The Effect Of Public Sector Led ICT Initiatives On Human Resource Capacity Building In Ghana; A Case Study Of South Dayi District Directorate Of Ghana Education Service

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Abstract- The purpose for the integration of ICT in education in Ghana is to enhance teaching and learning, and educational services delivery. In line with this, the government of Ghana envisaged integration of ICTs necessary for the education sector into its administrative and service delivery activities and work towards an electronically SMART ministry that is Simple, Moral, Accountable, Responsive and Transparent. This study investigated the effect of public sector led ICT initiatives on human resource capacity building using South Dayi District of Ghana Education Service as a case study. The world globalization makes it imperative for the integration of ICTs for policy formation and implementation agencies like District Directorate of Education for effective monitoring and supervision towards better growth and development. The investigation is based on the administration of questionnaire among fifty-eight (58) members of staff of the South Dayi District of the Ghana Education Service over a two month period based on purposive sampling. The results of the study revealed that public sector led ICT initiatives were not purposive to the direct needs of the human resource capacity building of the staff. They were not really directed to the district directorates; instead, they were school based initiatives. Alternatively, the integration process had brought to the fore the awareness of the importance of the ICTs which led to personal upgrading of some members of staff of the Directorate. One major set-back of the integration process was lack of basic training of members of staff. The study therefore strongly recommends that increasing access of ICTs is utterly paramount coupled with basic training in ICTs as a pre-requisite for staff recruitment.

Index Terms- ICT, ICTEP, SWAP, MDGs, and EFA

I. BACKGROUND TO THE STUDY

The application of Information and Communication Technology (ICT) in sectors of human endeavour for that matter education is seemed as paradigm shift from the normal traditional concepts of operations towards a more refined and transformational processes with significant enthusiasm. Social, political, religious, economic, and technological changes of the past decades make education and training for all and sundry more crucial than ever. However, educational systems, to different degrees worldwide, are struggling to afford educational opportunities for all, to provide their human resource with the necessary knowledge and skills for capacity building in evolving economies and sophisticated living environments, and to prepare citizens for lifelong learning. In order to meet these challenges, countries have to focus concurrently on access enabling environments, improving internal efficiency, promoting the quality of teaching and learning, and improving system management.

The digital divide poses several challenges for our countries, since Governments are being forced to choose between many competing objectives while planning development strategies and repeatedly need to find a balance between the demand for development funds and the availability of only limited resources. Bridging the digital divide requires adequate and sustainable investments in ICT infrastructure and services, capacity building, and transfer of technology over the years to come. The third world or developing nations like Ghana also perceives integration of ICT in education as an engine to promoting socioeconomic, political, and sustainable development. This perception underpins many tremendous attempts to improve upon the educational sector to meet the demand and human resource requirement of the country. In Ghana this has seen enactments of several initiatives like:

i. The Education Act of 1961
ii. The Dzobo Report of 1973 (Recommended the JSS Concept)
iii. The New Structure and Content of Education 1974
iv. The Education Commission Report on Basic and Secondary Education1987/ 88.
v. The Education Reform Programme 1987/88
vi. The University Renationalization Committee Report 1988
vii. The Free Compulsory Universal Basic Education Programme, 1996. (1992 Constitution)
viii. The FCUBE Policy Document and Programme of Operations, 1996
ix. The Ghana Education Trust Fund - GET Fund Act 2000. (Act 581) and now
x. The New Educational Reform (takes off September, 2007)

All over the world, educators, policy makers, policy implementers and researchers have collectively agreed on the potential of ICT to have a significant and positive effect on education. The Government of Ghana never relents on her heels in recognizing the benefits of embracing ICT and incorporating it in the latest educational reforms which took effect from the 2007/2008 academic year. This has been done in view of providing a tool for enhancing the efficiency and effectiveness of the teaching and learning process and also, equipping the nation's human resource capacity base with the requisite ICT skills and knowledge to meet the challenges of the ever changing world that await them outside the classroom. Education policymakers in Ghana have applauded the introduction of Information and Communication Technology (ICT) in sectors of education as a step towards knowledge production and communication, and information sharing among students and teachers in the school system.

However a number of issues need to be addressed when considering the overall impact of the use of ICT in education. These issues border on effectiveness, cost, equity, and more importantly the sustainability of deploying ICT in the educational system. The concern with "mainstreaming" arises in part from the widespread perception that ICT-for-development programmes was often set apart from, and not well-coordinated with, core sectorial activities of donors in education, health, private sector development, etc. At the same time, many sectorial projects had ICT components embedded in them, but often without benefit of lessons from broader experience with ICTs and the challenges of adapting them to specific environments and conditions. The challenge, then, is both to link ICTs to core development goals and projects and to ensure that the full range of those involved in development programmes and implementation understand where and how ICTs can be useful tools, and where they are not and their effective involvement in the implementation agenda.

Even though private sector, mainly in the form of Non-Governmental Organizations, has been playing a role by carrying out ICT initiatives in the Ghanaian educational system, the Government of Ghana is said to be the key player to a number of ICT initiatives supports in the country. The public sector led initiatives are most often in the form of policy making and implementation for which District Directorate of Education are responsible for educational institutions at the local levels.

'Indeed, relatively little is actually known about the effectiveness of investments in ICTs in education in promoting educational reform in general, and Education for All (EFA) goals in particular. Despite the billions of dollars of investments in ICTs in education in OECD countries, hundreds of ICT in education pilot projects in developing countries, and untold articles and presentations extolling the potential of ICTs, little hard evidence and consensus exist on the proper, cost-effective utilization of ICTs to meet a wide variety of some of the most pressing educational challenges facing the developing world.'

The above statement attributed to Mike Trucano of the World Bank, which is part of the Preface to the pre-circulation draft of the Infodev document titled 'Monitoring and Evaluation of ICT in Education Projects; A Handbook for Developing Countries (November 2005), very much reflects the situation we find in Ghana. How much do we know of public sector led ICT initiatives in our District Directorate of education in general to help us cost-effectively implement ICT in the institutions under their jurisdiction? In encouraging the public sector to continue playing a role with regards to ICT in the educational policy implementation stages, we still have to ask questions of the effect of the role they play, and they continue to play with regards to ICT in the Ghanaian educational system as a whole in dispatch of their duties as implementers, and find the right answers so that we learn from similar past initiatives' experiences in particular, improve service delivery, plan and allocate resources, and demonstrate results.

II. STATEMENT OF THE PROBLEM

The benefits that ICT bring are unhidden fact. It is a key to achieving the tenets of education for all, especially universal basic education by the year 2015 and could help unlock the door to education. (Annan, 2005). The fact that the government cannot do it alone due to the huge costs in deploying ICTs in the educational system is also a known fact. For instance it is going to cost the Ghanaian government over forty thousand Ghana cedis to provide very basic ICT facilities for a single institution like District Directorate of education. The G.E.S, through ICTEP, has been a cardinal point showing the direction of ICT in education. In a study of some preliminaries studies done by the Information and Communication in Education Programmes (ICTEP) unit of the Ministry of Education Science and Sports (MOESS) in 2005 reveals that the unit has been receives supports from private sector led ICT initiatives since the 1990s (Matrix For GESCI Initiatives 5-Nov—05). The Coordinator of the unit, Rev E. K. Dadebo, emphasized this point when he claims that a lot of such help even go unnoticed.

However, there have been concerns as to the true nature, quality, the mode of operations and even the true reasons for these initiatives. Rev E. K Dadebo in a discussion with the researcher laments that a lot of these initiatives in Senior High Schools by the private sector leaves much to be desired. These same sentiments are captured by the ICT4E policy when it indicates that a lot of these initiatives have been lopsided, poorly managed and served the interest of a few. The issue, it seems however has always been having adequate information to enable planners prevent such occurrences.

III. PURPOSE OF STUDY

The purpose of this study is to take a closer look at, not only the role the public sector has played with regards to ICT initiatives in District Directorate of education human resource capacity development, but also most importantly the effects of the initiatives, their nature and quality as well as how these have been determined.

IV. RESEARCH QUESTIONS

The following research questions have been formulated to guide the researcher in this study to evaluate the effect of the public sector led ICT initiatives in human resource capacity building of District Directorate of education.

i. What has been the extent of coverage?
ii. What resources have been committed to these initiatives?

iii. What has been the impact of these initiatives on education as a whole (school management, teaching, learning and infrastructure)?

iv. What have been the plans put in place by the public sector for the sustainability of private sector led initiatives once they pull out?

V. SIGNIFICANCE OF THE STUDY

With Ghana realizing the role of ICT as an accelerator of growth as captured in the ICT4E policy and the subsequent deployment of ICT in schools, there will be the ever increasing need for the public sector to get more and more involved with ICT in our educational system since it is clear that the private sector pull out at any time in the mist of implementation bottle-necks. However such initiatives need to be understood and guided with proper Monitoring and Evaluation mechanisms put in place to ensure that they help the educational sector in particular, and the nation at large, reap the numerous benefits associated integrating ICT practices in education.

This study hopefully among other things will:

i. Provide useful lessons on the nature of future public ICT initiatives

ii. Provide useful lessons on how to sustain such initiatives

iii. Provide useful lessons necessary for developing human resource capacity building initiatives for effective educational Monitoring and Evaluation in DDEs

iv. Provide opportunities to avoid a repetition of mistakes committed in past initiatives and to replicate good practices

v. Provide some base knowledge for further research in this area

VI. THEORETICAL FRAMEWORK

This research study primarily was based on the Information Integration theory and Constructivist's theory. Information integration theory offers several options for those who want to create (or encourage) attitude change. It is of the view that an attitude can be made up of favourable and unfavourable information and that each piece of information has both weight and value. In addition, a person's attitude is only primarily shaped by the information that is salient, or that they remember. This means that if they knew a piece of information but forgot it, we may be able to persuade them by reminding them this idea. Ordinarily, we would not have to convince them that we are right about this piece of information, because it is something they once accepted. It can often be easier to remind them of an idea than to persuade them to accept a new idea. Of course, you have to remind them of something that supports the new attitude you want them to accept.

In view with the above factors, Information Integration theory declares that there are six basic options for changing a person's attitude:

i. Increase the favourability (value) of a piece of existing information that supports the desired attitude.

ii. Increase the weight of a piece of existing information that supports the desired attitude.

iii. Decrease the favourability (value) of a piece of existing information that opposes the desired attitude

iv. Decrease the weight of a piece of existing information that opposes the desired attitude

v. Offer a new piece of favourable information

vi. Remind the audience about a forgotten piece of favourable information.

By implication, when one learns new information, he or she usually does not abandon the existing attitudes or ignore those new ideas. Rather, he or she integrates, mixes, or combines the new information in with the existing attitudes to come up with a new attitude. Our new attitude is not exactly the same as either our existing attitudes or the new information, but it is influenced to some extent by each. Furthermore, Information Integration theory's idea that information has two aspects, evaluation and weight, makes sense. This idea is similar to, although not exactly the same as, the thought that attitude is made up of beliefs (weight) and values (evaluation). Third, it is reasonable to say that the higher the weight and value of a piece of information, the more influence that idea has on our attitudes (Anderson 1971). Thus, the implication of any change related to technologically driven improvement will depend on the weight and value and individual puts on the information or, the implementation.

Technology as a Cognitive Tool

The use of computer technology to support learning has been difficult to document and quantify (Clark, 1994; Russell, 1999), leaving the role of computers in the classroom precarious. In the past decade, a sudden resurgence of interest was markedly observed in the classroom use of technological innovations, along with the increased use of the Internet and other digital technologies (Reiser, 2002). The field of Instructional Design and Technology, too, saw the evolution and emergence of alternative approaches, such as cognitive and constructivist theories, that deviated sharply from traditional practices, such as behavioral models. New emphases, like electronic performance support systems, web-based instruction, and knowledge management systems widened its horizon across business and industry, the military, health care and education, worldwide (Reiser, 2002). Initiatives, such as situated learning theory and constructivism presented fresh approaches to bring about reforms in the domains of public education and higher education (Anderson, Reder & Simon, 1996; Brown, Collins & Duguid, 1989; Jonassen, 1999; Reiser, 2002). To comprehend the prospect of technology implementation in enhancing the teaching-learning process, the impact of constructivism on classroom practices has been studied by many researchers (e.g., Black & McClintock, 1995; Richards, 1998; Brush & Saye, 2000). Other researchers have suggested that constructivist strategies exploit technologies for greatest impact in learning (e.g., Duffy & Cunningham, 1996). A complementary relationship appears to exist between computer technologies and constructivism, the implementation of each one benefiting the other.

Constructivism, derived mainly from the works of Piaget (1970), Bruner (1962, 1979), Vygotsky (1962, 1978), and Papert (1980, 1983), is both a philosophical and psychological approach based on social cognitivism that assumes that persons, behaviors and environments interact in reciprocal fashion (Schunk, 2000). Constructivism is a theory stating that learning takes place in

contexts, and that learners form or construct much of what they learn and understand as a function of their experiences in situation (Schunk, 2000). According to Jonassen, Peck, and Wilson (1999), technology is referred to the designs and environments that engage learners. The focus of both constructivism and technology are then on the creation of learning environments.

A central assumption of constructivism is that learning is mediated by tools and signs (Duffy & Cunningham, 1996; Ezell & O'Keeffe, 1994). "Culture creates the tool, but the tool changes the culture. "Participants in the culture appropriate these tools from their culture to meet their goals and thereby transforming their participation in the culture" (Duffy & Cunningham, 1996, p. 180). The computer is an exemplar of mediational means that has aspects of both tool and sign. The computer's role in education has been largely viewed as an instructional tool and for providing a richer and more exciting learning environment (Duffy & Cunningham, 1996; Jonassen & Reeves, 1996; Taylor, 1980). However, by focusing on the learner, the role of technology can support new understandings and capabilities, thus, offering a cognitive tool to support cognitive and metacognitive processes. The traditional view of instructional technologies of instruction as conveyors of information and communicators of knowledge is supplanted with active role the learner plays in learning with technology. Technologies, primarily computers, help build knowledge bases, which will engage the learners more and result in more meaningful and transferable knowledge. Learners function as designers using the technology as tools for analyzing the world, accessing information, interpreting and organizing their personal knowledge, and representing what they know to others. According to Duffy & Cunningham, 1996, cognitive tools do not preclude the use of computers to increase productivity for learning. Off-loading repetitive tasks and lower order tasks to cognitive tools frees cognitive resources for deeper thinking and reduces errors. Swain and Pearson (2001) revealed that teachers and students must be educated to use the computer as a productivity tool, as well as a tool for learning, research, networking, collaboration, telecommunications, and problem-solving. Using computers as a productivity tool is one of the basic requirement for teachers to use technology to enhance their productivity and professional practices"

Constructivist views assert that learning is the active process of constructing rather than passively acquiring knowledge, and instruction is the process of supporting the knowledge constructed by the learners rather than the mere communication of knowledge (Duffy & Cunningham, 1996; Honebein, Duffy & Fishman, 1993; Jonassen, 1999;). The constructivist framework seeks to understand multiple perspectives, and challenges the learners' thinking (Jonassen, Mayes & McAleese, 1993). It examines the social origins of constructions, whereby it acknowledges learning as a process of acculturation. Thus, the study of social and cultural processes and artifacts becomes a central issue. Context is a dynamic whole including the individual and socio-historical aspects Thinking is always dialogic, connecting minds, either directly or indirectly. The indirect or semiotic means are the signs and tools appropriated from the socio-cultural context. (Duffy & Cunningham, 1996).

The role of ICT in Education

The roles of ICT in education cannot be over-emphasized. Education is one of the major keys to economic development, improvements and empowerment. In the face of sharp growth of competition in global economic, education become an important source of competitive advantage, and a way for countries to attract jobs and capital investments. Additionally, education appears to be one of the key indicators for lifetime earnings for individuals as well as nations at large. Over the years, countries therefore frequently see raising educational attainment as a way of tackling poverty and deprivation. In developing countries, education is also linked to a whole batch of indicators of human development. In developed countries such as Ghana, education is seen as important not just in the early years, but also in later life. As the pace of technological change quickens and as the workforce in many rich countries grows obsolete, education provides a way to improve and update the skills and capabilities of the workforce.

There are, however, many constraints on delivering education to the right people at the right time. In developing countries, there is frequently a shortage of qualified school teachers. People may live in scattered communities in rural areas. Money for books and teaching materials may be scarce. The cost of university education has risen sharply, and students are increasingly expected to meet all or part of the cost directly. But, at the level of higher education and training, the problem is often also one of time. Students who are already in full-time employment find it difficult to take part in a university course offered at conventional times of day. All these factors have encouraged an interest in the use of ICTs to deliver education and training. Since the advent of personal and home computers, ICTs have become an integral part of the educational system. Computers are rapidly becoming central to the daily lives of many Ghanaians. Kennedy & McNaught, (1997) indicates that ICT is a force that has changed many aspects of the way we live. Oliver & Towers, (1999) also indicates that ICTs have the capacity to provide support for customized educational programs to meet the needs of individual learners.

Oliver (2000) also indicates that ICTs will continue to drive these forms of learning further. As students and teachers gain access to higher bandwidths, more direct forms of communication and access to sharable resources, the capability to support these quality learning settings will continue to grow. Reeves & Jonassen (1996) indicates that the influence of the technology on supporting how students learn will continue to increase. The emergence of ICTs as learning technologies has coincided with a growing awareness and recognition of alternative theories for learning. According to Duffy & Cunningham (1996), the theories of learning that hold the greatest influence today are those based on constructivist principles. These principles posit that learning is achieved by the active construction of knowledge supported by various perspectives within meaningful contexts.

The strengths of constructivism lie in its emphasis on learning as a process of personal understanding and the development of meaning in ways which are active and interactive.

In this domain learning is viewed as the construction of meaning rather than as the memorization of facts (Lebow, 1993; Jonassen & Reeves, 1996). Learning approaches using contemporary ICTs provide many opportunities for constructivist learning through their provision and support for resource-based, student centered settings and by enabling learning to be related to

context and to practice (Berge, 1998; Barron, 1998). The concept of flexibility in the delivery place of educational programmes is not new (Moore & Kearsley, 1996) indicate that educational institutions have been offering programmes at a distance for many years and there has been a vast amount of research and development associated with establishing effective practices and procedures in off-campus teaching and learning. Uses of the technology, however, has extended the scope of this activity and whereas previously off-campus delivery was an option for students who were unable to attend campuses, today, many more students are able to make this choice through technology-facilitated learning settings.

The scope and extent of this activity is demonstrated in some of the examples below. The communications capabilities of modern technologies provide opportunities for many learners to enroll in courses offered by external institutions rather than those situated locally. These opportunities provide such advantages as extended course offerings and eclectic class cohorts comprised of students of differing backgrounds, cultures and perspectives. The freedoms of choice provided by programs that can be accessed at any place are also supporting the delivery of programs with units and courses from a variety of institutions. There are now countless ways for students completing undergraduate degrees for example, to study units for a single degree, through a number of different institutions, an activity that provides considerable diversity and choice for students in the programs they complete.

Moore & Kearsley, (1996) state that Students are starting to appreciate the capability to undertake education anywhere, anytime and any place. This flexibility has heightened the availability of just-in-time learning and provided learning opportunities for many more learners who previously were constrained by other commitments. As indicated by Young, (2002), through online technologies learning has become an activity that is no longer set within programmed schedules and slots. Learners are free to participate in learning activities when time permits and these freedoms have greatly increased the opportunities for many students to participate in formal programs. The wide varieties of technologies that support learning are able to provide asynchronous supports for learning so that the need for real-time participation can be avoided while the advantages of communication and collaboration with other learners is retained. Furthermore, technology advocates have made several claims regarding the potential benefits of information technology in education. Means (1994) classified the use of IT in education into four broad uses: "it can tutor; it can explore, it can be applied as tools, and it can communicate IT is used as a tutor when it does the teaching directly, typically in a lecture-like or workbook-like manner. Tutorial used includes expository learning, in which the technological system provides information, it also includes demonstration, in which the system displays a procedure and practice, which requires the student to solve problems, answer questions, or execute a procedure. It is used to explore, when it allows teachers and students to move through information or obtain demonstrations upon request. Through the discovery or guided discovery that accompanies the exploration, the student can learn facts, concepts, procedures, and strategies as he or she interacts with the system. A micro-world simulation is an example of using technology to explore something. IT applied as tools in teaching and learning provide students with the same kinds of

tools generally found in the workplace or the home. These technologies, unlike technologies that tutor and explore, are not designed explicitly for school use, but can be put to educational purposes. Examples include word processing and spreadsheet software, video cameras, and video editing equipment. According to Millar (2000), the use of IT to communicate encompasses programmes and devices that allow students and teachers to send and receive messages and other information through networks or other technologies. The following are some Millar's (2000) examples of benefits of integrating IT into education.

Conceptual frame work

A recent World Bank report reveals that across the world, per capita economic growth is driven by three information and communication technology (ICT)-related factors (Schware 2005).:

i. investments in equipment and infrastructure,
ii. investments in human capital (i.e. in education and innovation), and efficient use of labour (human resource).
iii. capital that increases productivity.

These three factors have a direct impact on the provisioning of education. For one, the demand to adopt ICT-supported education services, or e-education, is outweighing the capacity of governments to adequately support education reform and expansion. At the same time, these three factors are key areas of interest to the private sector, which includes local, national, and international private commercial enterprises, non-government organizations (NGOs), not-for-profit trusts, philanthropic organizations, and development agencies. This interest and support from the private sector can be leveraged to enable the sharing of resources to overcome such obstacles as limited funds and lack of technical expertise and project management capacities in ICT integration in education.

However, public and private enterprises associated with e-education projects are driven by different agendas, which results in divergent targets and bottom lines. They may share common 'development' interests in having educated and healthy citizens, in putting in place the physical and social infrastructure that would improve the quality of learning, and in expanding markets for sustainable growth of e-education. A sharing of resources between public and private enterprises in e-education interventions make possible a shift away from collective, tax-based financing of educational infrastructure and services. Moreover, it is assumed that when public and private partners join forces to improve the provision of e-education services their complementary strengths can accelerate the pace of progress. Such partnerships draw in new ideas and capacities for problem-solving and leverage investments and professional expertise. Thus, the sum of the partnership wields greater influence, touches more people in need, and reaps benefits for all participants.

According to the experience of Organization for Economic Co-operation and Development (OECD) countries shows that public-private partnerships (PPP) can play a vital role in mobilizing the scale of resources required for financing and building ICT infrastructure, developing applications and locally relevant content, and developing the human capacity required for harnessing the full capacity of ICT productive tools (Ichiro and

McNamara 2003). Notwithstanding the previous assertions, public section in any way must not play supplementary role in the planning and implementation of ICT initiatives for development but face the issue headlong as the master key player supported by other private sector players. In recent past, research has demonstrated that often the nature and characteristics of public agencies affect the manner in which they tend to plan for and use ICT (Allen *et al*, 2004). Implementation of ICT plans and using ICT strategically in public agencies is impeded by hierarchical structures that exist within such agencies and the inability to share information among the various departmental settings. According to Coombs and Hull (1996), there is the internal political tension within public agencies as an impediment to ICT strategy and development. Bajjaly, 1998 reports assertions by Governmental ICT managers that elected politicians have a minimal understanding of ICT, and that politics commonly disrupts the planning of ICT projects. Clark and Munn (1986), referring to the risk tolerance of bureaucratic organizations, coined the phrase 'structural amnesia' according to which organizations disregard problems that threaten their values or hasten their deconstruction. They found that organizations exhibit a self-preservation mechanism in which they selectively choose the problems and risks worthy of consideration. This often leads to a disconnection between factual events and acknowledged reactions. In another development, relationship between elected officials and the civil servants within government agencies provides major obstacles to planning and implementation of ICT initiatives. Dufner *et al.* (2002), attest to the fact that the loosely nature of public agencies often means a distancing of functional and operational staff from the top-level decision process, and this in turn can result in decentralization and fragmentation of ICT planning efforts.

According to Fountain (2001), it is possible delineating the components of the 'bureaucratic' form of government, against which the application of ICT acts. In view of Fountain, the tendency of public agencies to perpetuate their bureaucracies makes them less inclined to undertake technological changes that can undermine them. Their bureaucratic, vertical structures also make them shy of horizontal inter-agency networks, and this in turn can inhibit the adoption of technologies and applications such as e-Gov that thrive on these very networks. There is no doubt that the very leadership of Ghana has placed a strong emphasis on the role of ICT in contributing to the economy of the nation. The medium-term development plan of the country captured in the Ghana Poverty Reduction Strategy Paper (GPRS I&II) and the Education Strategic Plan 2003-2015 applauded the use of ICT as a means of integrating the poor in the economy of Ghana (Government of Ghana, 2003). By the year 2004, Ghanaian Parliament passed into law ICT for Accelerated Development (ICT4AD) policy. In view of this policy, the Ministry of Education produced an ICT in education framework document to integrate ICTs in schools. The ICT in education policy for Ghana had a long gestation period. The policy development for the sector predates the national ICT policy. A committee set up by the Ministry of Education, Science and Sports outlined an ICT in education policy framework and produced a document that remained untouched for a long time. The objectives of the policy were clearly spelled out as follows:

i.　Ensuring that students have ICT literacy skills before coming out at each level of education

ii.　Providing guidelines for integrating ICT tools at all levels of education

iii.　Providing means of standardizing ICT resources for all schools

iv.　Facilitating training of teachers and students in ICT

v.　Determining the type and level of ICT needed by schools for teaching and administrative purposes.

vi.　Promoting ICT as a learning tool in the school curriculum at all levels. (Government of Ghana, Ministerial ICT Policy statements, 2005)

According to a paper delivered by the then Deputy Minister for Education, HON. MRS ANGELINA BAIDEN-AMISSAH at a study tour of Asia by African Ministers of Education (June, 2006), reveals that capacity for educational planning, and management of the education sector is fundamental both for making more effective use of resources and for enabling other stakeholders including civil society and community to contribute to education provision. She is of the view that all the systematic approaches being pursued, the most important is decentralization and that decentralization is key to improving the efficiency of education management and services. It will enable planning, prioritization and implementation to be directly influenced by and be responsive to, the local needs and priorities of students, parents and communities.

In addition, an increased decentralization of education service delivery through the development of District Performance Reports and District Operational Plans is to feed into the budget process for the Ministry. It is strongly emphasized that an Educational Management Information System (EMIS) has been strengthens evidenced - based Management. EMIS is a data collection, storage, retrieval, processing and dissemination system specifically designed for use by decision makers and administrators to plan and administer the education system more efficiently and effectively. In the process of outlining the Education Strategic Plan (ESP), the Minister reiterated the development the Education Strategic Plan (ESP) 2003-2015, which is a long term plan designed to provide the strategic framework that will guide the development of the education sector over the period up to 2015.

The preparation of the ESP was informed by the Ghana Poverty Reduction Strategy (GPRS), Education For All (EFA), the Millennium Development Goals (MDGs) and other sectorial and national reports.

According to the ESP, the foundation for a Sector Wide Approach (SWAP) to education sector development in Ghana is layed ensuring joint responsibility and partnership between government and all stakeholders, with the MOESS taking the lead role in guiding the implementation of the ESP. The ESP is organized along four main areas of focus as follows:

i.　Equitable Access to Education

ii.　Quality of Education

iii.　Educational Planning and Management

iv.　Science and Technology , Technical and Vocational Education and Training

Information technology was introduced into development in the early 1970s. This introduction was facilitated by international development agencies, such as the UNDP and World Bank, who

supported a large number of IT related development projects in the 1970s and 1980s (Berman, 1992). There was the familiar progression of initial enthusiasm and optimism leading to top-down strategies of implementation which accompanied the implementations of earlier technologies. The apparent "push" rather than "pull" implementation strategies by developing countries appeared to have resulted in significant failures (Heeks, 2002) and has often worsened the development states of most developing countries (Berman, 1992; Brohman, 1996). This "push" rather than "pull" strategies also resulted in the ripple effects of widening the gap between the developed and the developing countries in their adoption and use of ICTs.

According to Kofi Mangesi (2007), the commitment to improving the quality of education through ICTs is high both at the presidential and ministerial levels. Progress has been made on several fronts, but several other inhibiting factors exist including the following:

i. Access to ICTs still remains highly inadequate and unevenly distributed through Ghana, with an urban bias.
ii. The capacity of teachers and educators to deliver policy still remains low with many averse to adopting ICTs in the classroom or with inadequate skills
iii. There is a lack of adequate collaboration between the Ministry of Education and Ghana Education service or other implementation agencies such as ministries, departments, and agencies.
iv. There are inadequate partnerships and collaboration between the ministry and the private sector.

ICTEP Unit of the GES

According to the draft copy of ICTE Policy, The introduction of ICTs into education and its development partners and other private sector agencies by the Ministry is primarily through the GES. Public sector initiatives all over the years have spanned pre-tertiary cutting across public and private schools and tertiary institutions. The major efforts have fundamentally been geared towards the deployment of ICTs to these facilities through the provision of computers and the establishment of ICT laboratories. Also, there have been several attempts by the private sector initiatives to set up Community based ICT centres. These however have been largely confined to urban areas with few available examples of how they have been used to support educational objectives. The draft revealed that in a study carried out to review and assess the ICT in Education Initiatives in Ghana (2005), twenty initiatives were selected and their impact assessed to see what lessons could be learnt. Several positive achievements were noted.

i. Initiatives contributed to a wider number of students and teachers acquiring ICT skills and developing strong interests in ICT and Science;
ii. Schools involved in the initiatives were motivated to expand the project and / or acquire more ICT equipment; a number of private-public partners, including Parent Teachers Associations (PTAs) and civil society collaborated in the efforts;
iii. Lessons learnt from initiatives provided good examples for other schools to introduce their own ICT programmes;

However, the initiated projects were not free of a number of challenges. At least half of the initiatives had been launched as pilots with none expanded into national initiatives therefore led to a number of implementation challenges as follow:

i. Poor selection of schools without the involvement of GES / MoESS resulting in duplication and hence some schools having several parallel initiatives while others (especially those in the remote rural towns) had none
ii. Lack of policy direction at all levels (schools, districts, national) for the integration of ICT in education;
iii. Heavy dependency on external funds, with most initiatives stopped after depletion of initial funding
iv. 'Dumping' of obsolete and inappropriate equipment as 'support' for the initiatives
v. Low levels of ownership at the level of the schools, due to external motivations, and low levels of understanding on the part of recipients about the potentials of ICTs in education
vi. Lack of trained ICT personnel (including teachers) far below the numbers demanded to support the initiatives with most capacity building efforts one-off with no continuous trainings.

In another development, the draft policy seeks to ensure success and sustainability of ICT in Education projects not necessarily increasing the number of computers, but also basically supporting discrete educational objectives. In view of this lessons learned from the initiatives further highlighted the need for a coordinated, focused and properly managed approach to the adoption and utilization of ICTs. Such an approach could further improve the accessibility and delivery of quality education and better maximize the impact of ICTs in Education. According to E .K Dadebo, Co-ordinator, ICTE Programmes Unit, MoESS, Education Sector Policy Statement as defined in the National ICT4AD Policy is to transform the educational system to provide the requisite educational, and training services and environment capable of producing the right types of skills and human resources required for developing and driving Ghana's information and knowledge based economy and society.

The overall goal of the ICTE Policy is to enable every Ghanaian to be able to use the ICT tools and resources confidently and creatively to develop the skills and knowledge needed to achieve personal goals and be full participants in the global economy by 2015

The road map to achieving this policy is as follow: 2003

i. Development of an ICTE Policy Framework
ii. Policy Makers Workshop (ICTE) - WorLD
iii. Development of a High Level Business Plan for the Ghana e-Schools & Communities Initiative 2004
iv. Workshop to prepare the Implementation Plan 2005
v. Development of a draft ICTE Policy 2006
vi. Workshop to review of Draft ICTE Policy- Dodowa
vii. Workshop to review of Draft ICTE Policy- for Basic Education operators/stakeholders – Agona Swedru
viii. Workshop to review of Draft ICTE Policy- for Tertiary Education operators/stakeholders – Elmina
ix. In-house (MoESS/GES) Review of the Draft ICTE Policy
x. All stakeholders' Policy Validation Workshop 2007

xi. Development of Implementation Plan for the ICTE Policy

Strategies employed towards ICTE development process are listed below:
i. Participatory process
ii. Individual & Group Reviews
iii. Literature Reviews – of Education Policies & Strategic Plans, Global Conventions/Documentations, ICTE Policies from different countries
iv. Debates and Discussions

The Key elements for this development are Equity Access to ICT Infrastructure, Capacity Building, and Norms & Standards and the scale of priority is :
i. 1a MoESS & Agencies
ii. 1b Colleges of Education
iii. 1c Teacher Universities
iv. 2a Teacher Universities with ICT
v. 2b Other Universities /Polytechnics (Gen)
vi. 2b Other Universities /Polytechnics (ICT)
vii. 2b Secondary School/ Technical Institutions
viii. 3 Vocational Institutes
ix. 4a Junior Secondary Schools
x. 4b Community Information Centres
xi. 5a Primary Schools
xii. 5b Pre-Schools

The basis for the prioritization was of much concern to unit and the drafters of the policy hence the reasons as follow:
i. Urgency in providing the enabling environment,
ii. Need for building the capacity of the teacher who is a central figure in the entire programme.
iii. Need to put higher priority on those training to be teachers than others.
iv. Cost of providing an end to end solution and the availability of some of the needed logistics as against budget constraints ,
v. Early provision of facilities to courses that demand ICT facilities more than others
vi. Need to integrate ICT into education

The seven thematic areas covered by the policy are Education Management – Ministry / Agencies and Educational Institutions, Capacity Building ,Infrastructure, E-readiness and Equitable Access, Incorporating ICT into the curriculum, Content Development, Technical Support, Maintenance and Sustainability, Monitoring and Evaluation. In the area of Education management, the unit seeks to ensure the following as guiding principles towards the development process of the ICTE:
i. the utilization of computerized Management tools to strengthen the institutional capacity of the Ministry of Education, Science and Sports, it's Agencies and all Educational Institutions
ii. the availability of timely, accurate and reliable data to enhance administrative capacity for informed and effective decision making
iii. Effective use of ICT Tools to enhance management efficiencies
iv. In view of these, the objectives set for education management are:

v. Acquire and implement various easily integrated Information Management Systems
i. Develop institutional capacity in the use of computer-based management tools to enhance administration and management
ii. Formulate acceptable use policies based on security, privacy, intellectual property laws, cultural and moral values

The policy was not silent on capacity building which is the major concern of the researcher. The policy clearly recognized and outlined objectives and guiding principles for the capacity building process. Below are the guiding principles and objectives towards capacity building:

Guiding Principles

The introduction of ICT in the Education Sector necessitates the training of all persons involved in the educational service delivery (management / staff, teachers including teacher trainees, technicians, etc.) and in essence implies the need for lifelong learning of all stakeholders:
i. An aggressive well planned program is needed to solve the acute shortage of highly qualified ICT & Computer Science Faculty in the country's tertiary institutions
ii. A corps of highly trained personnel is required to ensure the sustainability and growth of ICT implementation.

Objectives
i. Develop of ICT Faculty & Enhance practical training in tertiary Institutions
ii. Provide appropriate ICT Training to all Teachers
iii. Use Distance learning to offer training to teachers in basic (first cycle) schools who have applied for study

Finally, in the case of the phase of implementation, the following were taken into consideration:
i. Enhance a system-wide and institutional readiness to use ICT for teaching, learning and administration.
ii. Ensure system wide integration of ICT into teaching and learning
iii. Encourage communities to support ICT facilities in educational institutions
iv. ICT integrated at all levels of the education system – management, teaching, learning and administration

One important variable of ICTs integration in schools is availability of ICT infrastructure. In his doctoral dissertation, Ottesen (2006) reveals that one fundamental problem facing ICT integration in schools is the lack of computer infrastructure. In a related study Norris et al., (2003) reveal that appropriate access to technology infrastructure is another key factor in the effective technology integration process. In another study, Yildrim (2007) explained that teachers agreed that access to ICT infrastructure is one of the effective means to integrate ICT in classrooms. Carlson and Gadio (2002), stated that teachers are the key to whether technology is used appropriately and effectively. Appropriate use of ICT can catalyze the paradigmatic shift from teacher centered pedagogy to more effective learner centered pedagogy. Capacity building of teachers as well as administrators and managers can play a major role in enabling this shift. The focus of teacher training institute however should not be limited to training teachers on how to use ICT rather it should provide the teachers

with the skills and expertise required to use ICT to teach a curriculum which is better suited to prepare students for the 21st century.

According to Monahan (2004), policy directions should have a major focus on creating and expanding the ICT infrastructure, while this helps the countries lay a foundation for integrating ICT, it results in an incredible influx of financial support for equipment but only a meager trickle for network support or staff training. He further stated that without a sound capacity building framework, the financial resources spent on building the infrastructure will go to waste. Important parameters that determine the success of ICT adoption in Education sector are the appropriateness of technologies, the suitability and quality of instructional materials and educational services made available, learning effectiveness and appropriation of new ways of work, and the cost benefit ratio. It is, therefore, important that policy makers are sensitized on the importance of incorporating these aspects within the plans for ICT in education at all levels.

Research Design

The research was non-experimental and was conducted using the Descriptive Survey Design. The non-experimental nature of the research was found suitable since such a research describes and predicts phenomena without manipulating factors that influence the phenomena (Amedahe 2002). The ultimate goal of this research was to probe in-depth and analyze the role played by the public sector in relation to ICT initiatives in District Directorates of education in Ghana, finding out the effect(s) of such a role on human resource capacity building whiles explaining the present ICT status of these Directorates and hopefully influencing a change in proper direction of the way such initiatives are undertaken.

According to Gay & Airasian, 2003; Johnson, 2001, survey research refer to any form of descriptive and quantitative research. On the other hand, Ary, Jacobs and Razavieh (1990) came out that descriptive research studies are designed to obtain information concerning the current state of affairs. Such a study is undertaken in order to ascertain and be able to describe the characteristics of the variables of interest in a situation. Again, descriptive surveys focus on determining the status of a defined population with respect to certain variables. Its purpose is to learn about a large population by surveying a sample of that population; describe, clarify and interpret aspects of education as they presently exist. A descriptive survey design was chosen because of the economy of the design, the rapid turnaround time in data collection (Creswell, 2003) and the ease of data interpretation by the use of simple descriptive statistics. Other reasons for choosing descriptive survey design boils down to the fact that it allows for more confidentiality with those being surveyed and furthermore provides a meaningful picture of events and seeks to explain people's perceptions and behaviour on the bases of the data collected.

According to Schwarz (1999), despite the successes of using this design for the research, difficulties associated with such a design needs to be addressed. One problem is that some people may intentionally misrepresent the facts in order to present a favourable impression to the researcher. Sometimes inability of respondents to articulate their thoughts clearly and poor research instruments could be factors that affect the research outcome.

Nonetheless, this was addressed in view of using a variety of instruments such as face-to-face interviews, telephone interviews and written questionnaires to collect data from a variety of sources. This research was also purported to serve as an Evaluation Research. Like all evaluative research it involved decision-making regarding the relative worth or effectiveness of a number of actions taking (Amedahe, 2002). Data was collected and analyzed to determine the effect(s) of public sector led ICT initiatives in District Directorate of Education in Ghana.

Study Area

The hierarchical landscape of Ghana Education Service has three major block segments; the Headquarters, Regional and District directorates. The area of study covered the Ghanaian Educational System with particular reference to District Directorate of Education in Ghana. There are about 128 District Directorate of Education in the country (currently more districts are being created). As a result of the educational reforms currently underway ICT has been introduced as a subject of study which requires a huge capital investment. The District Directorates of Education in all regions have been entrusted with oversight and implementation responsibility towards insuring effective integration of ICT in the school curriculum.

Two of the seven thematic areas of the ICT policy document states:

Management: – Ministry/Agencies and Educational Institutions
Capacity Building

The major concern here is how much human resource capacity has been built in terms of policy implementation where District directorates fall. If any at all has been done, what effect has it in their policy dispensation?

Sources of Data

The research used two sources of data namely a primary source and a secondary source. The primary source of data for the research was the respondents' questionnaires, selected interviewees and observations made by the researcher. The secondary source of data came from reports of studies done on ICT initiatives in education, especially with regards to public sector led initiatives in Ghana and elsewhere, information from the internet as well as other relevant studies on the activities under study, preliminary studies done by the Information and Communication Technologies in Education Programmes Unit (ICTEPU) of the Ghanaian Ministry Of Education Science and Sports (MOESS) on ICT initiatives in Ghanaian Schools, The draft ICT for Education Policy, The national ICT4AD policy, the Jophus Anamuah-Mensah Educational Reform Committee report and its corresponding Government White Paper and other available literature of interest on the subject matter in question.

Research Population

The population of a research is defined as the entire aggregation of cases that meet a designated set of criteria. Research Population can be divided into two namely Accessible Population and Target Population. Accessible population is the aggregation of cases that meet a designated set of criteria that are accessible to the research as a pool of subjects for a study. In this research, two bodies of accessible population were identified. The

first was made up of ICTEP Unit, public sector organizations that have made significant ICT initiatives in ICT in Education in Ghana. The second was the selected District Directorate of Education that benefited from such initiatives. One public sector organizations was chosen from the first body of accessible population. This is the Information and communication Technology in Education Programme Unit of G.E.S. They were handpicked based on the following criteria:

i. when the initiative was initiated
ii. nature of the initiative
iii. coverage of the initiative.

The criterion used above was to enable the study cover a wide period of time as well as scope. The profile of ICTEP was reviewed under Literature Review in Chapter two.

A District Directorate of Education that had benefited from ICT initiatives carried out by the above named public organizations was selected from the second body of accessible population. The selection was based on the following criteria:

i. location
ii. date of establishment
iii. staff population
iv. when they first benefited from the initiative
v. number of initiatives they have benefited from.

The profile of the selected District Directorates was summed up in tables.

Sampling Technique

A combination of sampling techniques was used for this research. Purposive sampling was used to select the public sector organizations for study. It was used to select the District Directorate of Education that had benefited from public sector ICT initiatives for study as well as some of the respondents to be interviewed. Researchers purposely handpicked subjects who in their opinion were thought to be relevant to the research topic. It must be noted however that the choice of the organization and the directorate was based on prior knowledge to which the researcher was privy to. Simple Random Sampling Technique was used to select the respondents of the questionnaire and, to some extent, those to be interviewed. Simple random sampling technique gave all units of this target population an equal chance of being selected. It is said to be very reliable, with high degree of representativeness and generalization of research results.

Research Instrument

The main instruments that were employed to obtain data for the study included: structured questionnaire, semi-structured interviews and observation guide. The questionnaire attempted to collect background information of the respondents such as their educational level, age and sex, etc. The background information was to bring out the perspective from which the respondents perceive the problem of study. The questionnaire covered issues very pertinent to the unraveling of the research problem. It included both close-ended and open-ended items. To obtain additional data for the study, a semi-structured interview guide was used to seek information from individuals whose views would very much help the cause of this research such as District Directors of Education, officials of the MOESS, GES and people connected

with activities of the organizations under study.The observation guide was to help the researcher identify issues, activities and other happenings of interest, as far as the study was concerned, which could feed into the interviews.

Data Collection

Preliminary contacts were made with either the Director or the Assistant Director of selected District Education Directorate. The purpose and significance of the research was discussed with them and permission as well as their support sought for the exercise. Specific times to carry out the exercise in sample District were fixed. Specifically, structured questionnaires were administered to select staff of the sample directorate. Also an interview schedule was adopted to secure information from those whose opinions mattered with regards to the research. The observation guide was used to cover verification of physical presence of ICT in the sample directorate especially. On the day of administering the questionnaire, the described sampling technique was applied to select the sample population that responded to the questionnaire. The questionnaires were distributed to them after each item has been explained to them. The collection of the completed questionnaires in the directorate was done by courtesy of a volunteer on behalf of the researcher. This hopefully gave the respondents sometime to respond to the questionnaire so that they were not forced to respond to it 'under pressure' and secondly it helped to ensure anonymity of respondents and hopefully elicited more genuine response from them. Selected interviewees were contacted. The purpose and significance of the research was discussed and specific times to carry out the interviews fixed. During the interview, responses were recorded manually and also with the help of a mini tape recorder.

Data Analysis

The data obtained were edited, coded and entered into a computer. With the help of statistical tools generated from the Statistical Product and Service Solution (SPSS) package such as simple percentages and frequency distribution, and also with the help of pictorials such as graphs and charts, the data collected were organized around a number of hypotheses which were derived from the research questions raised in Chapter 1. The pictorials brought out the true picture and quick visual impression of the research result(s).

VII. RESULTS AND DISCUSSIONS

This chapter of the study presented and discussed the various findings of the study of the impact of public sector led ICT initiatives on human resource capacity building of the staff of South Dayi District of the Ghana Education Service. In order to understand the findings through the analysis of the observation, interview, questionnaire data collected by the researcher, tables were provided to explain into details.

Table 1: Departmental Profile

Group	Department	No. of staff	Average no. of years in the service	Percentage (%)
1	Main Administration	22	7	31.4%
2	Finance	7	4	10.0%
3	Planning	3	6	04.3%
4	Human Resource Management	9	6	12.9%
5	Supervision & Monitoring	12	7	17.1%
6	Auditing	5	5	07.1%
7	Ancillary	12	3	17.1%
	Total	**70**		**100%**

Source: Field Study, 2020

Table 1 showed the departmental profile of the South Dayi District Directorate of Education, the average number of years of service and the percentage of departments in respect to human resource capacity. According to the survey, the main administration took the chunk in terms of human resource with 22 staff, representing 31.4% of the total staff population of the directorate and an average number of years of service of 7 years. The Supervision and Monitoring, and Ancillary departments came second in human resource capacity with 12 members of staff each; representing 17.1% and average number of years of service of 7 years and 5 years respectively.

Human Resource Management department came third in terms of staff strength. This department had 9 members of staff representing 12.9% with average number of years of service of 6 years. The next department which was Finance had average number of years of service as 4 years, 7 members of staff representing 10%. Auditing staff was made up of 5 members with a percentage of 7.1 and average years of service of 5 years. The department with the least members of staff was planning. It had only a 3 member staff representing 4.3% of the total population with average number of years of service as 6 years.

According to Table 1, it was clear that there were more members of staff in administration than any other department. This department took approximately 1/3 of the total population of the human resource capacity of the directorate. Secondly, taking average number of years of service into consideration, it was obvious that the most experienced personnel of the directorate were found in the main administration and Supervision and Monitoring with each having average number of years of service as 7 years. On the other hand, there seemed to be more young-on-the-job personnel in the Finance and Ancillary departments as compared to others in terms of average number of years of service. Supervision and Monitoring, and Ancillary was the second most populated department and the youngest department in respect to the average number of years of service. The Ancillary staff is made up of drivers, day and night watchmen and labourers who are not of much concern for consideration to the researcher. Apart from physical infrastructure and capital needs for the implementation and integration of any ICT programme, electricity and computer can be considered as other immediate and basic needs of the ICT integration towards human resource capacity building. The Table

2 below showed the status of various departments in connection with electricity and computer availability.

Table 2: Basic Needs of ICT Integration

No.	Status	Admin.	Finance	HRM	Planning	Sup. & Mon.	Auditing
1	Departments with separate offices	Yes	Yes	Yes	Yes	Yes	Yes
2	Departments connected to national electricity grid.	Yes	Yes	Yes	Yes	Yes	Yes
3	Departments with computers	Yes	No	Yes	No	No	No
4	Departments' whose work demand use of ICT tools	Yes	Yes	Yes	Yes	Yes	Yes

Source: Field Study, 2020

According to Table 2, all departments in the directorate have their separate apartments from where they operated. One of the basic requirements for ICT integration is electricity. The Table 2 showed that the whole directorate was connected to the national electricity grid making it possible for ICT integration. The table also revealed that out of the six departments in the directorate, main administration and HRM departments could boast of having computers. This implied that the rest of the departments depended on the main administration and HRM computers for their work. Item 4 of the table demanded the necessity for the use of computers at the work place. None of the departments underestimated the use of computers in accomplishing their various tasks and responsibilities.

Table 3: Computer availability

No.	Status	Admin.	Finance	HRM	Planning	Sup. & Mon.	Auditing
1	Number of computers in each department	3	-	2	-	-	-

Source: Field Study, 2020

The Table 3 showed the availability of computers in the directorate. It had been revealed that there were only five (5) computers in the entire directorate. There were three (3) computers for administrative purposes and two (2) other computers were found in the Human Resource Management department. Out of the two in HRM, the Public Relations Officer had one and the IPPD section of the same department possessed one. It was interesting to note that, Finance, Planning, Supervision and Monitoring and Auditing departments have no computers.

Table 4: Basic Training in ICT by Department

Status	Admin.	Finance	HRM	Planning	Sup. & Mon.	Auditing
Members of staff that had training in ICTs before joining the Directorate	2	-	3	2	1	-
Staff who receives support in the use of computer (e.g. web, print material, telephone)-from other staff.	1	-	1	-	-	-
Staff who had received any training on ICTs during the past three year.	-	-	5	2	-	-

Sources: Field Study, 2020

According to Table 4, out of the total staff strength of 22 members in administration, only 2 members had some ICT training before joining the Directorate, 1 person out of the 22 received likely supports in the use of computer either by the web, print material, and telephone or by a member of staff. Again, the situation in the HRM department was much more encouraging. Out of 9 members of staff, 3 had prior training in ICTs before joining the Directorate, 1 member received likely support in the use of computers and 5 members had received some level of training on ICTs during the past three years. The findings in Table 4, also revealed that, 2 out of the 3 staff members of the Planning department had earlier training in ICTs before entering the institution with no member receiving any form of support from elsewhere but 2 members were lucky to have had on-the-job training over the past three years. Monitoring and Supervision department could boast of 1 member out of 12 that had some sort of ICT training before joining the directorate with no other member receiving either support in the use of computers from the web, print materials, telephone and a member of staff or receiving any training of ICTs over the past three years. The worst situation was found in the Finance and Auditing departments. There was not even a single member of these departments that had any training on ICTs or received any form of training over the past three years.

Table 5: Basic Training in ICT in Whole Directorate

Status	Yes	Percentage (%)	No	Percentage (%)
Members of staff that had training in ICTs before joining the Directorate	10	14.3	60	85.7
Staff who receives support in the use of computer (e.g. web, print material, telephone) from other staff.	2	2.9	68	97.1
Staff who had received any training on ICTs during the past three year.	7	10.0	63	90.0

Table 5 showed the number of respondents in the whole directorate in relation to the basic ICT training acquisition before entering the directorate, and if member received any support in the form of web, printed materials, telephone or others. It showed the affirmative and negative responses and their corresponding percentages. Figure 1 and Figure 2 below threw more light on the situation described in table 5 above.
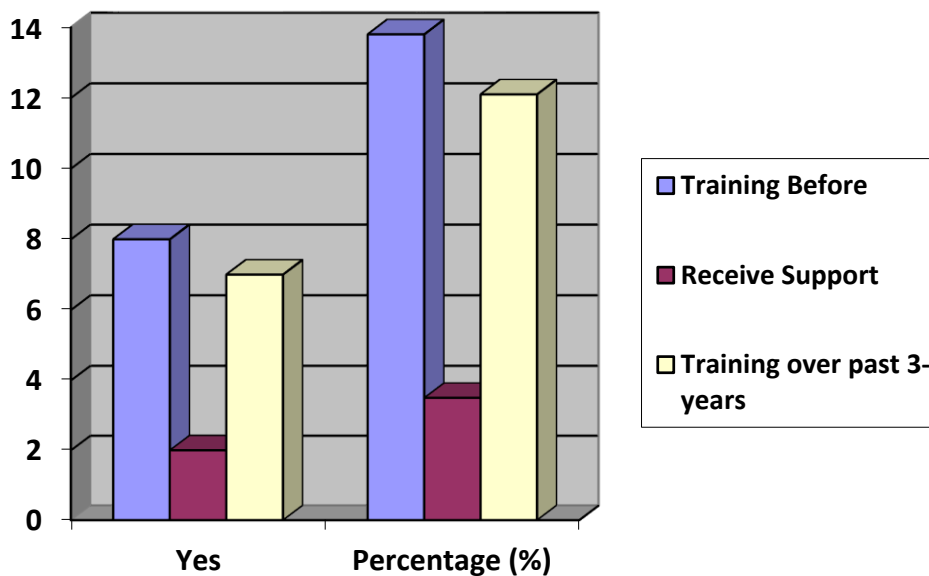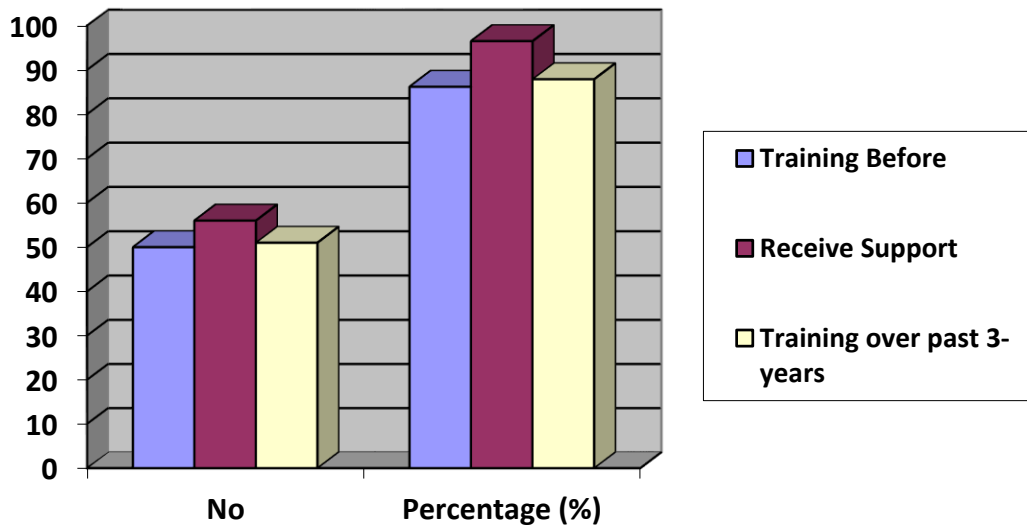

Figure 1: Staff with Basic Training in ICT in whole Directorate

**Figure 2: Staff with no Basic Training in ICT in whole Directorate**

Table 5 looked at the basic ICT training obtained by the staff of the directorate. According to the data above, there were 10 members of staff forming 14.3% that had some formal ICT training before joining the directorate; 60 (86.2%) staff members received no ICT training before joining the directorate; and two out of 70 members of staff representing 2.9% had at least received a support in the form of web, print material, telephone from other members of staff. Also 68 staff members representing (97.1%) had no help at all. In case of receiving any training on ICTs during the past three years, 7 (10%) answered in affirmative while 63 (90%) of the 70 responded negatively. The above revelation, pointed out

that there was a problem with the overall course structure for the training of policy implementers. This implied that members of staff of the directorate lack basic knowledge in the ICT. Hence implementation of the integration process of the ICTs would run into difficulty. It means also that plans were not put in place to train those who implement educational policies for ICT integration in schools or educational institutions as they are on the job. In a way, some members of the staff might have had a problem of reinforcement to enable them use the previous knowledge acquired before joining the directorate.

Table 6: Access to Internet

`Location	Access to internet	(%)	No access	(%)
At work	4	5.7	66	94.3
Home	7	10	63	90
Commercial places e.g. cafe	3	4.3	67	95.7

Source: Field Study, 2020
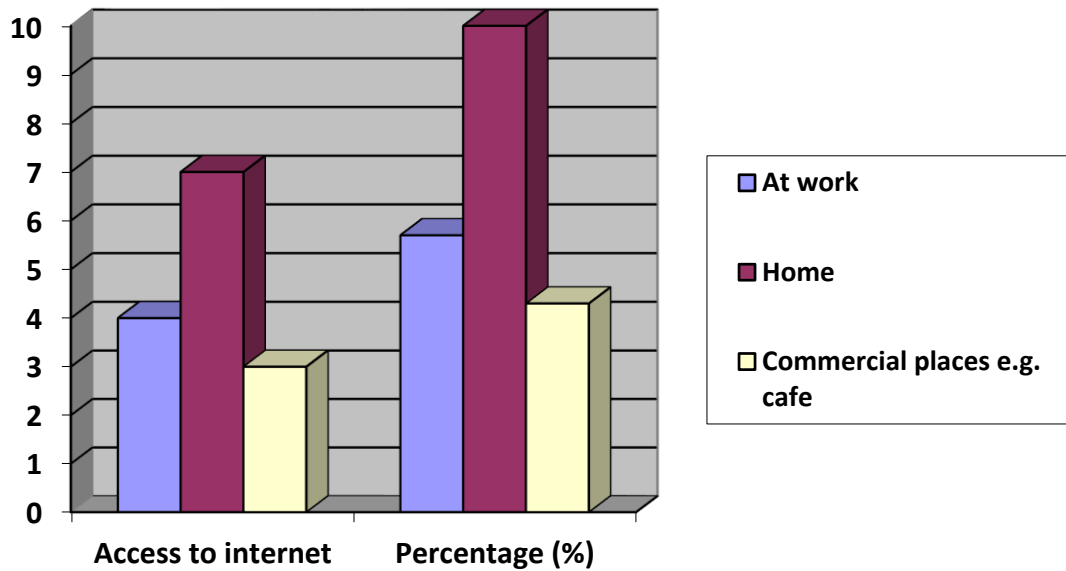
Source: Field Study, 2020

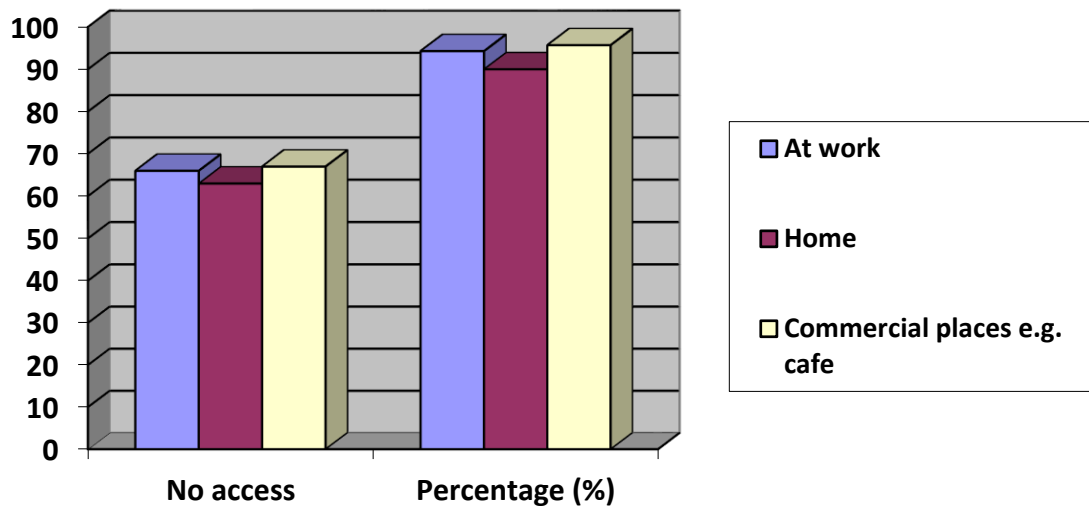**Figure 3: Access to Internet**

Figure 4: No Access to Internet
Source: Field Study, 2020

Internet is one of the major tools that help people all over the world to acquire new knowledge in their fields of endeavour. For a staff of education directorate to be abreast with time, there is the need for him or her to have access to internet for research and sharing of information. Table 6 shows the internet accessibility to the members of staff of South Dayi District Directorate. In all, there were only 14 out of 70 members of staff of the directorate that had access to internet and the rest 56 members had no access at all. This is represented 20% and 80% respectively. The details were as follows: there were 4 members representing 5.7% that had access to internet at their work places

while 66 forming (94.3%) had no access. At home, 7 (10%) had access to internet and 63 (90%) had no access. For commercial places like internet café, 3 (4.3%) had access to internet while 67 representing 95.7% had no access to internet.

In view of the data in Table 6, it was clear that members of staff were far back in accessing information via internet to enhance their work delivery. It was also obvious that staff might have resorted to traditional ways of sharing information rather than using the electronic mail (e-mail) which was faster and more reliable. Another problem that might result from their inability to use the internet was the failure to have interest in hosting district

websites; show casing the district to the world wide environment like others in the global village. On the other hand, the record showed that more staff members were making effort by accessing the net from their homes as against the workplace and the commercial places as a good sign of their preparedness to seek information and also to share with others. In another development, this embarrassing situation revealed might be emanating from the lack of provision of internet facilities for district directorate as part of the Ministry of Education's responsibility of which the central government has to be blamed.

Table 7: Basic /simple use of applications for the purposes of Education

No.	Item	Excellent	Very good	Good	Fair	No capability
1	Word processing – preparing papers	3	1	11	16	39
2	Spreadsheet – preparing budget/accounts	1	1	7	9	52
3	Presentation tools – PowerPoint for teaching	1	-	7	7	55
4	Basic E-mailing	1	3	3	9	54

Source: Field Study, 2020

In the integration process, getting the knowledge is one thing and application of the knowledge acquired is another. Table 7 showed the efficiency at which members of staff of South Dayi Education directorate used or applied basic simple application for the purposes of the work delivery in educational matters. Finding out how efficiently personnel used word processor application for work and other papers preparation, only 3 members of staff had excellent, 1 very good, 11 good, 16 fair and 39 had no capability.

For the usage of spreadsheet software for simple budget and accounts preparation, only 1 member was excellent, 3 very good, 3 good, 9 fair and 54 with no capability. There was 1 with excellent in presentation tools like PowerPoint for teaching, no member for very good, 7 good, 7 fair and 55 no capability. To have an excellent idea about E-mailing were 2 staff members, 9 staff members fell under very good, 6 were good, 9 fair and 40 no capability.

Table 8: Percentage of Capability as against no capability

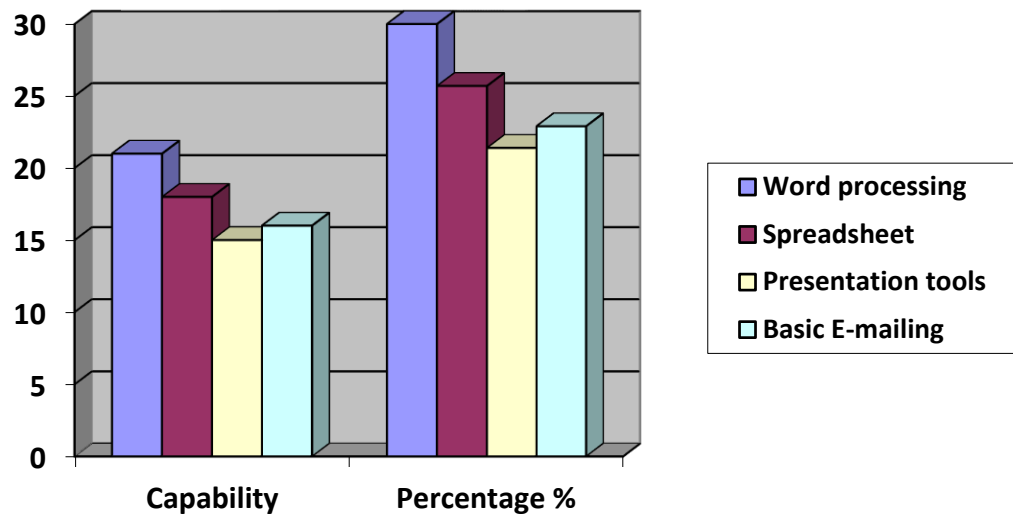| No.	Item	Excellent	Percentage %	No capability	Percentage %
1	Word processing – preparing papers	21	30	49	70
2	Spreadsheet – preparing budget/accounts	18	25.7	52	74.3
3	Presentation tools – PowerPoint for teaching	15	21.4	55	79.6
4	Basic E-mailing	16	22.9	54	77.1

Source: Field of Study, 2020

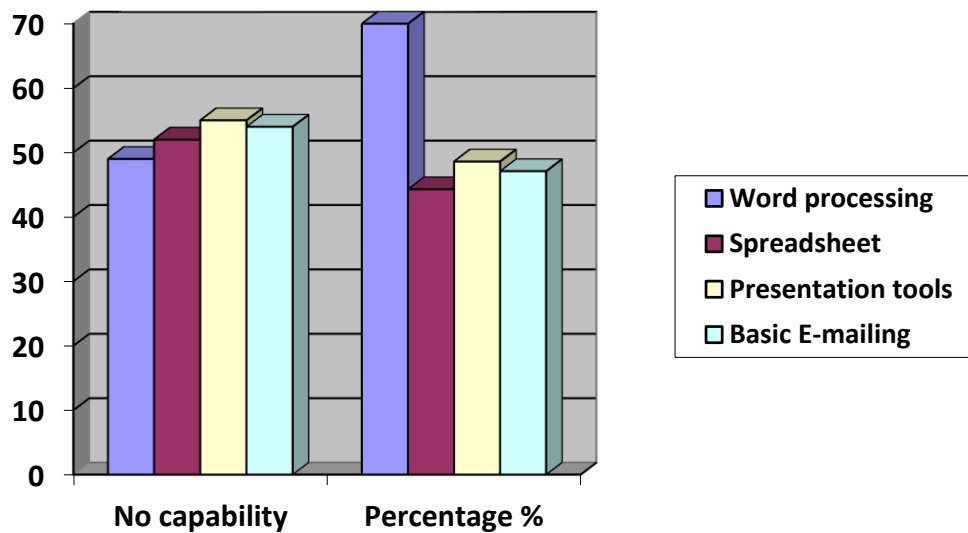**Figure 6: Capability percentage**

Figure 6: No Capability percentage

Table 8 above revealed the percentage of those who had some capability to use simple or basic applications for their work delivery. Generally, those with no capability outweighed the members with some level of capability. In the case of word-processing, 21 members forming 30% of the sample could use the application while 49 representing 70% had no capability. The same trend appeared in bar chart when 18 members of staff (25.7%) were capable as against 52 (74.3%) that had no capable at all. The situation worsened when only 15 out of 70 representing 21.4% could use the application and 55 out of 70 members of staff are not capable. Basic E-mailing had 16 people (22.9%) capable and 54 (77.1%).

In general, the Table 8 revealed the problem of efficiency of applying basic knowledge in simple computer applications to enhance the work of the directorate. It was true that failure to grab these basic applications would throw the integration process in to a complete jeopardy. The findings revealed that the least used application was the presentational applications which should be dearer to the heart of the work of the personnel of the directorate. By the above revelations, it was also clear that personnel of the directorate may resort to using traditional methods of information dissemination rather than the modern and more appropriate and convenience means.

Table 9: Frequency of personnel Use of ICT tools for Various Purposes
Sources: Field Study, 2020

	Very (everyday)	Often	Often (twice a week)	Seldom week/months)	(few	Never
Communication with family/friends (charting)	5		10	21		34
Monitoring and evaluating progress or keeping tracks of educational events	5		9	5		51
Engaging others on Collaborative projects	0		0	0		0
Use internet when preparing for Workshops and Seminars	1		1	2		66
Search for general information on topics of personal interest and educational materials	5		5	9		51
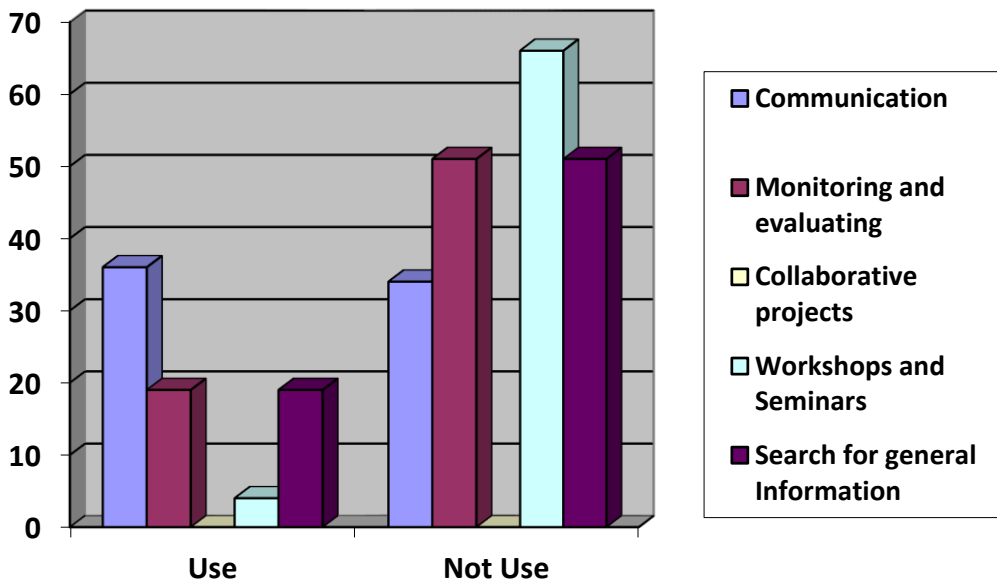
Figure 7: Frequency of personnel Use of ICT tools for Various Purposes

In every modern and digital world, every employee is expected to acquire basic skills in information and communication technology. This enhances work delivery resulting into efficiency, growth and development. The Table 9 above revealed the frequency at which personnel of South Dayi District of Education used ICT tools to enhance their work. The table unfolded an interesting situation of the directorate. The chart (Figure 7) above extracted from Table 9 revealed that there were no personnel in the directorate who used ICT tools to engage others in collaborative project work. In addition, there were only 4 personnel that used the internet to prepare for workshops and seminars. It was also revealed that there were more personnel using ICT tools for communication in the form of charting.

VIII. SUMMARY

The study was intended to find out the effects of public sector led ICT initiatives in South Dayi District of Ghana Education Service. Although the study was concerned with South Dayi District only, it is hoped that the findings will be useful to other departments and educators in the Ghana Education Service and then to the Ministry of Education as whole. The instruments used to elicit responses from the respondents (staff of South Dayi District Education Office) were the questionnaires, an interview schedule and an observation schedule. The objective of this study was to find answers to the following research questions:

i.   What has been the extent of coverage?
ii.   What resources have been committed to these initiatives?
iii.   What has been the impact of these initiatives on education as a whole (school management, teaching, learning and infrastructure)?
iv.   What have been the plans put in place by the public sector for the sustainability of private sector led initiatives once they pull out?

IX. CONCLUSION

1. From the above findings, it is clear that a chunk of the members of staff have very little or no capability in the use of simple applications for the purposes of education to enhance work delivery. It could be that initiatives that were undertaken in the district failed or have little impact on the capacity building of the human resource.

2. The findings revealed that the least used application is the presentational application which is dear to the heart of the work of the personnel of the directorate. By the above revelations, it was also clear that personnel of the directorate resorted to using traditional methods of information dissemination rather than the modern and more appropriate and convenience means. The result of the research revealed that, the ICT initiatives employed if there were any at all had no or little impact on the performance of the staff of South Dayi District Education Directorate.

3. There were no personnel in the directorate who used ICT tools to engage others in collaborative project work. In addition, there were only 4 personnel that used the internet to prepare for workshops and seminars. It was also revealed that there were more personnel using ICT tools for communication in the form of charting. This upward trend in communication is believed to have resulted in the recently proliferation of mobile phone equipment. It further unfolded that the upward trend in communication was as a result of personal initiative rather than public sector initiative.

4. The study has shown that there was no purposive ICT training given to the members of the directorate. If any was given at all, it might be a window dressing effort which might have no or little impact on the human resource capacity building of the staff. Since there have not been any planned ICT training for staff in the directorate, it quite difficult to determine the percentage coverage of such training.

5.   Even though the directorate had no planned ICT training for staff, individual staff members have made several efforts in purchasing computers and their accessories. The study further

revealed that some members have internet facilities and some individual staff members also have laptops and mobile modems for easy access to information.

6. The following were some of the problems detected from the study as hindering the integration of ICTs in the directorate.

i. Recruitment of staff to the directorate in terms of age. (older people have low interest in technology as compared to younger people)
ii. Lack of basic knowledge in ICTs (may-be as a result of the course structure for the training of GES staff)
iii. Insufficient initiatives in the part of the public sector.
iv. Ignorance in the part of heads of departments and the staff of the importance of the ICT integration.
v. Lack of refresher courses or in-service training for the staff to update their knowledge about the use of technology on the job.
vi. Lack of confidence in applying ICT know-how in the job.
vii. Resistance to change.

In view of the findings of the study, it is obvious that the South Dayi District Directorate of Education cannot make a head way in the modern trends of service delivery if certain measures are not put in place. The research revealed that public sector led ICT initiatives had no or little impact on the human resource capacity building of the staff of District directorate of GES.

It seems from the study that public sector led ICT initiatives were not purposive to the direct needs of the human resource capacity building of the staff. They were not really directed to the district directorates instead they were school based initiatives.

In the study, it is revealed that for the success of ICTs in the directorate, there must be interest development. Individual staff has to whip up interest in availing themselves and making every effort to see technology as an effective tool for service delivery. The study showed that the training of staff must be subjected to critical assessment. The training of staff should involve taking pre-requisite courses in Information and Communication Technology as a preparatory lesson for effective integration of technology in the directorate; for no individual or an organization can function well in the present technological oriented society without knowledge in ICT.

It is shown that even though technology is everywhere, some members of staff are ignorant of the importance of ICT to the directorate for that matter the education service. Again, the study revealed that there are no such courses like in-service training and refresher courses for members of staff to update and upgrade their existing knowledge. It is clear that so far insufficient on-the-job ICT training was organized for members of staff of the directorate. This makes it impossible for the majority staff population to take part effectively in the use of technology in the service.

According to the research conducted, a very small number of members who have little idea about the use of ICTs do not have the confidence to apply their knowledge to the profession. They lack personal motivation hence find it impossibly integrating technology in the service.

X. RECOMMENDATIONS

The following recommendations were made in the light of the findings of the study, as an attempt to address the problem confronting human resource capacity building in South Dayi District Education Office as well other districts with similar problems countrywide in integrating ICTs in their work:

1. That Information and Communication Technology be one of the pre-requisite qualifications for working at the district education offices.
2. That the District education offices be well equipped with computers and accessories to enable them run refresher courses periodically for staff in ICT.
3. That it should be one of the major decisions of the Ghana Education Service to plan and implement an ICT policy for all District Education Directorates in the country.
4. That more staff members of district education offices with ICT background be encouraged and helped to pursue ICT oriented programmes to help vitalize the activities of the district level education delivery for the survival.
5. That it should be the policy of the Ghana Education Service to hook all District Directorates on to the internet for effective passage of information and with time, sub-districts and schools should be brought on board.

XI. SUGGESTION FOR FURTHER STUDIES

This research only addressed one district of the Ghana Education Service. It is the researchers wish that, this research will spread across all other districts of the Education Service to enable us view the true colour of ICT application in the District Directorates.

The researcher has admitted that enough grounds have not been covered on this topic due to time and financial constraints. Therefore the research was only limited to the District Directorates of Education in South Dayi. The researcher thereby hopes that this thesis will provide the basis for anyone who may wish to research into similar work for any district in the Ghana Education Service in Ghana.

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