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DETERMINATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) TRAINING NEEDS OF ACADEMIC STAFF FOR BRIDGING GAPS IN THE 21ST CENTURY MANAGEMENT OF COLLEGES OF EDUCATION IN DELTA STATE

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ABSTRACT

The inability of many academic staff of the colleges of education (COEs) to work with and utilize different information and communication technology (ICT) tools in teaching and learning, conducting researches and other consultations in the 21st Century is the main essence of the present study. This situation which is worrisome especially in the 21st Century technological age, calls for the determination of training needs of academic staff. The study therefore, investigated the determination of information and communication technology (ICT) training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State. Five research questions guided the study. The descriptive survey research design was employed in the study. Population for the study comprised 1, 051 academic staff from the 4 government-owned colleges of education in Delta State. The sample size for the study comprised a total of 526 academic staff from the four COEs selected using proportionate stratified random sampling technique. A researchers' self-structured questionnaire, titled "ICT Training Needs Questionnaire (ICTTNQ)" was used for data collection. Both validity and reliability of the research instrument were established. Data collected were analyzed using mean statistics rated at 2.50 and standard deviation for answering all the research questions. Findings of the study indicated that the ICT training needs of academic staff should focus on areas where those needs are felt such as: the computer fundamentals, Microsoft Office software applications, computer graphic designs, computer online collaborations and computer data analysis statistical software training. From the findings of the study, recommendations were made, among them include that the government (both Federal & State) should focus more attention on ICT training needs of academic staff of the COEs by providing adequate budget and financial support for staff continuous training and retraining in the areas of computer fundamentals, Microsoft Office software applications, computer graphic designs, computer online collaborations and computer data analysis statistical software training, for bridging gaps in the 21st Century management of colleges of education (COEs).

Keywords: Determination, ICT, Training, Needs, Academic, Staff, Bridging, Gaps, 21st Century, Management, Colleges of Education

Introduction

The Nigerian colleges of education (COEs) maintain the third cadre in the ladder of tertiary education. They are known as teacher education institutions and important citadel of academic learning responsible for the training, retraining and development of both pre-service (that is; would-be teachers) and in-service teachers. The colleges of education (COEs) offer preparatory training programmes or courses for the Nigeria Certificate in Education (NCE) teachers. They offer educational programme designed as a preparatory or initial training programme to educate those persons or individuals interested in the teaching profession (Kapur, 2018). The COEs also offer in-service training programme for teachers who are already serving in the teaching profession. The role(s) of teacher education to both human development and nation-building cannot be overemphasized because they are charged with the responsibility of training the trainers who would train the trainees in different professions to occur various positions in different socio-economic sectors in Nigeria. The mandate of teacher education institutions like the COEs is mainly to produce vibrant graduates and teachers from different fields of studies who will take up teaching jobs and responsibilities at the various levels of education like the Early Childhood Care and Development, primary education, secondary education including higher education (Kapur, 2018). The relevance and importance of teacher education institutions in training various categories of teachers for quality teacher practices cannot be overemphasized. It is through the various teacher education institutions that teachers from various academic fields are trained in order to train and produce professionals who will build a dynamic society. Any unique investment made to support the achievement of excellence in the teaching and learning situations of teacher education institutions like the COEs can never be a waste. No wonder the Federal Republic of Nigeria (FRN, 2013) stated that no country can grow above the quality of its teachers. This statement shows that academic staff are important human resources for the growth and development of the Nigerian educational system. From all the foregoing discussions, the role of COEs in producing quality teachers in this 21st century Nigerian education system is very crucial. The COEs therefore, train the requisite future manpower for the country, likewise, prepare students at the basic education and junior secondary education levels for different professions in order to contribute towards national development in the country. As it is, education is an aggregate tool for human empowerment and capacity development. It is an instrument for socio-economic and cultural development which allows individuals to acquire the requisite skills and competences that will enable them to participate actively in nation building.

Given the above statements, the benefits of the COEs to the growth and development of the Nigerian society especially in the 21st century can never be overemphasized. The Federal Republic of Nigeria (FRN, 2013) in the National Policy on Education refers to the COEs as one of the teacher education institutions. Therefore, in recognition of the pivotal role of quality teachers and academic staff in the provision of quality education at all levels, teacher education institutions shall continue to be emphasized in educational planning and development, in which, the management of the colleges of education through effective deployment and integration of the ICTs remains an important focus for socio-economic development of the country. However, different learning opportunities

should be created in different fields of studies and courses offered in the COEs using the information and communication technology. The COEs therefore, have been established with certain goals which can only be pursued through quality teaching and learning, provision of high standard facilities, and provision of practical based curriculum; which is realizable through effective management of the information and communication technology - ICT (FRN, 2013). The goals of colleges of education as one of the teacher education institutions have been accurately recorded in the National Policy on Education (NPE) by the Federal Republic of Nigeria (FRN, 2013) and they are to; produce highly motivated, conscious and efficient classroom teachers for all levels of the educational system; further encourage the spirit of enquiry and creativity in teachers; help teachers fit into the social life of the community and the society at large and enhance their commitment to national goals; provide teachers with the intellectual and professional background adequate for their assignment and to make them adaptable to changing situations; and enhance teachers' commitment to the teaching profession (FRN, 2013, P.43). The implication of the above educational goals implies that the COEs shall be well equipped, made functional and sustainable for effective performance in achievement of the above goals. Achievement of all these goals cannot be possible without the academic staff who are trained to use the ICTs in management of teaching and learning experiences. The goals of the COEs therefore, cannot be met without putting in place and appropriately, quality academic staff with the 21st century ICT skills, knowledge and competences that will promote excellence in the educational processes. The information and communication technology, which has permeated all spheres of human life and sectors as observed by Ghavifekr and Rosdy (2015) is a short hand for computers, software, networks, satellite links and related systems which allow people to access and share information and knowledge in a variety of forms. Kpolovie (2011) defined ICT as the science of production and utilization of computer equipment, subsystems, software and firmware for the automatic analysis, acquisition, storage, manipulation, management, movement, transformation, control display, interchange, transmission and retrieval of data (quantitative and qualitative information) to most appropriately meet human needs. Kpolovie and Wusaku (2011) that ICT is a revolution that involves the use of computers, the internet, and other telecommunication technology in every aspect of human endeavour.

The Federal Ministry of Education, Nigeria (2010) stressed that ICT incorporates all tools (inclusive of outdated technologies of radio, video and television to the fresher technologies of computers, hardware, firmware etc.), as well as the approaches, practices, processes, procedures, concepts and principles that come into play in the conduct of the information and communication activities. Adomi and Kpangbam (2010) described the information and communication technology (ICT) as electronic technologies used for information storage and retrieval. Teacher educational institutions like the colleges of education (COEs), are under increasing pressure to use the new information and communication technologies (ICTs) to teach students the knowledge and skills they need in the 21st century (Wan, 2011). Teacher education institutions like the COEs have been organized to position and prepare the teachers to differentiate between developmentally suitable and disadvantageous uses of ICT. It requires to prepare the teachers with competency to make use of ICT for their own professional development as well. ICT has smoothed the learning of the students; it has made the implementation of tasks and operations manageable. When a student makes use of

technology to prepare reports and assignments, he is able to make corrections easily. Such student does not have any kind of strain of handwriting and it is beneficial. In the initial stage, a person may feel vulnerable and not comfortable in making use of technology, it is a major challenge for them in the area of education. A great deal of practice enables them to become acquainted with technology and make use of it in their work. With the beginning and production of Information and Communication Technology (ICT), there is an increasing demand that it be comprised in education (Kapur, 2018). ICT therefore, have the potential to transform the nature of education, where and how learning takes place and the roles of students and teachers in the learning process. ICTs are powerful tools for human capital development (Mwunda, 2014). Examples of these ICT facilities that could be effectively utilized for quality instructional delivery in the management of the COEs as stressed by Keengwe, Onchwari and Wachira (2008) include the application of multi-media technologies (i.e., those that combine text, graphics, video, animation and audio) in teaching and learning, use of hardware, software applications and on-line teaching materials. Studies of Alfawaz and Ibrahim (2018), Ali, Haolader and Muhammad (2013), Kpolovie and Wusaku (2011) and Tomie (2013) gave examples of the ICTs as including the use of communication devices, mobile and technological hardware devices and software applications like the Microsoft word, Excel or spread sheets, power point, graphic design, Corel draw, Adobe page maker, among others. ICT as further indicated by Tomie (2013) embraces all physical objects or equipment used for information processing or transmissions like computers, cellular phones, videos, DVD, CD players, flash drive, CD-ROMs and TV transmitters. It also includes publication outlets include e-books, e-journals or through personal Websites. ICTs provide ready means for production of research reports. ICT incorporates a range of applications, communications, and technologies which aid information recovery and research communications and administration. These embrace online database, library services and online services as well as the fax machine (Tomie, 2013).

ICT further includes digital video, audio, software simulation, synchronous and asynchronous chats and interactive software, among others, which brings vitality in describing a method or reporting result. Service oriented ICT accentuates the provision of information services including bulletin board services, online search engines, radio broadcast services. Communication technologies include all media employed in transmitting audio, video, data and multimedia such as satellite, cable, fiber optics, wireless (radio, infra-red, Bluetooth, Wifi). Network technologies include personal area networks (PAN), campus area network (CAN) intranets, extranets and the Internet. Computer technologies include all portable media such as optical disks, disks flash memories, video books multimedia projectors, interactive electronic boards and constantly evolving state of the art PCs. Mobile technologies include mobile phones, PDAs, palmtops (Kpolovie & Wusaku, 2011). Given the important roles of ICT in the 21st century educational development, management of the COEs, it is very crucial factor, which requires that different ICT tools and software applications should be highly provided in the Nigerian COEs. In as much as the Nigerian COEs offers training for student-teachers in a wide range of context; yet it is worrisome and alarming that academic staff of most of the COEs including those in Delta State, still find difficulties in handling and utilizing various ICTs for improvement in their instructional delivery in the 21st century technological age. The 21st century as described by Rivero (2010) refers to the ability to utilize

technology to deliver curriculum content in a manner that is both rigorous and relevant. It infuses a master plan of how to generate innovative, relevant practices in education. The 21st century is the era we are in now, a time of freedom and technological advancement. It is the current century of the Anno Domini era or the Common Era, in accordance with the Gregorian calendar, which began on January 1, 2001, and will end on December 31, 2100. It is the first century of the 3rd millennium. It is distinct from the century known as the 2000s, which began on January 1, 2000 and will end on December 31, 2099. Rivero (2010) from education standpoint attested further, that 21st-century educational management requires skills in communication, collaboration, and information analysis. It seeks out innovative methods and tools—technology—that will enhance not only students' learning but encourages teachers own personal growth as well. **It incorporates** the ability to use technology to bring education alive. The two most important new skills to add to 21st-century life skills list are: 1) information skills: searching, assessing relevance and consuming, and 2) technology adoption skills: using mobile, PC and Internet tools (Rivero, 2010). In the 21st century school and educational management, the emphasis is not only on the delivery of a permanently evolving curriculum but also on the holistic welfare and development of a student group whose needs are changing by the day, the school as a learning organization and the commitment and capacity of all staff towards updating continuously their knowledge, skills and competences; and performance management for all staff, those who teach and those who manage.

Effective management of any education system like the COEs in the 21st century not only enables the college to set and achieve its goals but it can be a powerful force for empowering teachers and improving their sense of professional satisfaction at a time when the morale of teachers is being seriously undermined. It can reduce the feeling of isolation that many teachers feel and build collaboration among teachers and support systems for teachers through the ICT (O'Mahony, 2014). Failure of the academic staff of the COEs to effectively explore varieties of teaching methodologies through various ICTs in this century, has negative consequences on the graduates of the system, who cannot effectively function in the 21st century. Conversely, if different ICT tools or resources are explored by academic staff of the COEs, this will encourage their effective utilization in teaching and learning for management of the COEs. Besides, academic staff of the COEs remains the teaching staff of the colleges. They are also equivalent to teachers at other levels of education. Academic staff just like teachers are lecturers who impact knowledge on the students. Omebe (2015) defined academic staff as a person whose interaction, relationship, understanding and encouragement enable a person or student to reach the fill potential. Such a person is a well-experienced person and professional in a particular field or course of study who teaches in any public (that is: federal or state) or private tertiary institution like the colleges of education in the country. Without the academic staff, it would be difficult to attain both instructional and educational goals and objectives. Academic staff are also one of the important machineries necessary for the nation's socio-economic growth and development, in the sense that, they train individuals of various professions and professionals that contribute magnanimously towards the national economy for the development of the Nigerian society. Since no nation can rise above the quality of its teachers, providing opportunities where academic staff utilize various ICTs in teaching and learning, will definitely promote academic programmes in the COEs. Going by the present ugly and devastating situations of the COEs in the country and Delta State inclusive, many academic staff still lack the

knowledge and competences to make use of the ICT in order to support and sustain their teaching. Giwa, (2011) study observed that many academic staff lack the requisite skills and competences to effectively utilize different ICT in teaching and learning activities in the COEs. Further studies like those of Achibong, Ogbiji and Anijaobi–Idem (2010), Badau and Sakiyo (2013), Omoniyi and Quadri (2013), Onasanya, Shehu and Adefruye (2011), Ya'acob (2010) and Yusufu and Balogun (2011) supports that notion that many teachers lack requisite knowledge, skills, attitude and competence to use ICT effectively both in and out the classroom, as such, they need training. This situation as such, requires in the first place the determination of ICT training needs for academic staff of the COEs. This means that before academic staff can become competent in the use of various ICT, need be to discover the areas of their ICT training needs. Ogunmakin (2013) refers to academic staff training as the processes, organizational mechanisms and practices that are aimed at providing support to the teacher for the improvement and smooth discharge of his or her duties. In the present study, academic staff ICT training needs simply refers to those areas of ICT want or need such as online collaboration, hard and software applications, learning management system, among others, in which academic staff of the COEs needs to improve their competences and skills. Ogunmakin (2013) expressed that ICT professional training for supporting academic staff can be delivered through a wide range of medium including mentoring, job shadowing, individual learning, seminars, workshops, coaching/mentoring, peer-tutoring, and Subject Lead-Teacher approach. Therefore, academic staff ICT training is important for their continuous development. ICT training given to academic staff determines their level of proficiency, competency, efficiency, effectiveness, work commitment, performance and productivity (Ogunmakin, 2013).

Ya'acob (2010) has suggested, training should be offered to teachers on a continuous, rather than a one-off, basis so that their IT knowledge is upgraded over time. In this regard, Maeers (2009) reported that teachers and their student teachers in the COEs need to know about ICT and about what ICT can provide. They also need to be able to critically evaluate and discriminate what (technological) resource to use, and whether one should be used at all. They need to be able to understand conceptually and in pedagogically-appropriate ways, how, where and why to use computer related technologies. Advantages of teachers' professional training include that: it ensures that teachers undergo periodic re-training through in-service course. The pedagogy of teachers needs to be improved to enhance the use of many new teaching-learning styles. Therefore, the role of teacher at this point is vital. It is known that teachers do not have time to thoroughly evaluate the educational strengths and weaknesses of a considerably portion of the existing curriculum materials, software and texts before they are used (Giwa, 2011). Giwa, further stressed that professionalization ensures that only professionally qualified teachers are allowed to teach in Nigeria. However, teachers need to be trained in following areas: (a) personal skills in use of ICT, (b) professional skills and competence in ICT, such as understanding the relevance of ICT in education, understanding the importance of ICT in teaching and learning, understanding how to plan ICT for teaching and learning across the curriculum, and managing ICT in the classroom is vital. He opined further that, educating teachers in effective use of ICT in the classroom needs to start from the pre-service education. Training in ICT could be in the various aspects of the computer fundamentals, use of online collaborations, data

analysis software such as the Statistical Package for Social Sciences (SPSS), graphic designs like the Corel draw and Adobe page maker, various Microsoft Office like Microsoft word, Excel or spreadsheet and PowerPoint, application of different hardware and software devices and so on. Areas of academic staff ICT training needs focused in this study includes; the aspects of the computer fundamentals, software applications like the Microsoft Office, graphic designs, online collaborations and data analysis statistical software. The computer fundamentals according to the Chtips (2015), can be describe as the learning or studying some basic functions of computer starting from their origin to modern day. The study of basic computer types to their characteristics, advantages and disadvantages are included in the learning of fundamentals of computers. Before Shifting to advance computer knowledge it is highly recommended to be aware of this topic thoroughly as it would make one more confident and comfortable while acquiring more advanced computer skills. Such areas covered in the computer fundamentals include the aspects of learning the history, types, functions, advantages, disadvantages and various computer devices, among others. The Microsoft Office according to Ballew (2020), is a collection of office-related applications. Each application serves a unique purpose and offers a specific service to its users. For example, Microsoft Word is used to create documents. Microsoft PowerPoint is used to create presentations. Microsoft Outlook is used to manage email and calendars. There are others as well. Techopedia (2020) define Microsoft office as a suite of desktop productivity applications that is designed specifically by Microsoft for business use. It is a proprietary product of Microsoft Corporation and was first released in 1990. For decades, MS Office has been a dominant model in delivering modern office-related document-handling software environments. Microsoft Office is a powerful service that helps you unleash your best ideas, get things done, and stay Microsoft Excel, Microsoft Outlook, Microsoft PowerPoint, Microsoft OneNote, Microsoft Publisher, Microsoft Info Path, Microsoft Teams, One Drive, among others.

Computer graphic designs as described by the Learn org. (2021) and Malvik (2020) combines skills in technology, business and art, using computer-generated images and words to create unique concepts and messages for publishing and advertising. Computer graphics unite abilities in images, and engineering, business, together with voice and graphics to make messages and concepts such as promotion and publishing. Graphic design is further defined by Malvik (2020) is the art and practice of planning and projecting ideas and experiences with visual and textual content. In other terms, graphic design communicates certain ideas or messages in a visual way. These visuals can be as simple as a business logo, or as complex as page layouts on a website. Computer graphic design is everywhere in the modern world. One can see it on street signs and in restaurants, television programs and magazines. Computer graphic designers use technology to manipulate and combine words, images, color, typography and sound in order to elicit emotions and deliver messages to viewers. Example of these graphic designs include software applications such as the Corel draw, adobe page maker, digital design, multimedia design, website design and motion graphic design or animations, among others. Online collaborations according to ezTalks (2021), Schmidt (2019) and Warren (2020) are tools and platforms people use to work together within a digital environment. In most cases, it refers to how people work together over the internet. Online collaborations can further be described as a technology that uses a collaboration software like ezTalks Cloud Meeting etc. to allow a group of people to work together to achieve the same goal. The members of collaborating group can use the collaboration software to coordinate, communicate,

cooperate, share, negotiate and even compete with each other to solve problems. Online collaboration offers organizations a chance to achieve optimal communication among team members during projects. Collaborating online provides more spaces where teams can communicate. Many tools offer virtual chat rooms, video calls and online meetings to keep a project organized and on schedule. Online collaboration tools empower employees to work together on projects from anywhere in the world. Online collaboration tools provide file storage in a shared database. Constant access to the library of files enables teams to thrive. This type of blanket connection naturally creates efficient projects. Teams can quickly receive ideas from text, images, or videos and work together to take the necessary steps with the data. Online collaborators can work together on text documents, PowerPoint presentations, video chats, or detailed brainstorming projects. The idea is that users do not need to be in the same room at the same time to work together. There are many online collaboration tools available. Examples include; web conference allows people to meet online and deliver presentations, Dropbox, WhatsApp, Google meet, Google classroom, zoom, Adobe XD, Google Doc, Proof Hub, Evernote, Google Drive, Google Docs, Chanty, Go To Meeting, Skype, Flock, Facebook, Microsoft Teams, among others. Academic staff also need ICT training in the area of data analysis for their research manipulations.

Data analysis statistical software products as observed by the Digital Bridge Institute (2020) are specialized programs designed to allow users to perform complex statistical analysis. These products typically provide tools for the organization, interpretation, and presentation of selected data sets. Statistical solutions typically package these data management capabilities with features specific to statistical analysis. Statistical analysis capabilities refer to capabilities that support analysis methodologies such as regression analysis, predictive analytics, and statistical modelling, among many others. Examples of these data analysis statistical software include the SPSS, MATHEMATICA, STATISTICA, R, STATA, SAS, MiniTab, NCSS, Eviews, Maple, among others. For promotion of quality academic staff practices and quality education which will yield positive outcomes in the 21st century Nigerian education system, this warrants the determination of academic staff ICT training needs. Although, several empirical studies like those of Akpan, Ntukidem, Ekpiken and Etor (2016), Giwa, (2011), Kapur (2018), Kayode, Irele, Agunbiade, George-Kayode (2019), Omotunde (2017) among others, have shown the importance of ICT in education, most of these studies have their own mix and findings. Kapur (2018) study observed in a study that the poor utilization and incorporation of ICT in teacher education institutions is responsible for poor teacher preparation in the institutions, lack of students and teachers' readiness in the use of ICT, lack of training for the use of ICT tools, among others. Jokthan (2012) asserted in a study that another challenge to teachers in the 21stcentury is in Information and Communication Technology (ICT). The spread of ICT challenges teacher "monopoly" of knowledge and learning process to the point that professional development and access to adequate ICT infrastructure without cutting other school resources had become a critical factor in classroom conditions. Not many know how to use ICT because majority of teachers do not have ICT skills. Kapur (2018) observed in a study that the poor utilization and incorporation of ICT in teacher education institutions is responsible for poor teacher preparation in the institutions, lack of students and teachers' readiness in the use of ICT, lack of training for the use of ICT tools, among others. Supporting the above statements, Jokthan (2012) opined that another challenge to teachers in

the 21stcentury is in Information and Communication Technology (ICT). The spread of ICT challenges teacher "monopoly" of knowledge and learning process to the point that professional development and access to adequate ICT infrastructure without cutting other school resources had become a critical factor in classroom conditions. Not many know how to use ICT because majority of teachers do not have ICT skills. The shortcomings of most of these studies have necessitated the present study which sought to discover academic staff ICT training needs for the management of COEs. It is therefore upon this background that the researchers are motivated to conduct the present study on the determination of information and communication technology (ICT) training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State.

Statement of the Problem

Academic staff of the colleges of education (COEs) form the hub on which effective teaching and learning is provided in the colleges of education (COEs). No quality education can take place in the COEs in Delta State without the efficiency of academic staff who are supposed to utilize various ICT tools in promoting teaching and learning experiences. Observations from the reality of things in the COEs showcases that many of the academic staff of the COEs are neither knowledgeable, competent or skilled to effectively utilize most of the ICTs tools such as their knowledge of the computer fundamentals, Microsoft Office software applications, computer graphic designs, computer online collaborations and computer data analysis statistical software; nor do they participate in various ICT training and retraining programmes that will improve their skills for goal actualization. Many of the academic staff in the COEs still rely heavily on the use of the old traditional or conventional teaching methodologies. Without the knowledge and skills in ICT, many academic staff will not function effectively in the system especially in the present 21st century. This is so because not utilizing the ICT in teaching and learning seem to make learners become only passive learners who cannot contribute to the teaching and learning situation. Rather the use of ICT in the management of teaching and learning in the COEs seem to aid effectiveness of the instructional delivery. This will make students active learners in the classroom. ICT promotes collaborations and active learning both in and out of the classroom. When academic staff utilize the ICT tools in the COEs, this will bring about quality learning. But it is alarming and saddening to see that in the 21st century many academic staff of the COEs are yet to incorporate the ICTs into their teaching. This situation, which is worrisome for the researchers, raises a lot of questions about the ICT training needs of academic staff of the COEs. There is no doubt that ICT training for academic staff will boost their competence in using many of its devices and applications to promote researches, effective communication with students, instructional deliver and other consultations. The problem associated with academic staff lack of ICT skills and competence has created a gap which needs to be filled in the present study. Therefore, in order to fill this gap for quality education to triumph in the COEs, this has necessitated the present study to determine information and communication technology (ICT) training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State, which is also the problem of this study.

Research Questions

The following research questions guided the study:

1. What are the computer fundamentals training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State?

2. What are the Microsoft Office software applications training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State?
3. What are the computer graphic designs training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State?
4. What are the computer online collaborations training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State?
5. What are the computer data analysis statistical software training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State?

Research Method

The descriptive survey research design was employed in the study. The design was adopted to enable the researchers to use a research instrument (that is, questionnaire) in order to collect information or data from a sample out of the population of academic staff from all the colleges of education in Delta State concerning the present study on the determination of information and communication technology (ICT) training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State. Population for the study comprised 1, 051 academic staff from the 4 government-owned colleges of education (that is: COE Agbor - 284 academic staff, Asaba – 388 academic staff, Mosorga – 130 academic staff & Warri - 249) in Delta State. Information retrieved about the population of academic staff were gotten from the Senior Establishment of each college of education as at December, 2020. The sample size for the study comprised a total of 526 academic staff from the four COEs (that is: COE Agbor - 142 academic staff, Asaba – 194 academic staff, Mosorga – 65 academic staff & Warri - 125) selected at 50% from the entire population of academic staff, using proportionate stratified random sampling technique. To draw the sample, all the academic staff of the four colleges of education in Anambra State were stratified based on their institutions ownership after which the proportionate stratified random sampling technique was used to select the sample at 50%. The selection of the sample is in line with Nworgu (2015) who opined any sample from 10% to 80% for a large population is sizeable and enough to conduct a study. A researchers' self-structured questionnaire, titled "ICT Training Needs Questionnaire (ICTTNQ)" which contained 48 items was used for data collection. Construction of this questionnaire was guided by the purpose of the study and research questions. The questionnaire was structured on a 4-point scale response items rated as: Strongly Agree (SA) – 4 points, Agree (A) – 2 points, Disagree (D) – 3 points and Strongly Disagree (SD) – 1 point. The instrument was validated by two experts from the Department of Educational Psychology (Measurement & Evaluation expert) and one Computer Science expert from Federal College of Education (Technical) Asaba, Delta State. Corrections made on the instrument by the researchers were effected before the final print out. This included in the aspects of content coverage, coverage, clarity of items on the instrument, and language construction. Reliability of the research instrument was established through a pilot-test sampling 15 academic staff from one of COE in Edo State. Data gathered from the pilot-test conducted were analyzed using Cronbach Alpha method. This yielded coefficients reliability values of 0.87, 0.83, 0.71, 0.81 and 0.92 for the five clusters which was added up to give an overall coefficient of internal consistency of 0.83, showing that the questionnaire was reliable. An on-the-spot method was employed

in order to retrieve data from the respondents. Data collected were analyzed using mean statistics rated at 2.50 and standard deviation for answering all the research questions. The decision rule was that any mean score that rated above 2.50 of the acceptable mean score was termed as an agreeing to the statement. Any mean score which rated at 2.49 and below was termed as disagreeing to the statement.

Presentation of Results

Research Question 1: What are the computer fundamentals training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State?

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Table 1: Mean Scores and SD on the Computer Fundamentals Training Needs of Academic Staff for Bridging Gaps in the 21st Century Management of Colleges of Education (COEs) in Delta State
N = 526 academic staff

S/N	Please determine your opinion concerning the aspect of computer fundamental training needed by academic staff in your institution	SA	A	D	SD	X	SD	Decision
1.	Meaning of a computer	158	210	51	107	2.80	1.08	**Agree**
2.	Types of computers such as mini, mainframe, micro, and super computers	167	296	52	11	3.18	0.68	**Agree**
3.	Types of computer software and their meaning	175	198	86	67	2.91	1.00	**Agree**
4.	Advantages and Disadvantage of the computer	224	209	79	14	3.22	0.80	**Agree**
5.	Various parts of a computer	189	149	88	100	2.81	1.12	**Agree**
6.	Meaning of a computer hard disk drive	176	194	86	70	2.90	1.01	**Agree**
7.	History of the computer	167	244	82	33	3.04	0.85	**Agree**
8.	Basic functions of the computer system	194	181	86	65	2.96	1.01	**Agree**
9.	Classification and characteristics of a computer	200	178	111	37	3.03	0.93	**Agree**
10.	Basic fundamentals of a computer as regards to the input, output, processing, storage	166	246	54	60	2.98	0.94	**Agree**
11.	Various computer devices coupled with their functions such as the keyboard, mouse, printers, monitors, scanners, projectors, speakers	145	288	35	58	2.99	0.88	\ **Agree**
	Grand Mean and SD =					**2.98**	**0.95**	**Agree**

Data presented in Table 1 indicated that all the items from 1 to 11 were rated above 2.50 of the acceptable mean score by the respondents, thus, showing that they agreed to these statements. None of the items were rated below 2.50 of the acceptable mean score by the respondents, thus, showing that they disagreed to these statements. However, the grand mean is 2.98 with SD of 0.95 indicating the computer fundamentals training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State.

Research Question 2: What are the Microsoft Office software applications training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State?

Table 2: Mean Scores and SD on the Microsoft Office Software Applications Training Needs of Academic Staff for Bridging Gaps in the 21st Century Management of Colleges of Education (COEs) in Delta State

N = 526 academic staff

S/N	Please determine your opinion concerning the aspect of Microsoft office software applications training needed by academic staff in your institution	SA	A	D	SD	X	SD	Decision
12.	Microsoft Access database management tool for compiling and organizing large amount of data	190	207	31	98	2.93	1.08	**Agree**
13.	Microsoft PowerPoint visual/graphing tool used to create presentation, organize, and manipulate data, formulas	223	136	88	79	2.96	1.09	**Agree**
14.	Microsoft Word processing program for creating, storing and editing documents, publications and files	260	236	16	14	3.41	0.68	**Agree**
15.	Microsoft Excel or spreadsheet with features such as calculations, pivot tables, and graphic tools	214	222	50	40	3.16	0.88	**Agree**
16.	One Drive used to store data online	128	227	93	78	2.77	0.98	**Agree**
17.	Microsoft Outlook which is used to manage emails and calendars likewise to do list and contacts	227	216	59	24	3.23	0.82	**Agree**
18.	Microsoft Publisher which is a desktop publishing program used for creating extensive publications, posters, flyers, menus	234	121	90	81	2.97	1.11	**Agree**
19.	Microsoft OneNote which is free note taking used for organizing data including handwritten notes, drawings, screen captures, audio clips and more	201	252	33	40	3.17	0.85	**Agree**
20.	Microsoft Info Path, a program that allows one to design, distribute, complete and submit electronic forms	230	144	100	52	3.05	1.01	**Agree**
	Grand Mean and SD =					**3.07**	**0.97**	**Agree**

Data presented in Table 2 indicated that all the items from 12 to 20 were rated above 2.50 of the acceptable mean score by the respondents, thus, showing that they agreed to these statements. None

of the items were rated below 2.50 of the acceptable mean score by the respondents, thus, showing that they disagreed to these statements. However, the grand mean is 3.07 with SD of 0.97 indicating the Microsoft Office software applications training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State.

Research Question 3: What are the computer graphic designs training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State?

Table 3: Mean Scores and SD on the Computer Graphic Designs Training Needs of Academic Staff for Bridging Gaps in the 21st Century Management of Colleges of Education (COEs) in Delta State
N = 526 academic staff

S/N	Please determine your opinion concerning the aspect of computer graphic design training needed by academic staff in your institution	SA	A	D	SD	X	SD	Decision
21.	Corel draw for creating designs	168	245	65	48	3.01	0.90	
22.	Adobe page maker for creating designs	201	188	67	70	2.99	1.02	
23.	Digital design which is an artwork and images created for advertising	125	232	100	69	2.79	0.95	
24.	Multimedia design such as QuickTime used for creating animations or videos	151	220	85	70	2.86	0.98	
25.	Website design used for creating, engaging and intuitive web pages for users	189	127	103	107	2.76	1.14	
26.	Motion graphic design or animation which bring visual elements to life through special effects, TV shows, video games and movies	151	240	58	77	2.88	0.98	
	Grand Mean and SD =					**2.88**	**1.00**	

Data presented in Table 3 indicated that all the items from 21 to 26 were rated above 2.50 of the acceptable mean score by the respondents, thus, showing that they agreed to these statements. None of the items were rated below 2.50 of the acceptable mean score by the respondents, thus, showing that they disagreed to these statements. However, the grand mean is 2.88 with SD of 1.00 indicating the computer graphic designs training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State.

Research Question 4: What are the computer online collaborations training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State?

Table 4: Mean Scores and SD on the Computer Online Collaborations Training Needs of Academic Staff for Bridging Gaps in the 21st Century Management of Colleges of Education (COEs) in Delta State

N = 526

S/N	Please determine your opinion concerning the aspect of computer online collaborations training needed by academic staff in your institution	SA	A	D	SD	X	SD	Decision
27.	WhatsApp which is a multiplatform messaging app that allows one to make video and voice calls, send text messages	213	209	56	48	3.12	0.93	**Agree**
28.	Zoom cloud-based video conferencing service used to virtually meet with other people	167	213	80	66	2.91	0.98	**Agree**
29.	Chanty which is a simple room chat solution created for teams to foster healthy relationship through accessible communication	204	217	57	48	3.10	0.92	**Agree**
30.	Dropbox which offers sharing and scheduling features	189	204	102	31	3.05	0.89	**Agree**
31.	Go To Meeting, a robust online meeting and video conferencing tool designed to enable people to collaborate with teams via internet	203	183	77	63	3.00	1.01	**Agree**
32.	Skype, an online collaboration tool which allows teams to share files, share screen video calls and discuss tasks	185	202	44	95	2.91	1.07	**Agree**
33.	Flock, which allows teams to have different channels, as well as individual and group conversations	222	213	25	66	3.12	0.98	**Agree**
34.	Facebook which allows team members to collaborate on tasks via voice/video calls and instant messaging	119	296	60	51	2.92	0.85	**Agree**
35.	Microsoft Teams, a unified communication platform that merges workplace chat with video meetings, file storage, attachment, and app integration	210	213	17	86	3.04	1.04	**Agree**

36.	Google meet which is a video-communication service that allows teams chat over video and text	199	201	62	64	3.02	0.99	**Agree**
37.	Google classroom, a free web service for sharing, creating, distributing, and grading assignments or files between the teacher and students	213	178	59	76	2.17	1.01	**Agree**
38.	Google Docs which allow multiple people to edit and comment on file at the same time	202	215	54	55	3.07	0.95	**Agree**
39.	Adobe XD which allows team members to collaborate on design projects	229	201	48	48	3.16	0.93	**Agree**
40.	Evernote, a note taking app which helps team to capture ideas on research	166	288	37	35	3.11	0.80	**Agree**
41.	Google Drive, an online storage for saving files and sharing them safely with team members	217	213	38	58	3.12	0.95	**Agree**
	Grand Mean and SD =					**3.04**	**0.96**	**Agree**

Data presented in Table 4 indicated that all the items from 27 to 41 were rated above 2.50 of the acceptable mean score by the respondents, thus, showing that they agreed to these statements. None of the items were rated below 2.50 of the acceptable mean score by the respondents, thus, showing that they disagreed to these statements. However, the grand mean is 3.04 with SD of 0.96 indicating the computer online collaborations training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State.

Research Question 5: What are the computer data analysis statistical software training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State?

Table 5: Mean Scores and SD on the Computer Data Analysis Statistical Software Training Needs of Academic Staff for Bridging Gaps in the 21st Century Management of Colleges of Education (COEs) in Delta State

N = 526

S/N	Please determine your opinion concerning the computer data analysis statistical software training needed by academic staff in your institution	SA	A	D	SD	X	SD	Decision
42.	SPSS software which provides descriptive statistics and inferential statistics packages for editing and analysing all sorts of data which comes from sources such as scientific, customer database, Google Analytic or server log files of a website	221	189	67	49	3.11	0.95	**Agree**
43	Rstudio which creates software for data science and statistical computing	189	248	33	56	3.08	0.92	**Agree**
44.	Stata for data management, statistical analysis and publication	211	261	24	30	3.24	0.79	**Agree**
45.	Minitab 18 software for quality improvement and statistics education worldwide	217	231	22	56	3.16	0.92	**Agree**
46.	SAS/STAT used for small data sets, high-performance statistical modelling tools for large data tasks and modern methods for analysing data with missing values	215	148	100	63	2.98	1.04	**Agree**
47.	Mathematica for arithmetical computation	213	237	43	33	3.20	0.84	**Agree**
48.	Statistics for statistical computation which assists for the collection, organization, analysing data	114	249	76	87	2.74	0.98	**Agree**
	Grand Mean and SD =					**3.07**	**0.94**	**Agree**

Data presented in Table 5 indicated that all the items from 42 to 48 were rated above 2.50 of the acceptable mean score by the respondents, thus, showing that they agreed to these statements. None of the items were rated below 2.50 of the acceptable mean score by the respondents, thus, showing that they disagreed to these statements. However, the grand mean is 3.07 with SD of 0.94 indicating the computer data analysis statistical software training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State.

Discussion of Findings

The findings of the study indicated the information and communication technology (ICT) training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State. These ICT training needs were felt more by the academic staff of the colleges of education in Delta State in the various aspects of computer fundamentals, Microsoft Office software applications, computer graphic designs, computer online collaborations and computer data analysis statistical software training needs. It was however found out that the computer fundamentals training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) were to focus on those areas which exposed the academic staff to the meaning of a computer, types of computer such as mini, mainframe, micro, and super computers, types of computer software and their meaning, advantages and disadvantage of the computer, various parts of a computer, meaning of a computer hard disk drive, history of the computer, basic functions of the computer system, classification and characteristics of a computer, basic fundamentals of a computer as regards to the input, output, processing, storage, and various computer devices coupled with their functions such as the keyboard, mouse, printers, monitors, scanners, projectors, speakers. To buttress more on this finding, before academic staff of the COEs should go further to advanced computer training, they need to go through the computer fundamentals which allowed them to know all about the computer. This finding is in consonance with Kayode, Irele, Agunbiade and George-Kayode (2019) study which found out that there was significant positive relationship between in-service training and job performance of secretarial staff. Therefore, the need for a continuous pragmatic and systematic staff development programme of an organization cannot be over-emphasized. There should be ICT capacity building often for academic staff in all the COEs. This was in support of Bukhala study cited in Kayode, Irele, Agunbiade and George-Kayode (2019) which reported the need to provide substantial, adequate and relevant training and retraining of secretarial staff was imperative for better performance. Obayan cited by Kayode, Irele, Agunbiade and George-Kayode (2019), in another related study also affirmed that investment in employees (staff training) is necessary to promote fluency in information technology and further opined that the training should be a career long process.

The finding of study indicated the Microsoft Office software applications training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs). This training needs includes in such areas as; Microsoft Access, Microsoft PowerPoint, Microsoft Word processing, Microsoft Excel or spreadsheet, One Drive, Microsoft Outlook, Microsoft Publisher, Microsoft OneNote, and Microsoft Info Path. However, after exposing academic staff to the computer fundamentals, it is also necessary that they are obtain training in the aspect of Microsoft Office software applications. This finding agrees with Omotunde (2017) study which found out that majority of respondents have limited computer skills, cannot use technical computer programs to complement their work and were not formally trained on the use of ICT rather they acquire their skills independently. Thus, the need for more frequent training on the use of electronic information devices and resources which should be made available to lecturers in Nigerian higher learning institutions.

The finding of the study further indicated the computer graphic designs training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State. As they include in such aspect as: the Corel draw and Adobe page maker for creating designs, Digital design, Multimedia design such as QuickTime used for creating animations or videos, Multimedia design such as QuickTime used for

creating animations or videos, Website design used for creating, engaging and intuitive web pages for users, and Motion graphic design or animation which bring visual elements to life through special effects, TV shows, video games and movies. With the computer graphic design, academic staff will be competent in designing and creating animations, pictures, cartoons, comics, among others which would be used to supporting teaching and learning at the COEs. This finding equally concurs with the study of Omotunde (2017) which found out that there is need for more frequent training on the use of electronic information devices and resources which should be made available to lecturers in Nigerian higher learning institutions.

It was discovered through the finding of this study, the computer online collaborations training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State. These online collaborations include; the WhatsApp, Zoom cloud-based video conferencing service, Chanty room chat, Dropbox, Go to Meeting, Skype, Flock, Facebook, Microsoft Teams, Google meet, Google classroom, Google Docs, Adobe XD, Evernote, and Google Drive. All these applications assisted in strengthening collaborations among teams. This finding agrees with Nwokedi and Nwokedi (2018) study which found out that the training method in which academic staff preferred was one to one instruction; the academics need training in Internet and online activities like browsing for materials for project writing, teaching and learning; incessant power failure was the major challenge the academic faced in the use of ICTs. However, the study discovered that: there is the need to expose these staff of the faculty to ICT training to enhance their skills in the use of ICTs. Therefore, efforts should be made by the University management to look beyond development of programmes that merely focus on the training of academics in the operation of computers and ICT literacy per se but plans to work actively towards enabling Faculty of Medical Sciences academics to master ICT as an effective tool to improve teaching, research and learning in the university. The researcher however, asserted that the academics in Faculty of Medical Sciences, University of Jos, need training in the use of ICTs facilities especially, in the area of Internet and online activities.

Finally, the finding of the present study indicated the computer data analysis statistical software training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs). This included such computer data analysis statistical software such as; the SPSS software, Rstudio, Stata, Minitab 18 software, SAS/STAT, Mathematica and Statistica. All this data analysis software however will assist to improve and support academic staff in the areas of their research. This finding concurs with Obayan study cited by Kayode, Irele, Agunbiade and George-Kayode (2019), in another related study which affirmed that investment in employees (staff training) is necessary to promote fluency in information technology and further opined that the training should be a career long process. Studies such as those of Akpan, Ntukidem, Ekpiken and Etor (2016), Giwa, (2011), Kapur (2018), and Omotunde (2017) confirmed the need for academic staff training which is one means of improving their work proficiency, competences, performances and efficiency in educational institutions.

Conclusion

Supporting academic staff through ICT training will definitely make significant impact in the management of the COEs in Delta State. Before any ICT training is organized for academic staff need be to identify areas of needs. The present study however submits that academic staff of the colleges of education in Delta State needed ICT training in areas such as the computer fundamentals, Microsoft Office software applications, computer graphic

designs, computer online collaborations and computer data analysis statistical software training. The study therefore concludes that academic staff in the COEs needs ICT training in order to promote the efficiency of their work. Given the findings, now is the right time to show priority focus and attention towards the determination of information and communication technology (ICT) training needs of academic staff for bridging gaps in the 21st Century management of colleges of education (COEs) in Delta State. Upon this premise, recommendations have been made.

Recommendations

Based on the findings of this present study, the following recommendations have been proffered:

1. The government (both Federal & State) should focus more attention on ICT training needs of academic staff of the COEs by providing adequate budget and financial support for staff continuous training and retraining in the areas of computer fundamentals, Microsoft Office software applications, computer graphic designs, computer online collaborations and computer data analysis statistical software training, for bridging gaps in the 21st Century management of colleges of education (COEs).
2. The institutions management should also source for financial support from external bodies like the private sector, financial institutions, among others, so as to provide adequate training for academic staff in the area of Microsoft Office software applications, for bridging gaps in the 21st Century management of colleges of education (COEs).
3. Institutions should consult graphic experts or designers who will improve academic staff knowledge, skills and competence in the aspect of computer graphic designs for improvement in academic programmes in order to bridge the gaps in the 21st Century management of COEs.
4. Academic staff should be motivated through adequate financial support from the government, regulatory body such as National Commission for Colleges of Education (NCCE) and management of their institutions for their active participation on computer online collaborations which is a way of bridging gaps in the 21st Century management of COEs.
5. Constant computer data analysis statistical software training and retraining programmes should be organized by NCCE in collaboration with the college management for academic staff in the COEs.

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