria, 2004) shows interest providing this special education in section 95 (ii) and 96(c) (i).

In this study, the students that needed to be included in the curriculum of the special education are all students with any handicapped disabilities, challenges or any student with special need. These include: visually challenged, physically challenged, gifted challenged, sensory challenged, challenged with learning, communication challenges, emotional and behavioural challenges and developmental challenges. The researcher refers to all students with any handicapped /disabilities /special need as challenges. Challenges in the sense that it refers to a particular place the individual has disorderliness or where the individual has impairment. Wikipedia, the free encyclopedia, 2010, defines special education as the education of students with special needs in a way that addresses the students individual differences and needs. Ideally, this process involves the individually planned and systematically monitored arrangement of teaching, procedures, adapted equipment and materials accessible settings and other interventions designed to help learners with special needs achieve a higher level of personal self-sufficiency and success in school and community than would be available if the students were only given access to a typical classroom education.

Curriculum in simple terms refers to the totality of all activities that go on in the school. This view is supported by Aguokogbuo (2002). Curriculum as a package of potential experience places implementation as a very crucial process. It is this impending role of implementation that has probably led to the definition of curriculum as intended learning, outcomes for students under the responsibility of the school (Offorma, 1994). Attempting a synthesis of the above views, Ominyi, Ogba and Igu (2009), define curriculum as whatever that is successfully conveyed to different degree to differing students by committed teachers using appropriate materials and actions of legitimated bodies of knowledge, skills, taste and propensity to act and react, which are chosen for instruction after a series of re-election and communal decisions by those concerned. To the researcher, curriculum is the package of all experiences that go on in he school, the implementation of such experiences that students undergo using the necessary materials for effective learning, all-inclusive participation and understanding that results in efficiency productivity. The researcher reiterate that in planning and implementing of curriculum, all stakeholders should be involved for us to have a good curriculum and educational reform in 21st century.

Special education curriculum states that educational transformation are always the result and the symptom of the social transformation in terms of which they are to be explained. For people to feel at any given moment the need to change its educational system, it is necessary that new ideas and needs emerged for which the old system is no longer adequate. But these needs and ideas do not arise spontaneously (Emil Durkeim, 1969). The 21st century, special education curriculum should

not be content and intellectual based (certificate based) like the one of 19ᵗʰ and 20ᵗʰ centuries but should be based on issues of social change, skills for the knowledge economy based, processing based, critical thinking based, successful implementation that requires change and failure is a result of neglecting it.

We cannot talk of implementation of special education curriculum in the 21ˢᵗ century in Nigeria without bringing in the curriculum processing and these skills in special education for global corruption. Skills like initiative, exploration, creativity, project (research), collaboration (nationally and internationally), and so on. More emphasis should be given to affective domain (i.e. having feelings and special care of special need students by the teachers and professional counsellors. Duaderstadt, 2002, stated that today we are evolving rapidly into a post-individual, knowledge based society a shift in culture and technology, as profound as the shift that took place a centur5y ago. Unlike natural resource such as iron and oil that have driven earlier economic transformation, knowledge is inexhaustible. The more it is used, the more it multiplies and expands.

The stakeholders in edition such as students, parents, community, philanthropist, NGOs, educators (professional counsellors and teachers) and Ministry of Education to be appreciated by contributions, immensely in the reform process. This is in line with the International Conference on Curriculum Reformation and Implementation in 21ˢᵗ century, (2005) hosted by the Board of Education of the Turkish Ministry, of National Education with stakeholders like policy-makers, analyst scholars, experts, teachers and representatives from NGOs. These stakeholders should seat together in planning, brain storming and implementation of curriculum of special education, unlike in 19ᵗʰ and 20ᵗʰ centuries where school system dictates curriculum. Satilberg (2005), drew a conceptual framework regarding understanding change and curriculum and choosing implementation gap in between. He re-emphasized that we should all understand that successful implementation requires change knowledge.

We cannot talk of rebranding special education curriculum without including inclusion /emersion of special need students in curriculum. That is to say integration of special need students of tertiary institutions with normal students. In this approach, students with special needs spend most or all of their time with regular students. Implementation of this approach varies. Because inclusion can require substantial modification of the general curriculum, most schools use it only for selected students with mild to moderate special needs, for which is accepted as a best practice. Inclusion has two subtypes: the first is sometimes called regular inclusion or partial inclusion, and the other is full inclusion. In a "regular inclusion" setting, students with special needs are educated in regular classes for nearly all the days or at least half of the day. Most specialized services are provided outside a regular classroom, particularly if those services require special equipment or might be disruptive to the rest of the class (such as speech therapy). In this case, the student occasionally leaves the regular classroom to attend smaller, more intensive instructional sessions in a resource room , or to receive other related service such as speech and language therapy, occupational and / or physical therapy, and social work. Under full inclusion, by contrast, students classifies as having special needs remain in general classrooms virtually all the time. Related services are provided via "push in" meaning that professionals enter the classroom and deliver assistance there. UNESCO(2005) defines inclusion as a process of addressing and responding to the diversity of needs of all learners through increasing participating in learning, culture and communities and reducing exclusion within and from education. The researcher has the vision that in this 21ˢᵗ century inclusion of the special need students will be legalized like other European countries, attracting some other foreign partners that will give federal government support like Finland, OECD, UNICEF, Save the children , NGOs and others.

There are some challenges that militate against the effective way of implementation of the special education curriculum. Most of the students both normal and special need students are indigent to the core. Their parents/guardian cannot even afford school fees, hostel fees, feeding fees, textbooks fees, pocket money, how much more the special need students afford specialized instructional gadgets for effective learning. Most of them attend crash programmes, others Sandwich programmes, others are copycats, others engage in cultism, others engage in mounting and planning studies crisis, others engage in many type of truancy and students malpractice during the

examination period. Some of them might be expelled or rusticated by school authority, yet some of them graduate in excellent result without adequate content of knowledge and skill acquisition, even they lack self-efficacy, cognitive attitude, motivation, self-esteem, assertiveness, self-productive and so on. They add to their poverty by waiting for collar jobs and stays donkey years without a job which cumulate to rejection, frustration and dejection. Onyiliofor, 2010, expresses entrepreneurial as education that prepares the visually impaired to have great positive mindset, positive, self-efficacy, self-reliance, and to have sharp focus to earn more for themselves and the society at large. The researcher further opines that entrepreneurial activity (new venture formation) as a means of re-engineering stagnated economics and of coping with unemployment problems by providing new job opportunity where others see uncertainty, chaos, contradiction and confusion If the 21st special education curriculum involves all these already mentioned skills like initiative, exploration , creativity, innovation, project (research), collaboration (socialization both nationally and internationally) and it will be student –friendly and special needs students will be self-employed and even employ graduates to work for them and compete globally. This is in line with the Federal Ministry of Education in 2006 that posits to bring in workable reforms measures in the nations educational sector with the view to recamp, reposition, re-engineer, and invigorate an education in all ramification.

The researcher is sure that the further special education curriculum of the 19th and 20th centuries is not students friendly, school environmental/infrastructural friendly, entrepreneurship friendly, funding friendly, gender friendly and millennium development friendly.

Other challenges in 19th and 20th centuries special education curriculum were not expertise friendly for collaboration and more knowledge. However, the 21set century should be expertise and collaboration friendly. The researcher underline the significance of sufficient potential for the development of expertise, willingness to draw on the experiences of other systems and to use external expertise and recognition of the need for good communications and strong relationships with the public and other partners in education as critical success factors in the curriculum reform process. Since it is certain that education is an instrument for national development, no nation can rise above the quality of her educational system and the educational system cannot rise above the quality of its teachers (FRN,2004).

The researcher uses biblical injunction recorded in Ecclesiastes 10:19 to prove that money answereth all things. Therefore funding! funding! funding! must be adequately provided by the federal government with partners like NGOs, UNICEF, UNESCO, USAID Reform. The lack of adequate funding seriously affects the institutions strategic planning and ability to mount appropriate quality assurance procedures. There is dearth of infrastructures in our tertiary institutions. Where there is at all, it is not adequate. Some of their infrastructural facilities include laboratory equipments, library textbooks, class room blocks, desk, chairs, offices of lecturers/teachers and so on. No school project whether it is at federal, state or local level, can be executed in the absence of money. Even when it is released by the federal or state government, it is diverted into another thing or into the individual pockets of those in the ministries (Omeje, 2002:56).

In this millennium, there should be adequate supervision and monitoring to make sure that money is directed and utilizes where it's being sent. There also, should be scholarship both normal and special students. National and international workshop should be given to them for collaboration. The educators involved around special need students like teachers, specialized teachers, professional counsellors and so on should be sent abroad for training to learn modern skills and technology for effective teaching and learning. These educators should be given incentives, allowances and special packages including the special need students so that they can have access to modern technology to bring a change for their localized ideas, localized production of cane chairs, bamboo beds, mats, and so on. All these things need money so that both the learners and educators will be at par with their counterparts in Japan, USA, Germany, Canada, and so on.

Without professional development of teachers and counsellors, the curriculum goal of this millennium cannot be achieved. Training and retraining of these educators abroad will increase their quality and competence and it will also increase their skills which they will come back to impact on their students. As a result, when these students graduate they will not go for white collar jobs but

will be independent and employ others. This is the type of curriculum the researcher is advocating for the special need students of this millennium. The special teacher should be individualistic in their pedagogy (method) knowing that education in this millennium is student centered and will handle individual difference of students to bring out both their covert and invert potentialities which they will utilize after their graduation for future uses for self- actualization Afe (1992), defines teacher education as the form of education which is properly planned and systematically tailored and applied for the cultivation of those who teach or will teach, particularly, but not exclusively in primary and post primary levels of schooling. Reiterating the relevance of teachers in the entire educational enterprise, Aggarwal (2004), contends that proper education of teaching enables him to have knowledge of how children grow, develop and learn, how they can be taught effectively and how their inner potentialities can be brought out and develop for their self-actualization. In this millennium, government should pour out money for training and retraining of teachers in all ramifications just as Guthrie and Rothstein (1998) asserted that teacher salaries account for at least 50% of typical school district expenditures. Further in their analysis of spending in the New York City public school system, Speakman et al (1996), found that over 41% of the total expenditure in this district were devoted to the salaries and benefits of instructional teachers. While in Nigeria, UNICEF has advocated that the budget of education should be 26% and in Obasanjo's regime, it was 11 % and it kept on reducing. Is it how we will make Nigerian students and educators to be at par with other global world? If Nigeria want the dream of 21st century to be a reality, the Nigeria government should pour money in education.

In Nigeria, even the curriculum of special education for special need people of 19th and 20th centuries was neglected. Also the people that constitutes the stakeholders formulating the curriculum are not the right people. The educators are not trained people. The implementation was zero. As a result, the special need people live in beggaries life, they leave their homes because of uncaring and ignorant attitude of their parents, community and government and settle in an unfinished houses, under the bridges, railways, motor parks, stadium, market and so on. While thousands are abandoned, marginalized in their homes in hidden places by their parents. They are regarded as curse by their deity (Onyiliofor, 2010). According to Okeke-Oti, (2010) , an education within the general education charged with the responsibility of equalizing education opportunities for exceptional children. Special needs education has a share in the reform because of the inadequacies and differences in service provision and delivery evident within its shores. Infact, the presidential forum on the education sector in 2006, identified special needs education as one of the neglected areas of education.

The current world sees a changing climate in educational policy and practice (Broodfoot, 1996; Murphy, 2007). The need for reform in the special need sector, Kolo, (2008:11), noted that the reasons for reform in special needs education include the strategies desire to have structural systematic content changes in order "to have irreversible progress". In 21st century, reform in special education curriculum, special emphasis must be on inclusions. There is research evidence that change in the educational process can take the form of new curriculum inclusion, new pedagogies, new assessment methods, change in leadership, teacher training, language policy, co-curriculum emphasis or even matters of administration (Koh, 2004 in Onyia, 2009). According to Okeke-Oti (2009), it was found that teachers do not have the pedagogical skills to meet the needs of all learners.

Educational transformation is highly dependent on continuous curriculum reform. Reform should be based on comprehensive and well-designed plans on persistent efforts of policy makers and stakeholders to implement it successfully, monitored from time to time, teacher training, development of new teaching materials, adjusting school areas in order to enable access for this children to school facilities, providing appropriate materials and conditions to meet the needs of children with handicap (Karip, 2005). Just like Montenegrin (2004), inclusive education in Montenegron is based on the principles of "equal opportunities" and "freedom of choice in accordance with individual abilities". This implies that the country assumed the responsibility for guaranteeing equal rights in education of every individual, irrespective of their physical or psychological constitution, giving opportunity to each child to express their own possibilities.

According to these principles, every child should be given freedom of choice: different forms of working. New concept of education in Montenegro implies all those principles, presented in "The Book of Changes" as well as the principles of International Conventions on Child Right and Convention against discrimination of students in education. In this respect, five "mobile teams" have been organized in the Republic, in order to provide support to schools, parents, health care institutions in the education of children with disabilities. Nigeria should emulate them in our own special need students in tertiary institutions in this millennium so that our special need students will compete favourable with their counterparts abroad. The old tradition of our special need students making of bomber beds, mats, local baskets, local holes, cutlasses, matchets, local musical instruments, cane chairs, raising of local shops, producing those local dye and dye materials and so on should give way to heavy technology like reading machine or talking machine, textile machines, sonoric devices, big supermarkets, modern musical instruments, industries and so on when they will even own and employ people. Based on the forgone, the question that becomes germane is : What is the missing link in rebranding process in the implementation of special education curriculum in 21st century in Nigeria?

The purpose of this study broadly stated, is to determine the missing link in rebranding process in the implementation of special education curriculum in 21st century in tertiary institutions. Specifically, the study seek to identify the missing link in rebranding process of the needs of special need students in tertiary institutions in 21st century; to find out the missing link in rebranding process in the implementation of the special education curriculum of 21st century of special need students as regards entrepreneurship friendliness (skills). Two research questions were designed to guide the study: What is the missing link in rebranding process of the needs of special need students in tertiary institutions in 21st century? What are the missing link in rebranding process in the implementation of the special education curriculum as regards entrepreneurship friendliness (skills)?

Research Method

Research Design: The survey design was used in carrying out the study. The choice of this design was informed by the fact that study's purpose was descriptive on the missing link in rebranding process in the implementation of special education curriculum in 21st century.

Area of Study

The study covers South-South geo-political zone of Nigeria. University of Uyo, Akwa-Ibom state, University of Calabar in Cross River state, University of Port-Harcourt, Rivers state, Delta State university in Delta state and University of Benin in Edo State.

Population of The Study

The population of the study comprises of 164 students and 32 teachers/educators from five universities in the South-South, geo-political zone of Nigeria. The subjects were 196 in number.

Sample and Sampling Techniques

Sampling was drawn through random sampling technique.

Instrument of Data Collection

Structured questionnaires were constructed by the researcher. The questionnaires contained 28 items on a four-point responds scale (strongly agree, agree, disagree and strongly disagree).

Validation and Reliability of the Instrument

The questionnaire was face-validated using five experts. Two in curriculum in Nnamdi Azikiwe University, Awka , Anambra State, two in guidance and counselling in University of Calabar in Cross River State, and one in measurement and evaluation in University of Nigeria, Nsukka, Enugu State. The questionnaires were tested using ten professional counsellors in Nnamdi Azikiwe, Awka, Anambra state, outside the target sample. The internal consistency of the missing link in rebranding process in implementation of special education curriculum was determined using Cronbach alpha. It yielded an alpha value of 0.95 which was considered high enough.

Method of Data Collection

The researcher with seven research assistants visited five universities in the South-South geo-political zone to solicit the co-operation of the respondents. The researcher assistants were purposely trained to administer and collect data for this study (if not for the researcher's sight

condition, the researcher would not have gone with research assistants since the sample was small). The researcher and the research assistants established rapport with the respondents for easy administration of the questionnaire and applauded the good work of the research and the assistants. The instrument was cross-checked and collected and collated for data analysis.

The Method of Data Analysis

The data collated were analyzed using mean and standard deviation for answering the research questions. A mean of 2.5 and above was accepted while any mean less than 2.5 was rejected.

Result

Research Question 1

What is the missing link in rebranding process of the needs of special need students in tertiary institutions in 21st century?

Table 1

Missing link in rebranding process of the needs of special need students in tertiary institution in 21st century

S/N	Items	Teachers /Supervisor			Students		
		X Mean	SD	Remarks	X Mean	SD	Remark
1	Motivation is needed by special need students in tertiary institutions in 21st century.	3.28	0.58	Strongly agree	3.12	0.76	Strongly agree
2	Inclusion is one of the needs of special need students in tertiary institutions in 21st century.	3.32	0.58	Strongly agree	3.11	0.63	Strongly agree
3	Gadget is an important need of special need students in tertiary institutions in 21st century .	2.98	0.90	Agree	2.91	0.95	Agree
4	Individual attention is an important method needed by special need students in tertiary institutions in 21st century .	3.20	0.70	Strongly agree	3.02	0.77	Strongly agree
5	Specialized teacher is needed by special need students in tertiary institutions in 21st century	3.15	0.62	Strongly agree	3.05	0.54	Strongly agree
6	Affection is needed by special need students in tertiary institutions in 21st century.	2.52	0.96	Agree	2.54	0.96	Agree
7	Skill acquisition is very important pedagogy needed by special need students in tertiary institutions in 21st century	3.32	0.62	Strongly agree	3.24	0.70	Strongly agree
8	Deepening knowledge is what is needed by special need students in tertiary institutions in 21st century	3.28	0.67	Strongly agree	3.25	0.71	Strongly agree
9	Modern technology is what is needed by special need students in tertiary institutions in 21st century	2.95	0.92	Agree	2.90	0.92	Agree
10	Collaboration learning	2.74	1.04	Agree	2.69	1.05	Agree

S/N	Items						
		abroad is needed by special need students in tertiary institutions in 21st century					
11	Scholarship is needed by special need students in tertiary institutions in 21st century.	2.62	0.73	Agree	2.60	0.68	Agree
12	Conducive classroom/ environment is needed by special need students in tertiary institutions in 21st century.	3.28	0.27	Strongly agree	3.01	0.35	Strongly agree
13	Braille Papers/hearing aids is needed by special need students in tertiary institutions in 21st century	3.05	0.49	Strongly agree	3.12	0.31	Strongly agree
14	Workshop is needed by special need students in tertiary institutions in 21st century.	2.62	0.73	Agree	2.60	0.68	Agree

From table 1 above, the items 1,2,4,5,7, 8, 12 and 13, the means ranges from 3.01 to 3.32 on both sides of the teachers/supervisors and the students. This shows that both strongly agree that motivation, inclusion, individual attention, specialized teachers, skill acquisition, deepening knowledge, conducive classroom/environment and braille papers and hearing aids are needed by special need students in tertiary institutions in 21st century. In addition, items numbers 3, 6, 9, 10, 11 and 14 , the mean ranges from 2.52 to 2.98 on both sides of the teachers/supervisors and students. This also indicates that both agree that gadgets, affections, modern technology, collaboration learning abroad, scholarship and workshop are needed by special need students in tertiary institutions in 21st century.

Research Question 2

What are the missing link in rebranding process in the implementation of the special education curriculum of 21st century of special need students as regards entrepreneurship friendliness (skills)?

Table 2

Missing link in rebranding process in the implementation of the special education curriculum of 21st century of special need students as regards entrepreneurship friendliness (skills)

S/N	Items	Teachers /Supervisor			Students		
1	Initiative skills is one of the entrepreneurship skills needed in the implementation of the special education curriculum of 21st century of special need students.	X Mean	SD	Remarks	X Mean	SD	Remark
		3.42	1.22	Strongly agree	3.41	1.28	Strongly agree
2	Creative skill is an important entrepreneurship skills needed in the implementation of the special education curriculum of 21st century of special need students	3.37	1.31	Strongly agree	3.35	1.28	Strongly agree
3	Critical skill is very important entrepreneurship skills needed in the implementation of the special education curriculum of 21st century of special need students	3.32	0.58	Strongly agree	3.21	0.63	Strongly agree

4	Self-efficacy skill is another important entrepreneurship skills needed in the implementation of the special education curriculum of 21st century of special need students	3.28	0.67	Strongly agree	3.01	0.77	Strongly agree
5	Project skill is an important entrepreneurship skills needed in the implementation of the special education curriculum of 21st century of special need students.	2.78	1.04	Agree	2.66	1.05	Agree
6	Collaboration skill is very important entrepreneurship skill need in the implementation of the special education curriculum of 21st century of special need students.	3.18	1.47	Strongly agree	3.13	1.28	Strongly agree
7	Self productive skill is another importance entrepreneurship skill needed in the implementation of the special education curriculum of 21st century of special need students	3.12	0.31	Strongly agree	3.05	0.49	Strongly agree
8	Positive mindset is another important entrepreneurship skill needed in the implementation of the special education curriculum of 21st century of special need students	3.28	0.67	Strongly agree	3.25	0.71	Strongly agree
9	Self reliance skill is an important entrepreneurship skill needed in the implementation of the special education curriculum of 21st century of special need students	3.39	1.31	Strongly agree	3.37	1.29	Strongly agree
10	Planning skill is an important entrepreneurship skill needed in the implementation of the special education on curriculum of 21st century of special need students	3.32	0.62	Strongly agree	3.21	0.67	Strongly agree
11	Managerial skill is one of an important entrepreneurship skill needed in implementation of the special education curriculum of the 21st century of the special need students	3.26	0.58	Strongly agree	3.25	0.71	Strongly agree
12	Accountability skill is another entrepreneurship skill needed in	2.95	0.92	Agree	2.90	0.92	Agree

	implementation of the special education curriculum of the 21st century of the special need students						
13	Supervision skill is a wonderful entrepreneurship skill needed in implementation of the special education curriculum of the 21st century of the special need students.	2.90	0.90	Agree	2.96	0.95	Agree
14	Monitoring skill is the best entrepreneurship skill needed in implementation of the special education curriculum of the 21st century of the special need students	2.80	0.71	Agree	2.85	0.76	Agree

From the table two above, items numbers 1,2,3,4,6,7,8,9,10, and 11 means ranges from 3.01 to 3.42.. This is an indication that both the teachers/supervisors and students strongly agree that initiative skill, creative, critical, self-efficacy, positive mindset, self-reliance, planning , managerial, collaboration and self productive skills are the wonderful entrepreneurial skills needed in the implementation of the special education curriculum of the 21st century of the special need students. It can be seen also that items 5,12,13 and 14 had mean score that ranges from 2.98 to 2.57. This shows that the respondents agree that project skill, accountability, supervision and monitoring skills are important entrepreneurship skills needed in implementation of the special education curriculum of the 21st century of the special need students.

The Summary of the Major Findings:
1. Motivation, inclusion, gadget, individual attention, specialized teacher, affection and skill acquisition are needed by special need students in this millennium. Also deepening knowledge, modern technology, collaboration learning abroad, scholarship, conducive classroom /environment, Braille papers/hearing aids and workshops are needs of special need students in this 21st century.
2. Initiative skill, creative, critical, self-efficacy, project, collaboration and self-productive are entrepreneurship skills needed in the implementation of the special education curriculum in the 21st century. In addition, positive mindset, self-reliance, planning, managerial, accountability, supervision and monitoring skills are entrepreneurship skills needed in the implementation of he special education curriculum of this millennium.

Discussion
From the findings, motivation. inclusion, gadgets, individual attention, specialized teachers, affection and skill acquisition are the needs of the special need students in this millennium. This is in line with the assertion of Koh (2004), who opines that there is research evidence that change in the educational process can take the form of new curriculum inclusion, new pedagogies, new assessment methods, change in leadership, teacher training, language policy, co-curricular emphasis or even matters of administration. Similarly, in line with the findings that deepening knowledge, modern technology, collaboration learning abroad, scholarship, conducive classrooms/environment, Braille paper/hearing aids and workshops are needed by the special need students in this 21st century, Kolo (2008), noted that the reason for reform in special need education include the strategic desire to have structural systematic, content challenges in order to have irreversible progress.

Initiative skill, creative, critical, self-efficacy, project, collaboration and self productive entrepreneurship skills are needed in the implementation of the special education curriculum in this 21st century. This is in line with Onyiliofor (2010), who expresses entrepreneurial as education that prepares the visually impaired to have great positive mindset, positive self-efficacy, mindset that is creative, productive, self-reliance, and to have sharp focus to earn more for themselves and society at large. Also, in line with the findings that positive mindset, self-reliance, planning, managerial, accountability, supervision and monitoring entrepreneurship skills are needed in the implementation of the special education curriculum in this millennium, Karip (2005), posits that reform should be based on comprehensive and well-designed plans as on persistent efforts of policy makers and stakeholders to implement it successfully, monitor from time to time, teacher training, development of new teaching materials, school areas in order to enable access for this

children to school facilities, providing appropriate materials and conditions to meet the needs of children with disabilities/special needs.

Conclusion /Recommendations

In conclusion, if the curriculum of the special need students will involve all these needs already mentioned above like motivation, inclusion, gadgets, individual attention, specialized teachers, affection and skill acquisition, they will be independent after graduation and will be able to compete favourable with their counterparts abroad. In the same vein, if all the entrepreneurship skills will be embedded in the curriculum of the special need students and implemented well, after graduation, they will not look for white collar jobs; they will be self-employed, own shops; big supermarkets; big industries, be able to utilize technology and be able to employ other graduates to work for them. In short, they will not only be productive but self-actualized. The family, the state and their entire nation will benefit maximally from them. To prove that there is ability in disability.

Based on the findings of the study, the following recommendations where made:

1. Funds to be adequately provided by the federal government with partners like NGOs, UNICEF, UNESCO, USAID Reform and so on for conducive enabling environment, good classrooms for specialized teachers and students, good offices and allowances for teachers.

2. Nigeria specialized education curriculum to be overhauled, rebranded and restructured by federal government with stakeholders (students, parents, communities, philanthropists, NGOs and educators (professional counsellors and teachers)).

3. Special programmes to be offered to special need students for different area of exceptionality such as mental retardation, talent, deafness, blindness, orthopedic disabilities, cerebral palsy, social and emotional problems by their various specialized teachers.

4. Tertiary Institutions to have features of construction, study materials and equipments to meet the needs of special need students. Constructions like rams in the roads of the institutions where they will be going with special wheel chairs, special machines, crutches, Soronic devices and cane sticks so that no vehicle will hurt them. Specialized study materials be provided.

5. Educators involved around need students like teachers, specialized teachers, professional counsellors and so on should be;
   a. Sent abroad for training and retraining to learn skills and modern technology for effective teaching and learning.
   b. Given incentives and special packages including the special need students ,
   c. Made to undergo professional development from time to time.

6. Special need students should be given scholarship and send abroad for collaborative learning

7. Sending the special need students for workshops and seminars at least two times a year (1st and 2nd semesters).

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THE NIGERIAN UNIVERSITY LIBRARIANS AND THE CHALLENGES OF THE INTERNET

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ABSTRACT

The study investigated the Nigerian librarians and the challenges of the internet. Four research questions guided the study. The population of the study comprised all the Federal and State University in South East geopolitical zone in Nigeria. The samples consist of three federal and four state universities with one hundred and four (104) librarian respondents. Questionnaire was the instruments used for data collection and the data collected was analysed using mean. Results show that all the items were accepted as strategies for harnessing internet challenges to Nigerian University librarians. Recommendations were that government and other stakeholders, including philanthropists should provide adequate facilities and environment for internet access in university

libraries. And, that librarians should strive hard to adapt and adopt new roles so as to fit into the emerging knowledge society.

INTRODUCTION

Librarianship has evolved and experienced many changes in Nigeria. They existed first as the curators and collections of books and other information materials, including the administration of conditional user access to these collections. Presently, librarians have become the mangers and mediators of access to information for user group of various descriptions. Harrod's Librarians' Glossary (2000) says of a librarian as one who takes care of a library and its contents, including the selection of stocks, their arrangement and exploitation, and the provision of a range of services in the best interests of all groups of users.

Sturge (1997) remarked that the education and training of librarians across the nations of the world have continuously been changing, hence the continued change in role and practice. However, unlike what obtains in the past, librarianship has broken the barriers of obsolesce through the establishment of strong, virile and qualitative education which has equipped the profession for challenges ahead. Projecting the library and the librarians, Kawatra (2000) and Achebe (2007) said of the libraries as the soul and mind of all the academic communities of the world and the librarians, the soul and mind of the library. In effect, libraries are essential and effective because librarians upgrade them. They are trained professionally to guide users to access their required information in books, archives or on web. In schools, and universities, librarians teach library literacy skills, bibliographic instruction and information guide to students with the aim of improving their academic performance. Indeed, in a world that knows the value of information, librarians provide the

needed expertise. They bring users with relevant information need together and provide the exact document for them, sometimes, repackaging them to meet their purpose or need.

Consequent upon the above, the role of librarians and other information specialist has become very essential in the contemporary network of systems that pose great challenges to the traditional library process. The many designs of computer systems and their software packages have generated an overwhelming posture to the librarians and their users. Moreover, Ojedokun (2007) notes that the proliferation, of new media and the establishment of Information Technology (IT) facilities such as computer and television, etc as occasioned by library trends have introduced new roles and challenges to librarians all over the world. In response to the above, Okebukola (2006) once said that" ... the recent development in the area of Information Technology (IT) have redefined the traditional understanding of the practice of librarianship across the globe. The spectacular speed with which information is generated, stored, and transmitted for the purpose of advancement of the frontiers of knowledge are no doubt critical to our determination to build a virile quality assurance system for our libraries."

Nevertheless, Crosby (2000) states that the situation of the new environment of the library calls for a change of role in the service delivery of librarians, and since their roles are never static but dynamic, it should be constantly evolving. Some changes have, of course enhanced the status and prestige of librarians while others have restricted them. Internet resulting from computers has both enhanced as well as restricted librarians. To Loertscher (1999) the internet represented a mass of information that confounded everything that libraries represented. The internet, according to Aptagiri (2005) is "a worldwide network of computers communicating via an agreed upon protocols (rules governing the exchange of

information) and which provides access to the most diversified sources of information hosted by individuals and various organistions, on a vast network of servers". The internet, the world's largest computer network is composed of heterogenous networks that use different message formats and protocols.

The internet has in fact, re-ordered the library. Rather than order, many librarians saw chaos. Among the chaos of unfiltered, un-organized and poor quality information, librarians were recognized much of value. The major challenge and primary questions were;
1. What information format will benefit our users?
2. How can librarians provide access to it in an efficient manner?
3. What are the challenges of the internet to the Nigerian university librarians?
4. How can these challenges be harnessed?

Response to these questions has become expedient because internet has irrevocably altered the entire library processes.

Methodology

Descriptive survey design was adopted for the study. A survey according to Akuezilo and Agu (2003) and Awotunde and Ugodulunwa (2004), is an attempt to, "collect data from a sample of a population in order to determine the current status of that population with respect to one or more variables". This design was considered appropriate for this study which sought to collect data on the opinions of librarians in Nigerian university libraries.

The population comprised of all the twenty seven (27) Federal universities and thirtyone [31] state universities in Nigeria while the sample consists of all professional librarians in the three federal universities and four state owned universities in the South-East geo- political region in Nigeria. The population respondents were one hundred and four (l 04) and the number was manageable so, sampling was considered unnecessary.

The survey covered libraries in Nnamdi Azikiwe University, Awka, University of Nigeria, Nsukka and Federal University of Technology, Owerri. Others are Enugu State University of Science and Technology, Enugu, Imo State University, Owerri, Ebonyi State University, Abakaliki and Abia State University, Uturu.

Structured questionnaire items and oral interview schedules were used for data collection. The instruments were properly validated by other senior researchers in Library and Information Science profession. The data so collected were analysed using frequencies and mean. Because the response format of the instrument was the modified four -point. Likert type scale of Strongly Agree (SA); Agree (A) Disagree (D) and Strongly Disagree (SD), the cutoff point for decision was 2.5. The decision rule was that any item with mean score of 2.5 and above was taken as positively responded to, while items whose mean scores were below 2.5 were regarded as having attracted negative responses.

RESULTS

Research Questions One: What Information Format will benefit the Nigerian University library users?

Results for this research question are shown in table 1 hereunder.

Table1. Mean score of types of Information Format that will Benefit Nigerian University Library Users

S/N	Statements	SA	A	D	SD	Freq	Mean	Decision
		4	3	2	1		$\frac{\sum fx}{\sum N}$	
1.	Print format (books, magazines, Newspapers, pamphlets, files, etc)	61	42	1	-	372	3.58	Positive
2.	Micro- formats	37	51	16	–	317	3.05	Positive

S/N		SA	A	D	SD	Freq	Mean	Decision
	Imicroforms (microfilm, microfiche, micro card)							
3.	Audio-visual formats (videos, diskettes, Audio tapes).	40	33	10	21	300	2.88	Positive
4.	Electronic formats online catalogue, online proprietary database, CD-ROM, Internet)	39	56	-	9	333	3.20	Positive

Results in table 1 show that all the items listed recorded mean scores well above the decision rule of 2.5. This shows that the respondents agreed to all the items as being the types of information format that will benefit the Nigerian university library users.

Research Question Two: How can Librarians Provide Access to Information in an Efficient Manner?

Results regarding this research question are shown in table 2.

Table 2 Mean score of How Librarians can Provide Access to Information in an Efficient Manner.

S/N	Statements	SA	A	D	SD	Freq	Mean	Decision
		4	3	2	1		$\dfrac{\sum fx}{\sum N}$	
5.	Determining the nature and extent of information needed by users	51	46	4	3	353	3.39	Positive
6.	Provision of adequate shealf lists and bibliographies.	49	37	10	8	335	3.22	Positive
7.	Providing lists of library holdings in a catalogue	60	42	-	2	368	3.54	Positive
8.	Providing relevant search engines and search strategies	58	42	-	4	362	3.48	Positive
9.	Providing periodical indexes and abstracts in printed and database format.	38	61	5	-	345	3.32	Positive

Findings in table 2 above show the mean score of "ways of providing access to information in a better and efficient manner by librarians". The mean score is ranked in the order of hierarchy as 3.54, 3.48 and 3.39. Others are 3.32 and 3.22.

Research Question Three: What are the Challenges of the Internet to Nigerian University Librarians?

Findings relating to this question are presented and analysed in table 3.

Table 3 Mean Score of the Challenges of the Internet to Nigerian University Librarians.

SIN	Statements	SA	A	D	SD	Freq	Mean	Decision
		4	3	2	1		$\dfrac{\sum fx}{\sum N}$	
10.	Poor management of information system	52	46	2	4	354	3.40	Positive
11.	Lack of quality control in information	39	40	13	12	314	3.02	Positive
12.	The demand of a new knowledge society	50	49	3	2	355	3.41	Positive
13.	Problems of software /hardware infrastructure	47	52	4	1	353	3.39	Positive
14.	Low telecommunication infrastructure	40	45	10	9	324	3.12	Positive
15.	Lack of National Information policy	51	39	-	14	335	3.22	Positive
16.	Prohibitive high cost of internet access.	50	44	7	3	349	3.36	Positive
17.	High telephone tariff as a result of slow internet connectivity.	46	50	3	5	345	3.32	Positive
18.	Lack of personnel with advanced technology and scientific skills	-	60	34	10	258	2.48	Negative
19.	Poverty and inadequate planning	68	33	–	3	374	3.60	Positive

Table 3 shows the challenges of the internet to the Nigerian University librarians. The mean scores obtained in the table was indicative that except for item number 18 which was negative, the rest of the items had mean scores above 2.5, hence, positive results.

Research Question Four: How can Internet Challenges be harnessed for Nigerian University Librarians?

Findings for this research question are shown in table 4 below.

Table 4: Mean Scores of Ways of Harnessing Internet Challenges for Nigerian University Librarians.

SIN	Statements	SA	A	D	SD	Freq	Mean	Decision
		4	3	2	1		$\dfrac{\sum fx}{\sum N}$	
20	Information system should be properly managed	61	42	1	-	372	3.58	Positive
21.	Information getting to the net should be examined by well established organization	60	39	5	-	367	3.53	Positive
22.	Hardware software infrastructure should be made available.	56	38	6	4	354	3.40	Positive
23.	Telecommunications should be improved to a high extent	50	35	10	9	334	3.21	Positive
24.	Tariff should be considerable reduced on telephone exchange	48	34	12	10	328	3.15	Positive

25.	Internet access should be made available at a cheaper rate by increasing its band width.	48	36	10	10	330	3.17	Positive
26.	There should be National Information policy	45	40	5	4	314	3.02	Positive
27.	Librarians should be re-trained to provide for the new knowledge society.	40	39	20	5	322	3.10	Positive
28.	Electricity generation should be improved upon.	39	38	20	7	317	3.05	Positive

Results in table 4 show that the respondents agreed to all the items with means scores well above 2.5. This shows their endorsement of the identified strategies for harnessing internet challenges to Nigerian university librarians.

Discussion of Result

From the analysis of data presented in table 1, the types of information format that will benefit Nigerian University library users are basically those in print format, micro,
audio-visual and the electronic types. This was in line with Ojedokun (2007) who remarked
that the predominantly used materials in Nigerian University libraries are mainly paper-based. Moreover, Ogunsheye (2004), Aboyade (2002) and Dike (2003) states that though printed information has existed long enough, the electronic information are making great impact in libraries, to the extent that they intend to take-over the prints. It is not strange however, how these statements attracted positive reactions from the respondents, because it appears couvincing that library materials should be packaged in different formats so as to provide for different user groups and also to pave way for the emerging knowledge society.

Results in table 2 also show that the respondents reacted positively to all the items, indicating that they are all potent strategies for librarians in providing access to information. These findings correspond with Oketunji (2000) on methods of providing access to information resources in libraries. It is most likely that for patrons to exploit the library maximally, tools for both organizing, retrieval and access should be made available to all categories of users. Bibliographies are considered as important as catalogues or search engines. So, their availability in libraries remains important.

Poor management of information system is considered as one of the many challenges posed by the internet to the Nigerian university librarians as shown in tab Ie 3. The table also showed the positive response of respondents that high telephone tariff, low telecommunication infrastructure and prohibitive high cost of internet access are among the challenges. No wonder Shibanda (2000) and Adeogun (2003) laments that Africans enjoy only one percent (l %) of internet connectivity out of the growing fifty million intended worldwide users, and worst still, they have only 0.022% of all the sites on the world-web, due to lack of advanced technological and scientific facilities.

Table 4 revealed the different strategies for harnessing internet challenges. Part of these includes establishing quality control process in information packaging and storage, making available, hardware/software infrastructure and reducing tariff on telephone exchange. Others are making internet access cheaply available and improving on electricity generation. It is the believe of the researcher that irrespective of the challenges posed by the internet, librarians are still in control and as such, should embark on re-training to get acquainted with the new technologies and their usage.

Implications of the Study

The major implication of the findings of this study is that the challenges posed by the internet to the librarians lie in the ability of librarians to adapt to the new knowledge society and adopt new technologies to improve their process. In effect, Small (1999) states that acquiring new leT facilities will not only enhance library services but improve on the general academic performance of the university students. This implies that the university management in partnership with the library should strive to make these facilities available in the library for effective services.

Conclusion

The study investigated Nigerian university librarians and the challenges of the internet. Most of the challenges experienced by librarians in this internet environment can be attributed to the globalization trend in world institutions and operations for optimum results, making the world a global village where it is imperative that we share, plan, merge and manage the earth's knowledge and resources. For Onwuka (2007)" ... new technologies complement and change the older ones ... that print did not destroy oral tradition, it extended its reach. Cinema did not destroy live theatre. Radio news did not destroy newspapers and televisions did not destroy radio". In effect, librarians should work hard to build more meaningful relationships with their clientele and always be mindful that the primary struggle today may not be to make the library as "we know it" better, but to create a larger vision of the roles of librarians and libraries in the future, to obliterate the tasks posed by the internet.

Recommendations:

Ogunsheye (2000) once noted that libraries and librarians are currently faced with the challenges of the transformation in the lifestyle and user demands of modern library clientele as the information society evolves and also that of the nature of the format in which knowledge has to be packaged. In view of this, therefore, the following recommendations are made:

1. The government and all other stakeholders, including the philanthropists need to do their part by providing funds/facilities and an enabling environment for an effective internet access in university libraries in Nigeria.
2. The librarians must nevertheless, realize that even with the provision of the most adequate facilities and environment, if librarians do not effectively utilize them, they will remain dormant and useless. The librarians should enhance their role through retraining and or devise ways of employing technicians and analysts in the library.

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THE PHENOMENOLOGICAL IMPACT OF USE OF ENGLISH ON LITERACY ATTAINMENT IN NIGERIA

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Abstract
English plays a high dynamic role in the Nigerian society. It develops an individual through Education. Literacy is fundamental to functional education, and professional/competitive performance of modern nations. These are achieved through taught skills of reading and writing. This paper explores the pivotal role of literacy in the development of an individual through education. It also examines the perception of English language in Nigeria. It affirms that the use of English programme aids literacy attainment which makes positive impact on the development of individuals in the Nigerian Society.

Keywords: Use of English, Literacy and Development

Introduction

Literacy is conventionally defined as the ability to "read and write. The Nigerian society is marked by both individual and societal multilingualism. There are many languages in use in the Nigerian environment. Colonization and the introduction of western education made English a world dominant language. Hence it is used as a language of education, as a medium of instruction and learning and as a school subject. This shows its relative importance in our nation.

The development of any nation is dependent upon its level of literacy. Development in a nation is actualized when her citizens enjoy benefits of being knowledgeable and acquires skills of reading and writing which she uses desirably and independently. An individual cannot be well equipped without the use of a language. It is the major source of education acquisition. In order words, maximum self -realization and development is achieved through the use of a language. In Nigeria the development of a literate person is largely achieved through the English language. Language is usually considered as a powerful means of interaction which propagates development and education while literacy achieves self, community and national development through enhanced communicative competence.

Thus, this made the English language the only generally accepted medium of communication in Nigeria. It is considered as the only language that can transform the users into becoming literates.

The trust of this paper thus is to explore;
- ❖ Language development and literacy attainment in Nigeria.
- ❖ The use of English as a programme of study in Nigerian institutions.

❖ English as the Nigerian Lingua Franca and relevance of English as a language of literacy. This paper concludes by reaffirming its position; English language development and literacy skills make positive impact on the development of individuals and nation at large.

Language Development and Literacy Attainments; the Nigerian case

Literacy in Nigeria is considered a recent phenomenon. This is because before the coming of the Europeans who colonized Nigeria, most communications were either oral and in the native languages, Or through the use of symbols and signs. Writing and reading skills were the exclusive preserve of the privileged class who could acquire it.

However the campaign for literacy had its stronghold in Nigeria when the colonial masters arrived. They had the need to communicate. Literacy became a school product where catechists, interpreters and clerks were groomed. Literacy then became synonymous with reading, writing, and counting.

In Nigeria the national literacy programme centers on certification rater than job assimilation. Hence, Rodney (2005) asserts that colonial schooling was education for subordination, exploitation, the creation of mental confusion and the development of under development (p.293). School literacy in Nigeria then was programmed to meet clerical and auxiliary needs; school, administrative and church functions and services.

However, attempts have been made to redefine Literacy from the usual concept of reading and writing to an amplified form of incorporating skills acquisition and effective manipulation of the skills. Otagburuagu et al (2006), described Literacy as both a process of skills acquisition for productive and purposeful life in the society and a product of organized intellectual schemes and effort. In order word it is a tool for man's total empowerment and development.

In another opinion, Dike (2002) sees literacy as having different levels of enlightenment literacy; which is the minimal decoding of the written words to functional literacy which incorporates basic and other forms of literacy. Functional literacy is incorporative, integrative .and value-orientation. It produces the required expectations. While enhancing the individuals Values and Oriented. It produces the required expectations. Smith (1978) posits that literacy should guide the thought of the individual, as he or she seeks to be critical, creative and participatory". Genuine literacy efforts must empower the individuals to achieve positive change in their environment. The literacy level has really improved from what it used to be.

Thus we have various types of literacies to include: school literacy, adult literally, computer literacy, mass literacy, sex literacy, visual literacy and more. Based on this, the nature of literacy in Nigeria today, requires a lot of creativity to be able to put together its goals for national development. However, Oyetunde and Aboki (1998) affirms that;
> No nation or individual can really advance
> in our modern society without literacy.
> Literacy has long been recognized as
> essential to efficient functioning of individual
> at all levels and its used to enhance

scientific and technological growth at
national level (p.vi).

Thus, literacy is largely achieved through developed language learning as a means of self improvement which enhance individual's communication and performance. Language improvement begets development. And this has assisted in the nation's development.

Language according to Emenanjo (1997) is any code employed for giving receiving, hiding, and distorting information.' Gimson (1980) describes it as; a system of conventional signals used for communication by a whole community. Language in my former work is seen as a powerful means of interaction which propagates development and education ...." Njemanze (2007: 181). Language being a unique human attribute enables an individual to dispatch his information through a communication process. It is used in real life situation where speech act is performed. Through language one is able to acquire knowledge, think, convey messages, intentions, request etc. it is therefore imperative that every individual acquires solid socio-linguistic competence, in the language skills of listening, speaking, reading, and writing. These skills are literacy attributes.

Literacy as the language of instruction creates effective learning in school. This brings to fore the relationship between literacy development and language learning. This is in line with Raphael & Au (2005) observation that; teachers have the core responsibility of ensuring that all children are expected to learn content through a second language. They should be able to read and write in the language used as medium of instruction.

This is so because; literacy is the key to the rest of the
curriculum. Virtually all schooling affairs, after the first year
or two, assumes pupil literacy. This is particularly
so to the extent that children are expected to work
independently of teachers, for that requires them
to read written directions, reference
materials, worksheets, and so on.
Hannon (1995:5-6).

A good Language development is fundamental for a complete education. The Nigerian education on the other hand is geared towards equipping the individual with the tool which he will use to survive in a constantly changing society. In the Nigerian Society, emphasis is laid on language training and development of cognitive skills as the base for successful literacy attainment. It therefore means that without literacy skills, many aspects of the good life, formal education and fluency in the use of English (Nigeria's Lingua franca) are entirely non-functional.

The vast majority of Nigerians have been exposed to education especially in the era of 'free education' but this has not yielded much fruit. Their literacy levels are low, their horizons are limited and their opportunities for catching up to the rest of the world…, in this generation are virtually poor. The situation is likely to persist well into the 21st Century, unless there are massive changes. Elley (2001:3). Free education aims at eradicating illiteracy but most people end up without being functional literates.

Functional literacy refers to the ability to use reading and writing skills to widen and expose ones intellectual and academic achievements in a manner that the individual will be able to communicate across all social levels as well as effectively handling all educational and social needs confronting him in his environment/society.

Literacy in Nigeria centers largely around academic/school subjects especially English. In this subject, emphasis is on textbooks, classroom and social communication. Literacy emphasizes individual's ability to exhibit competence in communication and language skills which help the person adapt to his immediate environment /society. Literacy education as Okedara (1989) expressed it; can be referred to as the type of learning that is received by an individual to sharpen his communicative competence or skills, whether in or out of school, that is, at the formal, informal or non-formal levels.

This, therefore call for an urgent need to help the Nigeria child to acquire and develop full language skills, of speaking, reading, understanding and writing in English language. This will help him achieved an acceptable literacy level to function efficiently in his nation. Thus, a peep into the use of English as a programme for literacy attainment in Nigeria is examined.

The use of English language as a programme of study in Nigerian institutions

The Nigeria's perception of language and literacy education is related; in such a way that literacy is dependent upon education while education relies on language. Hence, the language of instruction is an important factor in any literacy, educational and human development programme. There are various levels of language and literacy education in Nigeria. These ranges from
  ❖ The pre-primary level- (from 0-6yrs)
  ❖ The primary level - (from 6-16year)
  ❖ The post -primary level (12-17yrs)
  ❖ The tertiary level (18yrs and above)

At every level, language is fully utilized, with special attention given to English language. This indeed made literacy central to knowledge acquisition while knowledge acquisition remains the onus of every educational achievement. This is achieved through language which inturn aids human and national development.

The use of English programme aims at correcting the imbalance at the foundational stage. It serves the remedial purpose in some Nigerian tertiary institutions; this is to bridge the gap in students' deficiencies in English and communication skills. This programme became imperative in Nigerian schools because English is the language of instruction and Education; it is the language of administration, the official language of all transactions in the country and the language for science and technology. Thus acquiring good linguistic skills provides the learner with competent linguistic tools which is relevant and utilized in all aspects of the person's life.

The programme thus expands the student's horizon to diverse areas of language faculty. They develop fluency in language expression, use and are confident to communicate to the outside world. The participants gain improved vocabularies and communicative competence. They are

able to read, write and speak well in any environment. English being the language of major concern in this paper deserve a further assessment on its position as the Nigeria's lingua franca.

English; as a lingua Franca in Nigeria

A lingua-franca is a language which a society uses for wider communication. The importance of English language in the Nigerian educational process has remained unchallenged. In the words of Ker (2002: 114) the more complex society becomes and the more socially and technologically sophisticated man gets, the more communication problems tend to emerge in language. Thus the entrenchment of the English language in Nigeria has been unchallenged. The coming of the British colonized Nigeria and introduced the use of the English language which they gave a pride of place. The English language became the pre-eminent language of education from that colonial time to date.

It serves as the language of instruction in all levels of schools, form pre-nursery stage to the university level. It is made the sole language of communication, education, trade, commerce, entertainment, and the official language used in work place. It became the language of prominence; the Nigerian lingua-franca. In Nigeria today many researchers have unraveled the presence of over four hundred Nigeria native languages in existence yet English was made the only language of wider communication. More recently Anyachonkeya and Anyachonkeya (2008) reveal that there are no fewer than five hundred and sixteen (516) native languages in Nigeria. Many diverse groups have different tongues yet the English language stands tall in the global village.

Colonization was made easy because of the multilingual nature of Nigeria. There is need for cross-ethnic communication, Nigeria is not the only country that has the problem of language choice Most African Countries have the same problem. Multilingualism describes a situation where two or more languages co-exist within a particular speech society.

A linguistic conquest was made of the word and English achieved it. English is made a language of the privileged educated people. It develops the individual through education; it provides tools which increases mobility of skills within the Nation. English is used to simplify communication within and outside Nigeria. It plays an all level domineering role in the Nigerian society. The geographical spread of the user of English all over the world made it so prominent. In Nigeria there is no viable alternative to English language because of its multi-cultural, multi-ethnic and multi-lingual nature. Hence the need to be united educationally, socially culturally economically, and even politically becomes imminent. The diverse ethnic nationalities need a language that is common to all. The relevance of English thus, becomes a major factor in the nation's survival.

Since the English language enjoys multiple identities, it is used inter and intra nationally. This paper therefore takes a peep into English as a language of literacy.

English as a Language of Literacy

English as a language of literacy occupies an exalted place in the Nigerian educational system. It bridges the communication gap in a multiethnic society. At the inception of the colonization of Nigeria much emphasis was on mastery of English, it earned users, jobs as clerks, interpreter's evangelists and teachers and so on. At present, the English language has become an indispensable tool for communication both in the Nigerian environment and globally.

English opens the window to the outside world. It has multiple identities, the English language is used intra and inter nationally. It significantly grows by day, thus Graddol (2000) predicts that although there are about a billion English learners at present, in a decade later, the number would have doubled. He goes further to inform us that over 80% of information stored on the internet is in English. This is an indication that English is the only world language that has many users.

The importance of English as a language of literacy makes it easy to see literacy beyond being mere ability to read and write in English but as a language that has contributed to the growth of man thus helping him to attain his desired goals in his life and nation. The use of English language is central to individual achievements. Hermer (1990) adds to this belief by identifying variety of needs of English language in the achievement of the new millennium literacy goals. These needs include,
- ❖ English as a target language
- ❖ English for special or specific purpose (ESP)
- ❖ English for school curriculum
- ❖ English for advancement

- ❖ *English as a target language* helps nor-native users in a speech community achieve fluency in their environment.
- ❖ *English for specific or special purpose* is to accomplish specific tasks like speaking. Reading and writing English for occupational purpose or academic purpose
- ❖ *English for school curriculum* is studied as a matter of compulsion. It is compulsory that the subject must be studied by every person to get to the next academic level. It is then made compulsory in the curriculum.
- ❖ *English for advancement* is important because there may be a particular need of the mastery of English for a particular foreign or advanced job. Its knowledge becomes important.

These needs are unique. The learner's level of competence depends on the context of usage. Like some example I gave in my previous work. A journalist needs sophisticated English to excel on his job, an adult learner who needs a job as a waiter requires at least the low level English for interaction like, "welcome", "goodbye", "thank you; come again" etc. in a similar manner an English graduate needs a thorough mastery of the rules to achieve his literacy goals; (P183) for effective functioning. It is therefore evident that interactions that facilitate literacy attainments are conducted in English language.

Conclusion

Literacy is synonymous with reading and writing which are language skills. The relationship between the English languages use and literacy in the Nigerian environment, which is largely multiethnic and multi-lingual, becomes obvious because the knowledge of the English language relates to thinking. English language fluency is one of the modes of evaluating literacy performance. This encourages the user to maintain link between words and meanings. The user will also be abreast with his vocabularies, and establish a greater preference in the language that helps him meet his survival requirements.

Thus the phenomenon surrounding the impact of high dynamic roles of the use of English language in Nigeria has enhanced literacy achievements. This paper thus affirms that good English language development aids literacy attainment which is fundamental to functional education that makes positive impact on the development of individuals in the Nigerian society.

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