ASSESSMENT OF THE TEACHING COMPETENCIES OF TECHNICAL TEACHERS TEACHING IN TECHNICAL COLLEGES IN GOMBE STATE

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Competence, a wide phenomenon of human endeavor has been given distinct definitions from different authors. For example, Houton, and Tanner in Abdulrahman (2006) define competency as the optimum level of awareness, understanding and perfection which graduate must have achieved in order to be rated as successful and effective. The success of any curriculum largely depends on the quality of the teachers handling it. Competence is seen as the ability to do something well or to a required standard. Abbas (2000) observed that, the effectiveness of educational arrangements is dependent largely on the number, devotion and the quality of teachers who constitute the educational system. In the same vein, Abdulsalami (2002) observed that the teacher is a crucial factor in educational system in Nigeria in the objectives that the graduate may achieve. This implies that the teacher has to contain all the standards required of him to teach effectively. Educational qualification, methodology, skills in assessing instructional achievements and relationship with students are considered as the key areas that constitute teacher competence (Rice, 2003).

In education therefore, competence in terms of teaching can be seen as the teacher's ability to perform his teaching task to a required standard. This implies that the noble objectives of technical education can only be achieved if only competent and qualified teachers teach in our vocational and technical colleges. Academic qualification of a teacher ideally tells about the level of his knowledge of the subject he teaches. It is therefore obvious that technical teachers should possess an acceptable minimum educational qualification for teaching in technical colleges. Ndubisi and Ali (1986)

maintained that professional training of teachers without proper grasp of the subject areas is more than a waste of time because end result can be the effective spread of ignorance.

Olaitan (1995) states that, technical teacher must be competent in the technical subject which he teaches to the extent that students achieve the technological self-reliance after graduating from technical college. Abbas (2000) states that, technical teachers must know their teaching subject's basic general knowledge. It is therefore not wrong to say that for technical teacher to be regarded as competent, he must have a wide knowledge of the subject matter he teaches. The first competency needed of a technical teacher is that of his level of educational qualification, as this gives an impression of his knowledge of the subject matter. Considering educational qualification as an aspect of teaching competence, the United Nations, Educational, Scientific and Cultural Organization (UNESCO [1975]) advises that, pre-service and in-service education be integrated to foster the concept of life-long learning and the need for recurrent education. Stating the importance of the knowledge of subject matter and that of skills, Diraso (2000) states that competent technical teachers can be obtained through pre-service and in-service training programmes.

Another important aspect of teacher's competence is that of the skills in the method of teaching his subject. Teacher's high level of academic pursuit is not enough to be regarded as competence. He must have a skill of how to transfer his acquired knowledge to his students. This is in fact another aspect that most teachers lack. Dembicki in Apagu (2001) states that technical teachers must possess methodology in the teaching of the knowledge and manipulative skills to their students. Yalams (2003) in his own contribution on the need of skills in pedagogy states that, the little knowledge of educational psychology the technical teacher acquires as a subject during his training assists him in understanding his learner during the teaching/learning process. This will help the teacher choose the appropriate teaching method for a particular learning process.

Assessment is another important factor in educational process, that calls for emphasis on the part of teacher's ability. To teach is one thing, and to evaluate the learning outcome is another. A competent technical teacher should have a basic knowledge of assessment of instructional objectives. No learning can be ascertained if instructional objectives cannot be assessed. According to Ajeyalemi (1990), effective planning and management of educational programme require adequate feedbacks from assessment of the educational systems and programmes. The assessment outcomes are essential in the improvement of the educational policies so far formulated and the implementation strategies. In trying to elaborate on the importance of evaluating students in educational programmes, Akande (2003) states that assessment is generally a process that attempts to determine as systematically and objectively as possible the relevance, effectiveness and impact of activities in the light of their objectives. Teachers should therefore, have the skills of assessing the progress of such specific objectives.

For proper update of the attained competencies, teachers need to improve on their skills with the global change in technology. Diraso (2000) explains that, for any vocational and technical education to be adequate and sound, it should consist of three phases namely: pre-service, on the job experience and in-service training. The author further states that competent technical teachers can be obtained through pre-service and in-service training programmes. This implies that, teachers in technical education programme can be trained for further improvement on their teaching competencies through in-service or pre-service training programmes. This calls for teachers to be attending seminars and workshops on capacity building. Idris (2006) explains that, the effectiveness of technical education is dependent on the quality of its teachers and their teaching skills unlike the traditional society where every one can be a teacher. Idris further emphasized that, technical education teacher requires some specialized training not only on how to teach but also on the subject matter and practical skills so that he can be able to impart the skills needed by the students. For the

objectives of vocational and technical education to be successfully achieved, it is necessary that only competent teachers should teach in vocational training centers and technical colleges as well as Junior Secondary Schools.

Based on the forgoing views from various authors on the importance of the teachers' competencies, for better attainment of the educational objectives, the researcher is concerned with the level of teaching competencies of the technical teachers teaching vocational trades like; auto-mechanics, building and concreting, carpentry and joinery, electrical installation and metal work in technical colleges in Gombe state. The attention of this study was focused on the identification of areas of adequacies and inadequacies in teachers competencies, so as to improve and to ensure optimum attainment of the programme desirable objectives.

1.2 Statement of the Problem

One of the objectives of technical education is to provide the technical knowledge and vocational skills necessary for agricultural, commercial and economic development. This will in turn prepare our youths for self-reliance. The Federal Republic of Nigeria (FRN 2004) states that, "trainee completing technical college programme shall have three options;

i. to pursue further education in advanced technical/teacher programmes and in Post- secondary (tertiary) technical institutions such as, polytechnics or Colleges of Education (technical) and Universities of Technology,
ii. to be self employed by operating their own businesses or,
iii. to gain employment in recognized industries." (P. 37).

Students, who are opportune to gain addition to further their technical education in Federal College of Education (T) Gombe, tend to appear below expectation in terms of their entry behavior. The researcher observed this through pre-test results administered on 126 pre-NCE (T) students in the

area of metal work technology. The results showed that 12 students passed with Credit (60-79%), 6 with lower credit (46-59), 4 with lower pass (40-45%) and 108 failed (0-39). Information received from the statistics office of FCE (T) Gombe revealed that, about 70% of the students admitted into the NCE (Technical) programme had attended technical colleges. Yet they tend to be poor academically in the areas they have been taught. This may not be unconnected with the observed deficiencies in teachers teaching methods or teachers mastery of subject matter. Previous researchers like; (Olaitan, 1996; Olawepo,1998; and Apagu,2001) maintain that when teachers have no practical skills, the students cannot acquire it because the technical teachers can only give what they have.

Paying attention on the training of more competent teachers in technical education institutions, the Federal Republic of Nigeria, (FRN 2004) adopted an effort to expand the facilities for the training of technical teachers, particularly since the new structure for the proposed Technical Colleges, and Colleges of Education require many more skilled and competent teachers in different occupations.

Research findings (Olawepo, 1991; Olaitan, 1996; and Osuala, 1998) have shown that majority of technical colleges teachers in Nigeria have some deficiencies in their trades/areas of specializations such that they could not perform competently in the world of work. Perhaps that is why educators like Tanner and Tanner (1975), Ndubisi and Ali (1986), Ulifun (1990), Olaitan (1996), Abbas (2000) and Apagu (2001) argued that for technical education programme to be a success, the teachers must be competent and knowledgeable in subject area as well as teaching methods.

Olaitan (1996) and Apagu (2001) observe that majority of technical teachers teaching in technical colleges lack adequate pedagogical skills and technical competence. The effect of this on students is that they lack skills and knowledge in their areas of specialization. This study therefore intended to assess the general competency levels possessed by technical teachers in technical colleges in Gombe state. The fundamental issue that this study to work on is therefore, the deficiencies

observed in technical teachers teaching Metal work technology in Gombe State, with an aim to find out solution so as to up-grade their teaching standards.

1.3 Purpose of the Study

The purpose of this study was to identify the general competency levels of technical teachers in technical colleges in Gombe State. Specifically the study determined:

a) The educational qualification that technical teachers in Gombe State posses.

b) The level of pedagogic competence possessed by technical teachers in technical colleges in Gombe state

c) The competency level of technical teachers in the assessment of instructional objectives

d) The areas in which technical teachers need further training for effective teaching.

1.4 Research Questions

The following research questions were formulated to guide the study;

i. What is the educational qualification possessed by technical teachers teaching in technical colleges in Gombe State?

ii. What is the level of pedagogic competence possessed by technical teachers in technical colleges in Gombe state?

iii. What is the level of technical teachers' competence in assessing instructional objectives?

iv. What are the areas in which technical teachers need further training to be effective?

1.5 Hypothesis

The following hypothesis were tested at 0.05 level of significance:

$H0_1$ There is no significant difference between the mean responses of technical college administrators and technical teachers on the level of pedagogic competencies possessed by technical teachers in technical colleges in Gombe State.

$H0_2$ There is no significant difference between the mean responses of college Administrators and technical teachers on the level of competence that technical teachers possess in the assessment of instructional objectives

$H0_3$ There is no significant difference between the mean responses of college administrators and technical teachers on the areas in which technical teachers need further training for effective teaching.

1.6 Significance of the Study

The findings of this study will provide a statistical data on the level of teachers competence to Gombe State government, specifically Gombe State Ministry of Education (MOE), which will guide the Ministry in further selection and re-training of technical teachers. It also gives reliable information to the Ministry on the level of adequacy and in adequacy of professionally qualified teachers in Gombe State, hence draw decision on in-service training and retaining of teachers.

This study also provides the exact educational qualifications possessed by technical teachers, which the ministry of education will use as a guide to prepare plans for further educational development of

technical teachers. The findings of the study also serve as baseline information to the Ministry of Education in the selection of teachers to teach students in technical colleges

The results obtained from this study will serve as feed back information to the technical education programme monitoring agencies i.e. National Board for Technical Education (NBTE) and National Commission for Colleges of Education (NCCE) to ascertain the level of the effectiveness of their products. This will help the agencies in knowing the extent to which technical education curriculum needs review, and will help them in taking further decisions. Other researchers on related topics will also benefit from the findings of this study for it will serve as literature on further study on technical teachers' competence and other related research topics

1.7 Delimitation of the Study

This study was delimited to all the six government owned technical colleges in Gombe state. Only those teachers that teach vocational trades were assessed. The private secondary schools and government owned secondary schools were not included because they appear to have less technical teachers and less equipment, and for the fact that only introductory technology is being taught. Such schools are not technically biased and the study was aimed at only colleges that are technically biased. They also have no heads of department of technical trades, and this research requires the response of Heads of technical departments.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter presents the review of literature under the following sub headings:-

- Theoretical Framework of the Study
- Concepts, Purpose of Assessment and Effective Teaching
- Professional Teaching Qualification of a Technical Teacher
- Competencies of Technical Teacher in Assessing Instructional Objectives
- Competency Based Teacher Education
- Related Empirical Studies on Competency-based Education
- Summary of Review of Related Literature

2.1 Theoretical Framework of the Study

According to Dewey (1952), pragmatism places emphasis on methods and attitudes than on systematic philosophical doctrines. It is the method of experimental enquiry that is extended into realms of human experience. In the same vein Adenike (1996) states that:

> Pragmatism is the theory of workability and practicability of ideas, policies and proposals as criteria of their merits and claims to attention. Any phenomenon must be functional and observable in terms of getting things done and achieving results. Pragmatism is a theory that turn away from the abstraction and insufficiency concreteness and adequacy, towards facts and action (p. 142).

Similarly, Shang (2003) states that:

> Pragmatism is a 20$^{th\ century}$ philosophy of workability, which works

> and to do things that work best in order to achieve desirable ends. Pragmatism put a lot of emphasis on the process of acquiring knowledge. Pragmatism is one of the philosophies that have greatest influence on educational theory and practice in the twentieth and twenty first centuries. (p. 131).

In line with this therefore, Uyanga (2003) asserts that an organization should always have specific goals and objectives and that this organization should continue working until these goals and objectives are achieved. Technical colleges just like Engineering firms have specific goals to achieve. For this, College administrators, teachers and students are expected to work hard so as to see that goals are achieved. Just like the pragmatic theorists believe in the quality of workers as the bases for effective achievement of objectives, this study also intends to work on the quality of technical teachers who are the major implementers of educational policies, bearing in mind that the teachers should be pragmatic in their teaching responsibilities in accordance with the ideas of the theorists. The teachers' qualities are therefore to be ascertained to ensure that they teach perfectly such that the quality of their students will be improved. These reasons made it possible to base this study on the pragmatist theory, because it is aimed at assessing the working standards of technical colleges' teachers in ensuring that teachers in technical colleges possess the required teaching competencies that are the prerequisites of achieving the specific objectives as well as the goals of vocational technical education progammes.

2.2 Concept, Purpose of Assessment and Effective Teaching

Stufflebeam (1973) defines assessment as a process of delineating, obtaining and providing useful information for judging alternatives. Though he has been reported to have modified the definition to include information for accountability. He further pointed out that key points could be

kept in mind regarding his definition, and this include that it is performed in the service of the decision making and accountability. Another definition on assessment by Akin (1969) as cited in Okoro (2005) says that, assessment is the process of ascertaining the decision areas of concern selecting appropriate information and collecting and analyzing information in order to report in selecting among alternatives.

In his own view, Yalams (2006) described assessment as a process of ascertaining the appropriateness or otherwise of an established process. He further explained that it may also mean, a process of determining whether or not the objectives of a programme are being achieved. Taba, in Yalams (2006) defined assessment as the process of determining the changes in students' behaviors and appraising them against the value represented in objectives to find out how far the objectives of education are being achieved. Taba maintained that assessment is grading or awarding marks or testing students. Although the definition of assessment is broad in nature as given by different authors, there are certain points similar to all the definitions. These include that it is a process that involves obtaining and providing information which must be based on the states objectives of the programme or aspect of the programme being assessed. Also that such information is made available to decision makers and the decision makers make decision as regards the programme assessed.

United Nations Educational Scientific and Cultural Organization [UNESCO] (1975) also sees quality assessment as the actual process of external evaluation (reviewing, measuring, and judging) of the quality of higher education institutions and programmes. It consists of those techniques, mechanisms, and activities that are carried out by an external body in order to evaluate the quality of the higher education processes, practices, programmes, and services. UNESCO further explains that, some aspects are important when defining and operating with the concept of quality assessment:

(i) the context (national, institutional);

(ii) the methods (self-assessment, assessment by peer review, site visits);

(iii) the levels (system, institution, department, individual);

(iv) the mechanisms (rewards, policies, structures, cultures);

(v) certain quality values attached to quality assessment such as academic values, traditional values (focusing upon the subject field), managerial values (focusing on procedures and practices); pedagogical values (focusing on staff and their teaching skills and classroom practice); employment values (emphasizing graduate output characteristics and learning outcomes).

Osasona (2005) states that assessment is a term used for a wide range of approaches for measuring education effectiveness. According to Okoye as cited in Onjewu (2006), assessment includes all the processes and the products which describe that nature and extent of learning, its degree of correspondence with the aim and objectives of teaching and the relationship with the environment which are designed to facilitate schooling and learning. This is a very broad definition that involves all school processes relating to students, staff, the school environment and the teaching and learning processes. One way of interpreting education effectiveness is through the examination conducted at the end of every session or programme, to ascertain results of learner's achievement. Whenever students perform well, their school enjoys a positive assessment report and if not, the assessment report is negative. It is therefore not out of place to agree with Olaitan (1996) who states that assessment involves;

i. Classification of objectives to the point describing which behavior represents achievement in particular programme

ii The development and the use of variety of ways for getting evidence of changes in students

iii Appropriate ways of summarizing and interpreting that evidence.

iv. The use of information gained in the process of students or the lack of it to improve curriculum teaching and guidance.

v. A comparison of the programme with other programmes to provide information which educational or programme planners and evaluators are accountable for in relation to programme objectives and decision making.

In his own view, Wheeler (1983) sees assessment as a prerequisite to evaluation. The author explains that "the questions; 'Did change occur? If so, how much, and in what direction?' are questions to be answered by assessment." For effective assessment of objectives, Wheeler upholds that;

> To assess behavioral changes in individuals or groups, it is necessary to make judgments about the objectives of the school and the suitability of the learning experience, the content, organization and teaching methods used to attain them. This means that it is necessary to consider at least the following; assessment of relevant student behavior, and of the background factors liable to affect his behavior (P. 387).

In line with that, Boekaerts (1991) stresses that assessment employs a number of techniques which are tests, questionnaires, interviews, rating skills, etc which may also be multi source. For example, to assess students' performance data may be collected from different source using different method. Nworgu (1992) states that, "assessment is the process of seeking, obtaining and quantifying data with a view to making value judgment about objects, events or their characteristics". He further pointed out that such judgment or decisions are based on empirical data or information made available through measurement. In his own view, Fink (1993) commented that assessment is a

process of judging the appropriateness and reasonableness of programmes, projects, students' performance or general learning outcomes on the basis of standards. Fink (1993) stated that assessment is intended to examine experience objectively and with exactness in order to maintain performance at a certain level or improve performance at higher level. Commenting more on assessment, Okoro (1994) explains that various forms of assessment used in education are formative, summative and ultimate. Formative assessment is used for monitoring learning, summative assessment is used to determine achievement at the end of the course, while ultimate assessment is used in the field when the student is employed after completion of his/her course and is working

Assessment gives support to action taken as well as suggests changes to be made if instructional/ programme goals must be achieved (Olaitan, 1996). According to Scriven as cited in Okoro (1999), "assessment is a methodological activity which consists of gathering and combining performance data to yield rating and in justifying the procedures of data collected and the goals

Similarly, Olaitan and Ali (1997) states that assessment is one of such concepts to which many people have attached different meaning. He further up holds that, in some cases, people are contented, with giving only one aspect or two of assessment. While teachers and students may regard assessment as a means of grading, some people see it as a type of research. Many more believe that assessment is synonymous with educational measurement. Others think that it is the same as professional judgment. From the educational point of view, Leighbody and Small as cited in Okafor (1998) states that, assessment is considered as the process of determining how well educational goals have been met". In the same vien Screven, Stake and Provus, in Okoro (2000) viewed assessment as a process of obtaining performance information with clearly states objectives. They regarded assessment as a methodical activity which is similar irrespective of the nature of the procedure or product being assessed. Screven in particular considered assessment as the result of the comparison made between set goals and the actual performance obtained from measurement. Stake laid emphasis

on the need for assessment to express judgment about the level of performance of the programme being assessed. Okoro (2002) views assessment as a process which involves passing judgment on how adequate are marks or scores obtained through measurement. He further commented that assessment enables teachers provide proper guidance to students and determined their understanding of what they are being taught and provide feedback to them on how well they are going academically. Contributing on the impotence of assessment in education programmes, Ajala (2002) looks at assessment in a school setting as the process which includes research activities, the systematic testing of data, clarifying discrepancies between goals and objectives and a decision making function.

From the teacher's point of view, assessment can be explained as a process of bringing information from a number of different sources for the purpose of making judgment about a particular pupil or group of pupils (Oguntunde, 2006). Yalams (2006) stated that, assessment from the instructional point of view is a systematic process of determining the extent to which instructional objectives have been achieved by pupils. Yalams also stated that assessment has both quantitative and qualitative aspects, which when properly used can improve students' learning by offering feedback concerning learning programmes.

These definitions clearly indicate that assessment is more than one dimensional measurement, it should be regular and multi dimensional based on a number of variables which are believed to be important and can be utilized. Further more the definitions have revealed that any aspect of educational programme can be assessed once data can be obtained and be analyzed for decision making. The success of educational programme lies to much extent on the teachers. It should therefore be put in mind that, teacher's competence plays a vital role on the success of any educational programme. It should therefore be equally assessed in line with the programme evaluation.

Looking at the definitions given by different authors on assessment, one can infer that assessment in education is often carried out in order to obtain information that will help in determining the extent to which an educational programme has achieved its objectives, and as well in decision making on issues that affect or concern certain aspects of an educational endeavor. Teachers' competences as one of the factors that influence educational effectiveness should not be left alone with out being assessed. It should equally be assessed from time to time to determine the quality of teachers that teach in technical colleges, and as well to identify areas that need further improvement on the teaching activities.

The services of teachers, instructors and administrators in educational institutions determine to a large extent the quality of the programme offered. Ani,., Olaitan, Akubuile, & Anadi, (1989), opine that effective teaching would mean the conscious and deliberate attempts by one who possessed required knowledge and skills through some accepted methods, to one who lacks it with intention that the latter will master, apply and use those knowledge and skills so imparted in solving practical problems of life. Cannon (1991) focused his view on the teacher factor. Silcock (1993) also agreed with view above by explaining that, effectiveness depends on the independent actions and responsibilities of the learner as on the behaviors of the teacher. He further pointed out that teaching involves a large number of diverse and social and social encounters, which have to be managed successfully if students are to be provided with consistent opportunities. Brown and Alkins (1993) maintain that effectiveness is best estimated in relation to goals of teaching and that research on effective teaching should consider successful teaching strategies in context of what teachers and students value.

Looking at these various views, one can conclude that decision making on effectiveness should be focused on various context such as; the context of teaching itself, students characteristics, research and research findings, which help teachers to develop suitable methods that should work in

their own situations. In agreement with the above views and concepts, the present study focuses on teacher context through identifying the competencies needed by technical teachers teaching in technical colleges, for effective teaching of the subject matter in Gombe state.

Assessment in this case aids in ensuring the extent to which such educational personnel are trained and are executing the function that they are suited to execute. The teacher as one of the prominent education stake holder plays a wider role in the implementation of the educational policy. Therefore, programme assessment should also focus on him. The teacher has the most difficult task to play in ensuring that the programme goals are achieved. His performance therefore needs to be assessed in line with the assessment of the educational programme. Okoro (2002) explains that, teachers make more impact on the performance of students than any other school personnel. With regards to that he opines that assessment of teachers may center on any or all of the following: -

i. Qualification

ii. Experience

iii. Teaching ability

iv. Relationship to students, other staff and supervisors.

These factors constitute the level of competences expected of a technical teacher. Therefore, to assess the level of teacher's competence his level of academic pursuits, teaching experience, attitude to work, ability to teach the subject matter successfully (theoretically and practically) and his ability to maintain a good relation ship with his students and his supervisors should be put into consideration. Appropriate planning of the curriculum and the interpretation of the curriculum to achieve the desired educational goals depends solely on the teacher and the effectiveness of the teaching. The close involvement of the students in the lesson and perhaps the motivation of the students' interest to the course content is another great function of the teacher. The role of the teacher with respect to the effective teaching and learning cannot be over emphasized. In the same vein,

studies related to this, which have implications to teaching effectiveness focused on the teacher factor bases, for example, Ali and Akubue (1990) advocated for the identification and incorporation of all the elements of effective teaching and in common to all classroom situations and the model for teacher motivation, instructional techniques and characteristics for effective teaching. Wells (1997) emphasized the need for effective teacher preparation programme. On the same vein, the researcher feels that the teacher factor plays the most vital role to teaching effectiveness, if adequate steps are taken on pre-service and in-service training of teachers teaching in technical colleges. It is through teacher education programme that the Nigerian educational objectives can be achieved, since training is one of the conditions that improve teacher level of competence as well as influence teacher effectiveness.

2.3 Professional Teaching Qualification of a Technical Teacher

Teachers' ability and willingness to integrate methodology into their teaching will largely be dependent on the professional training and development which they receive during their training as teachers. According to Boekaerts (1991), professional qualification of a teacher deals with skills, knowledge and understanding of when, when not, and how to use a particular teaching method effectively in teaching a particular subject. These are in other words, competencies that are obtained in academic teacher training institutions.

Diraso, (2002) states that professional teaching qualification and the level of educational qualification possessed by technical teachers determine to a large extent, the ability of a teacher to teach the subject matter to expectation. This implies that a technical teacher must reach a certain level of educational qualification before he or she can acquire some teaching skills that will make him or her be regarded as professional teacher.

Teacher Registration Council Handbook (FRN, 2002) states that "the best way to raising standard of teachers is by means of constant in-service training to serving teachers." Ani, Olaitan, Akubuile & Anadi, (1989) as cited in Onjewu (2006) state that, teaching effectiveness is a function of possession of professional teaching qualification that aid the teacher in knowing what to teach, how to teach, to whom it will be taught and the conditions under which it will be taught.

A professional teacher, is a person who must possess a teaching qualification not lower in standards than the Nigeria Certificate in Education (NCE). This is the minimum standard stipulated by the National Policy on Education (FRN, 2004). This equally means that for a teacher to qualify for teaching in technical college, he should possess a minimum of NCE (Technical) certificate in a relevant field. The FRN (2004) further states that other acceptable qualifications are Degrees in Education (B.Sc Ed; B.Ed; M.Ed; PhD). To teach in technical college therefore, such degrees obtained should be technical biased in relevant field also. Those with Degrees/Diplomas in non-Education fields must possess Post Graduate Diploma in Education (PGDE) **,** Professional Diploma in Education (PDE) or Technical Teachers Certificate (TTC) FRN (2004). Stating the prerequisite for registration as a professional teacher, the Teachers Registration Council (TRC) states that, "To be registered as a professional teacher, a person must possess a teaching qualification not lower in standards than the Nigeria Certificate in Education (NCE)."

With regards to assessment of professional teaching qualification of technical teachers, Okoro (2002) lamented that qualifications can easily be assessed by deciding what the desired qualifications and experience are and collect data to show the extent to which teachers possess them. Okoro further states that, efforts made by teachers to upgrade their educational qualification should also be assessed. Cannon (1991), focused on the personal and professional qualities of the teacher for effective teaching and learning.

In his attempt to suggest ways of acquiring more professional technical teachers in the technical education programme, Diraso (2000) explains that, for any vocational and technical education to be adequate and sound, it should consist of three phases namely: pre-service, on the job experience and in-service training. He further states that competent and professional technical teachers can be obtained through pre-service and in-service training programmes. This implies that, teacher in technical education programme can be trained for further improvement on their teaching competencies through in-service or pre-service training programmes. It can therefore be said that, the main purpose of the in-service training course is to expose participants to modern and contemporary approaches, techniques, knowledge and skills, with a view to improving that production efficiency and professional competences, teaching abilities exposure to a cluster of skills in related occupations. Pre-service training is the initial education and training of a individual in general education and special education, where methodologies are taught to prepare the individuals for a career in teaching. Pre-service training is different from in-service training because in-service training is undertaken or designed to improve professional competencies of serving teachers after their training. It can hence be inferred that, professional technical teachers can be obtained through pre-service and in-service training programmes.

2.4 Competencies of Technical Teacher in Assessment of Instructional Objectives

Assessment is defined as the process of obtaining information that is used to make educational decisions about students, to give feedback to the student about his or her progress, strengths, and weaknesses, to judge instructional effectiveness and curricular adequacy, and to inform policy (Auwal, 2006). Auwal further averts that the various assessment techniques include, but are not limited to, formal and informal observation, qualitative analysis of pupil performance and products, paper-and-pencil tests, oral questioning, and analysis of student records. For the attainment of reliable

assessment, Boekaerts (1991) states teachers must possess the following competencies for the assessment of instructional objectives, as developed by the American Federation of Teachers (AFT), National Council on Measurement in Education (NCME)and National Education Association (NEA) as follows:

Each standard that follows is an expectation for assessment of knowledge or skill that a teacher should possess in order to perform well in the five areas just described. As a set, the standards call on teachers to demonstrate skill at selecting, developing, applying, using, communicating, and evaluating student assessment information and student assessment practices. A brief rationale and illustrative behaviors follow each standard.

i. Teachers should be skilled in choosing assessment methods appropriate for instructional decisions.

ii. . Teachers should be skilled in developing assessment methods appropriate for instructional decisions.

iii. The teacher should be skilled in administering, scoring and interpreting the results of both externally-produced and teacher-produced assessment methods.

iv. Teachers should be skilled in using assessment results when making decisions about individual students, planning teaching, developing curriculum, and school improvement

v. Teachers should be skilled in developing valid pupil grading procedures which use pupil assessments.

vi. Teachers should be skilled in communicating assessment results to students, parents, other lay audiences, and other educators.

vii. Teachers should be skilled in recognizing unethical, illegal, and otherwise inappropriate assessment methods and uses of assessment information.

Stressing the importance of assessment of instructional objectives, Mkpa (1993) subscribes to the view that student assessment is an essential part of teaching and that good teaching cannot exist without good student assessment, on how well learning has changed his behavior. Mkpa further states that training to develop the competencies covered in the standards should be an integral part of pre-service preparation. Such assessment training should be widely available to practicing teachers through staff development programmes at the local and state levels. Supporting this view, Dembicki in Apagu, (2001) states that technical teachers must possess knowledge of manipulative skills, methodology and the use of various assessment strategies to foster students' success.

The assessment competencies included here are the knowledge and skills critical to a teacher's role as educator. Supporting this view, Yalams (2003) explained that there are many competencies beyond assessment competencies which technical teachers must possess. In any teaching and learning process, for instance, teaching effectiveness will be said to have occurred if much learning has taken place, and this invariably depends on the teacher and his teaching strategies used in technical education. The quality of any teacher will so much depend on his ability to put together his methodological skills to carry out instructions as well as his ability to assess his instructional objectives (Yalams, 2003). The little knowledge of educational psychology the trained teacher acquires as a subject during his pre-service training will assist him to understand the learner in any teaching process. This will help the teacher to know the abilities and learning characteristics of his students. In addition to that,

In his attempt to elaborate the competencies needed by a technical teacher, Diraso (2000) advocated that, competency-based teacher education alone is not enough for a worker to be regarded as competent. He must really justify his qualification by actually performing competently. In other words, he must reach an acceptable level of competency in his field, the methodological competencies as well as his competency assessing instructional objectives. Following this view

therefore, establishing standards for teacher competence in assessment of instructional objectives is of importance to the teaching and learning process.

Abdulrahman (2006) maintained that the primary focus of all teaching should be on student learning, and strengthened that teacher's competence in the assessment of instructional objectives and knowledge in addition to teachers' competency requirements should be focused. Technical teacher therefore, is required to possess the skills required to effectively assess instructional objectives in addition to his teaching competencies.

It is therefore, important to understand that what is most essential about assessment is to understand how general, fundamental assessment principles and ideas can be used to enhance student learning and teacher effectiveness. This will be achieved as teachers learn about conceptual and technical assessment concepts, methods, and procedures, for both large-scale and classroom assessments, and apply these fundamentals to instruction.

2.5 Competency- Based Technical Teacher Education

On the issue of competency-based education, Okafor (1998) explained that competency-based education has gone further to introduce, in special cases or circumstances, individualized instruction in curriculum implementation in a special method called the learning activity method. In his approach, learning competences are packaged according to the abilities of each individual student and the individual procedures to accomplish such package or tale it at his own pace. His teacher can then be tested out and then be credited according to the level of his learning outcome. He further identified two important strategies that can be used to make the competency-based technical teacher education programme effective, and applied these factors to the professional training of technical teachers in the various occupations. The first of strategies is to ensure that objectives are based on the role

requirement of teachers and secondly performance rather than knowledge only would be required per programme completion.

Contributing on the importance of teacher competence, Rice(2003) lamented that, many researchers have argued that teacher quality is a powerful predicator of students' performance. Notwithstanding, she adds that there are no silver bullets for improving teacher quality. . . a comprehensive approach that touches on . . . a teacher's career is the best strategy for improving teacher quality (p. 4). In the part of the globe therefore, the challenges ahead of teachers are enormous and if the magnitude is looked at one may be scared but rather than that, it must begin somewhere; an effort like this may pay off.

Reichardt, (2000:1) identifies four areas of opportunity that influence teacher quality:

- *Pre-service*: Educating and certifying of future teachers.
- *Recruitment and selection*: Attracting the best and brightest teachers to the classroom.
- *In Service*: Improving teacher's knowledge and skills.
- *Retention*: Keeping the best teachers in the classroom, particularly in the classrooms where their skills are needed most.

Reichardt further added that, the areas of pre-service and recruitment and selection are not in the control of individual teachers but some aspects of the area of in-service including professional learning among others are. Teachers could improve themselves apart from the institutional arrangements made for the induction of new teachers (absent in most institutions now). And so, since technical education programme requirements and standards are based on the behaviors and effectiveness of teachers, teacher educators must closely attune their programmes unto a solid base, so that teachers graduated by teacher training institutions will be effective in teaching their trades.

Abeles ,in Ebenehi, (2006) described competency-based teacher education as an attempt to document what is necessary to make competent teachers to agree on goals and on the means to evaluate their successes in meeting these goals. Competency in this direction, focuses on the product if the teacher-training programme and the behaviors demonstrated by the graduating pre-service teachers. This phenomenon also parallels accountability by emphasizing specific behavioral outcomes of the programme and the importance of the evaluator actually being able to observe the desired goals. Abeles (1984) further observed that, the critical initial steps in structuring any programme for the competency-based technical teacher education is to identify the necessary competencies that contribute towards developing a teacher who will perform credibly as a professional teacher in his occupation. In this circumstance, the essential competences are to be determined first in terns of the total curriculum, and later reduced to skills areas in the trades of that occupation. Therefore, teacher quality matters because it is the most important school related factor influencing students' achievement

2.6 Related Empirical Studies on Competency-Based Education

On the identification of competencies, Apagu (1997) conducted a research on technical in-service competency needs of post-primary school building technology teachers of Adamawa state. He tried to ascertain the technical in-service competency needs of post primary school building technology teachers in Adamawa State of Nigeria. The study also determined the teachers perceived level of desirability and performance of the building technology competencies. It also ascertained if each of their educational qualifications and teaching experience significantly affected the teachers' perceived performance of the building technology competencies. His findings revealed that all the 83 competencies were considered by the teachers as desirable for effective teaching of building technology. Also, they perceived themselves as performing the competencies at moderate level. The

findings also revealed that teachers need in-service education in 23 (96%) of the 24 building drawing competencies, and in all of 41 competencies of block laying and 81competences in carpentry and joinery. further more, their educational qualifications had significant effect on their perceived level of performance of the building technology competencies. The conclusion of the study among others is that, building technology teachers' pre-service programme is to be aimed at boosting teachers' perception in content and level of teaching competencies. It was also recommended that their in-service education programme should be for them based on their educational qualifications.

Anyakoha (1994) in her study titled 'In-service Needs of Teachers in Post- primary Institutions in Home Economics (Clothing and Textiles) in Anambra State'. She identified 98 clothing and textiles competency needs of post primary school teacher of home economics. Three different categories of home economics teachers who responded to her structured questionnaire were involved in the study. Her study revealed that the respondents expressed performance ratings of the competencies were generally lower than their perceived importance of the ratings of the competence by the three different categories of home economics teachers. This implied that the three different categories of home economics teachers needed improvement on all the identified clothing and textiles competencies which will also guide the present study.

Diraso (1997) conducted a study on the In-service Needs of technical Teachers of Secondary Colleges in Adamawa State. The purpose of the study was to identify the competencies of technical teachers and to see in which of these competencies they need to up-date their skills. It was also to see whether there is any difference in the competencies needed by the trained and un-trained teachers and the degree of difference from the responses received. Bulk of the technical teachers are not trained teachers and perhaps that is why they all agree that they need to be competent technical teachers to be able to meet up with the current changes taking place in the industries and education. The result of the study revealed

that there is need for competent technical teachers in school system, if they are to produce technicians, craftmen, and other skilled personnel for industrial, commercial and economic development through pre-service and in-service training. He also advocated that for any vocational technical education programme to be adequate and sound, it should consist the following three phases namely: - pre-service, on the job experience and In-service training.

Idris (2006) also conducted a study on the Competency Needs of Metal Work Teachers for Effective Teaching in Post- primary Colleges in Kano State. The purpose of the study was to find out the competencies possessed by metal work teachers at post primary colleges in Kano state and to also find out skill areas in metal work where trained and un-trained metal work teachers need improvement for effective teaching of the subject. The result of the study revealed that majority of the teachers teaching metal work in post primary colleges in Kano state are trained teachers. Trained and un-trained teacher of metal work indicated that they need to be competent at various levels of the identified competencies. It also revealed that both trained and un-trained teachers indicated that they are competent on 27 items out of 99 item of the competency test. The study provided bases and relevant literature to the study at stake.

Madubuke (1990), carried out a study on the relationship between teacher intensity and levels of students' attentiveness, and he reported that increased levels of teacher intensity would lead to greater students' attentiveness. His findings according to Idris (2006) have significant implications for the general technical education and specifically for the instruction of vocational trades which demands for craftsman skills in the teacher.

Atiku (1992) made a study on the relationship between professional and non-professional teachers' assessment competencies and its impact on testing complexities and student academic achievement in Nigeria. The study was carried out in Kaduna State using questionnaire, incorporating multiple statistical procedures was fashioned containing a range of questions that

elicited information from 300 respondents on their perception of teachers' assessment competencies. From the findings, it was revealed that professional teachers apply various assessment techniques more effectively than non-professional teachers. The findings also revealed that even the professional teachers don't have the ability to interpret the obtained assessment results talk less of using it to improve their teaching task. Further, suggestions regarding measures that could help improve the employability of teachers were succinctly discussed. This study is therefore, proposed to adopt the method used by Atiku (1992) since the researcher also wants to make a survey research study on the assessment of the competencies possessed by technical teachers for effective teaching in Gombe State.

2.7 Summary of the Related Literature Reviewed

The theoretical framework of this study has revealed that works in any system should be performed well to ensure the achievement of the desirable end. Further more, it showed that education programme as a system should have all its working parts perform their tasks to standard. This aspect of standard can only be met through assessment of performance of each working part with an aim to identifying gaps and drawing solutions and recommendations, on the improvement of such performances to meet standards.

It is also understood that it is through assessment that educational programme's effectiveness can be ascertained. Importance should be attached to assessment of teachers' effectiveness as they are the one that carry out the majority of the aspects of the education programme implementation. The reviewed literature pointed out that all aspects of the education system most especially the personnel involved in the programme implementation are aspects that need assessment from time to time to ensure their level of effectiveness.

The reviewed literature revealed that deficiencies are observed in educators in general and particularly in technical education offered in vocational training centers and technical colleges emanate from lack of time-to-time training of serving teachers to enable them follow modern trends to effectively teach new skills that can help the students in the world of work. It is further identified that technical teachers need training on the skills needed for assessing instructional objectives. It also revealed the strategies used to solve teaching and learning problems in vocational technical education, particularly in the teaching of vocational trades. This effort provided guidelines, for this study and was motivated by the observed and identified problems regarding technical education in Nigeria.

Professional Teaching qualification and the level of educational qualification possessed by technical teachers determine to a large extent, the ability of a teacher to teach to expectation. The reviewed literature explained the minimum teaching qualification for teaching in technical colleges. It reveled that it is not only the pedagogy of teaching that is a primary competence of a teacher, but also the vast knowledge of the subject matter to be taught. And this is only obtainable as the teacher attains higher academic qualification in the area he teaches.

Regarding the assessment of instructional objectives, the reviewed literature showed that a teacher is not fully competent if his ability to assess students' achievement is low. It showed that the teacher's pedagogic ability, knowledge of subject matter and his level of technical skills have to go in line with his ability to assess instructional objectives. Teaching is said to have occurred if objectives are achieved. And it is through the teachers ability to assess the level of changes occurred in students behaviors, that instructional achievement can be identified.

Available literature also revealed that much work has been done on identification of competencies, especially with respect to solving problems associated with teaching and learning of vocational trades at vocational and technical colleges. The reviewed literature showed the necessity

on technical teachers to attain the standard teaching competencies as they are the pre-requisites for the attainment of instructional objectives. finally, it has been deduced that the level of technical teachers' competencies determine the level of goal attainment of the vocational technical educational programme.

Despite all efforts made by various researchers on the assessment of teachers' competencies and suggested solutions, the available literature shows that attention was only focused on the competency needs of trade areas of technical teachers in VTE without considering other aspects like; teachers' educational qualification, teachers' ability in assessing instructional objectives as well as areas where they need further training. The available literature also revealed that, no work has been done on the general assessment of competences of technical teachers' teaching in technical colleges in Gombe State. This study was therefore intended to fill this obvious gap by attempting to identify the general improvement needs of technical teachers in Gombe state for better achievement of technical education objectives.

CHAPTER THREE

METHODOLOGY

This chapter described the methods and procedures that were adopted in conducting the research. It includes research design, area of the study, population of the study, sample and sampling techniques, instruments for data collection, validation of the instrument, reliability of the instrument, method of data collection and method of data analysis.

3.1 Research Design

A descriptive survey research design was employed for this study . According to Akuezuilo (2003) a survey research design is found appropriate in a study that involves the assessment of attitude, motivation, opinion and activities using questionnaire.

3.2 Area of the Study

The study was conducted in Gombe State. Appendix III (geographical map of Gombe State), shows that the State is located in the North-eastern geo-political zone of Nigeria. It is sharing boundary with Bauchi State by the west, Yobe State by the North, Borno State by the East and Adamawa State by the South-east, all in the North-eastern part of Nigeria. Gombe State has eleven Local Government Areas, and six technical colleges located at its three senatorial districts.

3.3 Population of the Study

The population of this study consisted of one hundred and twenty four (131) respondents, comprising of school administrators and technical teachers, all from the six technical colleges, owned by the government of Gombe State. The break down of the population is shown on table I. The

Administrative staff consisted of the Principal, Vice Principal Academics and all the Heads of Department of trades taught. Technical teachers, as referred in this study consisted of all teachers that teach vocational trades including Technical Drawing. Heads of Departments that teach their trades are here in categorized under administrative staff.

Table 1:- Distribution Of School Administrative Staff and Technical Teachers in Technical Colleges in Gombe State **:**

S/No	School Address and location	Number of Admin Staff	Number of Technical Teachers
1.	Government Science Technical College, Gombe.	10	16
2.	Government Science Technical College, Akko.	8	11
3.	Government Science Technical College, Kumo.	10	18
4.	Government Science Technical College, Kwami.	7	9
5.	Government Science Technical College, Nafada.	8	12
6.	Government Science Technical College, Tula.	9	13
	TOTAL	**52**	**79**

3.4 Instrument for Data Collection

The instrument used for data collection was a structured questionnaire, developed by the researcher on the Assessment of the Teaching Competencies of Technical Teachers (ATCTT), teaching in technical colleges. The questionnaire was divided into two parts: - Part 'A' and Part 'B'. Part A' requested for personal data of the respondent. These data was used to identify the category of

the respondent and classify them appropriately under technical teacher or college administrator. Equally, this part enabled the researcher determine the educational qualification of each respondent most especially the teachers, whose data was needed to help to answer research question 1' of this study. Heads of Department that happen to teach their trade courses were classified in this study as college adminitrators.

Part B' of the instrument, consisted of 'section I, II and section III. These sections were structured to help the researcher obtain information that provided answers to research questions 2, 3 and 4 respectively. Section I consisted of 19 items that requested opinions of the respondents on the level of pedagogic competencies, of technical teachers teaching in technical colleges. Section II consisted of 11 items, that requested for the respondents opinion on the level of teachers ability in assessing instructional objectives. Section III of this part consisted of 7 items that requested for the respondents opinion on different areas that technical teachers need improvement on their teaching. The sections were structured on a five point rating scale as below: -

VH:	Very High	=	5 Points
H :	High	=	4 Points
ML:	Moderately Low/ moderately High	=	3 Points
L :	Low	=	2 Points
VL :	Very Low	=	1 Points

Section III of part B' of the questionnaire requested for the respondents to state the level at which the statement is true, using the options;

SA (strongly Agreed)	=	5 points
A (Agreed)	=	4 points
UD (Un Decided)	=	3 points
D (Disagreed)	=	2 points
SD (Strongly Disagreed)	=	1 points

3.5 Validation of the Instrument

Two experts in School of Technical Education, Federal College of Education (technical) Gombe, where some items were expunged because of irrelevance and spelling mistakes were corrected. Two experts from School of Science and Technology Education, Federal University of Technology Yola, also validated the instrument and observed that the items were not arranged based on the flow of the research purposes, and some items were removed as a result of duplication. These experts assessed the appropriateness and adequacy of the content, structured to be the competencies needed of technical college teachers. Their comments and corrections came up with a quality questionnaire that was distributed for pilot test.

3.6 Reliability of the Instrument

The consistency of the final draft of the instrument was determined. The process involved the administration of a single pilot test which was carried out on nine people – five trade teachers and four school administrative staff from Government Science Technical College Bauchi to provide their responses as normal. Bauchi was selected based on the fact that, it is in the same geo-political zone with the area of this study. The data collected was used to determine the internal consistency of the instrument using 'Cronbach's Alpha'. The result was analyzed to provide a measure of reliability of the designed instrument (ATCTT). The competency clusters have a reliability coefficient ranging

from 0.87 to 0.93. Section I' of the instrument which is the Pedagogic competencies of technical teachers has a reliability coefficient of 0.09, section ii' which asks about the teachers Competencies in the assessment of instructional Objectives has 0.87 and section iii' that asks about the areas where technical teachers need further training for effective teaching has a reliability coefficient of 0.93. The result shows that the instrument has a reliability coefficient of 0.903

The Cronbatch's alpha co-efficient (ά) formula was given as:-

$$\acute{\alpha} = \frac{M}{M-1} \quad \frac{(1 - \Sigma vi)}{vt}$$

Where M = number of items
Σvi = Sum of individual Variance of each item
Vt = Variance of total item.

3.7 Method of Data Collection

A letter of request from the researcher attached with the instrument was administered to all the respondents, who work in the six governments technical colleges in Gombe State. A copy of the letter of request from the researcher is shown in Appendix I.

Compiled copies of the questionnaire were collected by the researcher four days after the administration. 124 completed and accessed copies were used for the data analysis out of the 131 distributed copies. Table III shows the distribution list of the instrument and the record of the collection of the instrument. 23 copies of the instrument issued to technical college Gombe teachers were retrieved out of the 26 copies issued to them, all the 19 copies issued to technical college Akko were returned, 26 out of 28 copies were returned from technical college Kumo, 16 out of 17 were returned from technical college Kwami, all the 20 copies issued to technical college Nafada were returned and 20 out of 24 copies issued to technical college Tula were retrieved. The total copies of questionnaire distributed was 131 and the used returned copies were 124.

3.8 Method of Data Analysis

The information gathered from the questionnaire was personally analized using Percentage (%), mean (x) and t-test. The percentage (%) was used to answer research question 1 on the level of teachers' professional teaching qualification, mean was used to analyze data related to research questions 2, and 4. The t-test was used to test the three hypothesis at 0.05 degree level of confidence. A five-point rating scale was employed for rating items in part B' (sections I&II) with a value limit of 0.50 – 1.49 as very low, 1.50 – 2.49 as low, 2.50 – 3.49 as moderately low, 3.50 – 4.49 as high and 4.50 – 5.00 as very high. For items in part A' of the questionnaire, percent rate was employed with a value limit of 0.00% - 19.50% as very low, 20.00% - 39.50% as low, 40.00% - 59.50 % as moderately low, 60.00% - 79.50% as high and 80.00% - 100.00% as very high. This was obtained by distributing 100% into 5 point rating.

The mean of the five points rating scale is given as: - $\overline{X} = \frac{\sum fx}{N}$

Which is; $\overline{X} = \frac{5+4+3+2+1}{5} = \frac{15}{5} = 3.0$

Where $\overline{X}$ = Mean

F = Frequency

$\sum$ = Summation

N = Number of respondents (Source : Stanley and Hopkins, 1992).

The three null hypothesis were tested at 0.05 level of confidence and t-values were calculated using a computer aided software **(Analyse-it)**. The formula for calculating t-test is given as:-

$$t = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\frac{S^2_1}{n_1} + \frac{S^2_2}{n_2}}}$$

where $\overline{X}_1$ = Mean of first group

$\overline{X}_2$ = Mean of second group

n_1 = number size of first group

n_2 = number size of second group

S^2_1 = Variance or standard deviation of the first group

S^2_2 = Variance or standard deviation of the second group

(Uzuagulu, 1998).

The first research question was analyzed by rate percentage (%) of the number of technical teachers who possess professional teaching qualification. The rating used was 0.00% - 19.50% as very low number of teachers, 20.00% - 39.50% as low number of teachers, 40.00% - 59.50 % as moderately low number of teachers, 60.00% - 79.50% as high number of teachers and 80.00% - 100.00% as very high number of teachers.

The research questions 2 and 3 were analyzed by computing the mean score ($\overline{X}$) of each competency item to ascertain the level at which the respondent believes the technical teachers possess it. An interval of 0.5 was added to the mean of 3.00 which was the mean of the 5 point rating scale used. The upper limit used was therefore, 3.50. Any competency that reaches the mean value of 3.50 and above was considered as high and mean scores below 3.50 were considered as low.

For research question 3, an interval of 0.5 was also added to the mean of 3.00 which was the mean of the 5 point rating scale used. The upper limit was also determined to be, 3.50. Any competency that reaches the mean value of 3.50 and above was considered as adequate (INN i.e, improvement not needed) and mean scores below 3.50 were considered as in adequate (NI i.e, improvement needed).

To test Ho_1 – Ho_3, t-test of difference between means was used at 0.05 level of confidence and calculated t-value was compared with the t-table value, (which was found to be 1.97 for a population 124 having the degree of freedom of 122 at a corresponding level significance of 0.05)

for the acceptance or rejection of the hypothesis. Where the calculated t-value was lower than the table t- value, the hypothesis were accepted otherwise, the hypothesis were rejected.

CHAPTER FOUR
RESULTS AND DISCUSSIONS

The data collected for this study were statistically analyzed and are presented in this chapter. Mean, percentage and t-test were used in the interpretation of the processed data. Tables are shown in this chapter containing information and responses to each formulated research question and hypothesis. The findings and discussions on each item of the questionnaire are also presented in this chapter.

4.1: what are the teaching qualifications of technical teachers, teaching in technical colleges in Gombe state?

Table II:

Distribution of Technical College Teachers Showing their Possessed academic and Professional teaching Qualification

No. of Group	**Highest Qualification**	**No. Technical Teachers**	**% N= 70**
A.	M. Ed (Tech)	4	5.7
B.	B. Ed (Tech)	11	15.7
C.	B. Tech	8	11.4
D.	B. Sc (Engr)	7	10.0
E.	P.G.D. (Engr)	4	5.7
F.	PGDE	0	0.00
G.	H.N.D.	8	11.4
H.	N.C.E.(Tech)	15	21.4
I.	O.N.D.	13	18.6
	TOTAL	**70**	**100%**

Table II shows the highest educational qualification of all technical teachers as at 2009/2010, with their percentage based on the number of the respondents (teachers). The table shows that 5.7% of the teachers have attained (M. Ed) in their trade areas and possess teaching qualification. It can also be seen that 19 (27.1%) have obtained First Degree (B.Tech. Edu/B. Ed) in their trade areas, which shows that all of them possess teaching qualification,. The table also shows that 7 of the respondents possessed B.Sc (Engr), 4 (P.G.D), 8 (H.N.D) and 13 (O.N.D) thus, constituting a total number of 32 (45.8 %) respondents acquired tertiary technical education but have not obtained teaching qualification. The breakdown therefore shows that, 32 (45.8 %) have acquired tertiary technical education but have not possessed teaching qualification while 39 (54.2 %) have acquired tertiary technical education and have possessed teaching qualification.

4.2: what is the level of pedagogic teaching competence that technical teachers teaching in technical colleges possess?

Table III: Analysis Of The Level of Pedagogic Competence Possessed by Technical Teachers, Teaching in Technical Colleges

Section I				**Grand**	
Items	**Competencies**	$\bar{x}_1$	$\bar{x}_2$	$\bar{X}$	**Remarks**
1.	The teachers' ability in the teaching of the subject matter of their teaching trade?	3.81	3.75	3.78	Adequate
2.	The teachers' ability in employing appropriate strategies for various learner needs in their teaching process?	3.90	3.14	3.02	In adequate
3.	The teachers' ability in the use basic skills and appropriate mathematical principles in teaching their trades?	3.87	2.79	3.33	In adequate
4.	The teachers' capability of using different teaching methods for achieving educational goals?	2.90	4.66	3.78	Adequate
5.	The teachers' capability in demonstrating Good oral and written communication skills?	2.67	3.89	3.78	Adequate
6.	The teachers' ability to outline subject matter to be taught in a study?	4.02	4.42	4.2 2	Adequate
7.	The teachers' ability in identifying and utilizing a variety of resources to engage learners in the learning process?	3.00	3.68	3.3 4	In adequate
8.	The teachers' ability to demonstrate the use of instructional resources/materials?	3.74	3.82	3.78	Adequate
9.	The teachers' ability to use a variety of				

instructional media in teaching their trades?	3.94	2.88	2.91	In adequate
10. The teachers' ability in time management when administering their lessons?	3.94	4.08	4.01	Adequate
11. What is the teachers' ability in anticipating difficulties the learner may encounter?	3.47	3.21	3.34	In adequate
12. The teachers' ability in using democratic process in their teaching?	3.98	3.98	3.98	Adequate
13. The teachers' ability to choose appropriate teaching strategies and resources to accommodate diverse learning styles?	3.93	3.47	3.70	Adequate
14. What is the teachers' ability to prepare lesson in theory and practical?	3.59	4.15	3.87	Adequate
15. The teachers' ability in the use of convergent and divergent ways in teaching their trades?	3.43	3.45	3.44	In adequate
16. The teachers' ability in the use of demonstration method of teaching practical lessons?	4.10	3.98	4.04	Adequate
17. What is the teachers' ability in the management of tools, equipment and materials during practical lessons?	3.95	3.93	3.94	Adequate
18. The teachers' ability to motivate learners on the performance and habits of technical education?	3.96	3.06	4. 01	Adequate
19. The teachers' ability create a convenient Learning environment, which includes positive reinforcements for effective work and study habits?	3.25	3.33	3.29	In adequate

The data presented in Table III shows that, technical teachers possess pedagogic competences adequately in items 1, 4, 5, 6, 8, 10, 12, 13, 14, 16, 17 and 18. And are assessed deficient in items 2, 3, 7, 9, 11, 15 and 19 of the assessed pedagogic competencies.

4.3 What is the level of technical teachers' competence in assessing instructional objectives?

Table IV: Analysis of the Level of Competences of Technical Teacher in Assessing Instructional Objectives

Section II				**Grand**	
Items	**Competencies**	$\bar{x}_1$	$\bar{x}_2$	$\bar{X}$	**Remarks**
1.	The teachers' ability level in the knowledge of assessment techniques?	4.01	4.29	4.15	Adequate
2.	The teachers' ability of assessment methods to refine the instructional process, using the data obtained from learner evaluation report?	3.59	3.69	3.64	Adequate
3.	The teachers' ability in providing evidence of learner achievement?	3.64	3.68	3.66	Adequate
4.	The teachers' ability to effectively use Data from assessments and students' progress to evaluate the prograrmme's effectiveness?	3.75	357	3.66	Adequate
5.	The teachers' level of understanding importance of assessing instructional objectives to refine the education process?	3.68	3.64	3.66	Adequate
6.	Teachers' ability in utilizing a variety of evaluation techniques	3.90	3.48	3.69	Adequate

7.	The teachers' ability to select and use the most effective strategy in evaluating students' performances?	4.24	3.68	3.96	Adequate
8.	The teachers' mathematical ability to Record students' results an make analysis of it?	4.80	3.58	4.19	Adequate
9.	The teachers' ability to set questions that reflect the three domains of educational objectives.	3.85	3.57	3.71	Adequate
10.	The teachers' ability in understanding the importance of assessing instructional objectives to refine the education process?	3.74	3.66	3.70	Adequate
11.	The teachers' ability in providing feedback to the students on their performances?	4.03	4.45	4.24	Adequate

Data presented on table IV have 11 items and shows that all the 124 respondents, have rated the teachers' level of competency in assessing instructional objectives as adequate, within the mean range of 3.64 – 4.24.

4.4 What are the areas that technical teachers need further training to be effective?

Table V: Analysis of the Areas That Technical Teachers Need Further Training to Be Effective

Section III				**Grand**	
Items	**Competencies**	$\bar{x}_1$	$\bar{x}_2$	$\bar{X}$	**Remarks**
1.	Teachers are always sent on training on newly supplied machines and equipment.	3.12	1.84	2.33	N I

2. Induction training is frequently organized for teachers by the college on machines and equipment.	2.81	2.75	2.78	N I
3. Teachers attend capacity building workshops organized outside the college.	2.80	2.76	2.78	N I
4. Teachers go on in-service training to upgrade their Knowledge.	4.72	3.90	4.31	I NN
5. The teachers pursue appropriate professional teaching qualification.	4.16	3.62	3.89	I NN
6. Teachers need training on current technological Development breakthrough.	4.14	4.35	4.38	I NN
7. The teachers in technical colleges don't attend Seminars that develop their teaching effectiveness.	3.28	3.06	3.12	N I

N I = Needs Improvement

I NN = Improvement Not Needed

$\overline{x}_1$ = Mean response of administrators

$\overline{x}_2$ = Mean response of teachers

Table V contains 7 items and it shows that training on newly supplied machines, induction training on supplied machines and equipment, attending capacity building workshops need improvement for effective teaching. The table shows that no improvement needed on items 4,5, and 6.

4.5 Hypothesis

Three null hypothesis were formulated and tested in this study. The hypothesis are tested using t-test and the results are stated below:

Hypothesis I

$H0_1$ There is no significant difference between the mean response of technical

College administrators and technical teachers concerning the level of pedagogic teaching competencies possessed by technical teachers teaching in technical colleges in Gombe State.

Table VI

Two-Tailed T-Test Of The Difference Between The Mean Ratings of College Administrators And Technical Teachers Concerning the Level of Pedagogic Teaching Competence Possessed by Technical Teachers Teaching in Technical Colleges .

Group	$\overline{X}$	SD	t-calculated	t-table	Remarks
Administrators	3.76	0.33	1.34	1.97	Not Significant
Teachers	3.58	0.46			(Accepted)

The table shows that the t-calculated value is less than the t-table value. This tells that the difference between the mean responses of administrators and teachers on the level of pedagogic competencies of technical teachers is not significant; hence the null hypothesis was accepted.

4.6 Hypothesis II

$H0_2$ There is no significant difference between the mean response of college administrators and technical teachers concerning the level of competence that technical teachers possess in the assessment of instructional objectives

Table VII

Two-tailed t-Test of the Difference between Mean Ratings of the College Administrators and Technical Teachers Concerning the Level of Teachers' Competence in Assessing Instructional Objectives

Group	$\overline{X}$	SD	t-calculated	t-table	Remarks
Administrators	3.89	0.27	1.08	1.97	Not Significant

Teachers	3.76	0.29		(Accepted)

The table shows that the t-calculated value is less than the t-table value. This therefore indicated that the difference between the mean responses of administrators and teachers on the level of Level of teachers' competence in assessing instructional objectives is not significant; hence the null hypothesis was accepted.

4.7 Hypothesis III

$H0_3$ There is no significant difference in the mean response of college administrators and Technical teachers concerning the areas in which technical teachers need further training for effective teaching.

Table XIII

Two-Tailed t-test of the Difference between Mean Ratings of the College Administrators and Technical Teachers Concerning the Areas that Technical Teachers Need Further Training for Effective Teaching

Group	$\overline{X}$	SD	t-calculated	t-table	Remarks
Administrators	3.41	0.94	0.16	1.97	Not Significant
Teachers	3.34	0.74			(Accepted)

The table shows that the t-calculated value is less than the t-table value. It implies that the difference between the mean responses of administrators and teachers on the areas that technical teachers need further training for effective teaching is not significant; hence the null hypothesis was accepted.

4.8 Major Findings of the Study

This study on the assessment of competencies of technical teachers in technical colleges in Gombe state has the following findings:-

1. 30 of the technical teachers have possessed the minimum teaching qualification for teaching in technical colleges (NCE) in their teaching trade areas, and 15 among them have possessed higher educational qualification like; B.Ed (Tech) or B.Tech. in their teaching area.
2. Teachers were to have possessed 12 of the pedagogic teaching competencies at a high level and moderately low level in 7 items.
3. Significant difference did not exist between the mean responses of the college administrators and technical teachers on the pedagogic teaching competencies and competencies in evaluative of instructional objectives as they are possessed by technical teachers.

Technical teachers need further training to improve on their teaching skills in items 1,2,3 and 7 out of the 7 items on the areas where technical teachers need further training for improvement.

4. All respondents agree that technical teachers possess high level of competence in the evaluation of instructional objectives.

4.9 Discussions of the Findings

The findings of the study are discussed based on the four purposes and three null hypothesis formulated on this study.

Findings on the first research question shows that 57 out of the 70 teachers teaching technical trades possess the required minimum academic qualification for teaching in technical college and only 30 of them have acquired teaching qualification. This finding supports the view of Apagu (2001) and Okoli (2002) who found out that, most teachers have the knowledge of what to teach, but do not have the ability to implement classroom instruction. This is a lapse that can be caused by this lack of professional training to teach technical trades. The finding of this study also is in line with the finding of Diraso (2000) who observed that teachers in technical colleges have the knowledge of their trade areas but do not have the skills teaching them. The deficiencies observed in the skills of teaching will

be inclined to lack of professional teaching qualification observed in about 46% of the total number of teachers teaching I technical colleges. This could no doubt affect the performance of students.

Findings relating to research question 2 and hypothesis1 (Ho_1) of the study indicated that, the teachers possess most of the pedagogic competencies at a high level. All respondents in the study agree that technical teachers in Gombe state have high pedagogic competence. This statement is drawn from the fact that, significant difference did not exist between their mean responses. The null hypothesis was therefore accepted. This result did not agree with those of Olaitan (1985) and that of Diraso (2001) in which the respondents rated the pedagogic teaching competencies of teachers as moderately low. The improvement noted in this study may not be unconnected with the implementation of the suggestions given by the previous researchers.

Findings relating to research question 3 and null hypothesis 2 ($H0_2$) shows that technical teachers possess most of the questioned on competences, relating to assessment of instructional objectives. The hypothesis was accepted for the fact that significant difference did not exist between the mean responses of the two responding groups. This opposes the findings of Wolf (1992), Idris (2006) and that of Abdulrahman (2007) who found that there was assessment competency paucity in teachers of vocational and technical education generally.

The findings on research question 4 and null hypothesis 3 ($H0_3$) show that, technical teachers training needs improvement on 4 statements of the 7 questioned items to make their teaching effectiveness improved. No significant difference was noted between the mean responses of the administrators and teachers hence, the hypothesis was accepted. This implies that technical teachers training needs improvement on those areas. This inline with the observation made by UNESCO (1995), FRN (2004) and findings of Idris (2006). The finding of this study also agree with the finding of Diraso (1997) which revealed that there was need for onward retraining of technical

teachers for capacity building so as to be able to meet up with the current changes taking place in the industries.

The current study revealed that higher percentage of technical teachers possess the relevant minimum academic and teaching qualification (NCE Tech.) but need to be given training so as to up date their knowledge on newly developed technologies and skills.

in-service education in different fields of study were suggested for technical teachers such as Apagu (1997), Abbas (2000), Abdulrahman (2007) to mention but a few.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of the study, implication of the study, conclusions and recommendations. Suggestions for further study is also presented at the end of this chapter.

4.1 Restatement of the Problem

One of the objectives of technical education offered at technical college level is to prepare graduates to be trained as technicians and technologists in tertiary technical institutions. The Federal Republic of Nigeria FRN (2004) states that, "trainee completing technical college programme shall have three options;

i. to pursue further education in advanced technical/teacher programmes and in Post- secondary (tertiary) technical institutions such as, polytechnics or Colleges of Education (technical) and Universities of Technology,
ii. to be self employed by operating their own businesses or,
iii. to gain employment in recognized industries.

Research findings (Olawepo, 1991; Olaitan, 1996; and Osuala, 1998) have shown that majority of technical colleges teachers in Nigeria have some deficiencies in their trades/areas of specializations, as such they could not perform competently in the world of work. This perhaps is responsible for the observed poor entry behaviors of students in technical education programme offered in Federal Colleges of Education (Tech.) Gombe. The fundamental problem of this study therefore, is the deficiencies observed in technical teachers teaching in technical colleges in Gombe State.

It may be stated that if teachers possess adequate knowledge and relevant skills in their trade areas and teaching skills, there is high degree of expectation that the students will acquire the knowledge and skills expected of them as they graduate.

5.2 Summary of the Procedure Used

The study was conducted in Gombe State of Nigeria on all the six government technical colleges located at different parts of the state. Data was collected by the researcher from the responses of two groups of respondents by the use of structured questionnaire. Four purposes, four research questions and three null hypothesis were formulated. The hypothesis were analyzed at 0.05 level of significance. Percentage, mean and t-test were used to annlyse the data obtained using computer aided programme (Analyse- it). The instrument was validated by four experts and was further subjected to trial test to ascertain its reliability. The reliability test was conducted on 9 respondents and the data was analysed using the Cronbatch's alpha formula. The reliability coefficient obtained fall within 0.70 to 0.91.

5.3 Summary of the Findings

The following are the summary of findings of this study:

1. Majority of the technical college teachers in technical colleges are trained teachers, and possess the minimum educational qualification required for teaching in technical colleges.
2. Technical teachers in technical colleges possess most of the teaching competencies at high level and few at moderately low level.
3. Significant difference did not exist between the mean responses of administrators and teachers in all the three formulated null hypothesis. Thus, all the hypothesis were accepted.

4. Technical teachers training needs improvement in items 1, 2, 3 and 7 while items 4, 5 and 6 were agreed as adequate.

5.4 Conclusions

The following conclusions are drawn from the finding s of this study:

1. The study revealed that only few technical teachers do not possess teaching qualification even though they possess higher educational qualification in their trade areas.
2. The technical teachers possess most of the teaching skills required of a technical teacher.
3. The study also revealed that improvement is needed in most of the training activities aimed at improving technical teachers' effectiveness.

5.5 Recommendations

The following recommendations are made by the researcher as a result of the findings of the study:

1. None professional teachers in technical colleges should be encouraged to obtain teaching qualification.
2. Induction training should be made for technical teachers whenever new machines and training equipment are supplied.
3. Seminars and workshops should be organized by the state Ministry of Education on new teaching skills, developed as a result of global technological changes that take place in the industrial world.

5.6 Suggestions for Further Study

1. A study should be carried out on 'Factors Affecting Students' Performance in Technical Colleges in North-Easter States of Nigeria'.
2. A study should be conducted on 'Strategies for Improving Technical College Graduates' Performance in Tertiary Technical Institutions'.
3. Further studies on the 'Assessment of Introductory Technology Teachers' competences in junior Secondary Schools'.
4. A study should be conducted on the 'Assessment of Teaching Effectiveness of Academically Qualified and Professionally Qualified Technical Teachers.

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APPENDIX I

School of Postgraduate Studies,
Department of Technology Education,
Federal University of Technology,
Yola.

Dear Respondent,

ASSESSMENT OF THE TEACHING COMPETENCIES OF TECHNICAL TEACHERS (ATCTT) , TEACHING IN TECHNICAL COLLEGES IN GOMBE STATE

I am a postgraduate student of the Federal University of Technology Yola, currently carrying out a research work on the above named topic.

Please kindly provide sincere and honest responses to the attached questionnaire. Your responses will be treated as a confidential document and will only be used for the purpose of which it is meant for.

Thank you.

Yours faithfully,

Aminu Tijjani Umar

APPENDIX II

Questionnaire on the Assessment of the Teaching Competencies of Technical Teachers (ATCTT), Teaching in Technical Colleges in Gombe State

Please feel free to respond to the following items. All responses will be treated confidential.

Part A':- Demographic Data;

Please respond to these questions by placing a tick ( ) on the correct information about your self.

1. Your highest academic qualification;

   a. NCE (Tech.) ( )

   b. B. Tech ( )

   c. B.Ed (Tech) ( )

   d. M. Ed. (Tech) ( )

   e. B. Sc (Engr.) ( )

   f. M. Engr. ( )

   g. PGD Engr. ( )

   h. HND ( )

   i. OND ( )

   j. Ph. D ( )

   k. Others (specify) ……

1. Position (s) held in the college.

   Principal ( )

   a. Vice principal ( )

   b. Head of department ( )

   c. Trade teacher ( )

3. Teaching trade;

   a) Auto-mechanics ( )

b) Block laying and concreting ( )

c) Carpentry and joinery ( )

d) Elect. / Elect. ( )

e) Metalwork ( )

f) Others ……

4. Are you registered with any professional body? If yes, Please state the name of the body. ……

PART B':-

Please indicate your opinion by ticking ( ) as appropriate, on each statement below concerning the possessed level of teaching competence of technical teachers teaching in technical colleges in Gombe state.

Where; - VH stands for, Very High = 5 Points

H stands for High = 4 Points

ML stands for Un Decided = 3 Points

L stands for Low = 2 Point

VL stands for Very Low = 1 Points.

Section III of part B' is given as:-

SA (strongly Agreed) = 5 points

A (Agreed) = 4 points

UD (Un Decided) = 3 points

D (Disagreed) = 2 points

SD (Strongly Disagreed) = 1 points

Section I: Inventory of possessed level of teaching competencies of technical teachers teaching in technical colleges:-

competencies	VH	H	ML	L	VL
1. What is the teachers' ability in the teaching of the subject matter of their teaching trade?					
2. What is the teachers' ability in employing appropriate strategies for various learner needs in their teaching process?					
3. What is the teachers' ability in the use basic skills and appropriate mathematical principles in teaching their trades?					
4. What is the teachers' capability of using different teaching methods for achieving educational goals?					
5. What is the teachers' capability in demonstrating good oral and written communication skills?					
6. What is the teachers' ability to outline subject matter to be taught in a study?					
7. What is the teachers' ability in identifying and utilizing a variety of resources to engage learners in the learning process?					
8. What is the teachers' ability to demonstrate the use of instructional resources/materials?					
9. What is the teachers' ability to use a variety of instructional media in teaching their trades?					
10. What is the teachers' ability in time management when administering their lessons?					
11. What is the teachers' ability in anticipating difficulties the learner may encounter?					
12. What is the teachers' ability in the use of democratic process in their teaching?					
13. What is the teachers' ability to choose appropriate teaching strategies and resources to accommodate diverse learning styles?					
14. What is the teachers' ability to prepare lesson in theory and practical?					

15. What is the teachers' ability in the use of convergent and divergent ways in teaching their trades?					
16. What is the teachers' ability in the use of demonstration method of teaching practical lessons?					
17. What is the teachers' ability in the management of tools, equipment and materials during practical lessons?					
18. What is the teachers' ability to motivate learners on the performance and habits of technical education?					
19. What is the teachers' ability create a convenient learning environment, which includes positive reinforcements for effective work and study habits?					
Section II: Determination of the Competency Of Teachers in Evaluating Instructional Objectives. 1. What is the teachers' ability level in the knowledge of assessment techniques?	**VH**	**H**	**ML**	**L**	**VL**
2. What is the teachers' ability of assessment methods to refine the instructional process, using the data obtained from learner evaluation report?					
3. What is the teachers' ability to provide evidence of learner achievement?					
4. What is the teachers' ability to effectively use data from assessments and student progress to evaluate the programme's effectiveness?					
5. What is the teachers' level of ability in assessing instructional objectives to refine the education process					
6. What is the teachers' ability in understanding and utilizing a variety of evaluation techniques and assessment?					
7. What is the teachers' ability to select and use the most effective strategy in evaluating students' performances?					
8. What is the teachers' mathematical ability to record students' results and make analysis of it?					
9. What is the teachers' ability to set questions that reflect all the three domains of educational					

objectives?					
10. What is the teachers' ability in understanding the importance of assessing instructional methods to refine the education process?					
11. What is the teachers' ability in providing feedback to the students on their performances					
Section III: Determination of areas where Technical Teachers Need further training For effective teaching.	**SA**	**A**	**UD**	**D**	**SD**
1. Teachers are always sent on training on newly supplied machines and equipment.					
2. Induction training is frequently organized for teachers by the college on machines and equipment.					
3. Teachers attend capacity building workshops organized outside the college.					
4. Teachers go on in-service training to up grade their Knowledge.					
5. The teachers pursue appropriate professional teaching qualification					
6. Teachers need training on current technological development breakthrough.					
7. teachers in technical colleges don't attend seminars that develop their teaching effectiveness					

Thank you.

APPPENDIX III