

# Workshop Planning Techniques and the Achievement of Electrical and Power Engineering Students' in Higher Technical Teachers Training Colleges (HTTTCs) of Bambili and Kumba, Cameroon

Ngwa Marcus Suh<sup>1</sup>, Nnane Peter Ebontane<sup>2</sup>

<sup>1</sup>M.Ed/EFA, PhD in View, University of Buea, Buea, SWR, Cameroon, Central Africa

<sup>2</sup>PhD(Associate Professor), University of Buea, Buea, SWR, Cameroon, Central Africa

## ABSTRACT

This paper focused on Workshop planning Techniques and the achievement of Electricity and Power Engineering (EPE) students in the Higher Technical Teachers Training Colleges (HTTTCs) Bambili and Kumba, as well as what teachers and students think can be done to address would be problems. This study was aimed at empirically establishing the extent to which students' achievement in the department of EPE in HTTTC influenced by planning techniques used in workshop practicals?

This was done from the perspective of lectures, students and the raw scores of students' practical performances. The survey and descriptive design was used. The simple random sampling and clustered random sampling techniques were employed. A sample of 65 students and 10 teachers from the population of 109 students and teachers of the second cycles of the two institutions. Data collected through the use of 48 items questionnaires, "closed-end and open-ended", for students, interview guide for lecturers and raw scores of students' practical performances. Data was analysed using the statistical package for the social sciences (SPSS) and the techniques of content analyses respectively. The responses of the students' questionnaires have been analysed both descriptively and inferentially. Descriptively the responses have been analysed item by item using simply frequencies and percentages and as well as mean options. (Ranging from 4 to 1 and a critical value of 2.50) in search of trends on how workshop management techniques influence students academic achievement in the Department of EPE. The decision to agree or disagree has been established and taken under the conditions outlined on table 4.1. The chi-squared statistics has been used to test whether or not the perceptions of the students of HTTTC Bambili are similar to those of Kumba. The study concluded from the findings that there was a significant relationship between Workshop planning Techniques that influenced students' academic achievement in EPE in both schools.

**KEYWORDS:** Workshop, Planning, Techniques, Achievement, Electrical, Power Engineering, Higher, Technical Teachers Training Colleges, Bambili, Kumba

## INTRODUCTION

One of the major problems in the Higher Technical Teachers' Training Colleges in Cameroon as in some African Countries is Workshop Management Techniques. This is in a situation where the workshops are available. In some cases, the workshops are not available talk less of being equipped.

This is evident in the fact that in Cameroon, these institutions are created, opened and they go operational without the construction of classrooms, workshops, laboratories, libraries, and offices for staff. According to the draft document of the Sector Wide Approach on Education in Cameroon(2006), which elaborates on the demerits of our technical education system, it states" the inadequacy of training received by students has a limited external efficiency on the employment needed by graduates. The system does not adequately and effectively prepare the youths to confront the employment market which is more demanding, competitive and evaluative."

In view of the fact that electricity and power is and remains the bedrock of all developing countries and societies, the government of Cameroon of recent has embarked on the construction of giant projects like the Kribi deep sea port, Mevele, Lom Pankar, Mbamkim Hydro electricity dams, it is obvious that if these structures have to contribute to the development of the Nation, then the adequate and effective training of man-power to feed these giant projects of dames and deep sea ports in the domain of electrical and power engineering in our higher technical teachers training colleges is paramount. On the other hand, one of the objectives of these projects is to increase the quality and quantity of energy supply to industries and communities. The deep sea ports will enhance growth in trade through greater export and import of goods and services. All these are geared towards economic growth for the attainment of vision 2035 of an emerging economy.

**How to cite this paper:** Ngwa Marcus Suh | Nnane Peter Ebontane "Workshop Planning Techniques and the Achievement of Electrical and Power Engineering Students' in Higher Technical Teachers Training Colleges (HTTTCs) of Bambili and Kumba, Cameroon" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-3 | Issue-6, October 2019, pp.17-36, URL: <https://www.ijtsrd.com/papers/ijtsrd28054.pdf>



Copyright © 2019 by author(s) and International Journal of Trend in Scientific Research and Development Journal. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0) (<http://creativecommons.org/licenses/by/4.0>)



On the governance of the educational system and the participative management of communities, the law of orientation of education of 14<sup>th</sup> April 1998 and the Law of orientation of higher education of 16<sup>th</sup> April 2001 allow for the implication of the educational community in the management of education. In this frame, the government instituted in 2001/2002 school advisory councils charged with the functioning of schools. State Universities on their part have boards of Directors carrying out the same function. How effective these bodies are in solving some of the problems schools have might still be questionable.

Good practices in workshop management techniques requires statistical information on the educational system, which should be collected at all levels to be used in the management of training colleges, and to forward to the administration for its proper management for the good of teachers and students. Equally, the culture of piloting by results is not yet deeply embedded in the Cameroon educational system due to the lack of or poor method of evaluation in the educational system.

This study seeks to investigate Workshop management techniques and students achievement in higher technical teachers training college HTTTC, Bamenda and Kumba. In addition, the study seeks to capture teachers and students perceived solutions to the problems.

This chapter presents the background of the study under the following headings: statement of the problem and purpose of the study, research objectives and research questions, significance of the study, delimitations of the study, and operational definitions of terms and the summary.

### Statement of the Problem

It has been observed that over the past two decades that the achievement of students in the national technical examinations and other related certificate examinations have been considerably deteriorating, especially in the domain of electrical and power engineering. This problem is even more serious as can be seen during the last syllabus review for the technical examination organized by the ministry of secondary education and the Cameroon General Certificate of Examination Board (GCEB) in 2012. The conference for syllabus review which took place at the Government Technical High school (GTHS) Kumba brought together top ministerial education administrators, education experts, and chief examiners, national and regional inspectors of technical education, teachers, examiners and resource persons. The reports by the panel for electrical technology and from the experience of the majority of electrical technology teachers confirmed the observation.

Consequently, upon the observed deterioration in students' achievement in external and national examinations, the general feeling is that the electrical technology teachers in technical colleges seem to lack workshop management techniques in the teaching of electrical technology in the schools in situations where the workshops are available. It was also observed that a majority of the schools do not have workshops. Some schools have workshops but are not equipped. Some have equipment but the teachers cannot operate them due to lack of proper training. One wonders aloud what the situation will look like if adequate attention

is not given to improve on this appalling situation. Considering the fact that the electrical technology teachers in technical colleges are graduates of HTTTCs, one ponders if they really acquired the adequate skills and knowledge in workshop management techniques.

According to Elom (2009), workshop management techniques are necessary in every electrical or any workshop if effective teaching of the lessons is to be achieved. This is because it enables the teacher to effectively deliver his or her lesson to the students. This involves the planning, organizing, coordinating, controlling, implementing and evaluating of workshop management. Ede and Attama (2010), stated that for a workshop as a place of practical work and study, the quality of instructions and learning is positively influenced by the manner in which the workshop is managed.

Koontz and wehrich (2001), stressed that better teaching of technical lessons for success of any educational goals and objectives depends largely on the managerial techniques adopted and the efficient utilization of the available resources. Unfortunately, the management of electrical and power engineering technology workshop by the teachers in HTTTC, Bambili and Kumba leaves much to be desired..

Specifically, this paper intends to find out the extent to which students' achievement in EPE can be influence by workshop planning techniques.

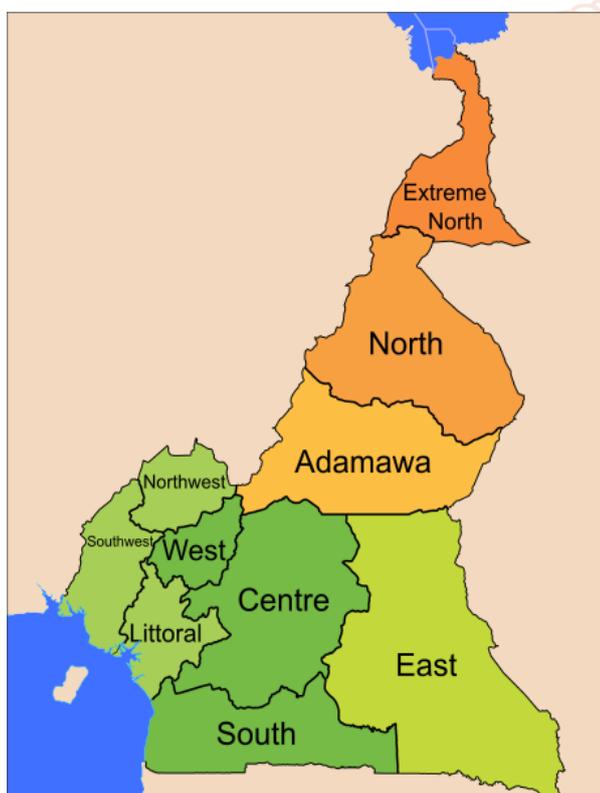
## BACKGROUND

### The Cameroon Educational System

The Republic of Cameroon is situated at the Extreme North Eastern Region of the Gulf of Guinea. It lies between longitude 8° and 16° East of the Greenwich Meridian and between latitudes 2° and 13° north of the Equator. Cameroon's position being seen as the "armpit of Africa", bordered to title South by Equatorial Guinea, Gabon and Congo; to the West by Nigeria; to the East by Central African Republic and finally; to the North by a narrow portion of Lake Chad(Cameroonweb.com. 2018). The territory has the shape of a carelessly drawn triangle with a base of about 700km and a height of 120km. The whole territory covers an area of 475,000km<sup>2</sup> with a population of about 20 million inhabitants (based on the 2010 census).

A former German protectorate, since 1884, it was divided between Britain and France after World War I, with the French getting about four-fifths of the territory. In 1960 it had its independence and in 1961 the country was reunited as a Federal Republic after a United Nations (UN) plebiscite, but at this, part of the British Cameroon was lost to Nigeria. This partition between the British and French led to the country being bilingual and this has led to its long standing peace. Cameroon has been controlled by a single-party government and has maintained a measure of political and economic stability. In previous studies, major issues necessitating a review of education policy were: the ruralisation of Cameroon education because about 85% of the population of Cameroon live and work in rural areas, re-unification of the two sections with the emerging issue of harmonization of the two sub systems of education and the introduction of bilingualism (Bureau of African Affairs, 2000).

Two separate systems of education were used in Cameroon after independence: East Cameroon's system was based on the French model, West Cameroon's on the British model. Uniting the two systems was deemed a symbol of national integration between West and East Cameroon. The two systems were merged by 1976, but studies suggest that they didn't blend well (Nsamenang, 2011). Shortly after independence, French was considered the main language of the country, but with the rising of English as first commercial language in the world, the balance switched to the latter. Christian mission schools have been an important part of the education system, but most children cannot afford them and are forced to choose state-run schools (Mbaku, 2005). Education became compulsory up to the age of 12 years, when 6 years of primary schooling are complete. Primary school education is free (since 2000), but families must pay for uniforms, book fees, and sometimes even anti-malaria prophylaxis for pupils. Tuition fees at the secondary school level are high, and therefore unaffordable for many families. The country has institutions for teacher training and technical education. There is, however, a growing trend for the wealthiest and best-educated students to leave the country to study and live abroad (Cameroonweb.com. 2018).



Source: Cameroon – Country profile". UNDP. Archived from the original on 2013-05-16.

### The Structure of Education in Cameroon Primary and Secondary Education

The educational system in Cameroon is divided into primary (six years, compulsive), middle school (five years), secondary (high school, two years), and tertiary (University). The academic year runs from September to June, at which time, end-of-year-examinations are always written. Education is compulsory through the age of 12 years. Primary school education has been free since 2000; however, families must pay for uniforms and book fees. There are two separate secondary schooling systems, depending on whether the French or British colonial models apply. In the Cameroon English-speaking education sub-

system, pupils leaving primary school enter secondary school after passing the Government Common Entrance Examinations (and obtaining a First School Leaving Certificate) in Class 6 (now) or 7 (formerly). The secondary phase comprises a lower (middle school) and an upper level (high school). For the majority of young people this distinction remains academic, because their parents are unable to afford secondary school fees at all (Classbase.com. 2018).

Students who graduate from a five-year secondary school program have to sit for the GCE Ordinary Level, and those who graduate from a two year high school program have to sit for the GCE Advanced Level. So far, the GCE advanced level and the Baccalaureate (the French equivalent of academic attainment) are the two main entrance qualifications into institutions of higher learning. After secondary school, there is the possibility of undertaking "vocational studies," courses aimed to unemployed people under the responsibility of the Ministry of employment and Vocational Training. In broad terms, the General Certificate of Education (GCE), both Ordinary and Advanced levels, are the two most qualifying exams in the Anglophone part of Cameroon.

### Higher Education

The higher education system in Cameroon has its roots in the traditional francophone African model, with almost all students in full degree courses, few links to the labour market, no involvement of the private sector in program selection and curriculum content, and virtually all financing (apart from small student fees introduced in 1993) provided and controlled by the Ministère de l'enseignement Supérieur (MINESUP) and the Ministry of Economy and Finance (MINEFI). This model, initially designed to produce personnel for the civil service, no longer conforms to the economy's needs in the era of shrinking public services, nor to international best practices (World Bank HDN II).

Although Cameroon boasts a sprawling cache of junior academic institutions of excellence, higher institutions are rather insufficient. There are eight state-run universities in Buea, Bamenda, Douala, Dschang, Maroua and Ngaoundere and Yaounde I & II. There are a handful of thriving private universities such as the Bamenda University of Science and Technology (BUST), International University, Bamenda and the Fotso Victor University in the west region (Njeuma, 2003).

The University of Buea is the only Anglo-Saxon style university, the University of Bamenda which went operational in 2011 is bilingual, and Cameroon has one English University. The rest of Cameroon's six state-managed universities are run on the francophonie model, although in principle, they are considered to be bilingual institutions. Cameroon's universities are strictly managed by the central government, with the pro-chancellors and rectors appointed by presidential decree. The minister of higher education is the chancellor of all Cameroon's state universities. For Higher Education system, the structure is 3 years First Degree; 2 years Master and 3 years Ph.D. The country now strives to put in place a national curriculum in the country. At the primary level the school year is divided into six sequences with specific competence, to be acquired before moving on to the next level (Njeuma, 2003).

### Technical/ Vocational Education

Technical/vocational education has been one of the major concerns of African countries since independence. In almost all the countries, technical /vocational education has not only continued to maintain a position of priority in the national budgetary allocations but has remained one of the major recipients of foreign aid. African technical/vocational educational development has continued to be a subject of numerous national and international meetings since the Addis Ababa Conference of 1961 though much emphasis was laid on general education.

In Cameroon for instance, technical or vocational educational focus has not historically been a priority in formal colonial schooling structures. In the francophone region, the primary focus of education for colonized peoples was to groom enough administrative workers to fill the needs of the French government this preparation of administrators also eventually became important in the Anglophone school systems as well. As Cameroon became independent in 1960, there were only five full-fledged secondary grammar schools and one technical secondary school in all of Cameroon (Ihims, 2003). There were several apprenticeship centers and handicraft workshops, but post-primary education was not available for most Cameroonians.

The goals of technical educational settings in Cameroon include providing a trained workforce for various employment sectors, to increase understanding of technology, and to prepare people who might be able to solve the environmental problems Cameroon is facing. According to Atayo (2000), technical and vocational education is confronting similar issues as general education in Cameroon: lack of resources, including material infrastructure, trained teachers, and financial sponsors. Vocational and technical educational settings in existence today in Cameroon can be classified into three categories: Rural craft, domestic science, and vocational and technical colleges or high schools (Atayo, 2000). Rural craft schools offer two-year courses in carpentry, masonry, pottery, and agriculture for those who may be too old for secondary school. An aim of these rural craft schools, of which there are about 150, is to stem rural flight (Atayo, 2000). The more than 100 domestic science schools in Cameroon offer two-year courses for girls who have not gone to secondary school. There are fewer than ten technical and vocational high schools or colleges in Cameroon, offering three to four-year courses in civil engineering, electricity and electronics, maintenance and production engineering, dress-making, nursing, clerical studies, economic and commercial studies, and industrial studies (Atayo, 2000).

The demand for vocational and technical education carefully matched to the labour-market needs increased appreciably during the 1990s. By the end of the decade, government ministers and educators placed greater attention on trying to develop a model that could be successfully replicated throughout the country to train youth for jobs and secure higher levels of employment for the graduates of both secondary and tertiary education programs. One model that appeared promising was experimented in the University of Douala, It started after the university-level reform decrees of 1993 by the World Bank. This school, the Institut Universitaire de Technologie de l'Université de Douala (University Institute of Technology of the University of

Douala, or IUT Douala), enjoyed close linkages with employers and entrepreneurs and was strikingly more successful at job-placing its graduates.

The differences between regular higher education programs in the late 1990s and the type of training programs the Bank intended to support were the institutes following the IUT Douala model which would provide diploma-level courses instead of degree-oriented academic training, the institutes would limit courses and programs enrollment to the number of students the institutes could effectively teach, they would use private-sector internships to give students in training specific job skills directly transferable to paid employment after graduation, and the institutes themselves would generate income through courses offered on a part-time and "à la carte" basis where students could more easily pay for their own training.

Higher Technical Teachers Training Colleges are expected to provide graduates with the much needed skills and competencies necessary for building an emerging Cameroonian economy by 2035. According to the Growth and Employment Strategy Paper (GESP, 2009), *Reference Framework for Government Action over the Period (2010-2020)*, it states that, in the general human development framework and in order to provide the nation's human resources with the skills necessary for building an emerging Cameroonian economy by 2035, the Government intends to lay special emphasis on the training of human capital through sustained implementation of the education sector strategy. The reforms envisaged in that strategy and updated with regard to vision 2035 objectives should culminate, after the GESP implementation, in an education and training system having the following characteristics:

1. Quality basic education covering the primary level and the first cycle of the secondary level accessible to the greatest number of children aged 6 years to 15 years and helping to raise the average level of education to that coherent with the vision of an emerging Cameroon by 2035.
2. Quality second cycle secondary education based on a dynamic balance between general and technical education in preparation for higher studies in priority professional fields of studies for the development of an economy general towards industrialization;
3. Vocational Training based on a modernized and significantly strengthened system for imparting a solid package of knowledge centered on the mastery of skills required on the job market and preparing the beneficiaries for job creation, to students leaving the first and second cycles of general secondary education;
4. University education with a professional focus;
5. Extending continuous training coupled with a system of developing learning through experiences; and
6. Real mastery of student's enrolment which is indispensable for ensuring quality education through defining a system of regulating transparent and credible flows, strengthening the educational counseling system and increasing the salary scale for technical professions.

To make this long-term development vision sustainable and break the inter-generational cycle of poverty, the management plans to make children aged from 0 to 8 years physically mentally and morally healthy, well nourished, well-educated and cultured, sound, fully enjoying their

rights, respectful of their environment's social, cultural and spiritual values and living in a sound, safe and conducive environment by 2035.

As for technical education, the state will first of all seek to significantly improve its quality by tailoring training to real market needs and by forging partnership with the productive sector of the economy in order to increase the provision of training. In an effort to rationally use available resources in personnel, infrastructure and equipment, the state will set up major technical education schools which include on the same site Government Technical schools (GTCs) and current technical high school.

As regards vocational training, the government plans to:

1. Significantly increase the provision and improve the quality of vocational training by tailoring it to the profession and be able to efficiently regulate flows at the level of primary, secondary and higher school cycles;
2. Further rationalize the management of the vocational training system, especially the over hauling of the 186 Rural Artisan and Home Economics Centers (REC/HEC) scattered across the country and building vocational training Centre that are limited in number, better equipped and more efficient;
3. Drastically reform the professional and knowledge-acquisition systems.

As for Higher Education, in the meantime, the state will continue to invest in infrastructure and teaching staff. The professionalization of education will be more refined. Moreover, graduates from professional schools (engineering, agriculture, public works, water and forestry etc) will be more involved through integration contracts during the execution of major projects.

Implementation of the aforementioned reforms will be done at each education or training level, according to an action plan covering the following operational objectives:

1. Improve access and quality;
2. Improve education and training efficiency and quality;
3. Forge efficiency, partnership with all stakeholders in education and training
4. Improve system management and governance.

The United Nations educational, scientific and cultural organization, UNESCO (2007), defined technical and vocational education as comprehensive term referring to those aspects of educational process involving the acquisition of practical skills, attitudes and understanding of knowledge applicable in industries. The aim of technical education is to produce graduates with employability or saleable skills, knowledge and attitude necessary for effective employment and who can actually function well in their place of employment. In technical colleges, teachers give training in various disciplines such as woodwork, metal work, shipbuilding construction, electrical and electronic technology to mention but a few (Adeyemi and UK Aviomoh, 2004). Each of the above disciplines (including electrical and power engineering) is usually headed by the most senior teacher referred to as the head of department. The effective and relevant training can only be acquired if the workshops are equipped with the adequate machines, tools (equipment) since technical education is highly skill oriented and requires the use of workshop for the provision of learning situation in

which the learner could experiment, study, create, construct, design and repair and so forth (Sulaiman, 2000). The school workshop refers to a room or building housing the facilities used for manual training of students in Technical subjects so that they could acquire the practical skills that would enhance their economic life upon graduation.

In order to carry out such skilled training, the school workshop must be well equipped and properly managed in order to be a replica of what is obtainable in industries and companies where the student will find employment upon graduation. In the same vein, workshop refers to a room or building where tools and machines are used for making or repairing things (Baba, 1992). Similarly, workshop is a unique learning environment in which the learner may test, construct, repair, experiment, design, disassemble, create, imagine and study (Ezeji, 2005).

Management is the process of dealing with or controlling things or people. Mullins (2007), defined management as the act of getting people together to accomplish desired goals and objectives using available resources (Human, Material and financial) efficiently and effectively. Management encompasses planning, organizing, leading, directing and controlling an organization or efforts for the purpose of accomplishing a set of goals. As used in this study, management means workshop management techniques such as planning techniques for workshop management, coordination techniques for the implementation of workshop activities, and evaluating techniques for workshop management.

Workshop management techniques are the various ways or methods adopted by technology teachers in schools, industries and companies on how students can acquire sound adequate practical skills. Workshop management techniques are strong means of attaining competences in a job or occupation by the concerned individuals (Danjuma, 2009). Danjuma added that techniques are important ways which when appropriately adopted, can result into effective teaching and learning of practical subjects. According to Agu (2006), techniques are ways or modes of doing things such as:

#### **Planning Techniques for Workshop Management**

Nwachuku (2003) noted that for any effective instructions in the workshop, appropriate instructional techniques must be arranged, utilized and kept in order that an acceptable occupational work habit and operational procedures are successfully imparted. Good planning gives impetus to effective teaching and learning; for planning to be effective, planning techniques must be considered (Olaitan, 2003). In effective planning, there must be selection of appropriate material, tools and equipment, identification of practical lessons objectives, selection of practical projects within the ability of the learners, drawing up step by step the procedure of executing the task, ensuring that all safety devices to be used for the lesson are in place and more so, preparation of learning sequence, that is starting from simple to complex steps.

The technical graduates from higher technical teachers training college HTTTC, are expected to be trained to attain full occupational mastery in their respective occupations, as this will enable them to be self-employed or gainfully

employed in companies and industries. In order to achieve this, the planning of school workshops becomes necessary, as this would improve the effectiveness of instructional outcomes and consequently will lead to the production of efficient technical graduates.

Umar(2010),stated that the effectiveness of any type of school workshop in meeting its specific function for a desirable outcome requires efficient planning by teachers and instructors. The reason for proper planning of workshop instruction according to Elom(2009), are:

- To understand what has been in the workshop in the past and then set the purpose for what is desired tomorrow.
- To overcome pitfalls and what might hinder the success in carry in out practicals in the electrical and power workshop and for the subsequent instruction preceding the practicals.
- To simplify the teaching and learning of skills through instruction.
- To provide a replica of the environment in which the learner must subsequently work.
- To ensure that the training activities are done with the same tools and equipment as the one s used in the industrial workshop.
- To obey all the theories, principles and practical of electrical work education.
- To ensure that the individuals in the electrical workshop are properly equipped through educational activities to acquire the needed skills to enhance their employ abilities in the world of work.

According to Nwachukwu (2001), planning techniques for workshop Management are those systematic processes used in establishing objectives, strategies and guidelines that can lead to the achievement of set objectives. Oranu(2001, revealed that the first management function of any technical teacher for workshop instructions is planning. He stressed that a good plan gives direction to the workshop teacher and his sub-ordinates for all they intend to undertake.

Umar(2010),stated that the guidelines for planning school workshop must include consideration for the development of each learner, the talented and the handicapped .He added that the learning environment must be flexible, safe, secure, accessible and organized. Nwachukwu(2001),opined that for the planning to be effective in school workshop instructions, the following should be considered:

#### **Availability of Adequate Materials, Tools and Equipment for Workshop Practice**

The first step in planning any workshop lesson should be to know the necessary materials to be available for the lesson and whether the materials will meet the needs of the lesson (Nwachukwu, 2001).In his view, if materials are found inadequate, useful efforts should be made to make them available either a way of planning order for more materials or by improvisation. Owoh(2009),warned that teachers should not use inadequate materials as an excuse to resort to poor teaching; instead they should learn to improvise.

#### **Proper Scheduling of Workshop Activities**

There is no doubt that when all activities in the workshop are properly scheduled, teachers and students normally find

it much easier to teach and learn, respectively. According to Asilokan(2003), good timing and duration of lessons and events provide for effective teaching and learning .He therefore advised that it is always necessary to consider the total events in the school calendar before planning and fixing workshop lessons in the school timetable. That is, workshop lessons should be fixed to avoid being short or clashing with major school events.

Time allocated for any experiment should be tried out to know whether it will be sufficient. Nwachukwu (2001), suggested that before carrying out any experiment for the students, it is normal for the teacher to practice that experimental one and confirm all necessary procedures. This idea, according to him, is to find out if the time allocated for the experiment will be enough, and also to consolidate the much needed confidence in the ability to conduct the experiment as well as to confirm the workability of the materials and equipment in use .He further highlighted that it is necessary to consider workability of the procedure and equipment in carrying out any work shop exercise. This is to identify possible obstacles students are likely to encounter when allowed to practice the task, so that if there is any, it should be rectified.

#### **Proper Arrangement in Work shop Practice**

According to Elom(2009), proper arrangement in workshop activities is necessary in every workshop if the objectives of the tasks are to be achieved. The arrangement enables the teachers and students to effectively deliver their lessons and learn, respectively.

Arrangement of students in controllable groups of ten yields good results. According to Oranu(2000),it is important for the teacher to determine the most effective and efficient group size that can help students acquire the necessary experiences quicker, bearing in mind that the materials and equipment required by individual work is more than required by group work.

Some other guide lines for putting arrangement in workshops' practicals are put forward by Elom(2009), and Ede(2010),thus:

- Each staff and student expected role to be performed should be clearly spelt out to avoid clashes of interest.
- Ensure that supportive personnel are available to assist learners. The roles of these personnel are: to prepare materials and equipment for students and to supervise students and correct them where necessary. Hence, such personnel should be very familiar with workshop activities.
- State clear step by step processes and operational procedures to be used in carry in gout any task in the work shop.

#### **Student Achievement**

Academic achievement or (academic) performance is the extent to which a student, teacher or institution has achieved their short or long-term educational goals (Annie et al, 1996). Cumulative GPA and completion of educational benchmarks such as secondary school diplomas and bachelor's degrees represent academic achievement. Academic achievement is commonly measured through examinations or continuous assessments but there is no

general agreement on how it is best evaluated or which aspects are most important—procedural knowledge such as skills or declarative knowledge such as facts. Furthermore, there are inconclusive results over which individual factors successfully predict academic performance, elements such as test anxiety, environment, motivation, and emotions require consideration when developing models of school achievement. Now, schools are receiving money based on its students' academic achievements. A school with more academic achievements would receive more money than a school with less achievement (Mosche, 1998).

Student achievement has become a hot topic in education today, especially with increased accountability for classroom teachers. The ultimate goal for any teacher is to improve the ability level and prepare students for adulthood. Student achievement measures the amount of academic content a student learns in a determined amount of time (Carter, 2018). Each academic level has learning goals or instructional standards that educators are required to teach. Standards are similar to a 'to-do' list that a teacher can use to guide instruction. Student achievement will increase when quality instruction is used to teach instructional standards.

Illustrating this "to do list", Carter indicated that if a student has a to-do list that involves three tasks: dropping off the cleaning, filling your gas tank, and studying for a final. Questions you may ask yourself are: In what order do I accomplish my tasks? How am I going to get each task finished? Should I study at the library where it is quieter or at home where I may be distracted? Is it worth it to purchase gas a few blocks from home at a higher price or drive a short distance to save money? Your goal is to get your to-do list finished in the most efficient and timely way possible. Hence, when teaching, instructors must use the same process when addressing instructional standards; by asking questions to enable them complete their 'to-do list' or learning standards in a timely and understanding the factors that can impact a student's ability to learn.

### Factors that Impact Student Achievement

There are many variables that can impact successful student achievement, but the most critical are classroom instruction and learning disabilities. It is important to remember that all students do not learn the same way or at the same rate. Students are like leaves on a tree; there are no two exactly the same. Just as a leaf comes in unique colors, shapes and sizes, each student has their own unique learning style. You must use a variety of teaching methods and understand the background and individual needs of each student.

### Students' Individual Differences

According to Stumm (2011), individual differences in academic performance have been linked to differences in intelligence and personality. Students with higher mental ability as demonstrated by IQ tests and those who are higher in conscientiousness (linked to effort and achievement motivation) tend to achieve highly in academic settings. A recent meta-analysis suggested that mental curiosity (as measured by typical intellectual engagement) has an important influence on academic achievement in addition to intelligence and conscientiousness. In California, the achievement of schools is measured by the Academic Performance Index.

### Parental Influence

Parent's academic socialization is a term describing the way parents influence students' academic achievement by shaping students' skills, behaviors and attitudes towards school (Magnuson, 2007). Parents influence students through the environment and discourse parents have with their children; this can be influenced by parents' socio-economic status. Highly educated parents tend to have more stimulating learning environments. Further, recent research indicates that the relationship quality with parents will influence the development of academic self-efficacy among adolescent-aged children, which will in turn affect their academic performance (Fam & Yaacob, 2016).

Children's first few years of life are crucial to the development of language and social skills. School preparedness in these areas help students adjust to academic expectancies. Also, Lassiter (1995), posit that indirect evidence suggests that physical activity could affect academic achievement by increasing neural activity in the brain. The exercise specifically increases executive brain functions such as attention span and working memory.

Besides this, Dearing, Kreider & Weiss, (2008), advanced that parents' connections with the school, their expectations of the school and their attitudes to learning are also factors weakening or strengthening educational achievement and the motivations and ambitions of students.

### Non-Cognitive Factors

Another determinant of student achievement is non-cognitive factors or skills, are a set of "attitudes, behaviors, and strategies" that promotes academic and professional success (Gutman, & Ingrid (2013); such as academic self-efficacy, self-control, motivation, expectancy and goal setting theories, emotional intelligence, and determination. To create attention on factors other than those measured by cognitive test scores sociologists Bowles and Gintis coined the term in the 1970s. The term serves as a distinction of cognitive factors, which are measured by teachers through tests and quizzes. Non-cognitive skills are increasingly gaining popularity because they provide a better explanation for academic and professional outcomes.

### Motivation

Motivation is the reasoning behind an individual's actions. Students who are motivated to improve upon their previous or upcoming performance tend to perform better academically than peers with lower motivation (Heckman, et al., 2006). Students with higher academic performance, motivation and persistence use intrinsic goals rather than extrinsic ones; that is, students with higher need for achievement have greater academic performance.

### Self-control

According to Tangney (2004), self-control is related to self-discipline, self-regulation, delay of gratification and impulse control. It is also considered as the capacity for altering one's own responses, especially to bring them into line with standards such as ideals, values, morals, and social expectations, and to support the attainment of long-term goals. In other words, self-control is the ability to prioritize long-term goals over the temptation of short-term impulses. Self-control is usually measured through self-completed questionnaires. Through a longitudinal study of the

marshmallow test, researchers found a relationship between the times spent waiting for the second marshmallow and higher academic achievement. However, this finding only applied for participants who had the marshmallow in plain site and were placed without any distraction tactics (Gutman & Ingrid, 2013).

### Extracurricular Activities

Abruzziet al., (Spring 2016), found that organized extracurricular activities have yielded a positive relationship with high academic performance. This includes increasing attendance rates, school engagement, GPA, postsecondary education, as well as a decrease in dropout rates and depression. Additionally, positive developmental outcomes have been found in youth that engage in organized extracurricular activities. High school athletics have been linked with strong academic performance, particularly among urban youth. However, involvement in athletics has been linked to increased alcohol consumption and abuse for high school students along with increased truancy (Eccles, & Janice, 2002).

### Quality of Facilities

The above indicates that the quality of teaching, learning achievement and teacher quality all have within them complex, closely related micro-and macro level elements of observable qualities, also elements that cannot be or can only indirectly be observed; while there are additional factors making up the teaching environment (teaching technology, school environment). The notable role of teacher quality is emphasised via a number of research results, and we can see that other school activity parameters –like financial conditions, the number of students per class, school structure or equipment –hardly have any detectable effect (Hanushek, 1992; Hanushek et al., 2005; Rivkin, Hanushek & Kain, 2005; Rockoff, 2004; Woessmann & West, 2002). Thus, the existence of teaching technology and equipment in itself is no guarantee of quality education, that is, such items will only have a favourable effect if the school employs quality teachers as well. Infrastructural parameters do not influence achievement directly, yet they do communicate the effect of other, non-observable factors –and they also determine existing opportunities and limitations quite well (Hanushek, Kain & Rivkin, 2004).

### School Environment

Another study by Darling –Hammond (2006), from the point of view of student and school achievement, teachers' professional qualities and dedication are of the utmost importance, together with the applied teaching practices and methods; and these, in an optimal case, will be coupled with a knowledge of students' attitudes and motivations and the use of information technology. According to research data examining teaching practice indicators, student achievement can be linked to the characteristics of classroom practice. It is true, however, that this only explains a small part of any "achievement scattering", a reason for which might be the fact that the indicators of classroom practice correlate with other, non-observed teacher characteristics (Bonesronning, 2004; Wenglinsky, 2002).

Knowledge measured with the use of competence tests is important, however; and an even more important factor is the way this leads to gained knowledge, together with the learning environment and the climate of the school. The

effect of school can be most deeply felt in classrooms through the teacher -student relationship. A good teacher-student relationship and the resulting social-relationship benefits will have a strong effect on learning achievement - and the less beneficial the student's family background is, the more intensive the effect here can be (Coleman, 1988; Pusztai, 2009).

The majority of empirical research dealing with the quality of education measures achievement in relation to students' performances in their studies and to test results which are, of course, the most frequent indicators of the effectiveness and quality of the teachers and of the school. Currently, the most frequent method for measuring teacher quality and school achievement is the value-added model (VAM). Besides noting the difference between a student's performance between two given points in time, the model also takes into account the socio-economic status (SES) of the individual and the school, together with their respective compositions; that is, it tries to filter out those factors that cannot be influenced by the school. In educational achievement tests the resultant outcome can also be termed "added value". There is a broad consensus in the literature that any measurement of teacher and school achievement cannot be limited to merely student performance, especially if the appraisal having this as its basis will have specific consequences. Furthermore, it is also widely believed that the application of student results as a means of appraisal is far more relevant in an evaluation of schoolwork as a whole than it is for the individual appraisal of teachers (the Organisation for Economic Co-operation and Development OECD, 2013).

The much debated Coleman report found the effect of school background and school parameters on student achievement to be negligible; yet it did highlight the significant effect of family and social background factors (Coleman et al, 1966). Since then, ever more research has proved that school achievement is context-dependent to a great extent, that is, students' performance is determined not just by their family and social background but also by the schools, atmosphere and the educational environment of the school (Lannert, 2006a). The results of international surveys measuring student performance clearly indicate that in the majority of countries and especially in Hungary factors affecting achievement are primarily parental background and the social and cultural environment of the family.

In addition, in most countries the socio-cultural background of the school as a whole will have a deeper effect on students' results than the individual socio-cultural background of individual students; and this is especially characteristic of the Hungarian educational system, where any "performance-scattering" or unevenness of performance emanating from differences between individual schools is greater than what we see in the OECD average (Balázsi et al, 2010; OECD, 2010a).

Research on cognitive and social skills and abilities highlight the fact that while a certain proportion of students do develop continuously, a quarter or third of students practically stop improving in abilities from the 4-6th forms. From here onwards, though, developmental differences existing between students not only stop declining they show a continuous and clear increase. This means that the level of

school entry serves to determine later opportunities for further education for the majority of students (Nagy, 2008); and this is even truer for underprivileged children, since empirical research data proves that children coming from an unfavourable socio-economic background are at a disadvantage already upon entering school and these disadvantages prevail for the whole period of their schooling and also show further increases (Havas, 2008). Given this, we can say that schools and teachers have an extremely important role to play in the enhancing of "added value".

There are at the moment two significantly different approaches to measuring teachers effect on student performance in the relevant literature: (1) measuring teacher achievement regardless of individual teacher parameters, and (2) an examination of the connection between the different teacher parameters and students' performances the latter of which cannot necessarily be interpreted as indicating a causal effect (Hermann, 2010).

Others determinants include gender, place of living, family background, attitudes to learning, motivation, network of connections), of schools (infrastructure, location, size of school, atmosphere, number and composition of students), and also regarding the level of teachers (professional training, attitudes to teaching, motivations, cooperation); and these all clearly show that certain parameters of educational achievement can be influenced by educational policy, while others cannot.

In this same light, Barber & Mourshed, (2007); OECD, (2005, 2010b) acknowledged that teachers are of major importance in the creating of a quality and successful education, the development of students and in student achievement at school. The first McKinsey report clearly concludes that (1) the educational system is only as good as the teachers constituting it are; (2) successful learning cannot be imagined without quality teaching; (3) for an excellent performance the success of every child is a prerequisite (Barber & Mourshed, 2007). Thus, if we include student development and school achievement among the factors that can be influenced by educational policy, we can say that the quality of teachers and the provision of equal opportunities are the most determining factors.

Research by Kim (2005), indicates that students' cognitive and deductive abilities are developed much more effectively if teachers have a constructivist attitude as opposed to an immediate knowledge-transfer one. Teachers' professional communities and cooperation between teachers also influence student achievement positively; furthermore, the existence of professional communities and cooperation reduces the size of the gaps between performances determined by ethnic and socio-economic status (Moller, 2013). Another study by Horn (2006), and La Annert (2006b), in Hungary focused on successful schools indicate that although the success of schools is very much determined by the composition of students, it depends on the devotion, attitudes and activity of directors, other heads and teachers to the same degree.

## METHODOLOGY

A descriptive survey design and inferential were employed for carrying out the study. The study targets two schools (02) thjat is HTTTCs Bambili and Kumba.

The target population for this study include students and lecturers in the Department of Electrical and Power Engineering in these schools. Since the target population is the population under which the phenomena is being studied and which possessed the information required by the researcher (McMillan & Schumacher (2010), these groups of persons are targeted for the study. The student population in the six institutions stood at 522 students. Also, the study targeted 6 of these lecturers: each from the selected institutions. These persons are very important and they are key informants in the study. The entire population was not involved in the study; hence there was sample of 200 students selected as such.

**Table: List of sampled Higher Technical Teachers Training Institutions (HTTTIs)**

Name of Institution	Population	Sample
HTTTC Kumba	50	25
HTTTC Bambili	87	25
Total		

This study mainly made use of primary data which was collected using primary tools of data. The instruments used for this study were closed ended questionnaires and interview guides.

The study employed the convergence triangulation model of data analysis. In the convergence model of data analysis, qualitative and quantitative data was analysed separately (Creswell, 2007). In this case, data collected from questionnaires issued to students was analysed separately from the data generated from interviews of lecturers. More to that, both data were compared and contrasted to see the extent to which they complemented each other, bringing out the similarities and differences of both qualitative and quantitative data. In the interpretation stage, the analysis of the data collected from both tools were merged to produce a solid interpretation of the data.

The questionnaire collected from respondents were thoroughly checked and edited to ensure completeness, consistency, accuracy, uniformity through data coding and data tabulation. The data were inputted into SPSS version 21. The descriptive and the inferential statistics were used to analyze the data which were collected the use of the structured questionnaire whereas data collected from interview was analyzed using thematic analysis. The descriptive statistics enabled the researchers to describe the data using tables, simple bar charts and pie charts. The Mean was used to establish the usage and the extent of workshop management techniques. Standard deviations were also used to determine the closeness of the means cores. The mean of 3.50 was taken as a criterion for the determination of work shop management techniques needed for enhancing the teaching of electrical and power engineering in technical colleges. Any means core of 3.50 and above represented positive response, while any mean score below the criterion mean of 3.50 regarded a s negative response.

T-test statistic was used for testing the null hypotheses formulated for the study at 0.05 level of significance. The decision to accept or reject the null hypothesis ( $H_0$ ) was when the calculated t-value is greater than the t-critical(table value).The null hypothesis ( $H_0$ )was therefore rejected and alternative hypothesis taken. But if the reverse is the case the null hypothesis ( $H_0$ )was accepted at the appropriatedegree of freedom(df).

**FINDINGS**

The finding of this study is presented incognizant with the key indicators of the planning technique of electrical power workshops in the two schools under investigation

**Item 1: Tools used for teaching are planned for yearly.**

Institution	n	% agree	% disagree	Mean value	Decision
HTTC Kumba	20	50.0	50.0	2.25	Indecision
HTTTC Bambili	24	66.7	33.3	2.33	Agree
All two Schools	44	59.1	40.9	2.29	Agree
Critical mean value				2.50	

In reaction to the annual planning for the tools that are used in the Electrical and Power Engineering Departments of the two Training Colleges, it was observed that about three-fifths (59.1%) of the students from both schools agree (mean opinion of 2.29). However, the opinion of the Kumba students is shared (50 – 50 and a mean of 2.25) between agreement and disagreement (2.25) while the Bambili students tend to agree more (66.7%) than disagree (33.3%). This implies that the yearly planning for the tools used in teaching is averagely regular.

**Item 2: Workshop equipment is properly serviced before embarking on new task.**

Institution	n	% agree	% disagree	Mean value	Decision
HTTC Kumba	20	100.0	0.0	3.00	Agree
HTTTC Bambili	24	66.7	33.3	3.00	Agree
All two Schools	44	81.8	18.2	3.36	Agree
Critical mean value				2.50	

In response to the proper servicing of workshop equipment before using them in new tasks, more than four-fifths (81.8% and a mean opinion of 3.36) of all the responding students generally agree. Comparatively, this agreement is unanimous in Kumba (100% and a mean opinion of 3.00) and just above average in Bambili (66.7% and a mean opinion of 3.00).

**Item 3: Materials are planned based on electrical and power engineering curricula.**

Institution	n	% agree	% disagree	Mean value	Decision
HTTC Kumba	20	100.0	0.0	3.25	Agree
HTTTC Bambili	24	100.0	0.0	3.33	Agree
All two Schools	44	100.0	0.0	3.29	Agree
Critical mean value				2.50	

All the responding students in both institutions unanimously agree that the planning of materials is based on electrical and power engineering curricula.

**Item 4: Learners' intelligence levels are considered in setting workshop task**

Institution	n	% agree	% disagree	Mean value	Decision
HTTC Kumba	20	75.0	25.0	3.25	Agree
HTTTC Bambili	24	100.0	0.0	3.66	Agree
All two Schools	44	88.6	11.4	3.47	Agree
Critical mean value				2.50	

While almost nine-tenths (88.6% and a mean opinion of 3.47) of all the responding students agree that the setting of workshop tasks are based on or consider learners' intelligence levels, the Bambili students are unanimous in this opinion (100.0% and a mean of 3.66) while only three-quarters of the Kumba students agree (75.0% and mean opinion of 3.25). This implies that the Bambili students agree better than the Kumba students.

**Item 5: Learners' physical conditions (disabilities) are considered in setting workshop task**

Institution	n	% agree	% disagree	Mean value	Decision
HTTC Kumba	20	25.0	75.0	2.00	Disagree
HTTTC Bambili	24	0.0	100.0	1.00	Disagree
All two Schools	44	11.4	88.6	1.45	Disagree
Critical mean value				2.50	

Almost nine-tenths (88.6% and a mean opinion of 1.45) generally say that learners' physical conditions (disabilities) are not considered in the setting of workshop tasks.

Comparatively, this disagreement is more pronounced in Bambili (100.0% and a mean opinion of 1.00) than in Kumba (75.0% and a mean opinion of 2.00). This implies that learners' physical conditions (disabilities) are generally ignored in the setting of workshop tasks

**Item 6: The planning of replacement of adequate ventilation of the workshop is done**

Institution	n	% agree	% disagree	Mean value	Decision
HTTC Kumba	20	60.0	40.0	2.45	Agree
HTTTC Bambili	24	29.2	70.8	2.12	Agree
All two Schools	44	43.2	56.8	2.27	Agree
Critical mean value				2.50	

While about three-fifths (56.8% and a mean opinion of 2.27) of all the responding students and about seven-tenths (70.8% and a mean opinion of 2.12) of the Bambili students say the planning of the replacement of adequate ventilation of the workshop is not done, three-fifths (60.0% and a mean opinion of 2.45) of the Kumba respondents tend to agree. This implies that the Bambili respondents agree while those of Kumba disagree that the replacement of adequate ventilation of the workshop is planned.

**Item 7: The maintenance schedule of equipment is set before hand**

Institution	n	% agree	% disagree	Mean value	Decision
HTTC Kumba	20	50.0	50.0	2.00	Agree
HTTTC Bambili	24	100.0	0.0	3.00	Agree
All two Schools	44	77.3	22.7	2.50	Agree
Critical mean value				2.50	

About three-quarters (77.3% and a mean opinion of 2.50) of all the responding students agree that maintenance schedule of equipment is set beforehand. Comparatively, this agreement is unanimous in Bambili (100.0% and a mean of 3.00) but shared (50-50) in Kumba.

**Item 8: The provision of workshop facilities are based on students' enrolment**

Institution	n	% agree	% disagree	Mean value	Decision
HTTC Kumba	20	50.0	50.0	2.60	Agree
HTTTC Bambili	24	100.0	0.0	3.50	Agree
All two Schools	44	77.2	22.8	3.11	Agree
Critical mean value				2.50	

While about three-quarters (77.2% and a mean opinion of 3.11) of all the responding students agree that the provision of workshop facilities are based on students', the Bambili respondents are unanimous in this opinion (100% and a mean of 3.50) and this view is shared in Kumba (50-50).

**Item 9: Duties and responsibilities are well comprehended by both teachers and learners**

Institution	n	% agree	% disagree	Mean value	Decision
HTTC Kumba	20	65.0	35.0	2.70	Agree
HTTTC Bambili	24	79.1	20.1	3.08	Agree
All two Schools	44	72.7	27.3	2.90	Agree
Critical mean value				2.50	

About seven-tenths (72.7% and a mean opinion of 2.90) of all the responding students agree that the duties and responsibilities are well understood by both teachers and learners, the Bambili respondent tend to agree more (79.1% and a mean of 3.08) than those of Kumba (65.0% and a mean of 2.70).

**Item 10; Workshop lessons in the timetable clash with other activities**

Institution	n	% agree	% disagree	Mean value	Decision
HTTC Kumba	20	25.0	75.0	2.15	Disagree
HTTTC Bambili	24	0.0	100.0	1.83	Disagree
All two Schools	44	11.4	88.6	1.97	Disagree
Critical mean value				2.50	

About nine-tenths (88.6% and a mean opinion of 1.97) of all the responding students say that workshop lessons in the timetable do not clash with other activities. This opinion of disagreement is comparatively very strong and unanimous (100% and a mean of 1.83) in Bambili than in Kumba (75.0% and a mean of 2.15).

**Item 11: Sufficient time is allocated for workshop training sessions**

Institution	n	% agree	% disagree	Mean value	Decision
HTTC Kumba	20	50.0	50.0	2.40	Indecision
HTTTC Bambili	24	100.0	0.0	3.41	Agree
All two Schools	44	77.2	22.8	2.95	Agree
Critical mean value				2.50	

In response to the sufficiency of the time allocated for workshop training sessions, about three-quarters (77.2% and a mean opinion of 2.95) of all the responding students agree. Meanwhile, all the Bambili students unanimously agree (100% and a mean of 3.41) while the opinion of those in Kumba are shared (50-50).

**Summary of Section B**

Institution	n	% agree	% disagree	Mean value	Decision
HTTC Kumba	220	58.30	41.70	2.56	Agree
HTTTC Bambili	264	68.56	31.44	2.79	Agree
All two Schools	484	64.26	35.74	2.68	Agree
Critical mean value				2.50	

In reaction to whether or not the planning techniques used in workshop practicals in Higher Technical Teachers Training Colleges (HTTTC) Bambili and Kumba with particular reference to the Department of Electrical and Power Engineering influence students’ achievements, more than three-fifths (64.26% and a mean opinion of 2.68) of all the responding students generally agree with the issues raised. Comparatively, this agreement is more profound in Bambili(68.56% and a mean opinion of 2.79) than in Kumba (58.30%) and a mean opinion of 2.56).

The chi-square statistic that follows tests whether or not the respondent’s general opinion that the planning techniques used in workshop practicals influence students’ achievements depend on their institution.

Ho: The respondents’ opinion that the planning techniques used in workshop practicals influence students’ achievements does not depend on the respondents’ institution.

Ha: The respondents’ opinion that the planning techniques used in workshop practicals influence students’ achievements depend on the respondents’ institution.

**Summary information on the chi square statistic**

Item	Characteristics or value
Critical chi square	$\chi^2_{crit} = 7.815$
Calculated chi square	$\chi^2_{cal} = 13.585$
Degrees of freedom	$(c - 1) (r - 1) = (4 - 1) (2 - 1) = 3 \times 1 = 3$
Level of significance	s.l = 0.05 (or 95% level of confidence)
Decision Rule	Reject Ho (and hence accept Ha, $p > 0.05$ ) if $\chi^2_{cal} > \chi^2_{crit}$ Accept Ho (and hence reject Ha, $p < 0.05$ ) if $\chi^2_{cal} < \chi^2_{crit}$

**Conclusion**

Since  $\chi^2_{cal} = 13.585$  is greater than  $\chi^2_{crit} = 7.815$  ( $p > 0.05$ ), Ho is rejected and Ha is therefore retained. Hence, the opinion that techniques used in workshop practicals influence students’ achievements, at the 95% confidence (sl = 0.05), depends on the respondents’ institution. The students of HTTTC Bambili, significantly agree more than those of Kumba.

**Recommendation**

Much effort must be made in the construction and equipping of HTTTCs in Cameroon. Because these colleges are created and opened by the State using rental premises which were not originally designed and constructed to host schools of this standard.

Therefore, effective and adequate training in the domain of EPE cannot effectively take place.

These are serious barriers identified that hindered the smooth training of students at this Higher level because 100% of their studies is practical so without well equipped workshops and good practices in workshop management will lead to producing half-becked engineers.

Therefore, their training is not relevant to the attainment of vision 2035 of an emerging economy.

- With this understanding, the following are recommended;
- The Government Policy of training teaches for recruitment does not fit in the present context and Vision of emergence by 2035. Instead HTTTCs should rather train skilled man-power for companies to recruit not only in EPE but in other specialties.
  - The Vice Chancellors of the various Universities through their connection power can invite renowned companies during Matriculation and Convocation ceremonies to orient fresh men and women on job opportunities in their companies.
  - Considering the fact that these institutions are ill-equipped, the Vice Chancellors should solicit for assistance from these renowned companies for donation of equipment and tools for training.
  - The University should reciprocate by advertising these companies in their University Publications as a matter of priority to build a solid partnership.
  - The Deputy Vice- Chancellor (DVC) I/C of relations with the business world should reinforce this partnership through constant visits or communications for reassurance of the cooperation ties.

- Considering the fact that the number of recruits in the various options keep declining over the years, sometimes 8,5,7,12,15 places per option, this may be an indicator that the burden is becoming unbearable for the State, so government should open up the training so that Students' files are studied and not by concourse. Admitted and trained then upon graduation, they search for their employment in companies or create their own jobs.
- Concourse give room for bribery and corruption and at the end, the best brains are not selected. Therefore, selection of students into HTTTTC should be based on best results at the GCE advanced level examination not concourse.

## REFERENCES

- [1] Adebisin J. Babatunde (2003). The essence for resource management in vocational technical education in a democratic setting. *Proceeding of the Nigerian Association of Technology Teachers (NATT)*. Annual National Conference, Oyo, 120-132.
- [2] Adeyemi J. & Uko-Aviomoh, E. (2004). Effective technological delivery in Nigeria Polytechnics: Need for academic Man power development Policy. Education Policy Analysis Archive 12 (24). Retrieved on 8<sup>th</sup> April, 2006 from <http://epaa.asuedu/epaa/uizn241>.
- [3] Adigun, A. O. (2000). Infrastructure facilities management and functional higher education in Nigeria. *Journal of Education Research and Development (JERD)* 1(1):46-52.
- [4] Agishi S. K & Nyiehuke, P. M (2004). The need for provision of facilities and good Management of Vocational and Technical Education in Nigeria. *Benue State University Journal of Education*, 5, 161-168.
- [5] Agu, P. A. (2002, February). *The present and future of vocational technical education in Nassarawa State*. Paper Presented at NATT Annual Conference, Nassarawa State.
- [6] Agu, P.A. (2006). Determining pedagogical needs of introductory technology teachers in Nassarawa State. A paper presented at the annual conference of STAN, Nassarawa State chapter, held 7<sup>th</sup>-9<sup>th</sup> May in Lafia.
- [7] Ahmad (2010). Planning Schools Workshops for Effective Practical Instructions as a Tool towards Sustainable Development in Nigeria. *Nigeria Vocational Journal*, 14, 1-6.
- [8] Akpakwu, S. O (2008). *Essential of educational management*. akurdi: Jalim Press Ltd
- [9] Akpan, D K (2003). *Principles and practices of Technology Education in Nigeria*. Enugu: Flox tones Press.
- [10] Aleburu J. O. (2003). Enhancement effective implementation of technology education in a democratic Nigerian educational system. *Nigeria Association of Technology Teachers Journal. Annual National Conference, Oyo, 30-36*.
- [11] Alegbemi, F. A (2010). Vocational technology education and work skill requirements in contemporary Nigeria: the way forward in electrical technology education. *Proceedings of the Annual National Conference of Nigeria association of Teachers of Technology*. Uyo, 152-161.
- [12] Amadi, A. A. (2003). *Evaluation of practical utilization of introductory technology equipments in junior secondary schools in Abuja municipal area council*. Unpublished B. Ed. Thesis. VTE Dept. UNN.
- [13] Amechi N.F. (2003). *Educational and training needs of low-level agricultural craftsman for teaching at the university basic education programme in Anambra state*. Unpublished PhD Thesis, University of Nigeria, Nsukka.
- [14] Anaele E. A. O. (2001). Promotion of safety practices in business and technical practical education workshop and laboratories. *Journal of Business and Office Education*. 1 (2).
- [15] Anaele E. O. (2003). The benefits of universal basic education (UBE) over present schooling. *Journal of Nigeria Education Research Association* 14(1): 205-208.
- [16] Asilokun, B. A. (2003). Strategies for the improvement of students' performance in technical subjects in democratic Nigeria. *Proceedings of the National Association of Technology Teachers (NATT)*. Annual National Conference, Oyo, 160-168.
- [17] Baba, U. (1992). *Identification of Workshop Organization and management Techniques for improved teaching and learning in selected schools in Kaduna State*. Unpublished M.Ed. Thesis. Department of Vocational Teacher Education, University of Nigeria, Nsukka.
- [18] Danjuma, A. O (2005). *Workshop management techniques for improving the teaching of introductory technology under the UBE programme in Nassarawa state*. Unpublished master's thesis, University of Nigeria, Nsukka.
- [19] Danjuma, A. O. (2008). Workshop Management Techniques for improving the teaching of introductory technology under the Nigerialvision2020 plan in Nasarawa state. A paper presented at Annual National Conference of Nigeria Association of Teachers of Technology.
- [20] Ede, E.O. (2010). Workshop management techniques needed for improving the performance of metal work teachers in technical colleges in Abia and Enugu States. *Technical and vocational education Journal*, 1-14.
- [21] Elom, E. N (2009). Strategies for planning facilities for the metal workshop. *Ebongi technology and vocational Education Journal*, 1, 60-64.
- [22] Encyclopedia Britannica (2001). Technical Education. Encyclopedia Britannica. Ezeji (2001) *Guidance and Counseling in Education*. Nsukka, Chubson International Press Bookshop Complex University of Nigeria.
- [23] Ezeji S. C.O.A. (2003). *A guide to preparing educational specification for secondary industrial arts facilities*, Unpublished Lecture Notes. U.N.N.
- [24] Ezeji S. C. O. A.(2003). *A guide to preparation of industrial art laboratories*. Lecture notes on facilities planning for M.Ed. Programme UNN.

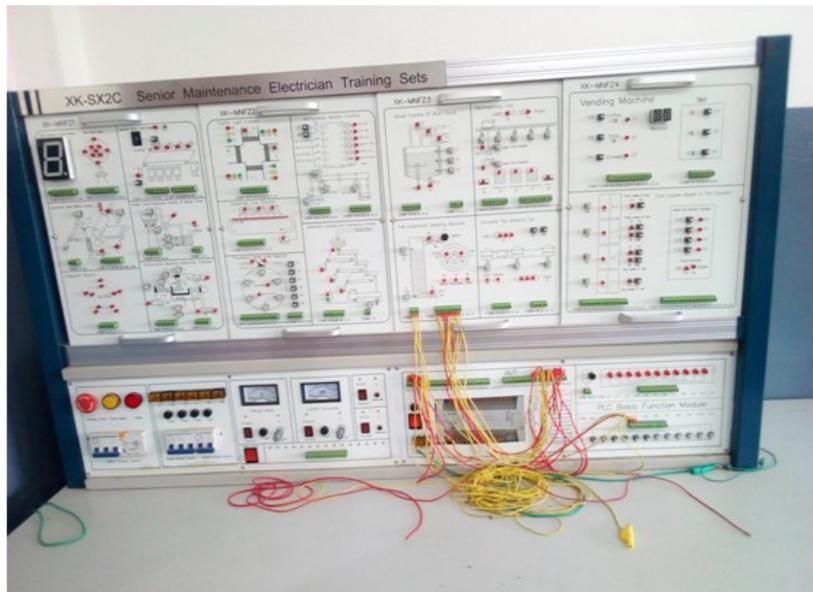
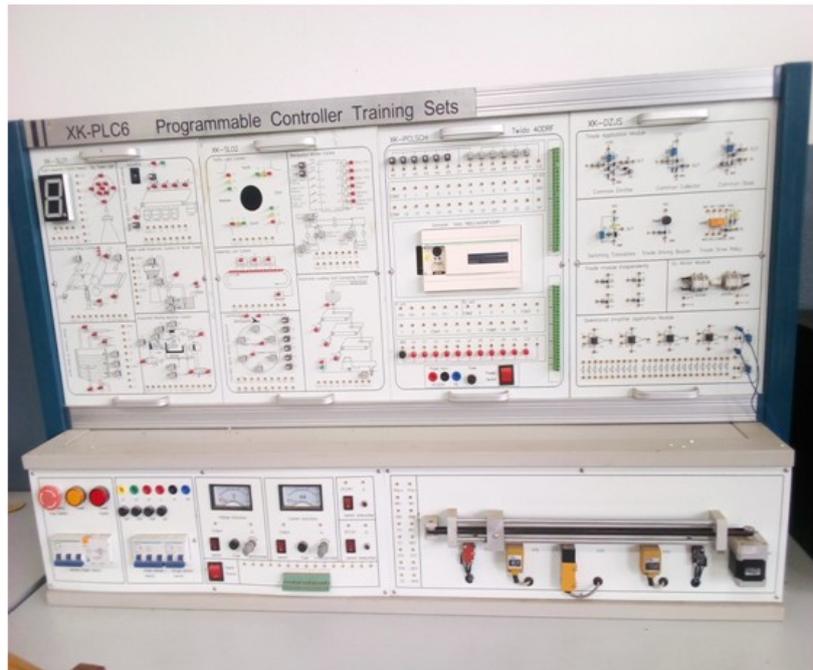
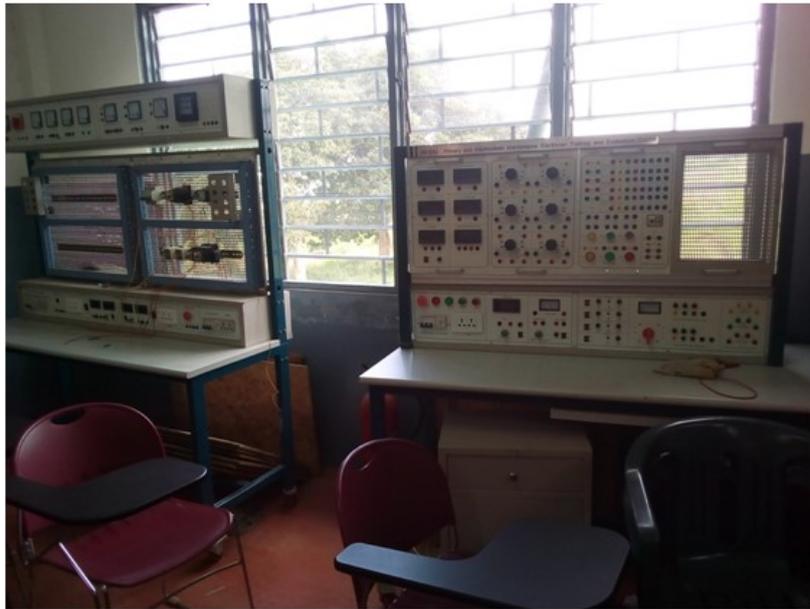
- [25] Ezeji S. C. O. A. (2005). *A guide to preparation industrial Art Laboratories and Facilities Planning*. Unpublished Lecture Notes for M.Ed Programme. VTE Development, UNN.
- [26] Federal Republic of Nigeria (1999). *National Policy in Education*. Abuja: NERDC Press.
- [27] Federal Government of Nigeria (2004). *National Policy on Education*: Lagos: NERDC Press.
- [28] Ibeneme, O.T. (1997). *Perceived roles of technical teachers in the maintenance of workshop equipment in Anambra and Enugu States*. Unpublished Ph.D Thesis. Department of Vocational Education, University of Nigeria, Nsukka.
- [29] Iloje U.J. (2001). *Skills improvement needs by introductory teachers for effective management of schools in Imo state*. Unpublished master's thesis, University of Nigeria, Nsukka.
- [30] Jimoh S.B. (1999). *The genesis of the construction industry in Lagos*. Ibadan: Longman Publishers.
- [31] Lukman and Oviawe (2010). Competencies and Skills Needed by Technical College Teachers for the development to entrepreneurial skills in students. *Technical and Vocational education Journal*, 2, 33-39.
- [32] Maiyaki (2002, March). *Management of technical workshop in Nassarawa state with reference to Lafia and Awe educational zones*. Paper presented at the Nassarawa science and technology day in Abacha Youth Centre.
- [33] Mkpozi, M.O. (1996). *The impact of the equipment maintenance project on workshops of polytechnics in South-East Zone of Nigeria*. Unpublished Ph.D Thesis. Department of Vocational Education, University of Nigeria, Nsukka.
- [34] Mullins, L.J. (2007). *Management and Organizational behavior*. London: pitman publishing.
- [35] Nelson I. Ogbonnaya (2003). *Principles and applications of education policies in Nigeria*. Nsukka: University Trust Publishers (UTP).
- [36] Nwachukwu C. E. (2001). *Designing appreciate methodology in vocational and technical education for Nigeria*: Nsukka: Fulla du Publishing Company.
- [37] Nwachukwu C. E. (2003). Strategic influence of UBE on the education of migrant farmers in Imo State. *The Nigeria UBE Journal* 1 (2):141-145.
- [38] Nworgu, B. G. (2006). *Educational Research basic Issues and Methodology*.
- [39] Nsukka: University Trust Publishers.
- [40] Ogbonna, F. C (2002). *Education planning in Nigeria: Issues and concepts*.
- [41] Ogbudu: Tech source pnb. Nigeria Ltd
- [42] Ogbonna, F. C (2003). *Management in education*. Ogbudu: Tech source Peb. Nigeria Ltd
- [43] Ogbuanya, T. C. (1999). *Development of a system for the Maintenance of Technical Laborator Equipment*. Unpublished PhD thesis, Department of Vocational Teacher Education University of Nigeria Nsukka.
- [44] Ogunsaju. S (2006). *School management and supervision*. Ilorin: Crystal Press. Ogwo, B.A. (2002). *Workshop administration and management*. Unpublished manuscript, University of Nigeria, Nsukka.
- [45] Ogwo, B.A. & Oranu, R.N (2006). *Methodology informal and non-formal technical/ vocational education*. Nsukka: University of Nigeria Press Ltd.
- [46] Ojulari and Lawar (2008). Effective Planning Asa Strategy for Improving the Quality of Vocational And Technical Education In Nigeria. *The Journal of Nigeria Association of Teachers of Technology*. JONATTVol.6
- [47] Oke, G.G. (2003). Promoting *quality assurance in technology education programme in Nigeria*. Paper presented at the seminar organized by the school of Technical Education, Federal College of Education (Tech) Akoka.
- [48] Oke, G.G. (2003). Promoting quality assurance in technical education programme Nigeria *A Paper Presented at the Seminar Organized by the school of Technical education, federal college of education, Akoka*.
- [49] Okorie, J.U. (2000). *Developing Nigeria's Workforce*. Calabar: page environs Publishers.
- [50] Okoro M.O. (1999). *Principles and methods in vocational and technical education*. Nsukka: University Trust Publishers.
- [51] Okoro M.O. (2000). *Programme evaluation in education*. Obosi: Pacific Publishers
- [52] Olaitan, S.O. (1996). *Vocational and Technical education in Nigeria: Issues and Analysis*. Onitsha: Noble Graphic Press.
- [53] Olaitan et al (1999). *Curriculum development and management in vocational technical education*, Onitsha: Cape Publisher Int. Ltd.
- [54] Olaitan S. O. (2003). *Developing curriculum of vocational and technical education*. Onitsha: Cape Publishers.
- [55] Olaitan S. O. and Mama R.O. (2001). *Principles and practice of school farm management*. Owerri: Cape Publishers Int. Ltd.
- [56] Olaitan, S. O. (2002): Trained vocational technical for the UBE. *The Nigeria UBE Journal* 1 (2):3-8.
- [57] Onwunali C.C. (2003). *A study of management and organization problem sin introductory technology in Abia State*. Unpublished B.Ed. Thesis VTE Dept.UNN.
- [58] Onyemachi, and Ekong (1999) *Foundation of Vocational Education. New Direction and Approaches*. Benin City: Supreme Ideal Publisher International Pages118-131
- [59] Oranu, R. N. (2000). Issues in the management of public schools. *Journal of Educational Research and Development (JERD)* 1(1):67-72.
- [60] Oranu R. M. (2001). *Construction in industrial vocational/ technical education*. Unpublished M.ED .Lecture notes in Industrial Design and production. UNN.

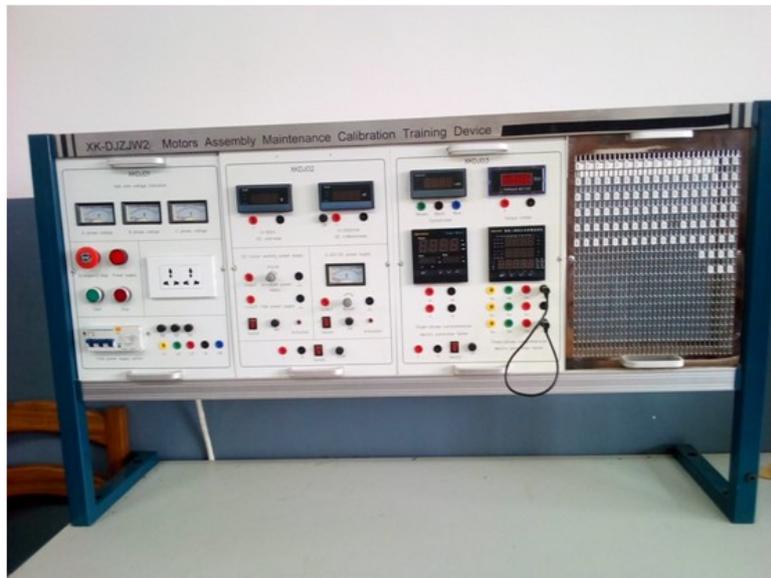
- [61] Oranu, R. M. (2003). *Construction in Industrial Vocational/ Technical Education*. Unpublished M.Ed Lecture Note in industrial Design and production.
- [62] Osuala E. C. (2002). *Business Management*. Onitsha: Cape Publisher International Ltd.
- [63] Owoh, T. M. (2009). Availability of instructional materials for the teaching of applied electricity in secondary schools in Enugu state. *Ebonyi Technology and vocational Education Journal, 1*, 35-42.
- [64] Ownegbuna, O. J. (2004). Strategies for Managing Vocational and Technical resources. *Benue state University Journal of Education, 5*127-135
- [65] Patizhiko, I. M. (2003). effective management of workshop resource in vocational technical education for national development. *Proceedings of the National Association of Technology Teachers (NATT). Annual national Conference, Oyo, 120-130*.
- [66] Simon R. C. (2000). *Selected management techniques of introductory technology*. Unpublished B.Ed. (Tech) Project, UNN.
- [67] Suleiman, A. O. (2000). *Workshop Management Competencies needed by the introductory technology teachers in Edo state*. Unpublished M.Ed. Thesis. Department of Vocational Teacher Education, University of Nigeria, Nsukka.
- [68] Theresa M. Ndongko and Leke I. Tambo (1999), "Educational Development in Cameroon (1961-1999). Issues and perspectives.
- [69] Udoh, S (2003). Evaluation of instructional programmes in vocational/technical education In Umoh-Mac (ed). *An introduction to vocational and technical education in Nigeria, (pp105-118)*. Ogbudu: Hill-Alex Ventures.
- [70] UgwuO. I. (2001). Implementation of the practical agriculture curriculum under the ube scheme ajss level. *The Nigerian Journal. 1*(2).P.165-172.
- [71] Umar, M. A (2010). Planning school workshops for effective practical instructions as a tool towards sustainable development in Nigeria. *Nigeria vocational Journal, 14*, 1-6.
- [72] Ume, Uloh, and Okoronko (2009). Adoption of improved rice production technologies by Farmers in Anambra State. *Ebonyi Technology and Vocational Education Journal*1, 1-21.
- [73] Umoh-Mac (2003). *An introduction to vocational and technical education in Nigeria*. Obudu: Hill-Alexventures.
- [74] UNESCO (2007). Technical and Vocational Education. Retrieved April 27<sup>th</sup>, 2012. From <http://www.unesco.org/>
- [75] Usman B. (1993). *Identification of workshop organization and management techniques for improved techniques /learning in selected secondary schools in Kaduna state*. Unpublished M.Ed. thesis, VTED ept. UNN.
- [76] Wale Olaitan 2004). *Basic Requirements needed to establish and Maintain an Auto Mechanic Workshop in Nsukka Urban of Enugu State*. Unpublished P.G.D
- [77] Wehrinch, H and Koontz H. (2003). *Management A global perceptive*. New Delhi:Mc Grawhill Publisher.
- [78] Whawo, D. D (1999). *Educational administration planning and supervision*. Benin city: Spectrum Associates.
- [79] UgwuO. I. (2001). Implementation of the practical agriculture curriculum under the ube scheme ajss level. *The Nigerian Journal. 1*(2).P.165-172.
- [80] Umar, M.A (2010). Planning school workshops for effective practical instructions as a tool towards sustainable development in Nigeria. *Nigeria vocational Journal, 14*, 1-6.
- [81] Ume, Uloh, and Okoronko (2009). Adoption of improved rice production technologies by Farmers in Anambra State. *Ebonyi Technology and Vocational Education Journal*1, 1-21.
- [82] Umoh-Mac (2003). *An introduction to vocational and technical education in Nigeria*. Obudu: Hill-Alexventures.
- [83] UNESCO (2007). Technical and Vocational Education. Retrieved April 27<sup>th</sup>, 2012. From <http://www.unesco.org/>
- [84] Usman B. (1993). *Identification of workshop organization and management techniques for improved techniques /learning in selected secondary schools in Kaduna state*. Unpublished M.Ed. thesis, VTED ept. UNN.
- [85] Wale Olaitan 2004). *Basic Requirements needed to establish and Maintain an Auto Mechanic Workshop in Nsukka Urban of Enugu State*. Unpublished P.G.D
- [86] Wehrinch, H and Koontz H. (2003). *Management A global perceptive*. New Delhi: Mc Grawhill Publisher.
- [87] Whawo, D. D (1999). *Educational administration planning and supervision*. Benin city: Spectrum Associates.

**APPENDICES**

**APPENDIX I**

**Indoors training equipments**









**APPENDIX II**  
**Outdoors training activities**

