INADEQUATE SUPPLY OF ELECTRICITY IN TECHNICAL COLLEGE WORKSHOPS IN DELTA STATE OF NIGERIA: PROBLEMS AND STRATEGIES FOR IMPROVEMENT

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Abstract
Electricity which is the flow of current through wires of a conductor in the circuit is of vital importance to man and the country. The use of electricity in the technical colleges cannot be overemphasized. This work focuses on inadequate supply of electricity in Technical College workshops, some important terms used in electricity transmission, types of workshops, uses of electricity, problems associated with the use of electricity, such as illegal connection, lack of finance, lack of competent manpower, vandalization of electricity components or accessories, lack of security. This study came up so that these lapses can be corrected, so that there will be maximum utilization of electricity in the technical college workshops. Strategies for improvement were recommended based on the findings which include government should send enough allocations to schools for the running and management of technical colleges; government should pay the electricity bills of technical colleges in the Delta State and schools without electricity should be electrified, practical teachers should supervise their students during electrical installation classes and ensure that all wiring are properly tested before approval and so on.

Introduction

In every sector of life, electricity has been found to be a powerful energy which is needed for both industrial, commercial and technological development of any country, state or community and even in the educational sector. In technical colleges, the importance of electricity cannot be over emphasized. The different departments which are; wood work, carpentry department, mechanical engineering Technology, building technology, catering department and others make use of electricity to carry out their practical activities. Initially, all technical colleges in the states were electrified to meet the objectives of the policies that gave birth to the establishment of the Technical Colleges.

It is supposed that all these technical colleges will depend on the Nigerian Electricity Regulatory Commission, Benin Electricity Distribution Company (BEDC) to function effectively but a Survey study round six technical colleges shows that the irregular supply of energy has hindered the successes of these colleges to meet up with the standards. In sufficient allocation from the government has not help matters as regard to the development and growth of technical colleges in the state. Today many technical colleges have been disconnected from Benin Electricity Distribution Company (BEDC) due to the inability of the school management to pay the light bills, the use of school generators has not helped issues, since the cost of purchasing diesel to operate these generators is high. This predicament has hindered the success of the technical colleges in the state, because of this predicament, practical work is lacking in most of our technical college, most of lath machines are farrowing away because of lack of use. Students are being denied of proper workshop practice. Despite all these odds and handicaps, this work is out to re-emphasize on the importance of electricity and factors affecting its usage in technical colleges in Delta State (Mkpughe, 2015).

Concept of Workshop Practice, School Workshop/Laboratory

Workshop practice refers to the series of operation done regularly in a small establishment called workshop where handcraft and manufacturing works are done. Workshop practice is very important in the practical life of the students, workshop practice make lessons more clearer after a thorough theoretical work.

School Workshop/Laboratory

School workshop is place, a room or a building where practical works are carried out, things made or repaired, all for the purpose of teaching and learning. A laboratory is a room or a building used for scientific research, experiments, testing and so on. Some of the workshops/laboratory found in Technical Colleges are wood workshop, fabrication workshop, catering laboratory, building workshop, mechanical workshop, computer laboratory, carpentry workshop, auto workshop, electrical/electronics workshop and so on.

Types of School Workshop

- **Carpentry/Building Workshop:**

Carpentry workshop is a place where office furniture, tables, chairs and desk for students are made or repaired. General maintenance works such as maintenance of the school buildings and general building work. Some equipment here includes planning machine, circular sawing machine, Sam papering machine, filling machine, drilling machine. The following are examples tools/machines in Building workshop. Glass magnifier, Razor/trimming plane, light weight moduler, miter box, engineer square, hinge Slutter Du-Brokwik Hinge Slotter Kit, 2 Bend pliers, Hammer, Building Pins, Chisels, Cutters Spirit levels Punches, hand saws, etc. The workshop is staffed with workshop assistance and technical teacher.

Carpentry is a skilled trade in which the primary work performed is cutting, shaping and installation of building materials during the construction of buildings. Ships, timber

bridges, concrete formwork, as framing, but today many other materials are also used, (Rosa, 2006, United Brotherhood of carpentry schools, 2015).

- **Fabrication Workshop**

This is section of mechanical workshop, where some fabrication work are carried out such as construction of key way, drilling operation, milling operation, boring of holes, equipment and machines found here are drilling machines, milling machines, boring machine, lathe machine, power hacksaw, soldering machine and grinding machine, etc. some tools include hammers, spanner, punches, chisels, cutters etc. They undertake construction of all mechanical systems whether they are flight or development. These vary from plasma detectors to full telescope and from radiation shields to organic coolers according to report from (Mullard Space Science Laboratory, 1999-2016).

The fabrication is a large active and comprehensively equipped workspace that provides fabrication support for students to realize their designs either through conventional manual model or the latest 3D digital techniques. The workshop strives to provide a safe work environment where students can develop their technical skills. It contains a broad range of equipment for metal, wood and plastic fabrication. Access is project based through course work. The workshop is staffed with technical assistances and teacher.

- **Automobile Workshop**

Students go to automobile workshop for practicals, there students are taught how to assemble the parts of a motor vehicle, repairs or cars, fitting of tyres. They are taught suspension of cars, repairs of cars exhaust and breaks, wheel alignment, window fixing, and also they are taught about vehicle road worthy certificate etc. Tools and machines used here includes spinners, screw drivers, mallets, spraying machine, Hole boring machine, etc. you can find worn out tyres, faulty vehicles undergoing repairs and worn out parts of a vehicle.

Automobile repair shops also offer paintwork repairs to scratches, scuffs and dents to vehicles damaged, as well as damage caused by collision and major accidents. An automobile repair shop is also known as a garage, is a repair show where automobiles are repaired by mechanics and electricians. (Independent Garages and Motro Vehicle Block Exemption, 2012).

- **Catering Laboratory**

This is a place where students go for their catering practical's and they use some electrical gadgets appliances like electric stove, electric gas cooker, electric iron, electric ring boiler empowered by electricity, microwaves, electric pot and plates. Catering is the activity of providing food and beverages for events, caterers are either independent vendors or individuals within a particular department of a facility.

- **Electrical/Electronics Workshop**

The Electrical/Electronics workshop is a place/building where students go to carry out their electrical practical. Different kinds of installation works are practiced there, such as two phase wiring, three phase wiring, construction of fuse box or extension box, charging of batteries, joining of cables, rewinding of electricity or electrical machines and so on while in the Electronics laboratory or workshop, we construct door bells, telecommunication work, construction of micro switches, repairs of faulty radio sets and television sets and so on. The electrical department ensures that the school generator is always in order.

Some machines and tools in Electrical workshop include plastic Hammer, Mallet, drilling machine, Electric cutter, pliers screw drivers, oscilloscope, wire stripper, Power Station Soldering Iron Adjusting Ratchet heavy Duty Ratchet, Crimping Tool, Development Board. Conduct Bender, Hack Saw, Materials/Accessories includes Fish Tape, cables, sockets, plugs, switches, wiring boards, Vero Boards, Branch Vice, Work Benches, etc.

- **Computer Laboratory**

This is a place or building where students go to carryout their computer practice. In the computer labs, jobs like printing, photocopying, laminating and browsing with computer are carried out here (Mkpughe 2015). Computer Laboratory is a space which provides computer services to a defined community. Computer labs are typically provided by libraries to public by academic institutions Hawkins (2015). In public settings computer lab users are often subject to time limits in order to allow more people a chance to use the lab, whereas in other institutions computer access typically requires valid person login credentials (McCampbell, Atefeh and Liedich, 2015). Computer in computer labs are typically equipped with internet access while scanners and printers may augment the laboratory setup. Computers are arranged in rows so that every work station has a similar view of one end of the room to facilitate lecturing or presentation (Hawkin and Oblinger, 2015)

History Of Electricity

Long before the knowledge of electricity existed, people were aware of the shocks from electricity fish. Ancient Egyptian text dating 2750 Bc referred to fishes, the thunder of the Nile and described them as the protectors of all other fishes Electric fish were again reported later by ancient Greek in 1991 and several ancient Greek writers, such as Piny the Elder and Scribonus Largus, attested to the numbering effect of the electric shocks delivered by catfish and rays and knew conducting objects. Pollock (2005) reported that patients suffering from ailments such as headache were directed to touch electric fish with the hope that powerful fold might cure them. Morris (2003) says that possibly the earliest and nearest approach to the discovery of the identify if lightening and electricity from any other source is to be attributed to the Arabs who before the 15th century and the Arabic word for lightening (raad) applied to the electricity ray.

Ancient culture around the medicaterian knew that certain objects such as rods of amber, could be rubbed with cap fur to attract light objects like feather, Thales of Milton

made a series of observation on the static electricity around 600 B.C. from which be believed that friction rendered amber magnetic, in contract to minerals such as magnetite which need no rubbing. Simpson (2003) Thales was incorrect in believing the attraction was due to a magnetic effect, but later science would prove a link between magnetism and electricity.

Definition of Electricity

Electricity is the flow of electrons through the wires of conductor in the circuit. Electricity is a form of energy involving the flow of electrons. Matters are made up of atoms, and atoms have a center called a nucleus. The nucleus contains positively charged particles called protons. The nucleus of an atom is surrounded by negatively charged particles called particles called electrons, constitutes an electric current. Electricity is a basic part of nature Baigne (2006) and it is one of our most widely form of energy. We get electricity which is a secondary, form the conversion of other sources of energy, like coal, natural gas oil, nuclear power and other natural source which are called primary source and also from water falls. (Primary Source).

Uses of Electricity

Electricity which is an extremely a flexible energy has been adapted to have a huge growing number of uses. In the Technical Colleges, the electrical departments, catering, automobile, mechanical, and fabrication departments, make use of electricity. Businesses department which houses most of the schools computer cannot do without the supply of electricity. The invention, of practical incandescent light bulb in the 1870's led to lighting, becoming one of the first publicity its own dangers replacing the make flames of gas lightening greatly reduced fire hazards within home and factories. Public utilities set up in many cities targeting the burgeoning market for electricity lightening in our homes, industries, our fans, bulbs, refrigerators, video, televisions, radio sets, video games, micro waves, woven, computers cannot function without electricity. Our air-conditioner, automobile systems,

(electrical equipment) cannot function without electricity. Furthermore, our electric car, electric motors, electric light, rail roads, electrophoresis make use of electric rockets, electric signaling systems in communicating system and in medicine and science all make use of electricity. The use and the importance of electricity to man cannot be exhausted for its uses is quite enormous.

Disadvantages of the use of Electricity

Any careless handling of electrical appliances, electricity wires with wet hands can lead to electrocuting, explosions, fire outbreaks and deaths.

Factors affecting the use of Electricity in Technical Colleges

1. Finance
2. Lack of competent man power
3. Vandalization of electrical components
4. Lack of maintenance
5. Carelessness on part of the students and teachers
6. Lack of security
7. Illegal connections

1) Finance:

In transmission of the electricity, finance has always been a major problem; you will discover that in a school, payment of electricity bill is a big problem, most times the Nigeria Electricity Regulatory Commission, Benin Electricity Distribution Company (BEDC) usually come and carry out mass disconnection because of inability to pay electric bills. The cost of purchasing a big generator which can feed the whole school via the different departments will cost not less than N100,000, even when the school is able, such generator may be through the assistance of parent, teachers, the cost of fueling regularly is also another predicament. So, where there is no finance to machine an institution, the school will be without electricity supply.

2) Lack of Competent Manpower:

In most departments, you find out there are no enough qualified and competent specialists to handle and manage the school electrical machines/equipments even when some are qualified they may not be practically oriented and such may affect both the students and the school.

3) Vandalization Of School Electrical Accessories Or Appliances

Most technical colleges have suffered so much in the hands of hoodlums who vandalize the school and make away with some properties of school. Some cut the school transmission wire, they take away the school generators, computers, laboratory machines, electrical appliances, Photostatting machines, different equipment minute workshop tools, and so on. This renders the school useless because technical colleges are supposed to be practically oriented.

4) Lack of Maintenance

The maintenance of any school equipment increase the life span of that machinery. Most equipment or machines in the technical colleges are not old and are not properly maintained as such the breakdown early. This is because government is not sending enough money for running and its maintenance. It is expected that government provide practical material for the students but most cases students provides these materials for themselves. If government will live up to their responsibilities providing enough machineries for practical work in the technical colleges and repairing the worn out ones, this will encourage effective learning and teaching process (Mkpughe, 2015).

5) Carelessness On The Part Of Both The Teachers And Students

Furthermore, most students handle practical materials, tools and equipment carelessly, if not guided by the teacher, even some careless teachers do no supervise the children when they are carrying out practice work. This can lead to workshop accidents, explosions of some electrical components and chemicals, burning of fuses and fire explosions of electrical gadgets.

6) Illegal Connections

It is very important that during installation work classes. The practical teacher, workshop attendants, electrical technologists, electrical technicians and electrical engineer should ensure that all the connections are tested so as to detect any fault before it is approved. For illegal connection can lead to fire explosion, electrocution, shocks and death. So safety precaution should be taken during electrical installation work.

7) Lack of Security

In most of our technical colleges, the security there is very porous where we have also men who are already quarts to their graves as our security men and these old men have no guns, in case robbers visit the school, they simply run to the bush to hide for their dear lives. In some cases, these arm robbers tie these old men to a tree while they carry out their evil operation.

Strategies for Improvement

1. Government, Technical Colleges Management Board should send enough allocation for smooth running and management of technical colleges.
2. Government should pay the electrical bills of technical institutions and electrified schools without electricity.
3. Government should send competent electrical personnel to technical colleges and security men.
4. Practical teacher should supervise their students during electrical installation and ensure that all wiring are properly tested before approval.
5. Electrical instructors should teach students safety rules and regulations and ensure that they hold on to it, to avoid accidents in the workshop.
6. Government should build and equip more workshops in technical colleges and ensure that they are adequately electrified.

7. Government should pay practical allowance to teachers in technical colleges and provide practical items for effective learning of students.
8. Government should organize practical exhibition among technical college students in the state and provide stand-by generators to supply electricity in all technical colleges in the state.

Conclusion

Every sector of human life needs electricity, its usage in the technical colleges cannot be overemphasized, as such all hands must be on deck to ensure that its finance and maintenance is properly done. Since in church, mosques, hospitals, companies, industries and government houses such as presidential houses and governors offices all need electricity to exist, technical colleges should also enjoy electricity to its fullest so that students will be practically oriented, academically constructive, positive mined and for effective teaching and learning process in schools.

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