TRAINING NEEDS REQURIED BY BASIC TECHNOLOGY TEACHERS IN EDO STATE

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A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION FACULTY OF EDUCATION UNIVERSITY OF BENIN, BENIN CITY EDO STATE NIGERIA IN PARTIAL FUFILMENT OF THE REQURIEMENTS FOR THE AWARD OF MASTERS DEGREE (M.Ed) IN TECHNICAL EDUCATION (ELECTRICAL/ELECTRONICS TECHNOLOGY)

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DEDICATION

This study is dedicated to God Almighty and to my wife Mrs Doris I. Okodugha.

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The researcher wishes to express his profound gratitude to God Almighty for his grace that enable him complete the program.

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ABSTRACT

This study was carried out to determine the influence of technical teacher training on the competencies teachers posses in teaching basic technology in Edo state. Five research questions were raised to guide the study and four null hypotheses were tested at 0.05 significant level for the study. Descriptive survey research design was used for the study. The population of the study was 400 basic technology teachers of Oredo local government area of Edo State. Simple random sampling technique was used to select 100 respondents for the sample. The instrument used was a structured questionnaire. The instrument was validated by three experts. Pearson's Product-Moment Correlation Coefficient (PPMCC) was used to compute reliability of the instrument which gave a correlation coefficient of 0.72. The data collected was analyzed using descriptive statistics of mean and standard deviation and t-test was used to test the hypotheses. The result of the analysis shows that for a basic technology teacher to be considered competent such teacher must have, gone through teacher training, good knowledge of subject matter, proper usage of instructional aid and methods, good classroom and laboratory management skills and proper evaluation techniques. The t-test analysis showed that the four groups of teachers (male & female, rural & urban, experienced & inexperienced and public and private secondary school) did not differ significantly in their rating on the variables that is important for effective teaching of basic technology by teachers. It was recommended among others that Edo state Ministry of education should employ only qualified and trained technical teachers for basic technology, and the state government must also enforce the same strategies in the private sector. The performance of basic technology students is directly influenced by the qualification and quality of the teacher taking the subject.

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CHAPTER ONE

INTRODUCTION

Background to the Study

Education appears to equip individuals with knowledge and skills that would enable them make good use of their natural resources to the benefit of the society. The success of any educational program depends on the ability of teachers to implement the policy. This is why the government established teachers training institutions and suitable programs for the training of competent teachers needed for the implementation of education program. Encarta (2007), describe competency as the ability to do something well, measured against a standard especially ability acquired through experience or training.

Competency is an acceptable standard demonstration of knowledge, skills and attitudes in teaching acquired through teachers education. A competent teacher is one who possesses certain qualities that makes them distinguished intellectually, physically, psychologically and emotionally from those who are not competent. Teacher competence is an intellectual potency that indicates teachers' ability to use professional standards effectively in Instructional planning, subject matter, instructional strategies and assessment of students during classroom activities. It is crucial for basic technology teachers to become proficient in subject matter and other instructional strategies for effective teaching of basic technology.

Basic Technology is a core subject offered at the upper basic school and it is the integration of metal works, electrical electronics works, wood works, building construction works, auto mechanics, technology of engineering materials and technical drawing. Students are trained to acquire the art of creativity in through basic technology. It is also crucial that in basic technology students acquire a preliminary knowledge, skill and awareness in technology that would serve as eye opener for choosing a career in the world of work (Uzoagulu, 2005). Federal Republic of Nigeria in the National Policy of Education (2013), outlined the objective of Basic Technology to include the following; Contribute to the achievement of the nation's educational goals by inculcation of technology literacy; exposure of students to the world of work to match

their talents and interests for wise vocational choice; and inculcation of positive attitudes towards work as a source of human identity, livelihood and power.

In view of this, selected topics and contents are organized into a teaching sequence must be achieved by the technical committee on basic technology curriculum planning and passed on to the instructors. As one of the core pre-vocational subjects introduced into the Nigerian system of education, basic technology gives opportunities to students to use tools and machines used in the industries in order to develop a good attitudes towards technology and the industry.

It is expected that students who have passed through the junior secondary school of education, would have acquired a broad-based knowledge of technical skills. This is to enable them have a wide range of career choices. Basic technology is a core subject in the 9 year basic education program as reported by Federal Ministry of Education (2007). Basic technology before now was known as introductory technology, structured to assist learners develop interest in technology. Onasanya (2010) described basic technology as a subject important for the scientific and technological advancement of any nation. The training of teachers of basic technology through teacher training education equips them with the skills, knowledge and technological composure in educating students of basic technology in both Public and private secondary schools in Edo state.

Today public and private secondary school managements have different dispositions towards their academic administration strategies. However, the major contributory factors toward the differences in achievement as stated by Aunkam (2009) is that the private schools are characterized by high sense of duty, while the public schools are characterized by loose commitments. Private schools records revealed that they are more committed in implementing the school curriculum than their public school counterpart which possible makes private schools

to achieve more success than the public schools, when given equitable resources and other factors of productions.

Teaching and learning depend to a large extent on the teachers' knowledge of the course content and ability to adequately or effectively deliver the instruction to the students. Researchers have examined the influence of gender, experienced and inexperienced teaching on students' academic achievement with varied findings. Akiri and Ugborugbo (2008) found that there was a significant relationship between teachers' gender and students' academic achievement. This was contrary to Dee cited in Akiri and Ugborugbo (2008). Yala and Wanjohi (2011) and Adeyemi (2010) found that teachers' experience and educational qualifications were the prime predictors of students' academic achievement.

In other views and reports as to the comparative ability of male and female in human endeavors, especially in education. A survey conducted by Okunamiri (2008) on teaching effectiveness of male and female teachers in Imo state, Nigeria revealed that female teachers are more effective than their male counterparts in the management of instructional delivery, while the male teachers are better in school-community relationships. Fauth (1984) also noted that women have been found to be more concerned than men about the academic achievement of students and participate more in professional growth activities.

Geographic locations of teachers' developments are also vital factors that affect the academic achievement. Although it has become established fact that urban schools tend to have better results than rural schools, yet, given the necessary qualified staff and equipment, rural schools will perform comparatively well as schools in the urban centers in School Certificate Geography examination.

According to (Owoeye & Yara 2011; Wambugu, 2006) school location and teaching approach that a teacher adopts are determining factors that may affect students' motivation and

academic achievement. Observably, Alordiah, Akpadaka, and Oviogbodu (2015), study showed that there was significant difference between the performances of urban students and rural students. The urban students performed higher than the rural students. The urban students performance may have be influence by other factor like teachers' qualification, availability of instructional materials, well equipped laboratory and workshops amongst others than the rural students as a result of teachers not wanting to go to rural schools to teach, students spend so much time on farm work at the expense of the time they should spend on their study.

Teachers in public secondary schools are likely to be more academically qualified than teachers in the private schools. The reason is that Government will not recruit persons who do not have teachers certificate, obtained in a teacher training institution. Teacher Training education refers to the professional education of teachers towards attainment of attitudes, skills and knowledge considered desirable so as to make them efficient and effective in their work, in accordance with the need of a given society at any point in time. It includes training and education obtained before commencement of service (pre-service) and during service (in-service or on-the-job). According to Miller, Bakare and Ikatule (2010), technical teacher is an individual who is trained in pedagogy and technical area of a particular subject to impart knowledge, skill and attitudes to students in an institution. Thus, teachers have the important role to play to adequately prepare the students to enable them play their role in the society in order to achieve the set national objectives. These objectives cannot be achieved without good skills and experience of the technical teacher.

There are skills and experience needed to carry out specific tasks or assignments for effective service delivery while teaching. One of the specific experience is subject matter knowledge, a technical teacher must have in-depth knowledge of the curriculum of specific subject areas that gives the knowledge of how to teach a chosen subject. Another aspect is the

use of teaching methods and techniques. A technical teacher should have a knowledge on the principle guiding the choice of appropriate teaching methods that ensures students attention and participation depending on the subject matter. Some teaching methods and techniques have been proven to be effective for the teaching technology-based subjects. Examples are demonstration method, discussion method, project methods and laboratory/workshop method.

Classroom/laboratory management is also an important skill and experience needed by technical teachers, Brophy (1986) defined classroom management as the ability to establish, maintain and restore classroom as an effective environment for teaching and learning. It's is expected that teachers organize the classroom and laboratory in such a way that stimulates students attention at all times during learning process. The evaluation technique of a technical teacher plays another important role in classroom instructional process. In teaching and learning, the use of effective instructional materials by a technical teacher cannot be overemphasize, Instructional materials and media are visual carriers of information selected by the teacher to help learners achieve learning objectives.

All these skills and experiences are approaches to enhance teaching and learning required by technical teachers, in teacher training program. The need to provide education for teachers of basic technology in Nigeria as a means of encouraging secondary school program delivery have become obvious, as clear understanding of the concept of teacher training education is vital to clarify teachers on the basic concepts associated with the subject. This is to make teachers competent in their various areas of specialization.

LaBoskey (2006) stated that, the kind and quality of training, development opportunities and culture in which a teacher works will influence their promotion of lifelong learning values and their ability to help students learn. Teacher training education has policies and procedures designed to equip prospective teachers of Basic Technology the knowledge, attitudes and skills

they require to perform their tasks effectively in the classroom. The institution that train technical teachers to teach basic technology in upper basic school is college of education (technical). Two college of education (technical) were also established in 1967.

The National College of Education (Technical) program is such that the technical teacher graduates are equipped in all engineering discipline in addition to pedagogy knowledge and skills. So in the three years program, year I and year II students offer courses in : Automobile, - Metal work, Building/woodwork, Electrical/electronics. In the third year, that is the graduation year the students offered courses only in special areas. At the end of the programs, technical teacher grandaunts are offered N.C.E (Technical) in the following areas: Automobile Technology; Building/woodwork Technology; Metalwork Technology and Electrical/electronic Technology

Teachers belong to the profession which has the potential to determine the social, economic, political and moral destiny of every Nigerian citizen. According to (Adewuyi and Ogunwuyi, 2002), teacher education is the provision of professional education and specialized training within a specified period for the preparation of individuals who intends to develop and nurture the young ones into responsible and productive citizens. Considering the multifarious nature of basic technology, teachers who are to handle this aspect of upper basic school subject ought to be well trained to cope with the challenges of the subject. All prospective teachers of basic technology need to be abreast with the following before they are considered competent: the content of the subject, proficiency in the use of technical tools and be skilled or knowledgeable in one or more areas of Basic technology.

Despite the fact that large majority of teachers in Edo State are now qualified they seem not to have the adequate knowledge and literacy skills in their chosen areas of subject specialization, (Teachers Registration Council, 2012). After the introduction of basic technology,

one expects that there should have been a better story about the quality of teachers teaching the subject. Many nations of the world had transformed their education systems and training systems, these reforms can make instruction delivery of basic technology to junior secondary schools in Edo State much more interesting and relevant to meet not only the needs of the society, but also the outside world as well.

Statement of the Problem

Quality teacher training education provides basic technology teachers with the ability to motivate, provide intellectual creativity and help students of basic technology fit into the social life of the community and society. Despite the rapid spread of technology around the world in recent time, there seems to be a decline in the teaching of basic technology in Edo State. This decline in effective teaching has been recorded through the academic performance of students in Basic School Certificate Examination (BSCE). The researcher observed that most teachers teaching basic technology in Edo state do not possess the basic added qualification needed for the effective teaching of the subject. Many of the teachers seem to lack the skills for teaching basic technology practicals, classroom management, effective teaching methods and evaluation technique, which are obtained through teacher training education.

Aina (2008) observed that out of all the militating factors against the full implementation of the basic technology program, the teacher quality factor ranks highest. The author observed that majority of the teachers employed to teach the subject cannot handle all the modules. Olaitan (2002) emphasized that a qualified basic technology educator for the junior secondary school should be able to teach basic courses in technical drawing, food storage and preservation, refrigeration, wood work, metal work, building and electrical/electronics technology.

Indeed, some of the teachers currently teaching basic technology in Edo state didn't study basic technology related courses in their higher institutions, while those who studied

technical related courses do not have the required added teacher training qualification. These deficiencies seem to have rendered many of the teachers incompetent in teaching basic technology Therefore, what is not yet clear to the researcher is the extent to which teacher training influence their effective delivery of instructions to students.

Purpose of the Study

The main purpose of the study was to ascertain training program on technical teachers' competencies in teaching basic technology among secondary schools in Edo State. The specific purposes determined the extent to which:

1. knowledge of subject matter influence technical teachers competency in teaching basic technology;
2. Skills of using instructional aids influence technical teachers competency in teaching basic technology;
3. Skills of using different instructional methods influence technical teachers competency in teaching basic technology;
4. Classroom management influence technical teachers competency in teaching basic technology;
5. Evaluation of students' achievement influence technical teachers competency in teaching basic technology.

Research Questions

The following research questions guided the study.

1. To what extent does knowledge of subject matter influence technical teacher competency in teaching basic technology?
2. To what extent does skills of using instructional aids influence technical teacher competency in teaching basic technology?
3. To what extent does skills of using different instructional methods influence technical teacher competency in teaching basic technology?
4. To what extent does classroom management influence technical teacher competency in teaching basic technology?
5. To what extent does evaluation of students' achievement influence technical teacher competency in teaching basic technology?

Hypotheses

The following hypotheses were formulated and tested at 0.05 level of significance.

H_{01}: There is no significant difference in the mean rating of male and female basic technology teachers in the knowledge of subject matter in teaching basic technology.

H_{02}: There is no significant difference in the mean rating of rural basic technology teachers and urban basic technology teachers in using instructional teaching aids for teaching basic technology.

H_{03}: There is no significant difference in the mean ratings of experienced basic and inexperienced basic technology teachers in the skills of using different instructional methods in teaching basic technology.

H_{04}: There is no significant difference in the mean ratings of public and those in private secondary schools in using different Evaluation techniques in teaching basic technology.

Significance of the Study

The findings of the study will be of great benefits to teachers, students, society, the ministry of education and educational researchers.

The findings will reveal areas where teachers need improvement in teaching basic technology to students, by identifying the required knowledge of subject matter with the use of instructional aids and instructional methods. The competencies identified could be used to train teachers of basic technology for effective teaching. This can be done through relevant workshops, seminar and conferences for stakeholders.

The students of basic technology will also benefit from the study with proper classroom management, if the identified findings are used to train teachers of technology who are the chief implementer of basic technology in schools. Improvement of these teachers will now affect the learning outcome of the students positively. The students will now understand the knowledge and skills in basic technology. Through the organization of symposium the students can be affected positively in choosing technology as career choices in the future.

The findings of the study will also benefit the Edo State Ministry of Education and the Edo state Post-primary Educational Board. The findings of the study will now reveal to Ministry of Education areas of basic technology where teachers need improvement. Workshops, seminars or conferences can now be organized for these teachers in order to enrich their knowledge in basic technology and appropriate methods of teaching it.

The parents of individual students will also benefit from the findings of the study, if implemented parents would be better informed on the expectation of their children who are expected to demonstrate meaningful technological skills and operations. Students trained by competent teachers become equipped with necessary skills and knowledge that would make them

meaningful citizens to their household and the society. Parents are better informed about basic technology through PTA meetings and awareness programs.

Scope of the Study

The study determined the competence acquired through teacher training in the teaching of basic technology in Edo State. The study specifically covered competency training needs of teachers of Basic technology in planning instruction, teaching the content of basic technology curriculum to students in junior secondary schools, classroom/laboratory management, using teaching methods and techniques and in applying evaluation techniques for the implementation of basic technology.

The geographical scope covered basic technology teachers in public and private secondary schools in Oredo Local Government Area of Edo State.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter reviews related literature under the following sub headings:

- Theoretical Framework
- Historical Development of Teacher Education in Nigeria
- Competency in Teaching Basic Technology
- Teaching the Contents of Basic Technology Subject Matter to Students
- Teachers Effective Use of Instructional Materials
- Teachers Competency in Using Teaching Methods and Techniques
- Teachers Competency in Classroom/Laboratory Management
- Evaluation Techniques for the Implementation of Basic Technology
- Application of ICT in Teaching Basic technology
- Teacher's Gender Significance on Student Performance
- Teaching Experience and Teacher Effectiveness
- Teaching Difference in Rural and Urban
- Teachers significance in public and private schools
- Review of Related Empirical Studies
- Summary of Related Literature Reviewed

Theoretical Framework (Models in teacher development)

The theory in teacher training development includes pre-service teachers development & beginning teachers growth, which highlight this study in order to support its line in exploring and analyzing teacher training. The rich experience of a competent teacher is an important theory that guides the teaching practice for student teachers during a training course. Vonk (1993) developed a theory of professional development for beginning teachers. It consists of three dimensions:

- Personal
- environmental
- knowledge and skills

✧ The personal dimension involves "self-concept by the teacher". It includes the teacher's knowledge of himself and ideas about "good practice".

✧ The environmental dimension involves the teacher's interaction with his or her working situation. It includes new responsibilities, and having to adapt to school environment as well as coping with expectations from colleagues.

✧ The knowledge and skills' dimension is concerned with pedagogical content knowledge, classroom knowledge and management skills as well as teaching skills.

Fuller (1960s) initiated a series of clinical studies to examine teachers training motivation, perceptions, problems, and attitudes toward teaching. In research of teacher professional development, Fuller's (1969) model of concerns has long been used to explain teacher training stages of development as teachers. In the model, Fuller (1969) theorized that teacher concerns can be classified into three distinct categories "self-concerns" which involves an individual's concern for their own survival related to their teacher preparation program; "task concerns" which focus upon the duties that teachers

must carry out within the school environment, and "impact concerns" related to one's ability to make a difference and to be successful with his/her pupils and the teaching/learning process. Fuller (1969) believed that as pre-service teachers move through their training, their concerns move from self to task, then to concerns impact.Fuller & Bown (1975) developed the following model of four stages:

✧ Pre-teaching concerns: becoming teachers have realistic interaction with their pupils, but unrealistic interaction with other teachers.

✧ Early concerns about survival: becoming teachers have some kind of ideas about their own success and survival. Also they have opinions about teaching contents.

✧ Teaching situation concerns: becoming teachers are worried about their own teaching, but they are not so much worried about pupils and their learning.

✧ Concerns about pupils: becoming teachers are worried about their own skills to recognize pupils, social needs, and their emotions.

They also worried about how to respond to pupils as individuals. A number of research about teachers' concerns have been conducted based on Fuller's model. For instance O'Connor and Taylor (1992) conducted concerns study on the students in California state University to ascertain what are the concerns of pre-service teacher based on progress through their professional programs.

Based on the findings,O'Connor &Taylor (1992) suggest that teacher educators need to have knowledge about pre-service and novice teachers' concerns and to address their concerns in order to decrease the rate of attrition of teacher candidates within their progress. Whether there are a cultural or social differences is also an interesting area of investigation.O'Connell's (1994) study indicate that the first year of teaching is not what the novice teachers expected and many of the previous beliefs and optimism had broken

in face of the reality. Thus, the degree of readiness that pre-service teachers are prepared for teaching is reflected in confidence and optimistic view held by them before and after teaching practice.

The images, metaphors and beliefs often seem to be established before student teachers begin their training as teachers and could be quite resistant to change (Korthagen, 1991).Based on that, you can see how it is important for student teachers to be knowledgeable about the subject matter they need to teach and how to organize that knowledge for learners in basic technology. Teacher of basic technology should be well structured in their discipline, because without this knowledge, they may misrepresent both the content and the nature of the discipline itself. Pigge & Marso (1989) discover that," student teachers becomes less concerned about themselves and more aware of classroom variables as they progressed through the practical teaching program.

Historical Development of Teacher Education in Nigeria

The idea of teacher training took its root from the need to train people to lead the missionary crusade of propagating the gospel during the early Christian missionary era (Ajayi and Ayodele 2002) The first teacher training college was founded by the Christian Missionary Society in Abeokuta in 1859. It was known as the "Training Institution". There were some hostilities in Abeokuta in 1867 that led to the expulsion of the missionaries from the town and that made the training institution to be moved to Lagos to become an arm of a Grammar School. However, the establishment of St. Andrew's College. Oyo in 1896 signaled a very landmark in the training of teachers in the country.

The pioneering efforts of the C.M.S were strengthened later by other missionary societies. For example, the Baptist Mission founded the Baptist Training College at Ogbomoso in 1897. The Wesleyan Methodist Missionary Society opened an institution to train catechists and

teachers in Ibadan in 1905 with four pupils (Ajayi and Ayodele 2002). Obviously, the business of teacher education started mainly as an exclusive missionary business. Durosaro (2006) posited that before independence, there were few secondary schools in the country with the bulk of their teacher expatriates and missionaries, most of whom had no teacher education. However, shortly after independence, there was a sporadic increase in enrolment in teacher training colleges owing to greater competitions in schools establishment among missions.

The establishment of more schools then, made the demand for teachers increase drastically. By and large, the teacher education curriculum then was geared towards the primary school teacher education only. A major event in the development of teacher education in Nigeria was the publication and implementation of the Ashby Commission report. The Ashby commission reported that there was an inadequate supply of trained teachers in the nation's secondary schools even while there was an increase in the demand for more secondary schools. The Ashby commission, among other things, recommended the training of more teachers for the nation's secondary schools, the establishment of more universities and establishment of the institution of a Bachelor's Degree in Education, where qualified teachers could be produced. B.A., B.Sc. (Education) degrees with fifty students were first introduced by the University of Nigeria Nsukka, in 1961. University of Ibadan followed suit in 1963; Ahmadu Bello University, Zaria 1964; University of Lagos in 1965 and Obafemi Awolowo University Ile – Ife in 1967.

Today most of the Universities in the country have faculties of Education where qualified teachers are produced. This makes teacher education a veritable tool towards educational development. This fact was given credence to by the National Policy on Education when it stated that Teacher education will be given a major emphasis in all educational planning, because no education system can rise above the quality of its teachers.

The policy emphasized that all teachers in the nation's educational institutions from pre-primary to University, would be professionally trained.

The policy stated the purpose of teacher education would be:

a). to produce highly motivated, conscientious and efficient classroom teachers for all levels of our education system.

b). to encourage further, the spirit of inquiry and creativity in teachers;

c). to help teachers to fit into the social life of the community and society at large and to enhance their commitment to national objectives;

d). to provide teachers with the intellectual and professional background adequate for their assignment and to make them adaptable to any changing situation, not only in the life of their country, but in the wider world; and

e). to enhance teachers commitment to the teaching profession (FRN, 2004).

Teaching Competencies for Basic Technology

School of Education and Allied studies at Bridgewater College found out the common teaching competencies for studying teachers, (Handbook, 2000): the following competencies were expressed:

- ✧ Subject Matter knowledge,
- ✧ Communication skills,
- ✧ Instructional strategies,
- ✧ Evaluation
- ✧ Problem solving,
- ✧ Deals equitably and responsibly with all learners,
- ✧ Professionalism.

Many studies have investigated the teacher knowledge and ability of teachers.

Fennema and Franke (1992) built up a model for examination and discussion on teachers knowledge as it occurs in the context of the classroom. The model, which shows interactive and dynamic nature of teacher knowledge, includes the components of teacher training knowledge of the content of Basic technology, knowledge of pedagogy, knowledge of pupils' cognitions, and teacher's beliefs.

Shulman (1986, 1988) also proposed a framework for analyzing teachers' knowledge that distinguished between different categories of knowledge: subject matter knowledge, pedagogical content knowledge, and curricular knowledge. Cochran et al. (1993) confirms that a teacher's knowledge and ability should include four aspects:

- ✧ Knowledge of a particular subject,
- ✧ Knowledge of common teaching ability,
- ✧ Knowledge of pupils' backgrounds, and
- ✧ Knowledge of teaching environment.

In addition, Krainer (1994) also proposed 4-dimentions of knowledge of basic technology teachers:

- ✧ Abilities,
- ✧ Attitudes,
- ✧ Reflection, and
- ✧ Autonomy and networking.

Leou (1995) mentioned that the teaching behavior evaluation instrument was applied to assess the teaching competency during student teachers' practice. This evaluation focuses on:

- ✧ The teacher's teaching skills,
- ✧ The material's organization and presentation,

- ✧ The learning environment created between pupils and teachers, and
- ✧ The teacher's teaching attitudes as four crucial aspects of teacher training.

The University of Alaska; (1997) publishes the teacher performance standards in nine areas as follows:

- ✧ Describe the teacher's philosophy of education,
- ✧ Understands how pupils learn and applies that knowledge in the teacher's practice,
- ✧ Teaches pupils with respect for their individual and cultural characteristics,
- ✧ Knows the teacher's content area,
- ✧ Facilitates, and assesses pupils learning,
- ✧ Creates and maintains a learning environment,
- ✧ Works as a partner with parents and with the community,
- ✧ Participates in and contributes to the teaching profession, and
- ✧ Uses instructional technology as a tool to enhance pupils learning.

Competency in Teaching Basic Technology

Competency is a knowledge, skill, or attitude that enables one to effectively perform the activities of a given occupation or function to the standards expected in employment. It involves knowledge, skills and attitudes. International Labour Organization (ILO, 2004) described competence as the knowledge, capabilities, skills and behavior which someone exhibits in doing his job.

To achieve sustainable development, the Government of Nigeria introduced Basic Technology into the junior secondary school curriculum for children to learn. Basic Technology is an integration of components of woodwork, metalwork, basic electronics, applied electricity, water flow technology, airflow technology, food preservatives, automobile, technical drawing, physics, rubber technology, chemistry, plastics, basic building technology, and ceramics. Basic

Technology gives opportunities to students to use tools and machines, which are used in the industrial processes. This helps to develop good attitudes towards technology and the industry. Uwameiye (2002) reported that through Basic Technology, students are helped to explore the various areas of technology towards making intelligent career choice. Developing teachers competencies in teaching Basic Technology which is the only core subject among the prevocational subjects of the Junior Secondary Schools in Nigerians key to ultimate innovations for comfortable environment for man.

The study of Basic Technology has three main objectives as stated by Federal Republic of Nigeria (Federal Ministry of Education, 2004):

1. to provide pre-vocational orientation for further training in technology;
2. to provide basic technological literacy for everyday living and
3. to stimulate creativity.

Federal Government of Nigerian (2004) stipulated that a pre-vocational course (Basic technology) be studied in Junior Secondary School that is aimed at instilling appreciation of technology, creation of awareness; acquisition of knowledge, work habits and attitude as well as orientation to basic manipulative skills. The National policy on Education (2004) expressed some concern about correcting the society's attitude to technology as well as providing trained manpower at the sub – professional level for the technological development of the country. According to Fasikun (2005) Basic technology is expected to be a foundation on which future technological development and skills can be built either in technical colleges or secondary schools or tertiary institutions for those who will proceed to higher levels. It is a practice – oriented course where practical application of day – to – day learning is enforced for proper technological awareness and skill development (Olorunselu, 1990).

The practical aspect of the subject will lead to basic manipulative skills, acquisition of work habit and attitude in hope to be taught as practical topics using equipment and tools. According to Fasikun (2005) Basic technology is taught in many secondary schools from first year to third year without any practical or demonstration lesson. He said that the ugly situation has been attributed to many reasons which range from unqualified teachers to lack of equipment. In order to achieve the objectives of National Policy on Education in the area of qualified technical teachers, the National Commission for Colleges of Education Structured a program that is aimed at producing NCE graduates competent to teach Basic technology at Junior Secondary School level with a view of attaining the following objectives specified by the Federal University of Education Printing Division (1985);

(i) To provide the youth in Junior Secondary School a pre – Vocational orientation for further training in technology,

(ii) To stimulate creativity

Aghenta and Abu in Fasikun (2005) observed that many basic technology teachers are not performing well. Ojidu (2007) said that basic technology was structured to assist learners to develop interest in technology. The aim is that at the end of the Junior Secondary School, technological Ignorance will be reduced and solid foundation laid for students' entrance into a vocation of their Choice. This statement is in consonance with the National Policy on Education (2004) curriculum for Junior Secondary School, which states, "In order to reduce ignorance about technology and to help lay a solid foundation for national development, Basic technology as a subject is to be offered in Junior Secondary School.

However, the extent to which Basic technology succeeds in actualizing these objectives is contingent upon adequate supply of professionally qualified and competent basic technology teachers in the secondary schools, availability of instructional materials for both teachers and

students and development of favorable attitudes on the part of teachers and students (Ojidu, 2007). Basic technology is a multi-disciplined subject that has a wide curricula offering in different areas of engineering, food science and applied technology. Concepts are carefully selected and serve as very useful introduction to technology for the nation's children. This is with the belief that development of technology begins from the society and ends with the society, and in every technology, the overall aim is to exploit the existing scientific and other knowledge for useful ends. Basic technology involves academic and practical study of materials, source of energy and natural phenomena with the ultimate intention of applying these to the service of humanity (Elekwa, 2003). The objectives of basic technology in the school system according to the Comparative Education Studies and Adaptation Centre (C.E.S.A.C, 1999), are to provide pre-vocational orientation for further training in technology; to provide basic technological literacy for everyday living and to stimulate creativity. Technology makes the learners get familiar with the environment. The learner is oriented properly into work habits toward technology.

As the nation enters the 21st century and strives toward technological growth and overall national development, the strategic importance of Basic technology is recognized. It is only when technology is understood that it can be adapted to suit local environment, that the concepts could be applied to problems of society. A technologically literate individual is more advantaged to succeed in personal and community life than one who is not (FGN, 1998). As envisioned in the National policy of Education (1998), a thorough understanding and application of basic technology principles and concepts right from schools is capable of empowering learners to tackle problems confronted in real life situations. As Nwagbo (2000) explained the study of Basic technology enables one to become more aware of one's changing environment, explore it better and be better adapted to it. Ojidu (2007) said that Basic technology is expected to equip the learners with the needed skills for laying of solid foundation for lifelong learning. For the

learners to acquire the appropriate level of literacy, numeracy, manipulative, communicative and life skills there is need to expose the child to appropriate instructional materials which will provide an effective communication channel to the learners.

The Basic technology curriculum is so planned to enable students acquire the scientific and technological skills to function effectively after 3-tier system of education in the world of work if so desired and for further studies. Despite the government's effort in terms of resource provisions the teaching and learning of introductory is in poor state (Nwoji, 2003).

Teaching the Contents of Basic Technology Subject Matter to Students

Effective teaching of basic technology requires competencies. Competencies based on the subject matter are the first quality every teacher of basic technology must possess. No one can teach what he/she does not know. Gbamaga (2002) stated that a teacher must know the subject he is going to impact to the learners and that without a good background of the subject matter the students will lose confidence in the teacher and the teacher may soon lose his or her job if the employer gets to know that he actually has nothing to offer. One good way a teacher can maintain a sense of scholarship is by reading continuously in addition to whatever they may have graduated with and also to keep abreast of research and new publications in his or her specialized field. Olaitan (2003) also stated that subject matters may be defined generally to mean a broad field of study made up of array of knowledge, skill and attitudes which an individual must acquire to become professionally competent contributors to the growth and development of his immediate family, community, state and nation.

The world is turning into a global village where students are liable to be exposed to all sorts of new knowledge in their subject areas such as new technological developments, which make it very crucial for the teachers to be competent in the subject matter. If the teacher lacks the practical knowledge or skills, it will be difficult to impart necessary skills to the students and as

such no maximum result will be obtained in the training. Teachers of Basic technology must be grounded in all the contents of basic technology to be taught for effective assimilation to take place. Many teachers enter the field with a moral purpose, the ability of teachers to serve as change agents relies on four core capacities Personal, vision, inquiring, mastery and collaboration. Fullan (1993 argued that those capacities are not developed individually but must be nurtured and consciously developed in a professional setting.

Professional development programs can serve as a space to purposefully develop these alignments of school reform and professional development. Little (1993) discussed streams of reforms, two of her streams lend relevance in considering of how teacher training education programs can help teachers of basic technology develop the capacities of change agents. First Little (1993) described models of professional development that focus on developing extensive subject matter, knowledge pedagogy that depart from test-book centered teaching and instructional design which engages students in learning. This type focuses on building mastery of basic technology knowledge and developing of pedagogical content knowledge (Shulman, 2000). The second stream of professional knowledge of pedagogy that departs from text-book centered on teaching. The second stream of professional development experiences centers on problems of equity and aims to assist teachers to identify and alter classroom practices that contributes to failure and that undermines equal opportunities to learn (Shulman, 2000).

It is the responsibilities of higher institutions to produce competent teachers in basic technology for effective teaching in secondary schools. Some of the difficulties encountered by teacher in the teaching of basic technology in secondary schools, he stated that teachers try to teach as much in a lesson and failing to provide enough time, teaching facilities etc in the lesson which makes the learning and understanding of certain principles being taught difficult. According to Federal Ministry of Education (FME) (2002), Nigeria is in very short supply of

professional textbooks, training manual and instructional media. The scarcity of professional textbooks and training manuals is a national threat to the technological development of the nation if professional text book, training manual and instructional media are not available for teachers and students to work with. It is essential for teachers of basic technology to be competent in both theory and practical skills. Olaitan, Nwachukwu, Igbo, Onyemachi, Ekong (1999) stated that the teachers should teach knowledge before skills. They further reported that "for effective learning to occur the learners should have good command of this information before practicing based on the knowledge of the subject matter and knowledge of how to teach subject would still not enable a teacher to be of maximum value in his profession.

A good teacher of basic technology must have an in-depth knowledge of other subjects of the curriculum which is of social and economic aspect of education or background that broadens ones knowledge and outlook thereby attaining the goals of educational system. Gbamaja (2002) also stated that having mastered the subject matter very well the teacher must possess certain qualities which are largely physical, psychological, emotional and intellectual competence in order to be effective. Some of the qualities include:

i. Good personality
ii. Ability to understand child psychology
iii. Ability to inspire learners
iv. Resourcefulness, and skills to improvise
v. Ability to observe and evaluate

It is therefore necessary for teachers of basic technology to be equipped with knowledge of the subject and skills for effective teaching. They should also have the capacity of creating a perfect teaching and learning atmosphere in the classroom.

Teachers Effective Use of Instructional Materials

In learning process, instructional materials attract students' attention and interest on the subject being taught and maintaining their attention alive during learning process. It enables a comprehensible and an efficient teaching to occur. The more the sensory organ of the students are addressed the more efficient and permanent learning will be. For this reason teachers have to use the instructional materials in order to address the sense of the students as much as possible. Besides, the rapid improving technology increases the instructional alternatives in the educational system. Jonassen and Reeves (1996) stated that instructional materials that are used efficiently have the potential to improve the educational system.

Odabasi and Namlu (1997) in their research about the perception of instructional materials, stated that classroom teachers generally demonstrated little knowledge and skill about using computers and other devices for instructional material proves a major problems among teachers in secondary schools. It is therefore pivotal for computer studies teachers to attain and maintain an assure degree of technological competence o make instructional materials more effective, consequently it allows them to become more efficient in dealing with their daily tasks. According to Hango (2004) instructional materials play an important role in the communication process for effective learning therefore, systematically prepared instructional materials enhance communication leading to effective teaching and learning. Instructional materials assists teachers to teach effectively and also assist the learner to grasp contents and practice easily.

Similarly teaching and learning aid helps both the trainer and trainee in the process of teaching and learning (Mtunda and Safuli, 1998). However the aid or instructional material must be carefully designed, selected and skillfully used in order to bring about effective teaching and learning. However, Mills (1982) argued that talking is not teaching and neither is listening learning. For effective learning, the teacher, subject matter, know-how, nature of the learner and pedagogy form a critical interface. Teaching only takes place only when learning has occurred.

The teacher performs the teaching activities with the purpose of helping learners of diverse personalities and backgrounds to assimilate planned content. Therefore the teacher has to select appropriate content and activities, synthesis the desired conduct of the learner decide on methods to use, emphasis to make, values to prefer, conditions to strive for, changes to advocate and make efforts to accomplish the purpose of education. Instructional materials or media are carriers of information that are selected to help learners achieve their objectives, Hango (2004). These can include printer, monitor, printed matter, diskette, CD ROM ,DVD ROM, System units, or other basic technology machines. However to effectively teach basic technology, one has to develop the required skills and competence to handle these instructional materials.

It is with the aid of these instructional materials that the teacher would be able to teach effectively in the classroom and also help the learners to understand what is being taught more easily. There are several types of teaching and instructional materials categorized as projected and non projected. Hango (2004) described projected instructional materials as media format where still images are enlarged and displayed on a screen like the overhead projectors, cinema projector, opaque projector, slide projector and LCD projector. Brown (1982) added that projected instructional materials are said to be more effective especially in higher learning because they clarify and assist meanings which words cannot portray. It is also suitable for large groups but very expensive in capital layout and maintenance, it also requires that the teachers should be well trained for the development and correct use.

Teachers Competency in Using Teaching Methods and Techniques

Teachers of basic technology are also expected to be competent in applying appropriate teaching methods or techniques. Teaching methods or techniques are important in any educative process. The teacher has to employ very rich methods and select suitable ones among them .The method will not only provide students with knowledge but it also must develop skills of

cooperative learning, discussion and social relations of students of the same time (Journe, 2007). In research about the perceptions of instructional materials, classroom teachers generally demonstrated little knowledge of technologies (Odabasi and Namlu, 1997).

Teaching methods according to Ogwo (1996) "is a recurrent pattern of teacher behavior, applicable to various subjects matters, characteristics of more than one teachers and relevant to learning". According to them methods are described as recurrent because they are repeated over interval measured in minutes or weeks that teaching can also been said to be instrumental process such as pattern teacher behavior, for example lecturing, discussion and so on. Delivery systems for curriculum such as film, programd instruction, printed matter etc are also organizational structures for promoting learning.

The instructional processes promoted student learning of different kind of various subject matters. Ericson and Andrews (1976) argued that there exist a vast literature on teaching techniques or methods conceived as classified by different authors, some teaching methods ends up in instruction in instructing in education. Pedagogy requires that teachers avoid confining to one teaching methods, teachers are advised to use various methods. Among the various difficulties experienced by teachers of basic technology is not being able to use adequate teaching methods.

Basic elements of several types of teaching methods may appropriately be combined for best result depending on the age of the students and the type of subjects matter being taught. This is where teachers select good but not all can be used at the same depending on the age and level of the students. Ukeje (1991) stated that no teaching method is more efficacious than the other. But in a strict sense, some methods are more suitable for teaching certain contents that is skill, knowledge and values and so on. A good teacher knows the principle guiding the choice of teaching method and stick to them in all situation, the teacher chooses the best suited for the

subject matter considering the students ability available materials and the time her own capability. Olaitan (2003) also supported the concept that many expert will prefer the instruction separated from the curriculum and call it methodology which will include methods and techniques of teaching or various delivery system. According to Ogwo (1996), it is the teachers personal qualities compiled with his professional competencies and the age of the learners that makes for effective teaching". Any effective teacher is aware that any method of teaching employed without due consideration for the learner will not be successful.

Some of the methods found effective in teaching technology based subjects are demonstration method, discussion methods, the lecture methods, project methods and laboratory methods. Demonstration method means teaching through displaying something that is audio-visual explanation of an idea process or a product. It involves showing, doing and telling the students the point of emphasis. It is mostly used as a technique within a method of teaching and sometimes used as a method by itself. The method is most effective methods in teaching skill or performance oriented subjects either in the sciences or art, the method is executed by examples and activities by the teachers while the learner observe and listens, thus the demonstration tasks the learners sense of sight and learning. This method could be given to the entire class, small group of students or to an individual. It requires careful planning and skilful execution where the method is used as an adjunct to another method or solely used, the teacher needs to plan well, organize the materials and skillfully present the demonstration exhibition and high degree of craftsmanship. Farant (1980) also supporting the contribution, Taylor (1987) said a little practical demonstration can make an incredible increase in speed and efficiency with which information is passed on to the learners.

The lecture method which is also referred to as the talk chalk is the traditional methods of teaching which many modern educators consider as out dated but it is still prevalent in the

education system in parts of Nigeria. Large amount of materials could be covered to a large class size in single period; it involves verbal presentation of ideas, concepts, generalization and facts. This method is not recommended for those in the primary school and lower secondary school level because of their level of development Gbamaja (2002) stated that the art of lecturing is a difficult one which requires that the teacher should undergo some training and continuous practice so as to achieve the required standard of performance. The teacher needs to have at his disposal to a variety of skills that do come as a result of natural endowment of which these skills must be developed except in exceptional case.

Discussion method is when two or more people interact verbally with each other. It could be considered as a technique within a method, it is a method that could be adopted deliberately in a learning situation (Gbamaja, 2002). Sometimes it occurs spontaneously as a teacher uses one method of teaching or another. It may also occur at brief intervals during informal lecture. It involves talking over subjects from various points of view and the teacher's role is not to dispense or communicate knowledge but to act as a moderator, she does not dictate or influence the viewpoints of the student as he moderates the discussion.

Project method is learning activities selected, planned, designed and executed by learning collectively or individually clarifying factors, acquired new knowledge skills appreciation and to solve identified problems under teachers guidance and supervision. Okoro (1993) reported that "in the planning of a project students may have to list the major steps in doing the project, make needed sketches, list the tools, equipments and materials required and state the procedures to be adopted in the assembly of the project. Okoro also remarked that in project methods, students are not usually told exactly what to do but are expected to participate in the planning of the intended project.

Another method is the laboratory method; the concept of laboratory work has extended from science affair to almost all other disciplines. Laboratory work is no more restricted to science alone. Laboratory method of teaching involves observation, experimentation or application by individual or small groups dealing with actual materials. This method is not restricted to a classroom called laboratory alone but it cuts across environments outside the classroom that provides practical work to give first hand experiences to the learner. Subjects like English or literature are in modern times taught in specialized laboratories equipped with tape recorders, cassettes and earphones, instead of scientific apparatus to do science experiments (Gbamaja, 2002). Teachers are therefore expected to be effective in using appropriate methods for teaching contents of basic technology. The choice of any method should however be based on stated objectives and the objectives must be stated in term of anticipated change in students behaviour that can be measured.

Teachers Competency in Classroom/Laboratory Management

The term management is the skillful handling or use of something such as resources. It involves the act of controlling, directing, supervising and so on. The classroom teachers does all of these and more in his managerial role in the classroom. Many productive system, whatever its aim and technology, require management, it must have leadership and direction, supervision and co-ordination, constant evaluation and adjustment. Brophy (1986) also defined classroom management as the ability to establish, maintain and restore classroom as an effective environment for teaching and learning.

Brophy added that it is particularly true of teachers working in urban schools where potential management problems tends to be more intense and numerous. Management depends on preparations, clarity about expectations, rules and procedures, instructions and opportunities to practice desired procedures and receive feedback, giving reminders to desired procedures at

times when they are supposed to be implemented, consistent monitoring of the students and follow through with intervention when necessary. Ericson and Andrews (2006) believed that the ability to manage and discipline is quite important because students are not in the position to take upon themselves more leadership responsibility than is delegated by the teachers nor can they be expected to take initiative in participating in class management.

Ericson and Andrews are also in opinion that it is expected of the teachers to organize the classroom and laboratory that the students may receive maximum benefit from assisting in problems of laboratory routine as well as from performing individual practical work. Successful classroom and laboratory management according to them depends on some conditions, some of which are interest, understanding, careful planning by the teacher and a suitable working condition. Basic technology laboratories have expensive facilities that are very complex in nature. It requires the active involvement of the teachers in planning, directing and controlling training facilities for the purpose of learning skills. When a laboratory is clean and bright with the equipments located in their appropriate places, it will give an impressive look to facilitate instruction and effective learning. Olaitan et al (1999) stated that a business -like laboratory stimulates and attracts new interest and capable learners because the facilities and their setting are impressive and therefore the learners would like to be identified with the program.

There are several reasons for maintaining a good laboratory and classroom management and they are outlined as follows:

i. A well arranged laboratory facilities instruction

ii. An orderly laboratory fosters students learning because a comfortable environment stimulates learning.

iii. A well maintained laboratory provides a safe setting in which the teacher and her students can work.

iv. When students work in a well managed laboratory, they come to learn acceptable occupational work habits and procedures.

Some of the social agents in the laboratory is that the learners bringing in anxiety and antagonism from home, playground and other extra -curricular activities of the learners Olaitan et al .(1999).They also reported that a well managed tools and equipments in any occupation will provide learning effectiveness but challenging and existing to all the users of the laboratory. Therefore teachers' effectiveness in managing classrooms/laboratory determines learning outcome of the students or learners. Competencies improvement need of Teachers of basic technology must be determined in for effective management of laboratory of basic technology.

Evaluation Techniques for the Implementation of Basic Technology

The primary and basic aim of evaluation is to find out how much knowledge students have, how much progress is being made which helps to reveal the extent to which the objectives of the program are being achieved. Evaluation plays an important role in many facts of the school program. It contributes directly to the teaching and learning process used in classroom instruction, curriculum development, making and reporting, guidance and counseling, school administration and research. Okoro (2005) stated that evaluation is useful in the evaluation of teacher ability and effectiveness.

When a teacher evaluates his students he is directly evaluating his own ability and effectiveness as a teacher. If students consistently do badly in examinations, it could be that the teacher has been incompetent and has not presented and taught his lesson in an interesting way. Norman (2001) stated that teachers' observation and judgments of students' behavior are of special value in those areas where the behavior is readily observable and the teacher special competencies to judge. It is therefore unnecessary to say that evaluation is the appraisal of the worth or value of a thing or action and making of appropriate decision on the basis of such

appraisal (Okoro, 2005). The author alleged that evaluation has to do with collection of data and use of such data to assess the effectiveness or quality of performance or program. When people choose between alternative lines of action they do so on the basis of an evaluation of the factors involved.

Brophy (1986) raised some important points about students evaluation which is often regarded as being essential for the benefit of teachers and administrations. Properly used evaluation procedures contribute to improve students' learning through.

i) Clarifying the nature of intended learning outcome
ii) Providing feedback concerning learning progress
iii) Providing short term goals to work towards providing information for overcoming learning difficulties
iv) For selection of future learning experiences.

It is therefore essential for teacher of basic technology to develop the necessary competence needed for the effective use of evaluation techniques. According to Houston (2001) information from carefully developed evaluation technique can also be used to evaluate and improve instruction. Okoro (2005) also stated that evaluation of students' performance can be categorized into the following.

i. Context evaluation- which involves the assessment of course and program objectives

ii. Input evaluation- which helps to evaluate the teachers ability and effectiveness.

iii. Process evaluation – which involves the assessment of instructional methods and determination of the level of knowledge or skill possessed by students if done at the formative stage of the teaching and learning process

iv. Product evaluation- which determines the level of knowledge or skills possessed by students if done at the summative stage of the teaching and learning process.

According to Ogwo and Oranu (2006) evaluating the input provides information on program needs in terms of facilities, funds, equipments, materials, personnel and other resources involved in a program. Process evaluation on the other hand is a technique which provides periodic feedback on the quality of implementation of a program and determines if there are any defects in the implementation process. It also provides information for interpreting program outcomes (Olaitan and Ali, 1997). Product evaluation on the other hand is an evaluation not of procedure adopted but of final product itself (Okoro, 2005). Product evaluation is not interested in the procedure adopted in answering a performance test but in the product on objective produced. Therefore for teachers to use these evaluation techniques effectively they must have the skill or competencies required to carry out these evaluation techniques.

Application of ICT in Teaching Basic Technology

No matter how undeveloped countries might be, virtually most of them recognize that ICT development is the key to future prosperity. Therefore, teachers‟ pedagogical content knowledge in era of technological advancement must develop to take account of ICT, noting that the speed and extent of the development can vary between teachers depending on their degree of confidence and competence with these technologies (Kennewell & Beauchamp, 2008). Ajelabi, (2005), opined that individual differences among learners can influence the outcome of instruction. In recent times, many researchers have lamented on the integration of ICT into the curriculum as a major factor for curriculum developers. Some based their criticism on teachers not been taught in their training institutions, inability of teachers to decide the appropriate use of it for instruction, lack of teachers‟ knowledge of subject matter and so forth.

According to Kemmis et al. in Tella et al., (2007), there are three main approaches to ICT which can be taken by teachers. They are as follows;

i. Integrated Approach: planning the use of ICT within the subject to enhance particular concepts and skills and improve students‟ attainment. This involves a careful and considered review of the curriculum area, selecting the appropriate ICT resources which will contribute to the aims and objectives of the curriculum and scheme of work, and then integrating the use of relevant lessons.

ii. Enhancement Approach: planning the use of an ICT resource which will enhance the existing topic through some aspects of lessons and tasks. For example, using an electronic white board for presenting theory about a topic. In this approach, the teacher plans to complement the lesson with an innovative presentation method to promote class discussion and visualization of problems.

iii. Complementary Approach: using an ICT resource to empower the pupil‟s learning, for example by enabling them to improve their class work by taking notes on the computer, or by sending home work by email to the teacher from home or by word processing their homework.

Therefore, educators have shown concern on how instructional needs are met while making use of ICT as a mode in instructional delivery. Some amongst many ways in which include the following:

i. Computer Managed Instruction: This refers to program that evaluate and diagnose students‟ need, guide them through the next step in learning and record their progress. Onasanya (2009) citing Harold (1981) classified the functions performed by computer managed instruction into two as follows: the function support- for basic users, including students, instructors, administrators and curriculum developers and evaluators- and the instructional management related functions- such as diagnosis of students, making prescription based on results of test, monitoring the performance of students, allocating or scheduling the instructional resources specified by the prescriptive process and reporting through storage in the data base for records.

ii. Computer Aided Design (CAD): These are graphics software which offers a variety of 3-dimensional modeling and visualization features. They allow images to be rendered completely, dangerous events to be simulated and making tedious tasks to be easier and less time consuming.

iii. Computer Assisted Instruction: Though popularly referred to as CAI, it has several nomenclatures such as Computer Assisted Learning (CAL), Computer Based Learning (CBL), Computer Based Training (CBT), etc. it is an interactive technique which allows computer to be used for presenting instruction and also monitor the process of presentation. It can be used in the classroom in the area of drill and practice, tutorial, simulation demonstration, designing, data collection, analysis and games.

iv. Programming: this is the art of conceiving a problem in terms of the steps to its solution and expressing those steps as instruction for the computer to follow. Students and teachers can develop their program using special computer programs like BASIC, FOTRAN, COBOL, etc.

Therefore, knowledge in the use of computer technology such as privacy and artificial intelligence, skills in flow charting, skills in software and hardware maintenance, etc. would also be of beneficial knowledge in the process of using ICT for classroom instruction. Teachers should endeavor to integrate ICT in teaching as it provides different modality to instruction and also makes it less cumbersome.

Factors Influencing the Teachers Training program

Kagan (1992) defined, "Professional growth as changes over time in the behavior, knowledge, images, beliefs, or perceptions of novice teacher". She added that in her review about professional growth among preserves and beginning teachers: " there are many personal and contextual factors that can affect a novice's

(i) acquisition of knowledge about pupils and

(ii) ability to use that knowledge to modify pre existing beliefs and images.

Hollings worth (1989) identifies four factors that appears to affect the acquisition of classroom knowledge by the teacher trainee:

(1) their images of themselves as learners,

(2) an awareness they need to temper initial beliefs and come to terms with classroom management,

(3) the presence of a cooperating teacher who is a role model that facilitate growth,

(4) placement with a cooperating teacher whose ideas and practices were some what different from the student teacher's beliefs.

In the model of Niemi (1989, 1992) teachers growth and teachers professional development are involved together and you cannot separate them. Niemi says that teacher profession is an ethical profession and teacher development is a pedagogical process and it will start very early in primary school. Teacher growth contains professional skills, the stages of the personal growth and cognitive processes (meta cognitive areas).

In the model of Bell & Gillbert (1996), is show that professionalism contains different teaching strategies, beliefs and concept of development. Therefore, professional development contains changing concepts and beliefs about the person's own subject matter and teaching and learning. Personal development contains an individual teacher development, emotions and beliefs about education and instruction. The cognitive development contains teacher's meta cognitive consciousness about her/his own learning. And the social development contains cooperation with other people.Some researchers (Kagan 1992, Kow 1994) have tried to understand teachers professional growth with qualitative methods.

They have stressed on prospective teachers' cognition, beliefs and mental processes. Kagan (1992) formulated the theoretical model of student teachers that enter the

university with personal beliefs about environment, children and pupils and with some pictures about themselves as teachers. Further she found that at the beginning of the study student teachers focus on themselves and step-by-step they build and rebuild the picture of teacher and get more skills to solve problems and to interact with different people.

Some studies indicate that the student teachers in their study move from concrete, undifferentiated thinking to more flexible, integrated thinking about educational matters, While Grossman & Richert (1988) reports that student teachers "felt they had learned practical survival skills, which they believed to be invaluable in their professional preparation". On the other hand many student teachers persist in viewing teaching as showing and telling, and learning as memorization (Calderhead, 1991; Mc Daniel, 1991).

One can summarize that student teachers are surrounded by a collection of pressures in the school site, as follows:1.Learning to cope with procedural unknowns. (Britzman, 1991).2.Feelings of insecurity over the curriculum. (Bullough, 1992).3.The evaluations of supervisors. (Hollingsworth, 1993).4.The wider school context. (Liston & Zeichner, 1990).

Problems of Pre-service and Teachers Trainee program

There are problems faced by beginning teachers. Many educators in Jordan say that there is lack of pre-service education directed towards student teachers in their practice teaching. This is followed by what is going in schools during practice teaching, and highlights the problem that faces the student teachers. In the same context, most educators allover the world agree that the formal initial pre-service training is inadequate for beginning teachers to successfully perform their teaching duties in the classroom. Yandila (1995) say that there are problems in the area of teachers of Basic Technology and that focus in:

1.Determining what part, depth and extent of the content should be taught;

2..Designing lesson plans and running them;

3.Timing their lessons, disciplining pupils in class and motivating them to learn.

4.Lacking knowledge of the individual pupils they teach.

Although, Hawk (1994) says that beginning teachers in Basic technology do not have problems with the knowledge of content of their teaching subjects. However, if the content was not covered during their courses at the university, they have serious problems to teach it. Consequently, beginning teachers lack mentors in their schools to assist them settle down in their teaching profession.

The importance of mentor-ship is well documented in many studies of beginning teachers (Bey & Holmes, 1990; Brooks, 1987; Huling-Austin,1990; Huling-Austin et.al. 1989). Jaus (2001) says that in her study of using the INTASC (Interstate New Teacher Assessment and Support Consortium) standards to understand and analyzing the performance problems of student teachers, performance problems were defined as behaviors that did not meet the expectations jointly set by university and public school professions; including knowledge, skills and dispositions expected of competent beginning teachers.

The types of performance problems that student teachers had, particularly in their efforts to individualize their planning, instruction, classroom management, and assessment to meet the needs of all pupils. At the same time there were another type of problems that arose from the student teachers personality and demeanor, time-management skills, and organizational abilities. Furthermore, These types of problems are reflected in the literature on beginning teacher development. Therefore, student teachers should receive additional training on the job or at least be assisted by their former instructors or senior teachers in their schools. This takes different forms but it aims to help them and decrease their problems that could be brought by the teaching environment both in and outside the

classroom.

Teacher's Gender Significance on Student Performance

Gender gaps in educational outcomes are now a matter of growing concern to educational researchers today. Boys are increasingly less likely than girls to attend school. Meanwhile, female continue to be under- represented in such technical fields as engineering and computer science. One popular, if controversial, response to these patterns has been a renewed push for single-sex education – an effort that has drawn support from across political divides (Dee, 2006).

Regardless of the academic subject, boys, according to Dee (2006) are two to three times more likely than girls to be seen as disruptive, inattentive, and unlikely to complete their homework. However, how boys and girls view academic subjects vary across subjects in ways that parallel the gender gaps in subject test scores. But while boys and girls may exhibit different behaviours and prefer different subjects, Dee (2006) noted that it is not quite the same thing as having a different experience because of the gender of the teacher. The critical question here, therefore, is: Are there any evidences that teachers relate better to students whose gender they share or vice versa? According to Dee (2006), significant patterns can be detected within the United States National Educational Longitudinal Studies (NELS) data survey. He noted that when a class is headed by a woman, boys are more likely to be seen as disruptive, while girls are less likely to be seen as either disruptive or inattentive. Besides, when taught by a man, girls are more likely to report that they did not look forward to the subject, that it is not useful for their future, or that they are afraid to ask questions.

However, how these interactions may contribute to the gender gaps in educational outcomes also depends critically on the gender distribution of teachers by subject. The main policy implication of these results is simply to underscore that the gender interactions between students and teachers do appear to constitute an important 'environmental' influence of

educational outcomes for both girls and boys. A policy alternative might be rooted in the conjectured existence of stereotype threat among students or of biases in the teacher behaviour and expectations. Discriminating among these explanations and designing appropriately targeted policies is a promising avenue for shaping the gender patterns of educational outcomes.

Teaching Experience and Teacher Effectiveness

Teaching experience is positively associated with student achievement gains throughout a teacher's career. Gains in teacher effectiveness associated with experience are steepest in teachers' initial years, but continue to be significant as teachers reach the second, and often third, decades of their careers. As teachers gain experience, their students not only learn more, as measured by standardized tests, they are also more likely to do better on other measures of success, such as school attendance.

In education, teacher experience is probably the key factor in personnel policies that affect current employees: it is a cornerstone of traditional single-salary schedules; it drives teacher transfer policies that prioritize seniority; and it is commonly considered a major source of inequity across schools and, therefore, a target for redistribution Early-career experience has a clear payoff in teacher effectiveness, and the impact is stronger than the effect of most other observable teacher-related variables including advanced degrees, teacher licensure tests scores, National Board certification at the elementary level, and class size (Clotfelter et al. 2007)

Teaching Difference in Rural and Urban

The learning environments have a major roles to play in learning and the area where the students' lives can determine their performance in their studies. Reasons for the variations in achievement are geographic location, resources, availability of technology and also the quality of teachers. Urban area relates to the area that are surrounding by cities and it is well populated areas compared to rural area which is sparsely populated areas and it usually farmland or country

areas.

The teacher has an important role in order to create good students performance. Most teachers do not want to be posted in rural area because they think it will bring difficulties to them. So, the majority of teachers that were sent to the rural areas are the new teachers that have less experience in teaching. Awoniyi (1981) remarked that there is a direct relationship between the quality of teaching personnel and the quality of education process. Most of them did not master the teaching technique yet because they are still new in teaching area. When we compared to students in urban areas they usually have a teachers that have good communications skills in English. Most of teachers compete for placement in urban schools. So, rural school will have inadequate teacher and it will make their learning progress disturbed and not running properly.

Teachers Significance in Public and Private Schools

The current school choice debate has many possible consequences, not just for students, but also for teachers. Broadly speaking, schools are either publicly or privately funded. Public schools are funded by the government through federal, state, and local taxes, and most are part of a larger school system. Elected school board members and education officials implement and oversee strict rules and procedures that public schools must follow. Private schools do not receive government money and thus have to raise their own funds. Private school officials may have more leeway to run schools as they see fit, but funders and others may play a significant administrative role.

Mishel clearly 2004, analyzed teachers in the public and private sectors as a group in comparison to other college graduates. Critics of the article inveighed against their selection of teachers from both sectors, because the two sectors differ on several fronts, making the teacher pay gap appear even larger with the inclusion of the private sector teachers. In response, in 2008 Allegretto, Corcoran, and Mishel published the results of a study in which the sample of teachers

was restricted to those in the public sector. This work showed that public school teachers earned, on average, 15 percent less than comparable workers in 2006 but had slightly better fringe benefits than other professionals had—making up close to 2 percentage points of the pay gap.

Buckingham (2000) affirms that: The division of schools into public and private sectors inevitably leads to comparisons. The growth in the private sector in recent years has renewed the debate over the relative merits of public versus private education. Some public schools consistently excel in academic achievement but sadly they are not well equipped. Students who attend private schools are more likely to complete school and get better results, have higher rates of university entry, and lower rates of unemployment. Not surprising, more and more parents are "opting out" of the public system, often by making financial sacrifices for more quality teaching or their wards.

Review of Related Empirical Studies

Ali, Haolader, and Muhammad, (2013) in Kano State, carried out an empirical study on "Factors Influencing Use of ICT to Make Teaching and Learning Effective in Kano State". The study was carried out to find out how ICT influence teaching and learning, Survey research design was used. A sample of 90 teachers and 75 administrators in which 101 (61.2%) fully completed questionnaires were returned-70 were filled by teachers and 31 by administrators respectively. The findings of the study revealed that teaching staff and administrators had a strong desire to integrate ICT into teaching and learning process.Also, Ajelabi and Agbatogun (2010), carried out a study on teachers‟ perception on ICT in instruction. Teachers were of the view that ICT should be utilized in schools as soon as possible to support learning. Basic technology is an ICT related subject, it is right for provisions to be made for computers and electronic learning for teachers of basic technology.

Gerald (2013) carried out a study in Kenya. The study was titled " Teachers Factors Influencing students Performance in Secondary Schools in Nyandarua, Kenya". The main purpose of the study was to investigate the relationship between selected teachers demographic characteristics and classroom instructional practices and students academic achievement. Five research questions guided the study as two hypotheses were raised. Survey research design was adopted for the study. The population of the study includes all teachers of Secondary Schools in Nyandarua, Kenya, One hundred and fifty three teachers were selected randomly among eighteen schools formed the sample size of the entire population of the study. Questionnaire methods was used in data collection. Linear regression and One-way ANOVA were used to test the relationship between the selected variables and performance in KCSE at $p<.05$. The study found out that teachers age, gender, professional qualification and teaching experience were not significantly related to academic achievement. This study is related to this present study as they both focus on teachers performance in relation to students academic performance .

Oloyede (2013) carried out a study in Edo state, titled " An Analysis of the Causes of poor performance in Business Studies". The main purpose of the study was to find out the problems affecting teaching and learning in business studies. Descriptive survey research design was used for the study. Teachers and students in Edo state formed the population for the study, while fifty teachers and fifty students from different schools were sampled for the study. Four research questions guided the study and two hypotheses was raised. Questionnaire method was used to collect data. Data were analyzed using descriptive statistics including the sampling main and grand population mean. Students were encouraged and motivated to cultivate positive attitude towards business studies as more skilled manpower are required in teaching the subject. This study is related to this present study as adequate teaching methods are been advocated to

enhance business studies, also in basic technology necessary teaching aid are needed to improve students' academic performance in the subject area.

In a study carried out by Jude and Dankaro (2012) in Benue State titled "ICT resource utilization For English language teacher's knowledge in Benue State" the study was carried out to find out ICT compliance by English teachers. In the study four research questions and two hypotheses were used, survey research design was adopted. The population comprises English teachers of secondary schools in Benue State, five schools and forty teachers were sampled, the study revealed that 87.5% of the sampled does not have computers/laptops. 80% of those who had laptops/computers were not connected to the internet, while 67.5% could not access the internet using personal mobile device. It was found out that availability of computers and internet was non-existent in virtually all the schools studied. It was concluded that most secondary schools have either insufficient or no ICT tools to cater for the increasing population of students in the schools and where they are available. This study is related to the current study as it provides the needs for basic technology teachers to use ICT knowledge in teaching basic technology to broaden their technological knowledge of the subject.

Similarly, Odabasi (2010), carried out a study in Edo state with title "An Analysis of Basic Technology curriculum shortcoming and its shallow statement of the condition for implementation". The main purpose of the study was to find out curriculum objectives in basic technology, as they cover the broad range of objectives for pre-vocational studies. The content coverage for the three years appeared to be too broad and treated in-depth for the level of students. Four research questions were developed and two hypotheses were raised to guide the study. A descriptive survey research design was used to conduct the study. Four hundred teaches was the target population while one hundred and eighty teachers were selected as sample size for

the study. The respondents were randomly selected from eight junior secondary schools from the study area. A structured questionnaire was used for data collection and it consist of two sections. The data obtained were analyzed using descriptive and inferential statistics. Findings revealed that effective implementation of basic technology curriculum is seriously constrained by lack of adequate trained teachers, concluding that there are not enough human and non-human instructional resources for teaching basic Technology in junior secondary schools in Edo State. In this present study is related in the seance that trained teachers are required to properly convey the instructional content of basic technology curriculum.

Alaribe and Omeh (2009) carried out a study in Enugu, titled "Determining Competency Improvement Needs of Instructors in Teaching Soil Conservation Tillage Practices to Students in secondary schools in Enugu state". The study was carried out to find out the competency of teachers of Agriculture in teaching Soil Conservation Tillage Practices. Two research questions guided the study and two hypotheses was tested. The study used ex-post facto design. The population for the study includes all teachers of Agriculture in Enugu metropolis, a sample size of sixty teachers were selected as respondent. A 25 competency item questionnaire was developed and used for data collection. The questionnaire had two types of scale responses of required and performance with a four point response scale each. The questionnaire was validated by three experts. Split-half technique and Cronbach alpha method were used for the reliability which yielded a co-efficient of 0.86. Twenty four copies of the questionnaire were administered to the respondents. All the copies of the questionnaire were retrieved and analyzed using weighted mean and Improvement Required Index (IRI) to answer the research questions. It was found out by the study that the instructors require improvement in all the 25 competency items in soil conservation tillage practices. It was therefore recommended that the instructors in soil conservation practices in schools of Agriculture be retrained in the 25 competencies identified by

this study through workshops and short duration courses by the stakeholders. This study helps basic technology understand that retraining in the subject area would enhance their competencies in teaching basic technology

A study carried out in Kano by Khazaleh, (2007), titled “Exploring Vocational Technical Education Teachers? Adoption of Teacher Training program",the study was carried out to reveals teachers participation in teacher training. Three research questions was raised and two hypotheses was created to guide the study. Survey research design was used to conduct the study. A sample of 200 responding teachers were selected from a total population of 800 teachers in Kano Metropolis.Questionnaire method was adopted in the collection of data. Data were analysed using descriptive and inferential statistics. Multiple regression analysis was used in analysing the hypotheses. Finding among others revealed that half of the teachers did not attend any teacher training program. This study is related to the present study in the seance that teacher training program was used to access Vocational Education teacher’s performance in classroom instructional delivery.

Summary of Related Literature Reviewed

Competency is described by so many authors as knowledge, skill, or attitude that enables one to effectively perform the activities of a given occupation or function to the standards expected in employment. Introductory and basic technologies in secondary schools were also defined in the literature as integrated subjects found in junior secondary schools for stimulating students technologically. Some competencies improvement needs of teachers of basic technology in instruction, teaching the content of basic technology curriculum to students in junior secondary schools, classroom/laboratory management, using teaching methods and techniques, and competencies in applying evaluation techniques for the implementation of basic technology

were reviewed. Theory of needs was reviewed and the relationship with the present study was established.

Many related empirical studies were also reviewed in order to show the researcher the suitable methodology to be adopted for the study. In addition, empirical studies on competency for teachers of basic technology for effective teaching were reviewed. These include the studies of Bakare and Owodunni (2011), Olaitan, Amusa and Ellah (2009) and Dimelu (2010) among others. It is imperative to state that none of these studies specifically focused on determining the competency of teachers of basic technology even despite the relevance of the subject to the overall technological development of the nation at the long run. This study was carried out to determine the competency of basic technology teachers in the implementation of basic technology in Edo State.

CHAPTER THREE

METHODOLOGY

This chapter presents the procedure to be used in carrying out the study under the following sub-headings:

- ✧ Design of the Study
- ✧ Population of the Study
- ✧ Sample and Sampling Technique
- ✧ Instrumentation
- ✧ Validity of the Instrument
- ✧ Reliability of the Instrument
- ✧ Method of Data Collection
- ✧ Method of Data Analysis

Design of the Study

The study adopted descriptive survey research design. According to Nworgu (2006), a survey research design is one in which a group of people or items are studied by collecting and analyzing data from only few subjects considered to be true representative of the entire population. This design is suitable for the study, as it collected data from few Basic Technology teachers who represent the entire population.

Population of the Study

The targeted population of the study comprised all four hundred (400) Basic Technology teachers in Public and private secondary schools in Oredo local government area of Edo State. This was made available to the researcher from the office of the principals of various schools.

Sample and Sampling Technique

A sample size of 100 teachers was selected for the study, consisting of 40 Basic technology teachers in public schools and 60 Basic Technology teachers in private schools in Oredo local Government area of Edo state. Simple random sampling technique was used. The name of the schools was written on a piece of paper with the numbers of teachers, after which the papers were folded into a bag, then using withdrawal with replacement method of balloting, the required numbers of schools was selected. Teachers were selected based on ranking order to make up the select sample at public and private junior secondary school in Oredo local government area of Edo state.

Table 1: Distribution of Sample of Respondents

S/N	Type of Secondary School	Male	Female
1	Public Secondary School	18	22
2	Private Secondary School	22	38
	Total	**40**	**60**

Source: Edo State Ministry of Education, 2020

Instrumentation

The instrument for data collection was a structured questionnaire. The questionnaire was segmented into two sections. Section A consisted of bio data of the respondents, such as Sex, qualification and the type of school (Public or Private). Section B comprised item statement according to the research question. Research question 1 has item 1-4, research question 2 has item 5-9, research question 3 has items 10-15, research question 4 has item 16-20 and research question 5 has item 21-24. The response was on 4- point rating scale of Very High Extent (VHE) = 4, High Extent (HE) = 3, Low Extent(LE) = 2 and Very Low Extent(VLE) = 1.

Validity of the Instrument

The instrument was validated by the researcher's supervisor and two other experts in the department of Vocational and Technical Education, Faculty of Education University of Benin.

Some items in the questionnaire were corrected like the line spacing, the title of each questions and the name arrangement of the researcher. that were structurally and grammatically incorrect were corrected. Their suggestions and contribution were incorporated in the final draft.

Reliability of the Instrument

To establish the reliability of the instrument, the test-retest method technique was used. The questionnaire was administered to 20 respondents who were not part of the sample size. The exercise was repeated on the same group of subjects within two weeks interval. The set of scores were correlated using Pearson's Product-Moment Correlation Coefficient (PPMCC) which gave a coefficient of 0.72.

Method of Data Collection

The questionnaire was administered to respondents by the researcher with the help of three research assistants to facilitate quick response. The researcher sought the permission from each school authority for the administration of the questionnaire. Copies of the questionnaire were distributed to the entire respondents that were selected as the sample. The questionnaire was a pretest structured questionnaire, administered to 100 respondents. After which completed questionnaires was retrieved and scored. The exercise would last for two weeks.

Method of Data Analysis

The statistical tools that were used for data analysis include mean (ẍ) standard deviation (SD) and t-test. The mean was used to answer the research questions while the t-test was used to test the hypotheses at 0.05 level of significance. The decision rule in accepting or rejecting the hypothesis was based on alpha value of 0.05 such that when the p-value is less than the alpha value the null hypothesis was rejected, otherwise it was accepted. In answering the research questions, any mean score of 2.50 and above was considered as high extent otherwise it was considered as low extent.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, AND DISCUSSIONS OF FINDINGS

In this chapter, the result of the study obtained from analysis of data are presented under the following sections:

A. Demographic information of the respondents.

B. Analysis of Research Question.

C. Hypotheses

D. Demographic information

Demographic Information of the Respondents.

Table 2: Gender of Respondents

Gender	Frequency	Percentage
Male	40	40.0
Female	60	60.0
Total	**100**	**100.0**

Field Study, 2020

Table 3: School Type of Respondents

School Type	Frequency	Percentage
Public Schools	40	40.0
Private Schools	60	60.0
Total	**100**	**100.0**

Field Study, 2020

Table 4: Teachers Experience

Experience	Frequency	Percentage
Experienced	30	30.0
Inexperienced	70	70.0
Total	**100**	**100.0**

Field Study, 2020

Table 5: School Location

Location	Frequency	Percentage
Rural	23	23.0
Urban	77	77.0
Total	**100**	**100.0**

Field Study, 2020

Analysis of Research Questions

Research Question 1

To what extent does knowledge of subject matter influence technical teacher competency in teaching basic technology?

The data collected in respect of research question one are presented in table 6

Table 6: Mean rating on the extent of knowledge of subject matter

S/N	Item Statement	Mean	SD	Remarks
1	Getting acquainted with technical drawing	3.34	0.78	High Extent
2	Woodwork aspect of basic technology	3.46	0.64	High Extent
3	Metal work aspect of basic technology	3.23	0.72	High Extent
4	Electrical/electronics aspect of basic technology	3.21	0.72	High Extent
	Grand Mean	**3.36**	**0.70**	**High Extent**

Source: Field Study, 2020

The data shown on table 6 revealed that mean rating of the respondents ranged from 3.21 to 3.46. The table shows that all the variables (1-4) were rated high extent.

The result shows that knowledge of various subject matter in basic technology has a high influence on teaching basic technology effectively.

Research Question 2

To what extent does skills of using instructional aids influence technical teacher competency in teaching basic technology?

The data collected in respect to research question two are presented in table 7

Table 7: Mean rating on the influence of using instructional aids

S/N	Item Statement	Mean	SD	Remarks
5	Audio instructional materials	3.54	0.78	High Extent
6	Video instructional materials	3.36	0.64	High Extent
7	Flip chart instructional materials	3.35	0.72	High Extent
8	Drawing instructional materials	3.58	0.62	High Extent
9	Picture instructional materials	3.51	0.80	High Extent
	Grand Mean	**3.41**	**0.81**	**High Extent**

Source: Field Study, 2020

The data shown on table 7 revealed that mean rating of the respondents ranged from 3.35 to 3.58. The table shows that all the variables (5-9) were rated high extent.

The result shows that using instructional aids in teaching basic technology has a high extent influence on teaching basic technology effectively.

Research Question 3

To what extent does skills of using different instructional methods influence technical teacher competency in teaching basic technology?

The data collected in respect to research question three are presented in table 8

Table 8: Mean rating on the influence of using instructional methods

S/N	Item Statement	Mean	SD	Remarks
10	Teacher-centered instructional methods	3.12	0.78	High Extent
11	Student-centered instructional methods	3.48	0.84	High Extent
12	Repetitive instructional methods	3.02	0.72	High Extent
13	Clinical instructional methods	3.11	0.82	High Extent
14	Game-based instructional methods	3.10	0.80	High Extent
15	Inquiry-based instructional methods	3.05	0.91	High Extent
	Grand Mean	**3.17**	**0.85**	**High Extent**

Source: Field Study, 2020

The data shown on table 8 reveled that mean ratings of the respondents ranged from 3.02 to 3.48. The table goes to show that all the variables (10-15) were rated high extent.

The result shows that using different instructional methods in teaching basic technology has a high influence on basic technology teachers performance.

Research Question 4

To what extent does classroom management influence technical teacher competency in teaching basic technology?

The data collected in respect to research question four are presented in table 9

Table 9: Mean rating on the influence of classroom management skills

S/N	Item Statement	Mean	SD	Remarks
16	Material selection for practical	3.32	0.74	High Extent
17	Relevant skills in organizing tools for practical	3.08	0.74	High Extent
18	Skills in equipment handling is necessary	3.12	0.62	High Extent
19	Exhibiting practical knowledge	3.38	0.75	High Extent
20	Demonstrating the skills taught	3.40	0.78	High Extent
	Grand Mean	**3.24**	**0.76**	**High Extent**

Source: Field Study, 2020

The data shown on table 9 revealed that the mean rating of the respondents ranged from 3.08 to 3.40. The table shows that all the variables (16-20) were rated high extent.

The result also goes to show that classroom management skills of a teacher influence the teaching of basic technology effectively.

Research Question 5

To what extent does evaluation of students' achievement influence technical teacher competency in teaching basic technology?

The data collected in respect to research question five are presented in table 10

Table 10: Mean rating on the influence of Evaluation techniques of a teacher

S/N	Item Statement	Mean	SD	Remarks
21	Assessment of results to make decision	3.50	0.74	High Extent
22	Practical evaluation	3.78	0.84	High Extent
23	The use of formative evaluation	3.32	0.75	High Extent
24	Evaluation their lesson at the end of teaching	3.48	0.82	High Extent
	Grand Mean	**3.64**	**0.79**	**High Extent**

Source: Field Study, 2020

The data shown on table 10 revealed that mean ratings of the respondents ranged from 3.32 to 3.78. The table shows that all the variables (21-24) were rated high extent.

The result goes to show that good Evaluation techniques by basic technology teacher influence basic technology teaching effectively.

Hypotheses Testing

Four Hypotheses were formulated and tested at 0.05 level of significance to provide useful information for the study

Hypothesis 1

There is no significant difference in the mean rating of male and female basic technology teachers in the knowledge of subject matter in teaching basic technology.

The data meant to test the hypothesis 1 were calculated and the result are summarized in table 11

Table 11: Test result of the difference between the mean ratings of male and female basic technology teachers on the knowledge of subject matter

Gender	N	Mean	SD	t value	Df	P	Remark
Male	40	100.05	8.90				
				-0.533	98	0.542	Accepted
Female	60	105.03	10.04				

Source: Field Study, 2020

The result of the t-test in table 11 above indicates that the P value indicated 0.542. The t-value showed -0.404. The mean rating for male and female indicated 100.05 and 105.03 respectively. The standard deviation for male basic technology teachers showed 8.90 while that of female basic technology teachers was 10.04. The degree of freedom showed 98. The number of male respondents was 40 while that of the female respondents were 60. Therefore null hypothesis which states that there is no significant difference in the mean rating between male and female basic technology teachers on the knowledge of subject matter in teaching basic technology is accepted as $p > 0.05$

Hypothesis 2

There is no significant difference in the mean rating of rural basic technology teachers and urban basic technology teachers in using instructional teaching aids for teaching basic technology.

The data meant to test the hypothesis 2 were calculated and the result are summarize in table 12

Table 12: Test result of the difference between the mean ratings of rural basic technology teachers and urban basic technology teachers in using instructional teaching aids

Location	N	Mean	SD	t value	Df	P	Remark
Rural	23	102.02	10.20				
				-0.153	98	0.134	Accepted
Urban	77	107.13	8.12				

Source: Field Study, 2020

Result of t-test in table 12 above indicate that the P value indicated 0.134. The t-value shown -0.124. The mean rating for rural and urban areas indicated 103.02 and 107.13 respectively. The standard deviation for rural teachers showed 10.20 while that of the urban teachers indicated 8.12. The degree of freedom showed 98. The number of rural respondents was 23 while in the urban areas the respondents 77. Therefore null hypothesis which states that there is no significant difference in the mean rating between rural and urban basic technology teacher on the use of instructional teaching aids in basic technology classes in Edo state is accepted as $p>0.05$

Hypothesis 3

There is no significant difference in the mean ratings of experienced and inexperienced basic technology teachers in the skills of using different instructional methods in teaching basic technology.

The data meant to test the hypothesis 3 were calculated and the result are summarized in table 13

Table 13: Test result of the difference between the mean ratings of experienced and inexperienced teachers in the skills of using different instructional methods

Experience	N	Mean	SD	t value	Df	P	Remark
Experienced	30	101.12	10.80				
				-0.167	98	0.174	Accepted
Inexperienced	70	97.10	9.13				

Source: Field Study, 2020

Result of t-test in table 13 above indicated that the P value indicated 0.174. The t-value shown -0.167. The mean rating for experienced and inexperienced basic technology teachers indicated 101.12 and 97.10 respectively. The standard deviation for experienced teachers showed 10.80 while that of the inexperienced teachers indicated 9.13. The degree of freedom showed 98. The number of experienced respondents was 30 while for the inexperienced respondent was 70. Therefore null hypothesis which states that there is no significant difference in the mean rating between experienced and inexperienced basic technology teacher on the use of different instructional methods in basic technology classes in Edo state is accepted as $p>0.05$

Hypothesis 4

There is no significant difference in the mean ratings of public and those in private secondary schools in using different Evaluation techniques in teaching basic technology.

The data meant to test the hypothesis 4 were calculated and the result are summarized in table 14

Table 14: Test result of the difference between the mean ratings of public and private secondary schools basic technology teachers in the skills of using different Evaluation techniques

School type	N	Mean	SD	t value	Df	P	Remark
Public	40	102.13	10.30				
				-0.133	98	0.194	Accepted
Private	60	89.12	8.29				

Source: Field Study, 2020

Result of t-test in table 14 above indicated that the P value indicated 0.194. The t-value shown -0.133. The mean rating for private and public school basic technology teachers indicated 102.13 and 89.12 respectively. The standard deviation for public school teachers showed 10.30 while that of the private school teachers indicated 8.29. The degree of freedom showed 98. The number of public school respondents was 40 while for the private school respondent was 60. Therefore null hypothesis which states that there is no significant difference in the mean rating

between public and private school basic technology teachers on the use of Evaluation techniques in basic technology classes in Edo state is accepted as $p>0.05$

Discussion of Major Findings

The study was conducted to find out the influence of technical teachers program on competency teachers possess in teaching basic technology, in some secondary schools in Edo State. The result obtained from the findings however showed that some factors such as poor knowledge of subject matter, lack of instructional aid, poor instructional method and classroom management are among the factors affecting teaching of basic technology in Edo state, which in high regards its due to poor attendance to technical teachers training programs by technical teachers.

The major findings of the study are as follows:

The result of research question 1 as shown in the table six reveled that Basic technology teachers in Edo State rated high the importance of knowledge of subject matter for basic technology teachers, for proper subject content instruction for students of basic technology. Gbamaga (2002) stated that a teacher must have a good knowledge of the subject he is going to impact to the learners and that without a good background of the subject matter the students will lose confidence in the teacher. it is important for Teachers of Basic technology to be grounded in all the contents of basic technology for proper instruction delivery.

As the world becomes more global intelligent and modern technological trends keeps advancing. It is important that a basic technology teacher is able to impact all new sorts of technology knowledge in their subject areas. When a teacher lacks the practical knowledge or skills in a particular subject area, it will be difficult to impart necessary skills to the students and as such no meaningful result will be obtained during educational process.

In the result of research question 2 as provided in the table seven it was realized that using instructional aids had a high extent influence in teaching basic technology, of which most basic technology teachers are not using during teaching and learning. Instructional materials attract students' attention and interest on the subject being taught. Hango (2004) instructional materials play an important role in the communication process for effective learning. it is also important However that the instructional materials be carefully designed, selected and skillfully used in order to bring about effective teaching and learning experience for the students.The teacher has to select appropriate content and activities to demonstrate each lecture. The importance of using visual and audio aids during lectures are well taught out practices inculcated on teachers during the teacher training program. Instructional materials or media are carriers of information that are selected to help learners achieve their objectives, Hango (2004).These assertions are in consonance with the findings of this study.

According to the result of research question 3, Table eight clearly revealed that appropriated instructional methods, such as Teacher-centered instructional methods, repetitive instructional methods allows free flow of communication between the teacher and student. The student are allowed to take on respective actions during lectures. Ogwo (1996) defined Teaching methods as "a recurrent pattern of teacher behavior, applicable to various subjects matters, characteristics of more than one teachers and relevant to learning". with that definition instructional methods are described as recurrent, therefore they are repeated over interval measured in minutes or weeks as an instrumental process such as lecturing or discussion teaching method.

The result of research question 4 has shown in table nine that classroom and laboratory management skills is required for good academic performance and was rated high extent. Defective classroom management, lack leadership and direction, supervision and evaluation, has

affected the effective teaching of basic technology. Brophy (1986) defined classroom management as the ability to establish, maintain and restore classroom as an effective environment for teaching and learning. A well managed classroom fosters students learning because a comfortable environment stimulates learning,and a safe setting in which the teacher and students can work.

As shown in the research question 5, table ten reveled that high extent was recorded in the influence of Evaluation techniques in teaching basic technology. Such evaluative techniques such as Assessment of results to make decision and Practical evaluation are very important for effective teaching of basic technology. Brophy (1986) sees students evaluation as essential for the benefit of teachers and administrations. Properly used evaluation procedures help in Clarifying the nature of intended learning outcome and Providing feedback concerning learning progress, all these contribute to improve students learning and help them in overcoming learning difficulties. It is essential for teachers of basic technology to develop the competence needed for the effective use of evaluation techniques.

The result of the t-test analysis showed that the four groups of teachers (male & female, rural & urban, experienced & inexperienced and public and private secondary school) did not differ significantly in their rating on the variables that is important for effective teaching of basic technology by teachers.

Implication of Findings

The implication of the result from this study have been able to prove that teachers added qualification and training have significant influence on students performance in basic technology. This therefore implies that proper knowledge of subject matter, using of instructional aids and methods, good classroom management and students evaluations which are inculcated unto the teacher during teacher training, should be a strong criteria for selecting basic technology teachers.

With the result of the findings the study established that teachers training experience significantly will influence students academic performance in basic technology in Edo state secondary schools. The findings of this study revealed that there is an urgent need for government to improve Teacher education and qualifications with lenience before any teacher is meaningfully employed in any public or private school. The finding of this study agrees with the findings of Apagu (2006), Osuala (2007), and Aminu (2011) who independently observed that most technical teachers in Nigeria lack required technical skills thus, could not perform competently in the world of work. Technical teachers including teachers of Basic Technology at JSS level must possess the skills of their subject they teach to enable them teach the subject effectively.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The main purpose of the study is to ascertain the influence of teacher training on technical teachers on competency they possess in teaching basic technology in Edo State. Five research questions were raised for the study and four null hypotheses were tested at 0.05 level of significance. The research design adopted for the study was descriptive survey. A sample size of 100 teachers was selected for the study, consisting of 40 Basic technology teachers in public schools and 60 Basic Technology teachers in private schools in Oredo local Government area of Edo state using simple random sampling technique. The instrument used for the study was a structured questionnaire it was structured by the researcher and modified by the project supervisor and some other lecturers. The data collected were analyzed using mean (X) and standard deviation (SD) statistics for the research questions while t-test was used to test the hypotheses at 0.05 levels of significance.

The major findings of this study are outlined below:

1. The knowledge of subject matter has a significant influence on technical teacher competency in teaching basic technology to a high extent
2. Skills of using instructional aids have significant influence on technical teacher competency in teaching basic technology to a high extent.
3. Skills of using different instructional methods have significant influence on technical teacher competency in teaching basic technology to a high extent.
4. Classroom management has a significant influence on technical teacher competency in teaching basic technology to a high extent.
5. Evaluation of students' achievement has a significant influence on technical teacher competency in teaching basic technology to a high extent.

6. There is no significant difference in the mean rating of male and female basic technology teachers in the knowledge of subject matter in teaching basic technology.
7. There is no significant difference in the mean rating of rural basic technology teachers and urban basic technology teachers in using instructional teaching aids for teaching basic technology.
8. There is no significant difference in the mean ratings of experienced basic and inexperienced basic technology teachers in the skills of using different instructional methods in teaching basic technology.
9. There is no significant difference in the mean ratings of public and those in private secondary schools in using different Evaluation techniques in teaching basic technology.

Conclusion

With the findings of the study, the researcher concluded that the competencies required from teacher training program for effective teaching of basic technology is knowledge of subject matter, use of instructional aids and methods, good classroom management and proper evaluation. Thus teachers of basic technology at the JSS level should adequately possess most of these basic competencies to implement basic technology curriculum. The implication on the students is that they would be exposed in sciences and engineering trades from the grass root.

Recommendations

Based on the findings of this study the following recommendations are made:

1. Government should give priority to the employment of professional and qualified teachers and ensure that such teachers are retained to enable them acquire experience on the job both in public and private schools.

2. The failure recorded in basic technology examinations should urgently be addressed through the organization of workshops and seminars for teachers on the need for them to use appropriate teaching techniques and methods.
3. A systematic program utilizing the vacation periods, for serving teachers, is advised to equipping such teachers qualitatively, this should be considered mandatory for teachers of basic technology.
4. There is the need for government to motivate teachers to boost their productivity by providing them with necessary incentives such as adequate salaries, excellent work environment and other fringe benefits that compare favorably with what their counterparts in other professions receives.
5. All non-professional teachers should be encouraged to acquire relevant diplomas and degrees in education to make them eligible for registration with the Teachers Registration Council (TCR).
6. Teachers of basic technology should be trained and retrained to equip them both in pedagogical, technical and effective work skills required for effective functioning as basic technology teacher.
7. Finally to maintain professional competence and teaching quality standards the issues of training and retraining of teachers at all levels of education should be given priority in the scheme of things by all the stakeholders in Education in Nigeria.

Suggestions for Further Studies

Based on the findings of this study, the following are suggested for further research:

1. Factors affecting students' choice of science subject options at the senior secondary school level.

2. Effects of teachers gender and qualification on students' performance in junior and senior secondary schools
3. The study should be extended to secondary school management and administration personnel at the state and national levels.

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APPENDIX A

LETTER FOR VALIDATION OF THE QUESTIONNAIRE

Department of Vocational Teacher Education,
Faculty of Education
University of Benin
Benin City
8th October, 2020

Dear Sir/Madam

REQUEST FOR INSTRUMENT VALIDATION

I am a post graduate student of the above named University and currently undertaking a study entitled: **Training Needs Required By Basic Technology Teachers in Edo State**.

Kindly participate in the study to validate the attached research instrument for content clarity, suitability and usability for data collection for the study. Your suggestions will improve the quality of the instrument.

Thanks.

Yours faithfully,

Samuel OKODUGHA

APPENDIX B

QUESTIONNAIRE FOR TEACHERS OF BASIC TECHNOLOGY
Training Needs Required By Basic Technology Teachers in Edo State.

SECTION A

PERSONAL DATA

Please check (√) the appropriate response that is most applicable to you.

Teachers of Basic Technology in Public Schools ( )

Teachers of Basic Technology in Private Schools ( )

1. Sex : Male ( ) Female ( )

2. Age : 18-24 years ( ) 25-34 years ( ) 35-44 years ( )

Age 45 and Above ( )

3. Education qualification of Respondents: NCE ( ), B.Sc ( ), PGD ( ), P..hd ( )

4. Other Professional Qualification of Respondents:

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5. Years of Experience of Respondents: 1-5 years ( ), 6-10years ( ), 11-15 ( ) and

16 years and above ( )

Please, indicate by checking (√) in the appropriate column in the level of performance Scale (To be completed by teachers of basic technology)

SECTION B

Please, indicate by ticking (√) in the appropriate column in the level of performance Scale (To be completed by teachers of basic technology)
KEY: Very High Extent (VHE) = 4, High Extent(HE) = 3, Low Extent(LE) = 2 and Very Low

Extent(VLE) = 1

Question 1.

To what extent does knowledge of subject matter of the teacher influence the teaching basic technology in Edo State secondary schools ?

S/N	ITEMS	VHE	HE	LE	VLE
	To what extent does basic technology get acquainted with:				
1	technical drawing aspect of basic technology				
2	woodwork aspect of basic technology				
3	metal work aspect of basic technology				
4	Electrical/electronics aspect of basic technology				

Question 2.

To what extent does the skills of the teacher in using instructional aids influence the teaching of basic technology in Edo State secondary schools ?

S/N	ITEMS	VHE	HE	LE	VLE
To what extent is basic technology teacher familiar with:					
5	audio instructional materials				
6	Video instructional materials				
7	Flip chart instructional materials				
8	Drawing instructional materials				
9	Picture instructional materials				

Question 3.

To what extent does the skills of the teacher in using different instructional methods influence the teaching of basic technology in Edo State secondary schools?

S/N	ITEMS	VHE	HE	LE	VLE
To what extent is basic technology teacher familiar with:					
10	Teacher-centered instructional methods				
11	student-centered instructional methods				
12	repetitive instructional methods				

13	Clinical instructional methods				
14	Game-based instructional methods				
15	Inquiry-based instructional methods				

Question 4.

To what extent does the classroom management skills of the teacher influence the teaching of basic technology in Edo State secondary schools?

S/N	ITEMS	VHE	HE	LE	VLE
	To what extent is basic technology teacher familiar with:				
16	material selection for practical				
17	relevant skills in organizing tools for practical				
18	skills in equipment handling is necessary				
19	exhibiting practical knowledge				
20	demonstrating the skills taught				

Question 5

To what extent does the Evaluation techniques of the teacher influence students achievement in basic technology in Edo State secondary schools?

S/N	ITEMS	VHE	HE	LE	VLE
To what extent is basic technology teacher acquainted with:					
21	Assessment of results to make decision				
22	practical evaluation				
23	the use of formative evaluation				
24	evaluation their lesson at the end of teaching				