COMPUTER MAINTENANCE AND POVERTY ERADICATION: TOOL FOR SUSTAINABLE DEVELOPMENT GOALS IN BUSINESS EDUCATION

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Abstract

This paper titled computer maintenance and poverty Eradication: Tools for Sustainable Development Goals in Business Education. The researcher formulated one objective and one hypothesis for the paper Determine the possible ways computer maintenance can eradicate poverty in Nigeria through teaching and learning of Business Education for sustainable Development Goals. While the hypothesis was, there is no significant difference between computer maintenance and poverty eradication in Nigeria through teaching and learning of Business Education for sustainable Development Goals. The paper utilized descriptive survey design and the population was 500 NCE students, the sample size was 100 which is in line with Odukunle (2005) who recommended 20% of the population when is less than 2500. The findings of the result revealed that, the relevance of computer maintenance in Business Education at Federal College of Education was acceptable. Based on the conclusion the researcher recommended that: Federal Government should use computer maintenance to eradicate poverty in Nigeria through the teaching and learning in Business Education.

Keyword: Computer Maintenance, Poverty Eradication, Development Goals, Business Education

Introduction

This paper forcast the needs of business education students, based on their curriculum such as computer appreciation and computer application. this research came up with suggestions where the students are lacking behind such as knowledge on basic computer maintenance which will enable them to repair some basic needs of the computer without looking for a specialist to fix it.

However, the fundamentals of this research is to introduce to students of business education the basic needs in servicing and maintenance concept, basic repairs, fundamental trouble shooting procedures. Methodologies on how to find fault location, service manuals, Test and measuring instruments, special tools. Building knowledge on hardware and software faults. The trouble shooting techniques: motherboard, configure and applying BIOS settings, Boot sequence, expansion Slots, RAM types and features, install and configure expansion cards install and configure storage device and appropriate media, differentiate among various CPU types and its features, compare and contrast various connection interfaces and explain their purpose to the students.

Furthermore, introducing to students in business education how to install an appropriate power supply based on a given scenario, identifying connector types and associated cables, how to install and configure various peripheral device, Networking, network cables and connectors, explain common TPC and UDP ports, protocols and their purpose.

Thus, introducing wireless networking standards identify various type of networks, compare and contrast network device their future and features. explaining the differences between the various printer types and summarize the associated imaging process. Given a scenario, install, and configures printers, print device sharing and maintenance. Explaining evironmental impacts and purpose of environmental control. This research is also build on a scenario of installing and configuration of operating system using the most appropriate method.

Given a scenario in troubleshooting commom video and display isues. trouble shooting keyboard and mouse on PS2 and USB ports.

Base on the aformentioned the researcher seek to introduce training emerging needs of students in business education. The needs among others are infusing basic computer maintenance into business education curriculum as way for sustainable development and self reliance after school in vocational and technical education programmes. This students are familiar to theoritical and practical aspects such as the computer appreciation and computer application, the theoritical here is evolution of computer while the practical deals on microsoft office such as mastering of microsoft word, excel , powerpoint publisher, and Access. The needs of these students can not only be limited to evolution of computer and microsoft office because information and communication technology (ICT) has come with lot of packages in the sence that the needs of this students could be on desktop publishing, computer maintenance , security, Java, Oracle , Cisco Network, Web site design, phone maintenance and repair, etc.

Thus, Business education is course design for a students to teach in the classroom and also for sustainable development either in the N.C.E level or Degree level. That is why the researcher forsaw the need of infusing basic computer maintenance as training emerging needs of students in business education because it will help the students in their place of work, during the labour market that is, seeking for employment the employer will want those job seekers that have this basic computer maintenance skill not only the person with computer operating skill.

Inaddition, some of the problems and challeges encantered is during introducing or infusing such courses into the curriculum, looking at the employers needs, teachers competence on the skill to teach. lack of time frame or time apportioned for the course, lack of userbility and maintenance of instructional material. lack of manpower and skill competence to teaching of the

course. The employers may feel of what need will be if emloyed, both for office job and teaching. The students may not have interest of doing any maintenance job for his or her employers.

Base on the aforementioned problems the researcher wish to investigate on computer maintenance and poverty Eradication: Tools for Sustainable Development Goals in Business Education.

Research Impact: This research will be of beneficiriay to the following ways: Students of Business Education, Employers of Labour, Lecturers in Business Education, Federal and State Ministry of Education.

Business Education students will benefit in this research work because is added advantage to the new students, the old students were taught only computer appreciation and computer application but with this new development of infusing basic computer maintenance in to the currriculum is a welcome idea to the students of business education.

Employers of Labour both in teaching profession and other office job the employers of business educator will benefit from this development of infusing basic computer maintenance into business education curriculum because this students will not only have knowledge on operating the computer but also do some basic computer repairs for the employers.

Lecturers of Business Education will be of benefit to this research work, it will develop the lecturers on the skill of basic computer maintenance because those that does not have knowledge on basic computer maintenance will be sent for studies to aquare this skills. this research will also be of benefit to lecturers of business education because it will boost their curriculum vatie.

The Mininstry of education both State and Federal level will use it for further development of the curriculum in business education and releted programmes. This research work will be of benefit to the federal and state ministry of education because it has highlighted the emerging needs of students in business education.

Statement of the Problem

Business Education teaches computer Appreciation (Theory) and Information Technology/Computer Application (Practical) what happens if the computer stops functioning, Damages, virus, windows installations, mouse problems for replacement and trouble shooting, PS2 port trouble shooting, keyboard trouble shooting, formatting of Hard disk, Networking trouble shooting etc. who will maintains it?

Teaching and learning of computer maintenance in Business Education, lack of who will do the teaching. Does the department have competent lecturers? Does the student have any interest on computer maintenance?

Lack of infrastructural facilities and instructional materials for teaching and learning of computer maintenance in Business Education can hinder the implementation of computer maintenance in Business Education Department at Federal College of Education, Zaria.

Base on the aforementioned the researcher seeks to investigate the computer maintenance and poverty Eradication: Tools for Sustainable Development Goals in Business Education which will be contributed to knowledge in this like.

Objective of the Study

The major objective of this paper is computer maintenance and poverty Eradication: Tools for Sustainable Development Goals in Business Education were the specific is to:

1. Determine the possible ways computer maintenance can eradicate poverty in Nigeria through teaching and learning of Business Education for sustainable Development Goals.

Hypothesis

1. There is no significant difference between computer maintenance and poverty eradication in Nigeria through teaching and learning of Business Education for sustainable Development Goals.

Review of Related Literatures

Concept and Propose Currriculum Course Outline

The objective of basic computer maintenance curriculum is to give students the basic computer skills needed to troubleshoot computer hardware and software problems and to prepare them for an entry level of employment. This curriculum will provide instructions and practical aspect of teaching:

Configure and apply BIOS Settings
  1. *This course will build students on Install firmware upgrades – flash BIOS, BIOS component information, RAM, Hard drive, Optical drive, CPU*
  2. *BIOS configurations, Boot sequence, Enabling and disabling devices, Date/time, Clock speeds, Virtualization support, BIOS security (passwords, drive encryption: TPM, lo-jack),*
  3. *Use built-in diagnostics,Monitoring,Temperature monitoring, Fan speeds, Intrusion detection/notification, Voltage, Clock, Bus speed (*A+ Computer Maintenance, 2013).

Differentiate between motherboard components, their purposes, and properties.
  1. *Sizes, ATX,Micro –ATX, ITX*
  a. *Expansion slots, PCI,PCI-X, PCIe, miniPCI, CNR, AGP2x, 4x, 8x, RAM slots, CPU sockets*
  b. *Chipsets, North Bridge,South Bridge, CMOS battery*
  2. *Jumpers*
  3. *Power connections and types*
  4. *Fan connectors*
  5. *Front panel connectors:USB, Audio, Power button, Power light, Drive activity lights,Reset button Bus speeds(basic computer maintenance,2014)*

Compare and contrast RAM types and features

1 Types
 DDR

2. DDR2: SDRAM, SODIMM, DIMM,RAM configurations (Single channel vs dual channel vs triple channel)
3. RAM compatibility and speed

Teaching students Installing and configuring expansion cards.

    i.   *Sound cards, Video cards, Network cards,Serial and parallel cards,USB cards,Firewire cards*

Storage cards, Modem cards, Wireless/cellular cards,TV tuner cards,Video capture cards, Riser cards

Building on Installing and configuring storage devices and use appropriate media.

1. *Optical drives:CD-ROM, DVD-ROM, Blu-Ray*
2. *Combo drives and burners:CD-RW,DVD-RW,Dual Layer DVD-RW,BD-R, BD-RE*
3. *Connection types:External (USB, Firewire, eSATA, Ethernet),Internal SATA, IDE and SCSI (IDE configuration and setup (Master, Slave, Cable,Select), SCSI IDs (0 – 15)), Hot swappable drives*
4. *Hard drives:Magnetic, 5400 rpm,7200 rpm, 10,000 rpm, 15,000 rpm*
5. *Solid state/flash drives:Compact flash, SD, Micro-SD, Mini-SD, xD, SSD*

Differentiate to students among various CPU types and features and select the appropriate cooling method.

    A. *Socket types: Intel: LGA, 775, 1155, 1156, 1366, AMD: 940, AM2, AM2+, AM3, AM3+, FM1, F*

    B. *Characteristics: Speeds, Cores, Cache size/type, Hyperthreading, Architecture (32-bit vs. 64-bit)*

      Integrated GPU

    4. *Cooling: Heat sink, Fans, Thermal paste (*A+ Computer Maintenance, 2013)*.*

Introducing to students how to evaluate and select appropriate components for a custom configuration, to meet customer specifications or needs:*Graphic / CAD / CAM design workstation,*

Audio/Video editing workstation, Virtualization workstation, Gaming PC, Home Theater PC, Standard thick client,Thin client,Home Server PC

Given students a scenario to evaluate types and features of display devices.

Types: CRT, LCD, LED, Projector

Impacting to students how to Identify connector types and associated cables.

    i.   *Display connector types:DVI-D, DVI-I, DVI-A, DisplayPort, miniHDMI,RJ-45*
    ii.   *Display cable types:HDMI, DVI, VGA,S-video*
    iii.   *Device connectors and pin arrangements:SATA,PATA, IDE, USB,PS/2, Audio,RJ-45*
    iv.   *Device cable types:SATA, eSATA, IDE, Floppy, USB, Parallel, Serial*

To Install and configure various peripheral devices.

    a. *Input devices: Mouse, Keyboard, Microphone*
    b. *Output devices: Printers, Speakers, Display devices*

To Identify types of network cables and connectors.

    A. *Twisted Pair: Connectors: RJ-11, RJ-45, Wiring standards: T568A, T568B*

Explaining to students properties and characteristics of TCP and IP.

1. IP class:Class A, B, C

2. IPv4 vs. IPv6, Public vs. private vs. APIPA, Static vs. dynamic, Client-side DNS, DHCP, Subnet mask

Gateway

Explain to students the common TCP and UDP ports, protocols, and their purpose.

a. Ports: 21 – FTP, 23 – TELNET,25 – SMTP, 53 – DNS, 80 – HTTP, 110 – POP3, 3389 – RDP

b. Protocols: DHCP,DNS,LDAP,SNMP, SMB, SSH, SFTP, TCP vs. UDP

Identify various types of network: LAN, WAN, PAN, MAN, Topologies:Ring, Bus, Star, Hybrid
Compare and contrast network devices their functions and features:Hub, Switch, Router,
Access point, Bridge, Modem, NAS, Firewall, VoIP phones, Internet appliance
Given students a scenario to use appropriate networking tools: Crimper, Multimeter, Toner
probe
Cable tester, Loopback plug, Punchdown tool

Explain the differences between the various printer types and summarize the associated
imaging process to students
   A. *Laser: Imaging drum, fuser assembly, transfer belt, transfer roller, pickup rollers,*
      separate
pads, duplexing assembly, Imaging process: processing, charging, exposing, developing,
transferring, fusing and cleaning
   B. *Inkjet: Ink cartridge, print head, roller, feeder, duplexing assembly, carriage and belt*
      Calibration
   C. *Thermal: Feed assembly, heating element, Special thermal paper*
Compare and contrast the features and requirements of various Microsoft Operating Systems.
   i.   *Windows XP Home, Windows XP Professional, Windows XP Media Center,*
         Windows XP 64-bit, Professional
   ii.   *Windows Vista Home Basic, Windows Vista Home Premium, Windows Vista*
         Business, Windows Vista Ultimate, Windows Vista Enterprise
   iii. *Windows 7 Starter, Windows 7 Home Premium, Windows 7 Professional, Windows 7*
   iv.   *Ultimate, Windows 7 Enterprise*
   v.   *Features: 32-bit vs. 64-bit, Aero, gadgets, user account control, bit-locker, shadow*
         copy, system restore, ready, boost, sidebar, compatibility mode, XP mode, easy
         transfer, administrative tools, defender, Windows firewall, security center, event
         viewer, file structure and paths, category view vs. classic view
   vi.   *Upgrade paths – differences between in place upgrades, compatibility tools, Windows*
         upgrade, OS advisor
Given a scenario, install, and configure the operating system using the most appropriate
method:
   1. *Boot methods: USB, CD-ROM, DVD, PXE (*A+ Computer Maintenance, 2013).

The Concept of Sustainable Development Goals

According to Emas, (n.d), reported that, In 1987, the Bruntland Commission published its

report, *Our Common Future,* in an effort to link the issues of economic development and

environmental stability. In doing so, this report provided the oft-cited definition of sustainable

development as "development that meets the needs of the present without compromising the

ability of future generations to meet their own needs" (United Nations General Assembly, 1987,

p. 43). Albeit somewhat vague, this concept of sustainable development aims to maintain

economic advancement and progress while protecting the long-term value of the environment; it "provides a framework for the integration of environment policies and development strategies"

(United Nations General Assembly, 1987). However, long before the late 20th century, scholars argued that there need not be a trade-off between environmental sustainability and economic development. Thus, with this concept business education has bring in an idea that stand for sustainable development in Nigeria to its students at large.

Sustainable Development: Definition and Principles

Although many definitions abound, the most often used definition of sustainable development is that proposed by the Brundtland Commission (Cerin, 2006; Dernbach J. C., 1998; Dernbach J. C., 2003; Stoddart, 2011). This broad definition, which will be used in this dissertation, does not limit the scope of sustainability. The explanation does, however, touch on the importance of intergenerational equity. This concept of conserving resources for future generations is one of the major features that distinguish sustainable development policy from traditional environmental policy, which also seeks to internalize the externalities of environmental degradation. The overall goal of sustainable development (SD) is the long-term stability of the economy and environment; this is only achievable through the integration and acknowledgement of economic, environmental, and social concerns throughout the decision making process.(UNITED NATIONS, 2008)

Concepts in Business Education

According to Ezeani(2012) Business Education is one of the aspects of vocational education that focuses on skills and knowledge acquisition for the recipients. The goal of business education according to Anao, (1986) is the production of manpower that possesses the requisite knowledge, skill and attitude for harnessing other resources and brings them into co-operative relationships yielding goods and services demanded by society for satisfaction of other

wants and needs. However, business education been skill acquiring discipline must inculcate in the recipients to have knowledge and skill of ICT. The premise that ICT is essential for bringing changes to classroom teaching and learning in educational systems around the world are under increasing pressure to the society and the world at large. The acronym for ICT means Information and Communication Technologies.

Research Methodology

Descriptive survey research design was used for the study. The most common descriptive research method is the survey (Thomas and Nelson, 2001). The method involves systematic collection of data from the entire population of people or sample drawn from the population through the use of questionnaire, and oral interview or observation in order to find out the opinions of indvivduals about some things.

Population of the Study

The population of this study consist of students from N.C.E. II and III students of Business Education Department, Federal College of Education, Zaria. The population of this work is 500 respondance. The NCE II students consist of three hundred and fifty (350), while the NCE III consists of one hundred and fifty (150) respondence.

Sample Size and Sampling Procedure

The sample size of the study was 100, despondence this is in line with Odukunle (2005) who recommended that if the population is less than 2500 for descriptive study 20% is enough to establish the existence or non existence of a relationship. In order to get the required sample size, hundred students were randomly selected seventy students (70) from NCE II and thirty (30) NCE III. Due to the foregoing a total of One Hundred (100) respondents shall be the sample of this study.

Table 3.2 Sample Size and Sampling Procedure

Name of institution	Respondents	Population
Federal college of education Zaria (Department of business education)	NCE II students	70
	NCE III students	30
Total		**100**

Sources: Departmental record office, 2016

The researcher used the class list of NCE II and III students to randomly select the students for the sample size of the study in federal college of education Zaria.

Test of Null Hypothesis

Table 4.3.1: t-test analysis of the difference between computer maintenance and poverty eradication in Nigeria through teaching and learning of Business Education for sustainable Development Goals.

Schools	N	X	Std.	Df	t-cal	t-crit.	Sig.	Decision
Teachers.	140	2.8	.26523					
				306	5.941	1.96	.000	Rejected
Students.	167	2.4	.14343					

In the test of null hypothesis one as presented in table 4.3.1 revealed that, t-calculated (5.941) was greater than t-critical (1.96) at 5% level of significance. This implies that, there is a significant difference between computer maintenance and poverty eradication in Nigeria through teaching and learning of Business Education for sustainable Development Goals. The result suggested that, teaching of computer maintenance can eradication poverty in Nigeria. Therefore, the null hypothesis which states that, there is no significant difference between computer maintenance and poverty eradication in Nigeria through teaching and learning of Business Education for sustainable Development Goals, was rejected.

Conclusion and Recommendations

The researcher having identified the impact web design as new technologies in business education curricula, the following recommendations were made:

1. It is imperative that federal college of education and universities should provide requisite new technologies for effective instructional task management for business education.

Business educators should be challenged to provide their students with web design for developing requisite skills, knowledge and attitudes to live and work in technologically dynamic environment.

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