CELL PHONE MAINTENANCE TRAINING CURRICULUM (MODULE) FOR TRAINING OF MEN AND WOMEN FOR PRESERVATION OF INDIGENOUS KNOWLEDGE AND DEVELOPMENT IN AFRICAN SOCIETIES

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Abstract
Cell phone is seen as a powerful and useful tool for communication and storing of data, information and storing and dissemination of indigenous knowledge. This tool therefore needs to be properly maintained in order to continue serving the users in storing and preserving vital information and knowledge. Contents for maintenance of cell phone training curriculum are developed in this paper for training of individuals such as indigenous men and women. It was recommended that men and women should be trained using the developed contents and identified facilities for effective preservation and dissemination of indigenous knowledge and development.
Keywords: Cell Phone, Curriculum, Indigenous Knowledge System

Introduction

Cell phones belong to the family of mobile communication technology. Mobile communication technologies are modified computers with communication features. They have the capability of receiving, processing, transmitting data, voice and video signals through wireless link. Darby (2005) stated that mobile communication technologies are those technologies which depend upon the broader phenomenon of internet protocol (IP) convergence when data, voice and video travel over a single channel. According to the Report of United Nations Educational, Scientific, and Cultural Organization (UNESCO) (2005) IP includes devices such as internet, which converts the package that belongs to a voice, data or video exchange into the appropriate presentation. Mobile devices can enable someone to use a variety of communications technologies such as: (i) wireless fidelity (Wi-Fi) - a type of wireless local area network technology; (ii) Bluetooth - connects mobile devices wirelessly; (iii) global system for mobile communications (GSM) and general packet radio service (GPRS) data networking services for mobile phones; (iv) dial-up services - data networking

services using modems and telephone lines and (v) virtual private networks - secure access to a private network.

Examples of mobile communication technologies or devices are hand held audio and multimedia guide, handheld game, personal audio player and mobile or cell phones. Prasart (2006) listed mobile communication technologies to include laptop, notebook computer, smart phones, low ends cell phones, personal digital assistant (PDA), tablet personal computer (TPC) and pocket personal computers (PPC). Commonly used mobile communication technologies or devices according to Scourias (2007) include hand held audio, multimedia guide, handheld game, personal digital assistance, personal audio player and mobile or cell phones. Baby (2007) said that personal digital assistant is an affordable gadget which offer high end features and act as office assistant since it can store personal and official files. The most commonly possessed and operated mobile communication technologies by individuals in Nigerian and other African societies are laptops, ipad and cell or mobile phones. Others which are highly restricted to professionals include walki talki and mobile tapes.

Mobile phones such as smart phones were made possible by the introduction of the Global System for Mobile Communication popularly known as GSM. The emergence of GSM is traceable to 1982, when the European Conference of Postal and Telecommunications Administrations (CEPT) constituted the Groupe Spécial Mobile committee ostensibly, to draw up a unified cellular telephone protocol for Europe, although the eventual mandatory standard or specifications were articulated by European Telecommunications Standards Institute (Huurdeman 2003). Essentially, the GSM encapsulates the open and integrated second-generation (2G) digital cellular standard that powers mobile phones. Between its introduction in 1982 and now, the GSM has improved in capability and efficacy becoming the most widely used phone technology across the world. Mobile communication technology such as mobile phones are found very useful in every human endeavour

Relevance of cell phones in Nigeria and African society

A cell phone belongs to the family of mobile communication technology. It is mobile in nature and it can be used for communication. A cell phone is also called mobile phone, hand phone, handset or mobile. It is a portable telephone that uses wireless cellular technology to send and receive phone signals. Hahn and Kibora (2008) described cell phone as an electronic device used to make mobile telephone calls across a wide geographic area. It can used to make and

receive telephone calls to and from the public telephone network which includes other mobiles and fixed-line phones across the world. It does this by connecting to a cellular network owned by a mobile network operator. It does not have wires and works by radio wave that can carry calls to anywhere. Feig-Nancy (2007) stated that cell phones and their network vary very significantly from provider to provider and country to country. However, the basic communication method of all of them is through the electromagnetic microwaves with a cell base station. Some mobile phones adopt advanced mobile phone service (AMPS) for the digital advanced mobile phone service (D-AMPS), code division multiple access (CDMA) 2000, evolution data only (EVDO), GSM, universal mobile telecommunication system (UMTS), and GPRS for the digital communication. Sarah (2009) added that each mobile or cell phone network has a unique radio frequency. Donner and Steenson (2008) explained that cell phone makes use of different mobile communication methods, such as short message service (SMS), Wireless Application Protocol (WAP), Wireless Local Area Network (WLAN), WIFI, GPRS, Bluetooth, Infrared, Infra-red Data Association (IrDA) and I-Phone.

Cell phones are in different types manufactured by different companies with their trademarks or brands. Some are nokia, samsung, Motorola, infinix, iphone and philip products among others. They have a number of features in common, but manufacturers also try to differentiate their own products by implementing additional functions to make them more attractive to consumers. Waard, Schepers, Ormel and Brookhuik (2010) said that cell phones have features beyond sending text messages and making the short or long distance voice calls, the other features include internet browsing, MP3 playback music, email, personal organizer, built in cameras, multimedia messaging (MMS), short messages service (SMS), call registries, built in games, voice mails, downloading, video call, bluetooth and infrared. In addition to functioning as a telephone, Reardon (2010) also explained that a modern mobile phone typically supports additional services such as e-mail and internet access; short-range wireless communications, as well as business and gaming applications, and photography. Cell phones that offer advanced computing abilities are referred to as smart phones. They are capable of sending and receiving emails, editing documents and storing files. Prasart (2006) described smart phones as third generation (3G) mobile phones which mostly use symbian operating system, linux and windows. Smart phones are non-touch screen devices that offer a robust mobile operating system (James, 2011).

Among the common components found in cell phones are a rechargeable battery to provide power source for the phone functions, input mechanism (keyboard and touch screens) and display to allow the user to interact with the phone. SIM card allows an account to be swapped among devices. David (2011) mentioned components of cell phones to include: liquid crystal display (LCD), menu button, keypad, antenna, battery, microphone, earpiece, power switch, battery terminal, power integrated circuit, oscillator, frequency divider, central processing unit, flash chips and SIM. Cell phones and their components are prone to faults like hardware faults, software faults and setting faults.

Many people in African society like other parts of the world prefer to make use of smart phones because they can perform different kinds of functions to support one's business. According to Charles & Kevin (2017) smartphone has become one of the most pervasive gadgets of the 21st century. In the last decade smart phone adoption has grown exponentially to emerge as an integral part of everyday life in most societies (Alfawareh and Jusoh 2014). A survey of global attitudes and trends by Pew Research Centre (2016) show a sharp rise in smart phones ownership over the last three years. While the survey indicates a high prevalence of smart phones in Europe and US, South Korea however, emerged the country with the highest penetration of smart phones (88%). In 2010, the GSM Association reported that technologies using the GSM protocol serve eighty percent of the international mobile market, covering over 5 billion people across more than 212 countries and territories, making GSM the most pervasive of the many standards for mobile systems. Cell phones are generally found useful and relevant in every human activity. They are found useful in businesses, trading goods and services, education, security, transportation health, among others. Bakare (2014) explained that cell phones help in selling and buying of goods and services with ease but has created some management problems to the users in the areas of maintenance, repair and servicing. Most of the users could not easily locate efficient technicians who can repair and service faulty cell phones thereby making users whose cell phones are bad to abandon them for the purchase of new ones. If the faults could be repaired or maintained, it will reduce continuous spending of money and electronic wastage which can cause health problems such as cancer to people especially where they are disposed carelessly.

Maintenance of cell phones for effective preservation of indigenous Knowledge and Components of Cell phone maintenance training curriculum (Module)

Maintenance is the process of preserving something or state of being maintained. Maintenance according to Olaitan in Ihediwah (2007) is a set of measure or steps taken to ensure that a given piece of equipment or infrastructure is kept in good operational order until it attain its maximum possible life span. In the Report of Microsoft Corporation (2009) maintenance is described as the work done regularly to keep a machine, building, or piece of equipment in good condition and working order. Two major types of maintenance can be carried out on cell phones. They are preventive and corrective maintenance. Preventive maintenance is systematic inspection, detection, correction and prevention of incipient failures, before they become actual or major failures. Corrective maintenance is the activity undertaken to detect, isolate and rectify a fault so that the failed equipment, faulty cell phone, machine or system can be restored to its normal operable state. Maintenance therefore are the activities carried out to repair, service, flash, upgrade, jail break and configure damaged or malfunctioning cell phones. Cell phone maintenance module is therefore needed for training of indigenous people of Africa

Module is a unit of curriculum based on the development of entry level competencies of students. Modules according to Olaitan (2003) are of equal length that will take approximately specific hours of instructional time to achieve by the average group of students. Onuka (2003) said that modules lend themselves to training in bits and reduce training periods. According to Anyawu, Nzewi and Akudolu (2004), module is a self-contained, independent unit of a planned series of learning activities designed to help students accomplish certain-well defined objectives. Modules are presented in booklet with each booklet produced for each class. Oristian (2007) stated that module is an organized package of information that includes elements such as objectives, contents, assignment or activities and assessment. Onuka (2008) explained that in a module, the training objective, content and methodology are presented at a glance in a concise form for the use of trainers and trainees to ensure that they participated effectively in training programme. That is, module is an organized unit of instruction for training of individuals.

Training is the activity of learning skills. Nick (2011) described training as the acquisition of knowledge, skills, and competencies as a result of the teaching of vocational or practical skills and knowledge that relate to specific useful

competencies. Generally, it reflects changes in profession rather than an upward movement in the same field. Salvi (2009) said that training can be offered as skill development for individuals and groups. Training involves presentation and learning of contents as a means for enhancing skill development and improving workplace behavior. Uko (2010) also described training as a process of transferring basic knowledge, skills and attitudes to learners to enable them improve their performance. Training is therefore the process of equipping indigenous men and women with skills and attitudes for maintaining all kinds of cell phones with relevant tools and equipment for effective preservation of indigenous knowledge, skills and attitudes. Cell phone maintenance training module conceptualized in this paper is a package of information that its elements such as objectives, contents, facilities, delivery systems and evaluation techniques and activities are arranged and organized in order to train indigenous men and women for the maintenance of all kinds of cell phones. Indigenous men and women in this paper are the people who can be trained in cell phone maintenance for the benefit of themselves and the African society. The first step in developing training modules is to conduct a needs assessment since according to Teare and Atkinson (1996) a training need assessment is a critical activity for the training and developing function. A need as stated by Gall, Gall and Borg (2007) is a discrepancy between an existing set of conditions and a desired set of conditions. There is need to conduct need assessment study in order to identify competencies required in the training modules for indigenous men and women. The need assessment study is to ascertain what is currently in place and what is needed in the future. It involves identification of training objectives, designing module contents, selecting delivery systems to be used to facilitate learning, facilities to be used in the training, the evaluation techniques and activities for assessing the training modules.

Training objectives are the expected learning outcomes. Objectives are brief, clear statements that describe the desired learning outcomes of instruction; that is, the specific skills, values, and attitudes students should exhibit that reflect the broader goals (Sommefeldt and Briggs, 2002). They are commonly specified with action verbs especially the behaviour terms. Objectives in technical education are stated in behavioural or specific ways. William (2011) explained that behavioural objectives are educational objectives, which identify precisely the type of behaviour a student should exhibit at the end of a course/module or programme. Microsoft (2009) said that objectives are stated in terms of what trainees should be able to do using acquired knowledge, skills and attitudes. Objectives of cell phone maintenance training modules indicate what the

indigenous men and women would be able to do as a result of exposure to the contents of modules. Content is defined as what the teacher and the students pay attention to when they are teaching and learning. Kapoma and Namusokwe (2011) described content as a list of subjects, topics, skills, themes, concepts or works to be covered by teacher and his students. The contents of the CMTM include: function of major components of cell phones, symptom and remedies of faults in cell phones, safety precaution needs of cell phones, skills in trouble shooting, repairing, servicing, configuring, flashing, upgrading, coupling, unlocking and jail breaking malfunctioned cell phones. Microsoft (2009) described skills in repairing skills as actions required to restore something broken or damaged to good condition. Skills in repairing cell phones therefore are the abilities to restore all kinds of dead or cell phones with major faults. Skills in servicing malfunctioned cell phones are the steps or actions one must take to clean, check, adjust and make minor repair to a piece of equipment such as cell phone in order to make sure that it works properly (Salvi, 2009). Configuration skills are the learnable tactics for arranging and interconnecting hardware and software components of a cell phone. These skills also enable one to configure a cell phone to browse the internet, snap pictures among others. Skills in flashing mobiles are the capacities for updating the internal programme of phone memory (Oluwaseun, 2009). Skills in unlocking blocked cell phone according to Kayne (2012) are well established habits to unlock a locked cell phone in order to be used on any GSM network with interchangeable SIM card. Skills in upgrading handsets according to Larry (2013) are the abilities required to improve the quality, standard, or performance of a cell phone, especially by incorporating new advances. Jail breaking skills are the step by step ways for bypassing the locks put in place by Apple in order to gain access to a large number of Apps that Apple has not authorized. Skills in coupling a cell phone are the procedural steps required to fix a dismantled parts of a cell phone together**.** All these skills are usually gained through training when using relevant facilities. Facilities are physical objects that facilitate a given work or activity. Facilities according to Okorie (2000) are physical items and structures such as buildings, offices, equipment, tools, machines and other materials. Facilities include relevant tools, devices and equipment for teaching and learning relevant skills within the contents of the modules. Yavala (2011) explained that facilities are those goods and services that help to facilitate teaching and learning process in any performance. Adequate and relevant training facilities make the learning process more satisfying. Various facilities such as sets of screw drivers, infra red rework station, soldering iron, cutting pliers, vacuum cleaners, magnifying desk lamp, flashing software, booster chargers, fluxes and analog/ digital multimeter could

be used for maintenance of cell phones and implementation of cell phone training modules.

Implementation strategies or delivery systems are means of teaching prepared lessons to students. Delivery systems to be selected depend on the contents of the lesson to be taught by a trainer. A good trainer matches the contents of a lesson to delivery systems in order to achieve the objectives of the lesson. Application of appropriate implementation strategies or delivery systems improves students' understanding. It enables the students to acquire relevant skills and knowledge. Ezeilo (2001) suggested delivery systems such as seminars, workshops and conferences. Implementation strategies or delivery systems are different teaching methods or techniques and related resources for facilitating the implementation of the cell phone maintenance training modules. Cell phone maintenance training modules could be implemented by lecturers, trainers, instructors and supervisors who their capacities are built in cell phone maintenance. Lecturers are academic staff within the programme with minimum qualification of first degree not below second class honours lower division. Instructors are technical teachers responsible for teaching of practical skills to electrical/electronic students in the polytechnics. Road side cell phone technicians are informally trained individuals maintaining all kinds of cell phones for members of the society while supervisors are the experienced and high ranking electrical and electronic personnel in telecommunication industries such as MTN, GLO, Etisalat and samsung. After implementation of CMTM, evaluation must follow.

Evaluation according to Olaitan (2003) is a means of ascertaining the success or failure of an enterprise by measurement or assessment of change in behaviour of the learner. Learning outcomes are evaluated using different techniques. Evaluation techniques are tools always employed by a teacher, trainer or an evaluator to evaluate learning outcomes. Osinem (2008) identified techniques that could be used to evaluate training outcomes to include: oral questions, discussion, demonstration, project method and procedure testing. Trainers use several evaluation techniques to assess learning outcomes. Evaluation of CMTC involves activities design to determine the extent to which the objectives of the training modules have been achieved. Such activities include tests, quiz, interview, assignment, homework, debate, essay questions and objectives questions. CMTC will equip the indigenous men and women with skills in trouble shooting, repairing, servicing, flashing, upgrading, unlocking, configuring and jail breaking malfunctioned or faulty cell phones if properly

implemented and mastered. It will help in solving maintenance problems facing the users of cell phones. It will also assist in reducing employment among youths. It will also help preserving indigenous knowledge, skills and attitudes. Cell phone maintenance training modules will serve its purpose if the procedures for curriculum development and implementation are duly followed. Curriculum development according to Uzoka (2010) is a process where curriculum experts identify what to be included and means of doing it. These means are the learner' objectives, selection of learning experiences and organization, personal resource materials, delivery system, contents and evaluation techniques (Olaitan, 2003). Curriculum development process consists of producing the curriculum materials including the course objectives, contents, learning experience, resources or facilities, and evaluation techniques. Research design suitable for this study is research and development (R and D) design. This designed is used when developing new educational products such as CMTC.

Contents of Cell phone maintenance training curriculum for preservation of indigenous knowledge and survival men and women in African society

The under listed contents and facilities have been tested and can be used for training indigenous men and women for survival and for preservation of indigenous knowledge and development

A. Contents of Cell phone Maintenance Training Modules:
Functions of the Major Component of Cell Phones

1. Read only memory and flash memory chips provide storage for the phone's operating and customizable features
2. Subscriber identity module allows users to retain information after switching handset
3. Circuit board allows all parts of the phone to communicate with one another
4. Digital signal processor performs signal manipulation calculation at high speed
5. Radio frequency handles power management and recharging battery
6. Software serves as interface between the user and cell phone
7. Know the classes of each component

Symptoms of Possible Faults in Cell Phones

8. Microphone faults result to caller not hearing the receiver or receiver's voice is distorted to the caller

9. Symptoms of hard ware faults in cell phone include dead set condition, no charging, battery empty and auto turn off
10. Symptoms of software faults in cell phone are no signal, dead set display, test mode and not charging
11. Symptoms of setting problems include call divert, SIM lock, and security code country lock
12. Auto turn off of a cell phone indicates old age of major components in the mobile

Remedies of Possible Faults in Cell Phones

13. Identify the cause of the faults
14. Identify bad components in the cell phone
15. Recommend solutions to each he faults
16. Relate each symptoms to faults in the cell phone

Safety Precautions in using Cell phone

17. Clean cell phone with correct solvent like alcohol
18. Use soft materials to clean cell phone
19. Take cell phone away from water or foods
20. Charge the battery of a cell phone at moderate
21. Use recommended battery charger for a cell phone

Safety Precautions in maintaining Cell phones

22. Remove the battery of the phone before servicing
23. Use extreme care when disassembling cell phone for any reason
24. Apply the right pry tools and screwdrivers when changing the faceplates or other components
25. Use recommended tools to remove battery of a cell phone
26. Gently pry parts of cell phone until they come loose on their own
27. Use correct tools to open a cell phone
28. Dismantle cell phone on a smooth place
29. Use appropriate tools to remove bad components from a cell phone
30. Apply recommended soldering iron when working on cell phones
31. Leave the terminals of a battery open always
32. Avoid to repair or service a cell phone if not conversant with the mode of operation
33. Install software onto the cell phone in case of smart phones
34. Observe, solely rules relating to soldering while soldering a components in a cell phone

35. Handles mother board with care while working on a cell phone

Skills in troubleshooting faulty cell phones

36. Take down the history of the faults from the cell phone user
37. Identify the facilities for trouble shooting faulty cell phone
38. Test the faulty cell phone in the present of the owner
39. Recognize the symptoms of all the possible faults
40. List all the possible causes of the problems
41. Check the list of possible causes against the list of the symptoms
42. Rank the remaining causes in order of likelihood
43. Reveal the result of the trouble shooting to the owner of the cell phone
44. Use tested okay unit to replace bad unit of the same capacity if fault is obvious
45. Test the unit or component one by one
46. Record down the outcome of the trouble shooting
47. Tackle the likeliest causes in the order of the complexity, cost and /or time required to check them

Skills in repairing faulty cell phone

48. Dismantle the cell phones
49. Split out the casing of the cell phone
50. Separate the key pad from the mechanism
51. Move the slider down
52. Lift the connector up to unplug the screen that is attached to the circuit ribbon
53. Move the slider up in case of slide phone
54. Remove the front cover of the cell phone
55. Identify faulty area or components in a cell phone
56. Test the components with appropriate testing instruments
57. Remove the component(s) from the mother board using appropriate tools
58. Select components of correct specification
59. Verify the condition of the components before fixing it back to the mother board
60. Repair or change the faulty components if totally bad
61. Fixes back the components into mother board correctly
62. Applies soldering iron for only 3 seconds if needed
63. Applies sufficient flux to point(s) being soldered
64. Couple back the phone
65. Configure the phone

Skills in coupling cell phones

66. Fix the electronic panel correctly into the main body
67. Screw the panel gently without breaking
68. Fix the screen and key pad correctly with electronic panel
69. Fix back the microphone/speaker/mouth piece gently if removed
70. Connect the battery and SIM sit to appropriate position
71. Insert the SIM card to rest on it sit
72. Put back the casing correctly

Skills in configuring cell phones

73. Select or click menu
74. Select settings
75. Select Configure setting
76. Identify personal configuration
77. Select add new in web
78. Write wap.mtnonlineplay.com
79. Select home page
80. Select bearing setting to have proxy server
81. Write 8080 on port
82. Generate username and password two times
83. Click back up and choose options
84. Activate as web
85. Browse to show bookmark

Skills in flashing malfunctioned cell phones

86. Connect the laptop to the internet
87. Key in the website of the service provider
88. Unzip the downloaded flashing software
89. Download correct software from the website of the service provider
90. Register with the CDMA or GSM carrier in your cell phone
91. Connect the cell phone to the computer with the help of appropriate USB cable
92. Install the downloaded software onto phone
93. Complete the installation within 15-20 minutes

Skills in unlocking cell phones

94. Identify materials for unlocking cell phones
95. Contact service provider for an unlock code

96. Download correct software for unlocking
97. Generate unlock codes correctly
98. Find the serial number of the cell phone, also known as IMEI number
99. Create in *#06# into cell phone
100. Use the downloaded software to enter into the Manufacturer website and slide the card out
101. Enter only one code to unlock the phone
102. Enter code 7 (Multi lock) if the phone is not unlocked by typing the first code (MCC+MNC)
103. Use computer to identify the secret code in case of any difficulties in unlocking

Skills in Unlocking phones using Password

104. Return the battery back again without SIM card

Skills in jail breaking cell phones

105. Select facilities for cell phone jail breaking
106. Determine what version of iOS to run
107. Back up the cell phone
108. Plug the cell phone into the computer
109. Click on cell phone in the sidebar to back up
110. Turn off the pass code screen lock if enabled
111. Visit the website from the cell phone
112. Check for compatibility of cell phone
113. Slide the bar to start the jailbreak process
114. Reboot the cell phone
115. Browse cydia for new apps
116. Return home screen

Skills in upgrading cell phones

117. Select tools for upgrading cell phones
118. Understand various options in upgrading a cell phone
119. Detect parts of the cell phone that needs to be upgraded
120. Download relevant application software for upgrading
121. Install application software for upgrading
122. Remove obsolete components from cell phone
123. Install new component onto the cell phone
124. Couple back the cell phone
125. Confirm functionality of the upgraded cell phone

Skills in servicing malfunctioned cell phones

126. Service cell phone with ear piece problem
127. Check cell phone with mouthpiece not working
128. Carry out minor repair on a cell phone with ringing problem
129. Make minor repair to a cell phone with charging problem
130. Heat the cell phones with vibration problems
131. Heat service dead cell phone
132. Dry clean a cell phone with screen problem
133. Clean a cell phone with keypad problem
134. Clean the ports of a cell phone with SIM card and SIM card port problems
135. Service cell phone with network problem
136. Adjust cell phone with hand free mode problem
137. Set a cell phone hanging when snapping/video recording
138. Adjust cell phone restarting when memory card is inserted
139. Service cell phone hanging due to overloading of application software
140. Make minor repair to a cell phone with charging problem
141. Dry clean wet cell phone with appropriate materials

B. Facilities for Maintenance of Cell Phones

The facilities that could be used for maintenance of cell phone:

1. Set of Screw Drivers for screwing
2. Infra red Rework station for soldering and desoldering of components
3. Soldering iron (small-tipped 30-to-50 watt irons) for soldering
4. Laptops of high capacities
5. Compatible universal serial bus for cell phone
6. Flashing software
7. Internet facilities in case of down loading software for cell phones
8. A computer with Windows 2000 or newer with a USB Port, 800Mhz+, 256MB RAM
9. A code division multiple access cell phone (CDMA)
10. Eyelets and eye letting tools
11. Soldering lead for soldering
12. Soldering paste for aiding soldering
13. Pickers for removing tiny and hidden objects
14. Torque screw driver/precision tools
15. Long nose pliers for holding tiny object in hidden place
16. Software (Assorted
17. Cutting pliers for cutting flexible objects

18. Tweezer
19. Hot lead sucker/suction devices for removing melted solder
20. Digital power supply
21. Fluxes (Non-corrosive liquid flux) for preventing oxidation
22. Standard/universal head phone for testing signals/sound
23. Magnifying desk lamp
24. Multitester for testing or measuring electrical quantities
25. Solder-resistant paint used in soldering
26. Ultrasonic cleaner
27. Booster for reactivating dead batteries of cell phones
28. Magnifying lens for enlarging tiny objects in a cell phone
29. Methylated sprit for washing panel or mother board of cell phones
30. Heater for heating the mother board during repair
31. Broad holder
32. Extension box for extending power source
33. Small brush for brushing away the solder residues
34. Regular power sources
35. Chargers (conventional and universal ones) for charging batteries
36. Signal chart books
37. Vacuum cleaner for cleaning cell phones
38. Microscopes for seeing tiny components
39. Universal phone leaver/opener for opening tough cell phones
40. Intelligent printed circuit board cleaner for cleaning water damaged mobile phones
41. Universal extension cable for connecting directly to USB 2.0 ports on the personal computer
42. Universal serial bus cable for powering mobile phones directly from USB port on laptop or personal computer
43. Anti-static wrist strap for ESD control
44. Antistatic tweezers for installing static sensitive components during mobile phone repair
45. User manual to give direction of servicing
46. Soft, dry cloth for clean cell phone
47. Compressed air for blowing dust from the cell phones
48. Pickers for picking small objects in a cell phone
49. Screw extractor for grabbing those screws and get them out without messing with the hardware
50. Wrist scrap for preventing static current shock

Needs for cell phone maintenance training curriculum (Module)

Cell phone maintenance training curriculum or module could be a training package to equip individuals with skills and knowledge required for maintenance of all kinds of cell phones. Lack of cell phone maintenance training curriculum to train individuals gives rise to various forms of management problems for users of cell phones. Most of the users could not easily locate skilled and efficient technicians who can repair or service their faulty cell phones thereby making users whose cell phones are bad to abandon them for the purchase of new ones. Unavailability of phone maintenance training curriculum to train individuals for maintenance of cell phones indirectly amounts to continuous spending of money by the users and electronic wastage which can cause health problems such as cancer to people especially where they are disposed carelessly.

Moreover, the curriculum of polytechnics that are mandated by Government to produce skilled technicians and technologists to maintain and repair all kinds of electronics such as cell phones still lack contents of cell phone maintenance. The available maintenance modules are dominated by basic knowledge but lack skills in trouble shooting, repairing, servicing, upgrading, coupling, jail breaking, and configuring all kinds of malfunctioned cell phones for the users. These situations emphasize the need for cell phone maintenance training curriculum (modules).

Conclusion and recommendations

Cell phone is seen as a powerful and useful tool for communication and storing of data, information and storing and dissemination of indigenous knowledge. This tool therefore needs to be properly maintained in order to continue serving the users in storing and preserving vital information and knowledge. Contents for maintenance of cell phone training curriculum are developed in this paper for training of individuals such as indigenous men and women. It was recommended that men and women should be trained using the developed contents and identified facilities for effective preservation and dissemination of indigenous knowledge and development.

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