

**The Anatomy of ICT Policies for Development
and Education Implementation - the Case of
Secondary Schools in Ghana**

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for the award of the Degree of Doctor of Philosophy

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Declaration

'I, [Samuel Kwaku Awuku] confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.'

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Abstract

Research on the integration of Information Communication Technologies (ICTs) in the Ghanaian secondary schools tends to focus on computers and the potential benefits of using them. This study proposes a way of understanding ICTs in the Ghanaian secondary schools by examining the work of two ICT policies: Information Communication Technologies for Accelerated Development (ICT4AD) and Information Communication Technologies in Education (ICTED) in terms of the process of the formulation and the impact of the formulation process on implementation. By understanding policy as a collection of texts and discourses that include objectives and intentions mostly known only to the policymaker and rarely known (if at all) to the policy implementer, this study proposes a culture of policy formulation that is inclusive of implementers, as well as a technology culture that is implementer centred.

The intention of the ICT4AD and ICTED policies of Ghana, launched in 2003 and 2008 respectively, was to equip the citizenry with the capability of using the ICT skills they acquired both formally and informally to effectively perform in the global knowledge economy, thereby transforming Ghana into a knowledge economy. This intention, as this research confirmed, is now far from being achieved within the 12-year period set in the ICT4AD policy.

The reasons for the unsuccessful implementation of the ICT4AD and ICTED policies, as this research unveils, include

1. Non-engagement of policy implementers from the outset of the policy formulation. In the cases of the schools involved in this study, the intended implementers of the ICTED and ICT4AD policies have never seen the policies. Although some of the implementers (respondents) claimed they were aware of the existence of these policies, the first time of actually seeing them was during my interviews with them. The respondents were also not engaged during the formulation of the policies. The schools, therefore, did not have any policy of their own to guide the integration of ICT into the curriculum. The non-engagement

of policy implementers in addition to several factors have had an adverse impact on the effective implementation of these policies and the efficient rollout of the relevant ICTs. These multiple hindering factors identified include the lack of a strong political will and leadership, insufficient equipment (a high student-computer ratio), infrastructure challenges, and curriculum-related challenges, including limited scheduled instructional time in the schools.

2. Textual analysis of the ICT4AD and ICTED policies reveals the intentions of the policy makers, which were not necessarily shared with the implementers. The reason for this, as identified in the study, was partly due to policy implementers not being involved in the formulation process; therefore, a misalignment existed between what the policy makers deemed to be key issues and the ideal ways forward if development were to be enabled through policy implementation, as well as with what secondary school teachers – the policy implementer on the ground experienced.

Combining discourse analysis and grounded theory approaches through semi-structured focus-group interviews, survey and textual analysis data, I conclude that in Ghana, it is important that policy implementers take ownership of policies as facilitators of effective implementation. To achieve policy ownership among implementers and to ensure that such policies so formulated are implemented for the intended purpose, I recommend the use of *commonality capital* as a currency to drive stakeholder engagement in policy-formulation dialogue from the outset to avoid a situation where policies are formulated and never get implemented, or what I have termed for the purpose of this study as *de-energised policy*.

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List of Acronyms

ASPnet	Associated School Project Network
AUP	Acceptable User Policy
CETAG	Colleges of Education Tutors Association of Ghana
CRDD	Curriculum Research and Development Division
FDI	Foreign Direct Investment
GBS	Ghana Bar Society
GES	Ghana Education Service
GICTED	Ghana Information and Communication Technology Department
GNAT	Ghana National Association of Teachers
GTM	Grounded Theory Method
JHS	Junior High School
ICT	Information Communication Technology
ICTs	Information Communication Technologies
ICT4AD	ICT for Accelerated Development
ICTED	ICT in Education Policy
ICTEST	ICT in Education Support Team
IEP	Innovative Education Programme
IMD	Instructional Material Development
IntoIT	Into Information Technology
MoE	Ministry of Education
MoC	Ministry of Communication
MP	Member of Parliament
MTAG	Mathematics Teachers Association of Ghana
NAGRAT	National Association of Graduate Teachers
NEPAD	New Partnership for Africa's Development
NIIT	National Institute of Information Technology
NITA	National Information Technology Agency

OECD	The Organisation for Economic Co-operation and Development
PDF4D	An Integrated ICT-Led Socio-Economic Development Policy and Plan Development Framework for Ghana
PiL	Partners in Learning
PPP	Public Private Partnership
SHS	Senior High School
SSCE	Senior Secondary Certificate Examination
T-TEL	Transforming Teacher Education and Learning
UDS	University of Development Studies
UEW	University of Education, Winneba
UNESCO	United Nations Educational, Scientific and Cultural Organisation

Chapter 1 Background to the Study

1.1 Introduction

This thesis proposes a way of understanding ICTs in Ghanaian secondary schools by investigating how ICT policies work in the Ghanaian context regarding the process of formulating and implementing an education policy for ICT use in education and development. The investigation into the context of Ghana is designed to build a theory about the status of the policy's implementation, what the ICT4AD and ICTED implementation is like in the secondary schools of Ghana—and to explore the hopes of policymakers and policy implementers regarding the benefits of integrating ICT into their day-to-day practices on the one hand, and the reality that policymakers and policy implementers face in their day-to-day practices on the other. Based on the emerging evidence from the study, I have proposed concepts of policy culture—*commonality capital*, or *commonality deficit*; *policy momentum*, or *de-energised policy*; and *political orientation*, or *political identity*—as factors that contribute to or hinder successful implementation of ICT policies among secondary schools in Ghana. I later clarify these concepts and attempt to locate the ICT use in schools and the ICT policy direction of Ghana within them. Specifically, the study concerns the implementation of the intended educational purpose of the Information and Communication Technologies for Accelerated Development (ICT4AD) policy framework and its related policy, the Information and Communication Technologies in Education (ICTED) policy of Ghana, which were launched by the government of Ghana in 2003 and 2008, respectively.

Ball (1993) suggests that policy intents are encoded in policy text and may be decoded differently by varying actors depending on the context and the aim of the actor. Furthermore, policies scarcely dictate and determine specific practice and rarely tell one exactly what to do, although some policies narrow creative responses (Ball et al., 2013: p.3) from policy actors. The actors in this study are the teachers and school leaders who are at the forefront of implementing such policies. In this sense, the interpretation of a policy text is

fundamental in fulfilling (or not fulfilling) the desired goals. In the case of Ghana, one of these goals, which is the focus of this thesis, is stated as follows:

To enable graduates from Ghanaian educational institutions, formal and non-formal, to confidently and creatively use ICT tools and resources to develop the requisite skills and knowledge needed to be active participants in the global knowledge economy by 2015. (Republic of Ghana: ICT4AD, 2003b: p.37)

In furtherance of this goal, the ICTED policy later states the following aim:

To articulate the relevance, responsibility and effectiveness of utilising ICTs in the education sector, with a view to addressing current sector challenges and equipping Ghanaian learners, students, teachers and communities in meeting the national and global demands of the 21st. century. (Republic of Ghana: ICTED, 2008: p.13)

The aforementioned indicates that the government of Ghana intended to use ICT for its socio-economic development through the implementation of the ICT4AD policy. The government of Ghana has also placed a strong emphasis on the role of ICT in contributing to the country's economy (Mangesi, 2007). The country's medium-term development plan captured in the Ghana Poverty Reduction Strategy paper one and two (GPRS I & II) and the Education Strategy Plan 2003–2015 suggests the use of ICT as a means of reaching out to the poor. Thus, the goal of ICT use in the Ghanaian context seems to be poverty alleviation, and the education sector is required to produce graduates with ICT skills to help achieve this goal. Therefore, the creative use of ICT by Ghanaian “graduates from *the* formal and non-formal sector to develop the requisite skills and knowledge that they need to participate in the global knowledge economy” (Republic of Ghana: ICT4AD, 2003b) is purported to be the conduit for reducing poverty in Ghanaian society. Hence, the onus is placed on the school system and the teachers to make the promise of using ICT for socio-economic development a reality.

Teachers are hence the policy implementers in this study. The pilot study revealed that Ghanaian teachers are willing to try new ‘things’, generally risk-friendly, and capable of interpreting government policy texts from their particular perspective and understanding. However, since “a policy is both

contested and changing, always in a state of 'becoming', of 'was' and 'never was' and not 'quite'" (Ball, 1993: p.11 and 2006: p.44) and because "at all stages of the policy process we are confronted with different interpretations" (Ball, 2006: p.45), achieving a 'perfect' realisation of a written policy is not possible. What can be achieved, in my view, is a narrowing of the gap between policy interpretation and misinterpretation by effectively harnessing the human elements and factors in the formulation process so as to achieve the *commonality capital* (e.g., the value emanating from collaborative and deliberate involvement of key stakeholders, in this case policy implementers in the policy engineering process from the outset, so as to gain 'ownership'). It is additionally possible to achieve the implementation of the policy to meet the intended goal, thereby avoiding *de-energised policy* (which is my term to describe a policy that is formulated for the sake of it), which results in the policy remaining on the shelf unimplemented or leading to a bewildering implementation with mere rhetoric and jargon.

Essentially, both of these italicised terms are frames derived in the course of the research to describe the actions of those engaged in policy formation and implementation (an analogy for using the term "de-energised" in relation to policy is explained later in this chapter). Policies provide textual documentation of objectives and intentions to arrive at a destination, and in the context of this study, the destination is the socio-economic development of a nation state, Ghana. As I have explored in the following paragraphs, research has not been silent on understanding policy as text, but I am more interested in how the actors are engaged in the construction of such texts.

1.1.1 Policy as Text

Policy texts are said to carry the intended goals and meanings of their authors (Taylor et al., 1997). However, I will add that the clarity of these goals is dependent on the level of the implementers' involvement and orientation in the process of the policy formulation. Conversely, the meaning attached to the policy intent by policy implementers is what I would call the *pinnacle of the essence* in implementing the policy for the intended purpose. Perhaps the

driver for implementing the ICT4AD in Ghana, and for that matter in any other country, could be to successfully garner the expected benefits and purposes of constructing the policy, but in my view, this is only feasible if a commonality of understanding about such benefits exists between the policymakers and the implementers. One could also argue for unintended benefits that arise from implementing policies, which perhaps resonate well with policymakers and implementers and a position I also take. I do not think, though, that this '*benefit by accident*' of policy implementation is good for *policy engineering* (my concept to mean the process of policy design and formulation) and *policy economics* (a concept I have developed to mean investment in policy formulation and design). Many human and material investments go into *policy engineering*, and if in the end, they mostly achieve only those objectives that were unintended, it would not be unreasonable to call the entire process into question. There is, therefore, need to ensure that the stakeholders are on a similar footing, particularly regarding the intention of the policy and its objectives. It is said that policies rarely carry the meaning (objective) that perhaps was first intended because "policy changes as it is implemented" (Taylor et al., 1997), so there might be a good case to involve policy implementers in the formulation of the policy from the outset.

For this study, specifically, the engineering process of the ICT4AD and ICTED of Ghana mentioned terms such as 'creativity', 'knowledge', 'global(isation)', 'transformation', and 'knowledge economy' in the policy documents, which rarely have a single interpretation in the literature and are likely to cause confusion among policy implementers. In fact, I do not envisage the ICT policymakers and the implementers in Ghana having the same meaning and interpretation of the policy intent and text, but my concerns are about the *commonality of ownership* of the policy goals and what it is intended to achieve *as a prerequisite for effective implementation* of the ICT4AD policy in Ghana. These concerns are because as a text, it may have varying meanings to different people, and as a policy, it may be differently represented by various actors and interests (Ball, 2006: p.45); thus, I believe *commonality of ownership*, *a value of commonality capital*, and engagement to aid *successful implementation* are required. Such success is then evaluated and measured

against clear success indicators that are only possible if the policy intents are well understood by all stakeholders. I will argue that involvement of policy implementers from the outset in the policy engineering is both fundamental and crucial for its successful implementation and worthwhile for *policy economics*.

1.1.2 Policy Engineering

As mentioned earlier, policy engineering is the process of designing and formulating policies. Policy formulation as part of policy engineering is the process by which government statements are arrived at (Ikiara et al., 2004) and is as important as the policy itself. In the context of this study, however, I contend that the statements that make up the policy are influenced by what I will call the *political orientation* of the policymaking process and the *political identity* of the policy. There is a case for the implementers to be aware of these two elements (*political orientation* and *political identity*) of policy engineering to help them develop a better contextual understanding of the policy and to aid implementation because at the centre of these two key elements is the issue of *ownership of the policy* being engineered and those who are responsible for the attainment of its goals and intended purpose (see Figure 1.1 Impact of political orientation and identity on shared ownership and responsibility of developmental policy.). I argue that if the process could be infused with the involvement and participation of those who are to implement the policy, then there could be 'shared ownership' and 'shared responsibility' in the failure or the success of the policy implementation.

In the diagram below, I have shown the intertwined relationship between *political identity* and *political orientation* about which policy implementers need to be aware. This awareness will enable them to distinguish one from the other and avail themselves to be involved in the *political orientation*. When this happens, they can contribute and effectively, collaborate and engage in *policy engineering* from a *nationalistic perspective* and not a partisan one. A policy driven from a nationalistic perspective becomes a national policy and national owned, and it withstands the change of regime of government to the other.

Conversely, a policy underpinned by partisanship tends to be linked with a particular political party in government and ceases to exist in the absence of that political party. In this sense, I will advocate that a policy, and for that matter a developmental one such as ICT4AD, should not ‘die’ with a political party (identity). Moreover, policy statements and documents should not suffer from *de-energised policy* just because they have been marred by the *political identity and orientation* of policy engineering.

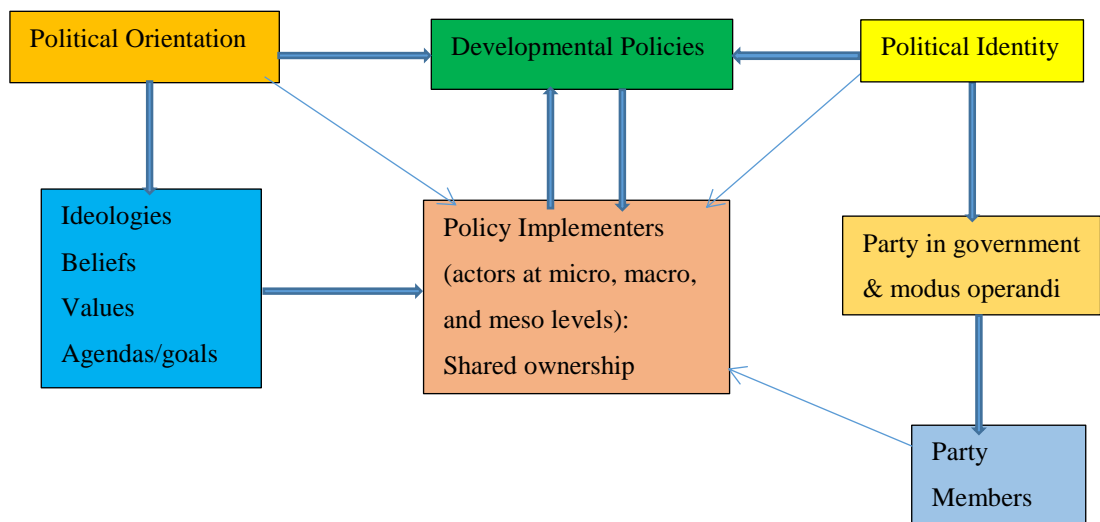


Figure 1.1 Impact of political orientation and identity on shared ownership and responsibility of developmental policy.

Ball's view of conceptualising policy as a ‘text’ is central to this discussion (Ball, 1993:10) and the meaning(s) attached to policy text by the policy implementers is pivotal in ensuring that policies are implemented according to the formulated intention(s). In the case of Ghana, the integration of ICTs into the school curriculum is promulgated by the ICT4AD and ICTED policies. The question is whose policy, is it? Further, what are the ‘whats’, ‘whys’, and ‘hows’ of the policy? To what extent have the secondary schools in Ghana implemented the policies? Policies are said always to have multiple interpretations, but can those interpretations and surrounding conflict be minimised if both actors (policymakers and policy implementers) effectively collaborate in the engineering of the policy from the outset? Moreover, in constructing the policy, should there be full consideration of the local and national context, or should it be driven by what I refer to as *cultural backsliding* (putting aside the values of

national identity and way of life in the interest of foreign values and identity)? Should the policy be underpinned by the globalisation paradigm instead of the cultural and social perspective of Ghanaians? As simple as these questions may seem to a seasoned academic, policymaker, or both, they are questions that concern individuals and politicians who want to have policies that work—policies that achieve results.

For instance, a post on the World Bank blog (September 11, 2012), “Analysing ICT and education policies in developing countries,” submitted by Michael Trucano, mentioned that the World Bank was approached by a Minister of Education for help regarding ICT in education policy formulation as her country prepared to undertake a large-scale investment in educational technologies. The Minister asked, “What might be important to include in such a policy?” I am sure this minister is not alone in this dilemma, and in the quest to find immediate solutions, a minister might end up borrowing policies from the global village that may not necessarily fit the local and national context, which, the blog added, is only useful to a certain extent. Ministers are expected to investigate extensively the intent of any policy they want to formulate to thoroughly understand what they hope to achieve, as well as how they know that their goal has been achieved. However, this process is rarely the case as it may require lengthy consultation at the micro and macro levels, which ministers in the context of their tenure in office do not like to ‘waste’ time doing, knowing it is the right thing to do. Ghana may not be distant from this kind of scenario in its drive to integrate ICT into every sector of the nation for the socio-economic development and transformative benefit of the country.

1.2 Background to the Study

Countries around the world, including Ghana, are clamouring for technological advancements and their applications in the daily life of every sector of their economies. There is also a tendency to technologically transform how things are done in each country, with a view to bringing the country onto a global stage for national and global problem-solving. Technology is perhaps seen as a problem solver and enabler within nation states through which humans are

able to discover, create, and have endless possibilities of doing things beyond their capabilities. Technology in this sense is seen as the “application of knowledge, tools and skills to solve problems and extend human capabilities” (Smith, 1994: p.2). Some see technology as offering new capabilities that may lead to significant changes in an organisation (Mojgan et al., 2009: p.235). Therefore, the claim relating the positive correlation between technology and endless possibilities does not only pertain to individuals but also to organisations. Such an organisation may be a school or an institution of higher learning, a society, or a nation, all of which have problem to resolve but with endless possibilities in one form or another. In the school system, the problem to be solved may be what to teach, how to teach what needs to be taught and why, or it could just be how to improve the quality of teaching and learning. While in the case of a nation, the problem to be solved could be employment creation for the youth by leveraging their potentials through technological skills and knowledge acquisition, or as in the case of Ghana, to equip graduates from formal and non-formal institutions with ICT skills so that they can creatively and effectively use them in the global knowledge economy. From this perspective, information and communication technology (ICT) may be purported as an agent in helping to address the problems. Fisher et al. (2006) were of the opinion that technologies could be used for knowledge building, distributed cognition in the form of accessing resources, community and communication, and engagement.

Many other educators believe that ICT in the form of computer use in educational settings can be employed effectively to enhance teaching and learning (Bauer & Kenton, 2005; Flanagan & Jacobsen, 2003). For example, technology usage in the teaching and learning process can “increase students’ writing, enhance cooperative learning, enhance integration of curriculum, increase teacher communication, enhance community relations and enhance global learners” (Whitehead, Jensen & Boschee, 2003: p.10). Therefore, computer use may provide an active cooperative learning environment and offers the flexibility that is now mostly absent in traditional classrooms (Attaran & Vanlaar, 2001). However, integrating technology is not about helping people to use computers *only* but about helping teachers to integrate technology as a

tool for learning (Sheingold & Hadley, 1990; Moeller & Reitzes, 2011). Perhaps Fiske and Hammond (1997) were of the same view of seeing technology as a tool for learning when they used the term 'instructional technology' for ICT and referred to it as a key to educational quality in the new millennium. The use of 'instructional' is probably to emphasise the instructional functional aspects of technology in education. In discussing ICT capability, Loveless (2009) eluded to the claim that technologies can be tools that offer learners the potential to extend or enhance their abilities but iterated that this potential does not lie in the technologies themselves but in the interaction with human intention, activity and tools. Emanating from these views about ICT use in education, I contend that ICT is, therefore, regarded as a panacea of effective learning.

The rhetoric of 'everything nice' about ICTs use in schools and in nation development has made all countries around the world ready to embark on massive investment in their acquisition. It has led to marketization and commercialisation of what ICT can do and created a culture of a make-believe approach to a *developmental problem-solving hypnosis*. The conservative estimation of global market share of ICTs within other commodities is said to be more than \$5 trillion USD per year (Selwyn, 2013: p.2). What is not clear from the outset, however, is whether politics and politicians have always seen technology as an answer to their country's problems. While I am of the view that political orientation and identity play a significant role in this investment, Selwyn makes it clearer when he says that one of the priorities for governments, politicians, and other stakeholders is the provision of digital technology to their populace and the belief in its ability to bring about improved educational systems and enable them to "out-educate and out-hustle the rest of the world" (Obama, 2011, quoted by Selwyn, 2013: p. 2). Hence, there is the faith and hope in the 'wonders' of technology as an enabler and probably as a 'game-changer' in the education sectors and nation-state development. As mentioned earlier, policymakers and governments are quick to write policies without critically investigating the intended purpose and mode of monitoring and evaluating the implementation process and are quick to provide the ICT equipment but slow to evaluate the impact of its implementation.

Moreover, since the intended outcomes are blurred, if not confusing from the outset, policy implementers may be oblivious as to what needs to be achieved with the tools in their hands, and implementation is haphazardly carried out and construed. This situation of blurriness of intended outcomes, calls into question the leadership of policy engineering at the micro, macro, and meso levels.

The leadership at the micro and macro levels perhaps influences the ICT policy environment at the school and at the national levels. The decision-making by the leader regarding the policy intent and the types of ICTs that are required for the intended purposes of the policy is a necessary part of the puzzle in unlocking non-use of ICTs that are provided for teachers. A conclusion, therefore, is that successful ICT policy implementation is not about equipment or software but about influencing and empowering teachers and learners; implementation is not about acquiring computer skills but about knowing what tools need to be provided, providing them, and supporting teachers in the ongoing engagement with students in their learning (Yuen, Law & Wong, 2003). Successful ICT policy implementation is also about knowing the possibilities of what can be done and what cannot be done with ICTs and being able to improvise when necessary; it is about having a strong leadership that lives above *polidigiteched* (meaning the interplay between the transformative potential of ICT and the political culture of Ghana, thus its political identity) but is nationalistic in their outlook on ICT policy engineering and implementation. An environment like Ghana where there is a high level of political polarisation to the extent that every developmental project has a significant political party undertone, *polidigiteched* has the tendency to become a hiding ground for non-performing leaders in terms of ICT implementation. Therefore, successful ICT integration and development within schools will require school leaders and teachers to be aware of the possibilities and the future development of technology and how the school might integrate it into teaching and learning (Mojgan et al., 2009: p.237). The culture and micro context of each school determine how easily what has been introduced can be absorbed into the system and vice versa.

In addition, heads of schools need to understand the capacities of the new technologies, to have personal proficiency in their use, and be able to promote a school culture that encourages exploration of new techniques in teaching, learning, and management (Schiller, 2003). Furthermore, teachers and school leaders need to understand the policy (policies) underpinning the culture of ICT use in their school. They need to understand the tenets of the 'policy text' and what they are meant to achieve. Perhaps, as is the case for Ghana, this understanding may inform the result of producing graduates with the requisite skills needed for the global knowledge economy. Immediately, it may lead to improving the school from one stage of development to another or to transforming the educational provision that will reflect the culture, socio-economic, and political determinism and optimism that surround the introduction of technology into the school system. Such are the hopes that Ghana and Ghanaians want to realise from their use of ICT, and as Selwyn (2011b) says, to epitomise perhaps the hopes and 'messy realities' of twenty-first-century use of technologies in education. Therefore, any work on examining and investigating practitioners' use and view of integrating ICT into the curriculum informed by government ICT for education policies is relevant, especially as it relates to developing countries such as Ghana.

1.3 Demands on School

However, the preceding places some demands on schools and other educational institutions in trying to live up to the claims relating to the benefits of ICT use and what policies portray ICT capabilities to be. That educational technology is not a value-free and straightforward process but a value-driven site of profound struggle where some people benefit more than others do is evident; there are winners and losers (Selwyn, 2013: p.2). Amidst this, claims that the rapid developments ICTs have made tremendous changes in the early part of twenty-first century persist and have affected the demands of modern societies (Republic of Ghana, 2003a). Consequently, to realise the impact of ICTs on the workplace and everyday life, today's educational institutions try to restructure their educational programmes and classroom facilities to minimise the teaching and technology gap, thereby becoming effective and efficient in

their educational provisions. In other words, institutions are purported to be using ICT to improve their educational provisions and to aid them in becoming a good or outstanding school. To this end, “the key question I ask concerns whether could it be that technology use has contributed to schools becoming good and outstanding, or that schools have the technologies and are using them because they are good and outstanding” (Awuku, 2010). Schools, irrespective of technology, have a central responsibility to prepare their students for the future. However, the introduction of new technologies has made this responsibility appears important and sometimes distracts where the ‘blame’ lies for non-performance of education, especially in developing countries like Ghana. My experience is that teachers in Ghana hope that the presence of computers and other ICT peripherals will make teaching ‘easy’ for them, but teachers are unable to articulate convincingly for what and how specifically they will use ICT in their subject areas to meet the demands placed on them by government policies.

Ghana’s ICT4AD also demands that schools produce graduates who are prepared for the workforce and can meet the demands and challenges of today’s technological world. I believe this calls for ‘big changes’ in the Ghanaian educational curriculum. With years of experience in the Ghana education sector, I am aware of the curriculum content and how challenging the integration of ICT into various subject areas can be. However, since one cannot use a French language literature textbook for teaching English language literature to achieve the same result as using the textbooks specific to each subject, effective integration requires schools to identify the right ICT tool for the right purpose (just as one ensures the right textbook is provided for the right subject). It also requires school leaders to become more aware of the existing context in which they are working; in this way, the new technologies can be effectively diffused into the existing context to provide learners with the knowledge of specific subject areas to promote meaning and learning and to enhance professional productivity (Tomei, 2005). However, promoting the meaning and learning in this way may not happen in isolation; but be informed by the intended learning, which might be relevant to the specific goals that are to be achieved. Learning, according to Law (2007), who references Verran

(1998, 1999, 2001, 2002), is specific, material, relational, performative, a set of tensions, political, and allegorical. In this sense, learning is multifaceted, and both developed and developing countries have put in place strategies and initiatives to use technology in realising this multifaceted learning in their students and graduates.

Ghana is one of those countries that in recent times have embarked with many hopes on an *edutechnology* journey (a deliberate attempt by government to create a space for technology in the school curriculum), as expressed in its ICT vision document, Information and Communication Technology for Accelerated Development (ICT4AD). So, what, then, are Ghana's educational technology hopes, as expressed in the ICT4AD? To what extent are these hopes realised by Ghanaian secondary schools? These questions are born out of my desire to make a meaningful contribution to the global 'ICT in education policy implementation in secondary schools' debate and, more specifically, contribute to the ICT for education implementation in Ghana.

1.4 Ghana and Educational Technologies

Ghana, a country on the west coast of Africa, is one of the fastest developing and ambitious democracies in the continent of Africa. It shares boundaries with Togo to the east, la Cote d'Ivoire to the west, Burkina Faso to the north, and the Gulf of Guinea to the south (Ghanaweb, 2012). In 1957, Ghana became the first country in Sub-Saharan Africa to gain independence (IAEA, 2013). Ghana retained the education system inherited from Britain for over 30 years after independence, even though Ghana had its first Educational Act in 1961. A recommendation in 1973 by 'The Dzobo Report' to reform the educational system was not implemented until 1987/88 after many years of reviews, including The New Structure and Content of Education (1974), The Education Commission Report of Basic and Secondary Education (1987), and The Educational Reform Programme (1987). The educational landscape of today, according to the Ghanaian government, is the result of these major policy initiatives in addition to 'The Free Compulsory Universal Education Programme (1996)' and 'The Ghana Education Trust Fund – GET Fund Act

2000', and most recently, 'The Educational Reform of 2007'. The overarching aim of these policies was to make education accessible and affordable to all people of school age (Newsghana, 2014).

The government is convinced that the use of information and communication technologies (ICTs) will not only make education accessible but will enable schools to provide quality education through effective teaching and learning (Republic of Ghana, ICT4AD, 2003b). The government of Ghana also claimed that the ICT revolution was having a tremendous impact on the rapid development of world economies and making national economies more interdependent than they were some years ago. Consequently, the government identified a new commitment to making Ghana a key player in today's digital age (Ghana Ministry of Education, 2002). This claim was collaborated on by other agencies and policymakers such as UNESCO and the Microsoft Corporation, both of whom promoted the optimistic view that ICT is the "bedrock of quality socio-economic development and quality education, particularly quality teaching and learning in Ghana" (President's Committee on Review of Education in Ghana, 2002; Republic of Ghana: ICT4AD, 2003b; World Bank, 2007). To achieve these claims, the government of Ghana, through the Ministry of Education and the Ministry of Communication and their affiliates (the Ghana Education Service, National Information Technology Agency, and National Centre for Tertiary Education), have been embarking on various initiatives and programmes to streamline ICT use in all educational institutions in Ghana.

1.4.1 ICT Initiatives

Since 1996, Ghana has been embarking on various initiatives mainly through collaboration with charitable organisations: The World Bank, UNESCO, Microsoft, Intel, and Cisco. Notably among them is the SchoolNet Ghana programme, National ICT Policy, and ICT Use in Education Policy. Within these initiatives are strategies of implementation such as the NEPAD (New Partnership for Africa Development) e-schools programme, Partners in

Learning (PiL), dotNet (.Net), the Innovative Education Programme (IEP), and the Digital Content Development Centre (DCDC).

1.4.1.1 **SchoolNet**

The first major programme in Ghana to introduce a computer technology project into the education system was SchoolNet, launched in March 1996. SchoolNet was a non-profit project initiated by Dr Gideon Chonia, a lecturer of computer science at Zurich University (interview with Reverend E.K. Dadebo (National ICT in Education [ICTED] Coordinator at the Ministry of Education [MoE]). The main purpose of the SchoolNet programme was to help Ghanaian secondary school students take advantage of computer networking to enhance their learning, socialising, and communication skills. The goals of SchoolNet were both immediate and long term. The immediate goal was to connect 50 secondary schools (out of 452 public schools at the time) and help them achieve the following:

- Help Ghanaian secondary schools to benefit from networking and computer networking
- Encourage teacher-student interaction in secondary schools
- Promote inter-campus discussion of topics and subjects among students
- Help Ghanaian students to use the Internet to do research and get information that may not be available elsewhere. (Dankwa, 1996)

The long-term goals of the project were

- To raise the level of education in Ghana by providing the platform for students to effectively interact with each other and encouraging them to take advantage of the information explosion that is accessible through computer networking
- Based on the participation level of schools and students and the outcome of the first phase of implementation (securing computers, registration of the domain and organisation and setting up of the infrastructure), to connect as many schools as possible. (Dankwa, 1996)

As of 1996, there were no official policies on computer communication and networking in Ghana, which could imply that the government of Ghana was not ready to initiate a project of the kind, yet SchoolNet was initiated in the belief that it would get the approval of the government. The project effectively started in the 50 selected schools, which were mainly urban based. Their selection was informed by the availability of the necessary infrastructure vis-à-vis electricity, telephones, and accommodation. As part of the objectives of the SchoolNet project, teachers and students were provided with basic computer training in the use of the internet for research and emailing. Students were permitted to use the computers for collaborative projects after school hours. However, according to the SchoolNet project documentation, the project was confronted with the cost of electricity, poor telecommunication infrastructure, the cost of telephone connectivity, and a lack of technology experts for effective implementation (Boateng, 2007). However, according to my interview with Reverend E.K. Dadebo (National ICT in Education [ICTED] Coordinator at the Ministry of Education [MoE]), the SchoolNet project failed because of unfavourable terms and conditions, e.g., the cost to the government. There was no Memorandum of Understanding between the SchoolNet Project Directorate and the government of Ghana, but the expectation of SchoolNet was that the government would later meet some of the operational cost of the project. The government's inability to meet this expectation led to the failure of the project, Dadebo said.

1.4.1.2 National ICT Policy

This section focuses on some of the socio-economic development challenges that Ghana faces, and the perception that ICT and ICT policy are a remedy in dealing with the challenges. Ghana as a country had undertaken many planned development programmes aimed at bettering the socio-economic prospects through improving access to social amenities such as the housing, education and training, and the health of its citizenry. Notable among such plans are The Five-Year Development Plan of 1975 to 1980, Vision 2020, and the Ghana Poverty Reduction Strategy of 2002 to 2004 (Republic of Ghana, 2003a). These plans, though implemented, have not taken Ghana to where it wants to be regarding meeting the social needs of the citizens. However, a

strong desire persists on the part of Ghanaian governments both past and present to ensure that Ghanaians are not 'left out' of eating the 'global cake' of information and communication technologies. This strong desire has been demonstrated through collaborative work between Ghana and international organisations such as the United Nations Economic Commission for Africa (UNECA) and the World Bank and the African Information Society Initiative (AISII) to refocus, in my view, Ghana's development initiatives. This work gave birth to the ICT4AD policy of 2003, out of which "An Integrated ICT-Led Socio-Economic Development Policy and Plan Development Framework for Ghana" (PDF4G) was developed in 2003. Other policies developed were the ICT in Education Policy Framework of 2002; the ICT in Education Policy of 2008; the National Science, Technology, and Innovation Policy of 2009; the Policy Framework for the Deployment of ICTs in Education of 2010; and the Coordinated Programme of Economic and Social Development Policies, 2010–2016 (Republic of Ghana, 2010).

Arguably, the hope of Ghana to develop a knowledge-rich digital economy is underpinned by the various ICT and technology policies that have been put in place. If policies were an end in themselves, then Ghana could have been on the pedestal of technological advancement and reaping its 'benefits'. Obviously, policies per se will not bring the development that Ghana needs; policies need to be formulated and efficiently implemented with all actors effectively involved from the outset with the value of *Commonality Capital* in mind. However, as this has never been the case, Ghana's PDF4G has identified some developmental challenges the country faces that need addressing using ICT as a means. The challenges that I will discuss in Chapter 2, Development Culture, include a population that is largely skewed towards the youth, a mismatch between population growth and low per capita income, a lack of highly skilled manpower professionals and underdeveloped infrastructure, and ICT are seen as having the characteristics and potency to provide solutions for these challenges.

1.5 De-energised policy

To understand what ICTs are like in the Ghanaian secondary schools and the extent of implementation of ICT4AD and ICTED policy education-related objectives, I have adopted a metaphorical analogy between the release of energy in the human body and the drive that Ghana needs for policy work. Obviously, the human body is complex with many parts. The complexity of the human body means that it requires the right nourishment and environment to develop and grow. The type and amount of nourishment that the body receives will determine how much energy it has and how effectively it can function. Food or nourishment, which is a major source of the body's energy, needs to be broken down and converted to glucose, which then provides energy for the body. The body also needs the right level of energy from food (glucose) to function effectively. When the body is unable to move glucose from the bloodstream into cells as is necessary, the important process of breaking down the glucose into much-needed energy cannot occur; the body becomes *de-energised*. In this de-energised state of the human body, the affected individual generally feels weak and tired, and unable to perform and move at expected levels of efficiency and momentum. The situation may be more complex than I have presented here; however, my brief description and its impact on the human body's effectiveness, and thus its impact on health and well-being is sufficient for drawing relevant comparisons to the subject of ICT4AD and ICTED policies implementation in Ghana.

Like the human anatomy, Ghana consists of various parts (regions, metropolis, private and public sectors, and cultures) with various roles that need to work effectively together for its efficient and effective functioning as a country intending to grow and develop into a global knowledge economy. Within the context of this thesis, the developmental intentions of Ghana are crafted into the ICT4AD and ICTED policies. As is the case with the human body, Ghana thus needs to diffuse the policy intents and objectives (energy from the policies) and the enabling environment for the policy implementers to carry out their functions. Again, like the human body, where glucose remains in the bloodstream and unable to move to the cells, so it can be with Ghana where

the policies that are meant to drive the global economy agenda remain at the source of formulation and never get to the implementers (and when they do, the policies are likely to be misunderstood). The position of this thesis is to refer to this scenario of formulated policies remaining with policymakers (and or policy implementers not knowing about the existence of such policies) while implementers are nevertheless expected to implement them as *de-energised policy*.

The analogy is intended to seize the momentum surrounding the current priorities of key decision makers in Ghana to eradicate the cancrans of lukewarm attitudes among some sectors of the Ghanaian population and to resonate with key policy and decision makers. The current President of Ghana in his inaugural address on 7th January 2017 called on Ghanaians to be “citizens and not spectators” – directing their energy to nation development. Hitherto, the immediate past President of Ghana, in his State of the Nation Address on 25th February 2016, declared his commitment to making policies relevant to the needs of Ghanaians; for people are Ghana’s greatest wealth with skills, talents, passion, personality and ideas that need to be galvanised to make a world of difference – create change and shape the future of Ghana (Parliament of Ghana, 2016). Individual citizens of Ghana seem to be responding positively these calls e.g. through voluntary participation in monthly national cleaning exercise. In my view, just as individuals are making a deliberate effort in responding to the call to direct their energy to nation building as citizens and not spectators, the use of the term within the context of this thesis is expected to attract a certain level of urgency in addressing the issue of *de-energised policy*.

1.6 Research Context

As mentioned earlier, the government of Ghana has placed a strong emphasis on the role of ICT in contributing to the country’s economic development (Mangesi, 2007) through the human-capacity building for which the education sector has been given the mandate. The medium-term development plan of Ghana, as outlined in the Ghana Poverty Reduction Strategy Paper (GPRS I

& II) and the Education Strategic Plan 2003–2015, views the introduction of ICT into the country as a means to end poverty. In this way, ICT is seen as having the potential to create a platform where both sides of the economic divide (the rich and the poor) can engage and share national resources, perhaps equally. This developmental ambition and the burden it places on ICT to deliver remind me of the fact that ICT is not an end in itself but a means to an end. In any case, part of the main objective of introducing ICT in Ghana is to produce graduates through formal and informal means who can function in the global knowledge economy. Consequently, Parliament in 2004 passed into law Ghana's ICT for Accelerated Development (ICT4AD) policy, which is currently at various stages of implementation. This policy represents the vision of Ghana in the information age and addresses 14 priority areas, or pillars (Republic of Ghana, 2003a & 2013b), some of which are "promoting ICTs in education – the deployment and exploitation of ICTs in education, deploying and spreading ICTs in the community, and rapidly developing ICT and enabling physical infrastructure" (Republic of Ghana, 2003a p.9)

The 2003 policy, is the first time the government of Ghana has developed an ICT policy of this nature and, as mentioned earlier in the introductory chapter of this study, before ICT4AD and ICTED engineering, the Ministry of Education through Ghana Education piloted various ICT-integration initiatives, including a nationwide STEM programme without a clear-cut policy. The ICT in Education (ICTED) policy for Ghana in particular, therefore, had a long gestation period, and at maturity was to be fully embedded into the education system by 2015. Through the help of various agencies, including the Global e-Schools and Communities Initiative (GeSCI), the ICTED policy documents were finalised in 2007. Over the 8-year period (2007 to 2015), the ICTED policy was to be fully implemented, the outcomes of which follow:

- At each point of exit from education, students are fully equipped with specific skill sets as defined in the ICT syllabuses and are ICT literate.
- All levels of people in the education system are aware of guidelines for integrating and have integrated ICT tools into the curriculum.

- ICT resources in all schools are standardised.
- Teachers are trained to be able to facilitate the training of students in ICT.
- The type and level of ICT needed by schools for teaching and administrative purposes is determined.
- ICT as a learning tool in the school curriculum at all levels is highly promoted. (Ghana Ministry of Education [MoE], 2010)

These objectives fit into the overall ICT4AD aim, and the ICTED is, therefore, the Ghana MoE's acceptance of the mandate of the ICT4AD policy and envisions the provision of the appropriate resources needed:

To enable graduates from Ghanaian educational institutions – formal and non-formal – to confidently and creatively use ICT tools and resources to develop the requisite skills and knowledge needed to be active participants in the global knowledge economy by 2015. (Republic of Ghana, ICT4AD: 2003b in Ghana MoE, 2010)

Previously, the MoE conceived that “a bold implementation plan is needed, which will require significant resources and attention from all stakeholders to ensure the desired impact is achieved in the educational sector” (Ghana MoE, 2010). The stakeholders, in my view, are the policymakers and the implementers, and the resources will include human, financial, and material resources such as computers and general ICT tools and software. In addition, in the context of this thesis, the sector in question is the secondary education sector.

The secondary education sector in Ghana includes senior high schools (SHSs) and technical and vocational institutes (TVIs). Ghana has 547 public secondary schools made up of 510 SHSs and 37 TVIs in addition to 105 private SHSs (Ghanaschools.net, 12 February 2011). Given the educational objectives of ICT integration in Ghanaian schools, all schools (SHSs and TVIs) are required to set up two ICT centres, one for general ICT literacy training as prescribed by the ICT syllabus and the other for eLearning purposes for all subjects. ICT use in Ghanaian schools, according to the coordinator of ICTED, focuses largely (although not exclusively) on the use of desktops, notebooks,

and hand-held computers, many of which now have multimedia capability and utilise associated hardware and software. Hardware includes peripherals such as printers, digital video device (DVD) drives, and scanners, while software includes packages that facilitate word processing, worksheet processing, desktop publishing, and database management, among others. In addition, the communication aspect of ICT incorporates the networking of computers, which increases the availability of a larger range of software and information.

The ICTED Coordinator is of the view that ICT capability is not just the ability to undertake a range of mechanical tasks, but also the realisation by a child that computers can be used to assist or enhance the completion of a number of tasks. The computer should be seen as a tool to achieve objectives effectively. ICT capability is, therefore, characterised by an ability to use ICT tools and information sources effectively to analyse, process, and present information, as well as model, measure and control external events. Furthermore, through the introduction of ICT into the National Curriculum, pupils are expected to become familiar with a range of technologies and have the skills necessary to become effective, critical, and independent users of ICT. In addition, they should also benefit from the opportunities and advantages that ICT can provide to support learning in other areas of the curriculum. The ICTED Coordinator added that the National Curriculum for ICT outlines the scope of ICT experiences and understanding that a child should have to develop ICT capability.

The ICTED coordinator stated that ICT application in Ghanaian schools could be seen at four broad levels.

Table 1.1 below from the Ghana Ministry of Education's (MoE) Policy Framework for Deployment of ICTs in Education (PFD of ICTED) (2010: p.8) illustrates this claim:

Table 1.1 Broad application of ICTS at the basic school level

Key ICT application areas	Description	Examples
Expose students to ICT	Providing children exposure to computers, programming and other technical skills	100,000 kids in 130 medium - to well-resourced schools in Ghana are being exposed to basic computing skills (executed mostly by 'for private' organisations)
Leverage ICT to enhance learning process	Create curriculum-linked content to enhance learning experience and encourage self-learning	At Achimota Secondary School, the computer centre manager gets 5 requests per day to get supplementary material, examples and tools to be used in regular teaching
Improve back office and administration process	Using ICT to improve school administration process including payrolls, certification, drawing students' bills and fee payment schedules, taxation processing etc. Circulation of administrative memos to remove bottlenecks of bureaucracy	Aggrey Memorial Secondary School in Cape Coast currently uses ICT effectively in administration (as described), which has significantly improved management capabilities and frees up time
Improve teacher effectiveness	Using ICT to support teachers to improve IT skills, regular teaching processes and teaching of ICT-supported curriculum	Most teachers, and specifically those in rural areas, indicated that ICT support in the form of lesson plans and supplementary content would improve their teaching effectiveness significantly due to current inadequate reference material in some subjects in the curriculum

Source: Ghana MoE, 2010

1.6.1 ICT Use the Sampled Schools

I have observed at all the data collection sites that ICTs in the form of computers and the use of Microsoft packages are mainly used by schools to record and generate performance data on students. The computers and software are also able to be used to prepare quickly large amounts of test materials. Contextually, the use of ICT (including computers and appropriate software) are big changes from using pen and paper to record data and generate students' term reports, and chalk and blackboard technology for administering tests. From an experiential point of view, teachers used to write the test questions on the blackboard in the 1980s when I was a student in Ghana. We all had to stay outside of the classroom while the teacher wrote the questions on the board and were only allowed in when the teacher had finished. However, since the blackboards were sometimes not big enough to accommodate all the questions that the teacher wanted to ask, we were timed to complete sets of questions (e.g., questions 1 to 5) after which those questions were erased for the teacher to write additional questions while we continued to answers sets at a fixed time rate. It was a kind of "read-write-erase" strategy.

However, from the early 1990s, this strategy started to give way to typesetting (using typewriters) and stencil printing technology, but this was mainly in urban and suburban centre schools. By the late 1990s, typewriters started to give way to computers in some schools, as the one in which I was working. In demonstrating how far things have changed, I observed at one of the data-collection sites, K-Aca, that they had in place a secure examination room equipped with five computers and two commercial-size copier/printers and a dedicated staff appointed to coordinate examinations across the school. According to the examination coordinator, all subject teachers submit their questions to him at least three weeks before the start of the examinations to give more time for processing and printing, followed by a school-wide examination schedule. The printed papers are then secured and supervised by the assistant head teacher and academics. Therefore, an evidential shift is obvious regarding the method of examination delivery and coordination and

students' progress reporting in the 1980s and 1990s compared to the 2000s, and this shift is perceived as 'transformational'.

1.7 Research Aim

This study proposes an understanding of how ICT policies work in the context of Ghana concerning the process of implementing the education policy of using ICTs in secondary education and changes to patterns of practice. The emphasis will be on the extent to which the government has successfully implemented its ICT4AD policy objective of enabling "graduates from Ghanaian educational institutions—formal and non-formal—to confidently and creatively use ICT tools and resources to develop the requisite skills and knowledge needed to be active participants in the global knowledge economy by 2015" (ICT4AD, Ghana: 2004).

1.8 Research Questions

Understandings about change, educational transformation, and development were encoded in texts - the ICT4AD policy documents of Ghana by policymakers, passed to another group (Ministry of Education and Ghana Education Service), interpreted, and then those understandings were acted upon, and the actions typically produced new texts - ICTED. These texts are then translated into action for the desired outcome. Therefore, the study specifically looked at what ICTs are like in the secondary schools of Ghana and whether the ICTED and ICT4AD education policy objectives, as stated earlier, have been effectively implemented in these schools.

The main questions are

1. What factors affected the successful implementation of the policy objective of ICT4AD and ICTED?
2. From the perspective of teachers and policymakers, how successful is the implementation of the ICTED and ICT4AD policies in Ghanaian secondary schools?
3. To what extent do Ghanaian secondary schools teachers believe they own the ICTED and ICT4AD policies?

1.9 Significance of the Study

In answering these questions, the study aims to make a valuable contribution to existing knowledge in the field of ICT policy formulation and implementation, specifically as it pertains to ICT policy for development and education in developing countries and in this case, Ghana. By helping to identify and find meaning for the use of ICT policies in Ghana and factors for successful implementation of the ICT4AD and ICTED from the perspectives of teachers (policy implementers) and policymakers, the study seeks to inform strategies aimed at ICT policy formulation and implementation process. In addition, by focusing on the involvement of policy implementers from the outset, the need for greater attention to their perspective on ICT policy formulation and implementation is being addressed. Furthermore, the study is driven by a strong personal interest in the field of ICT policy formulation and implementation as it relates to classroom practice and development. My experience during the pilot study indicated that there is need for this kind of study to inform effective ICT policy formulation for and implementation in education and the development agenda of Ghana.

1.10 Overview of Methodology

In response to the research question and purpose, I have used a mixed method using grounded theory and quantitative methods. A three-phased approach was used to gather evidence for the thesis, with flexibility between phases one and two. The first phase comprises interviews with ICT4AD policymakers. The aim was to establish their views about the ICT4AD and ICTED policies, as well as the steps taken to engage with the intended policy implementers. I was also interested in their perception of the policy implementation to date, which was important in determining the questions to ask at the next phase. Coding and analysis occurred throughout this phase. Phase two comprised interviews with practitioners. The aim here was to ground the data collected from the policymakers into theory and then look for evidence of the theory being enacted in the classroom through observation to be then able to triangulate the data and avoid issues of self-reporting. The interview consisted of a semi-structured, focus group interview. The intention

was to engage practitioners with the relevant experience, knowledge, and skills to take part in the study and involved reliance on the network of professionals I have in Ghana. This also implies that, as possible, I aimed to have at least 60% of the regions in Ghana represented in the data collection, which I wanted to be a combination of urban, suburban, and rural areas. However, I was led solely by the emerging patterns from the data to determine the next data collection site. The third phase was a survey of a wider population of practitioners carried out alongside the interviews, which aimed to verify the typicality of the understandings identified up to that point. The survey questionnaire was used to gather data from areas that were difficult to reach for interviews. As a result, the questions included a list of patterns generated from all the interviews to date and asked for the views of participants.

A working hypothesis based on grounded theory emerged from the data, which will be discussed alongside research about Ghana's ICT4AD and ICTED policies. Further details on methods and analysis are provided in Chapter 3.

1.11 Overview of the Thesis of Chapters

The study proposes a way of understanding ICTs in Ghanaian secondary schools by investigating how ICT policies work in the Ghanaian context concerning the process of formulating and implementing an education policy for ICT use in education and for development. The study has specifically explored the process of formulating the ICT4AD and ICTED policies of Ghana and evaluated their implementation in its secondary schools. Also investigated are the intent of the policies and the reality of what is happening in the space of ICT use. A combination of interviews, questionnaire, observation, and documentary analysis were used to build a theory grounded in the data. The research aimed to provide a solution to the policy engineering process so that policies that get formulated have clear ownership by policy implementers. The chapters of the thesis provide a systematic discussion and evaluation of the situation leading to the development of a theory around *commonality capital*.

In Chapter 1, I introduced the study and included the key concepts explored within the space of the Ghanaian ICT policy formulation and implementation. The intention was to explore the current policy culture of policy formulation and implementation in general with specific focus on the ICT4AD and ICTED policies of Ghana and their position within secondary schools. I take the position of using policy engineering instead of policy formulation as the former metaphorically presents a more detailed mental picture of the specific policy culture I propose for Ghana. I concur with Ball (1993 and 2006) that “policy as a text and discourse, policy is contested and changing, always in a state of becoming, of was and never was... and because at all stages of policy process we are confronted with different interpretations;” thus, Chapter 1 presents my position on how the gap between policy interpretation and misinterpretation can be narrowed. To narrow the gap, I propose the concept of *commonality capital* and the related ideas of *policy economics*, *de-energised policy*, *policy momentum*, *commonality deficit*, *political orientation*, and *political identity*, which are the main concepts of the study. The position in the study that misunderstanding of policy intent by policy implementers lead to, in some cases, *benefit by accident*, is a costly and ineffective use of *policy economics* and suggests the need to build a culture of *policy ownership* through effective use of *commonality capital* as a way of minimising misinterpretation and enhancing implementation. Also, the interplay between political orientation and the political identity of policy engineering is a critical factor of which policy implementers need to be aware so as to avail themselves of being engaged for building shared ownership and responsibility for the success (or failure) of the policy implementation. I have also provided the background to the study, with my call for leadership of policy engineering at the micro, macro and meso levels, which is positioned within the ICT4AD and ICT4AD policy objectives and the socio-economic challenges that Ghana faces. The background also highlights the previous ICT initiatives that Ghana implemented, albeit unsuccessfully, which supports the position stated in this thesis regarding building a policy culture of ownership. The basic research questions and significance of the study are also highlighted.

Chapter 2 reviews the literature to identify the position of scholarship regarding the key terms used in the following ICT4AD policy objective:

To enable graduates from Ghanaian educational institutions—formal and non-formal—to confidently and creatively use ICT tools and resources to develop the requisite skills and knowledge needed to be active participants in the global knowledge economy by 2015. (Republic of Ghana: ICT4AD, 2003b: p.37)

The terms explored are ‘knowledge economy’, ‘globalisation’, ‘policy borrowing’, and ‘transformation’. The chapter also reviews the discussion on educational policies with a focus on policy analysis and policies as both relate to globalisation and a knowledge economy. Technology culture and a review of the perspective of technology as a transformative agent are undertaken. In reviewing a policy as text, the position expressed in this thesis that the interpretative meaning held by policymakers about a policy's intent is corroborated by policy implementers when they are engaged in the policy engineering process from the outset, thus ensuring policy ownership. As highlighted by the chapter, achieving policy ownership may be complex and unattainable because the source, scope, and pattern of the policy may carry different messages but typical of a particular space and situation; hence I take the position that implementation of the ICT4AD and ICTED policies should take a critical look at their source, scope, and pattern. The chapter hones in on technology policymaking and proposes a position of technology culture that values and uses national expertise and argued that is not everything global that is relevant in the national context. Technology use has the potential to bring about transformation but depends on the process and steps taken to ensure policies formulated to drive use and created by and owned by the people—*policy democracy*. Areas of the Ghanaian economy that technology is expected to transform have been reviewed in light of my position that ICT policy, transformation, and development are cyclically connected with specific gatekeepers in the middle, influencing the character and position of each.

In Chapter 3, the methodology is presented, as well as a rationale for the specific approaches. The ethical consideration and approaches adopted to ensure the validity and reliability of the data collected for the study are

explained. Further, the Chapter provides an overview of findings from the pilot study and shows how the results influence the change in methodology and the research questions.

In Chapters 4 and 5, research findings are presented. The premise of this study was to delve into the anatomy of the ICTED and ICT4AD policy implementation in Ghana. This was done by investigating the hopes and realities of the ICTED and ICT4AD policy implementation from the perspective of those who were behind the formulation of the two policies and those who are expected to implement the policies so that Ghanaian graduates from both formal and informal sectors are equipped with the requisite skills; at any point of their exit from education, graduates should be able to use technology creatively to function effectively in the global knowledge economy. The research provides from the data collected a theory grounded in three key areas:

- Factors that contributed to or hindered the successful implementation of the policy objective of ICT4AD and ICTED
- Teachers' perspectives on the success of the implementation of the ICTED and ICT4AD policies in Ghanaian secondary schools
- The extent to which Ghanaian secondary schools believe they own the ICTED and ICT4AD policies and are equipped to implement them

The findings from the data indicate that the hope of the ICT4AD policy is to bring about transformation and change to how things are done within the various sectors of the Ghanaian state so it can develop a knowledge economy. The majority of the ICT4AD policy was devoted to presenting the transformational agenda and how ICTs were seen as the driver, with the educational sector required to provide the skill labour. Against this backdrop, the research concludes that implementation of policy objective within the stipulated period is ambitious. In the secondary education sector, the research indicates that implementation of the policy has not been successful, and none of the implementers knew about the existence of the ICT4AD and ICTED policies. The policy implementers felt excluded from the policy formulation

process and have demanded their involvement in future policy engineering processes. In addition to this lack of involvement (and hence, a lack of ownership), the study identified the infrastructure, equipment, capacity, curriculum, and political factors as conditions that, when effectively harnessed, can enhance effective policy implementation. These mitigating factors and discourses that emerged from the study, coupled with the critical issue of a lack of policy implementer involvement, contributed to the unsuccessful implementation of the policy objective within the set deadline.

Chapters 6 and 7 position the study within the main objective of theory development and a discussion of the findings in the context of the culture of policy ownership and the hopes and realities of ICTED and ICT4AD policy implementation. Arguably, the studies have revealed that policy implementers do not believe in keeping the policy (formulation) engineering process in quarantine and made a perceive for the few; the policy maker, but to be let loose and placed in the domain of social impact and policy democracy. In the absence of this, the policies as formulated lack ownership and thus lead to *de-energised policy*. The ecosystem for ICT policy formulation and implementation in Ghana should be one of a collaborative approach through effective use of *commonality capital* with the intention of making Ghana a healthy country with identifiable attributes. In this way, the demand placed on education is understood from the outset by the policy implementers and other stakeholders because they were effectively engaged during the process and the cultural understanding of what needed transforming. Within these chapters are the development and discussion of the main contribution that this study has made, to knowledge, which are presented in Chapter 8.

The position of the thesis as presented in Chapter 8 is that it is important that policy implementers own the policy they are enacting, a position that can be achieved through the use of *commonality capital*, without which there is *de-energised policy*. Chapter 8 also highlights the challenges (political, cultural, technological, and economic) to the study and makes recommendations for future study. Chapter 8 concludes with what I call a manifesto for ICT policy

working in Ghana for education and development with a focus on specific technology culture and policy culture recommendations for Ghana.

Chapter 2 Literature Review

2.1 Introduction

Chapter 2 highlights discussion in the existing literature regarding educational policies, globalisation, and the knowledge economy about the Information and Communication Technologies for Accelerated Development (ICT4AD) policy of Ghana. The ICT4AD and its related Information and Communication Technologies in Education (ICTED) policy are the main ICT policies, launched by the government of Ghana in 2003 and 2008, respectively. The clarity of the policy seems dependent on the interpretative meaning that the architects of the policy might have intended, which could be ‘misinterpreted’ at the point of implementation. *At the implementation level, policies rarely carry the meaning that perhaps was first intended. Policy changes as it is implemented and policy refracts as it passes from formulation to implementation* (Taylor et al., 1997). However, it may be argued that the meaning attached to policy text by the ‘policy implementers’ is pivotal in ensuring that policies are implemented according to the formulated intention(s).

In this study, the extent to which both the policymakers developing policy texts and the practitioners working with the policies share interpretations of the texts has been analysed by drawing on Stephen Ball’s (2003, 2006, 2008, and 2011) discussion of “policy as text and discourse.” An attempt has also been made to contextualise the discussion in the Ghanaian setting by deliberately categorising the text and discourse nature of policy under four identified cultures—policy, education, technology and development—and the implication for Ghana’s ICT4AD and ICTED policy formulation and implementation.

2.2 Policy Culture

Culture has many meanings depending on the context. The term could be used from an anthropological perspective, behavioural science (e.g., a sociological interpretation), or a biological view. In this thesis, and within the

political context of ICTED and ICT4AD policies of Ghana, I am using culture from the metaphorical biological perspective to mean a colony of bacteria (policies) and other microorganisms (procedures) that have the potential to grow in the right environment. The use of the biological perspective of culture instead of the sociological interpretation (or any other perspective) aligns well with the position of this thesis that policy is a living organism that must be owned, nurtured, and supported to thrive, use, and attain value. Therefore, policy culture seeks to identify various facets of policy: how policies grow, how they are formulated, and the conditions required for their effective implementation (maturity). From this perspective, there is a need for us to understand what we mean by policy before attempting to look at its various facets. The policy facets to consider, as implied in the ICT4AD and ICTED documents of Ghana, are policy process, policy as text, policy as discourse, policy regarding globalisation, and policy regarding the knowledge economy.

2.2.1 Policy Culture – Policy Definition

Many definitions of policy may be useful to explore the field. Policy may refer to the principles that govern action, which is directed towards given ends (Kulchmeister, 1998). Policy is fundamental to the formulation of plans, prescriptions, and legislative instruments aimed at correcting development and growth-related inadequacies within national and local institutions (Said, 1986). At the macro level, policy is an embodiment of goals and acceptable procedures and actions to achieve macro-level goals. Policy in this form is imperative in realising these goals, which are deemed essential for growth and development. Therefore, it could be said that the effectiveness of a policy is dependent on achieving defined goals. So, policy could be referred to as intended and unintended acts regarding goal ramification, value definition, or resource allocation, or as Easton puts it, “a web of decisions and actions that allocate value” (Easton, 1953: p.129 as cited in Taylor et al., 1997). Policy in this sense is decision driven and value-laden. Fundamentally, however, “policy is about the exercise of political power and the language that is used to legitimate the process” (Foucault, 1980: p.92).

According to Blakemore (2003: p.10), policies are aims or goals, or statements of what ought to happen, while Harman (1984) sees policies as a statement of intent, which represents plans or programmes of work. For Jenkins (1993: p.30) policy is

a set of interrelated decisions taken by a political actor or group of actors concerning the selection of goals and means of achieving them within a specified situation where the decisions should, in principle... is within the power of the actors to achieve. (Jenkins, 1993: p.30)

Jenkins' definition focuses on decisions and policies as being concrete, while others like Gordon et al. (1997) see policies as systems or sets of decisions that make up an episode, arguing that "it is thus more helpful to talk about a policy system" (p.9). The focus in the above has been on policy as a product motivated by decisions from politicians towards specific deliverables. The process captures the critical role that policy implementers play and the need to engage them from the outset. It seems from their statements that emphasis is on the formulated policy; the product of the decision, hence the product affecting society, seems the most important aspect of implementing a policy. However, I will argue that the process with reference to the *commonality capital* within the context of *edutechnology* in Ghana is also important because it may help to make the policy meaningful depending on the actors and those involved in developing the policy; moreover, a good case can be made to involve policy implementers in the formulation of the policy at the outset.

Policy formulation could be said to be the process by which specific government developmental statements, guidelines, and pronouncements are determined (Ikiara, Olewe-Nyunya & Odhiambo, 2004). The key issues here are the *political orientation* of the policymaking process and the *political identity* of the policy. By *political orientation*, I mean the ideologies, beliefs, values, agendas, goals, and philosophies of the government in power, and *political identity* refers to the particular political party (or parties) in the government and their *modus operandi*. It is, therefore, revealing when UNECA (2004) states that

Contrary to popular belief, the making and shaping of policy is less a set of organised, predictable and rational choices than a complex, often unpredictable and, above all, political process. (UNECA, 2004: p.9)

Perhaps if the process could be infused with the involvement and participation of those who are to implement the policy, there could be ‘shared ownership’ and ‘shared responsibility’ in the failure or success of the policy implementation. Obviously, the language of policy carries with it “the notion of discursive power” (Foucault, 1974, 1981 in Ball, 2006), which will be discussed in the following pages.

2.2.2 Policy Analysis

According to Codd (1988), policy analysis is widely seen to transcend a single discipline and existing specialisations and fields; therefore, different approaches to investigating pertinent government issues are adopted for

The purpose of policy analysis is to draw on ideas from a range of disciplines in order to interpret the causes and consequences of government action, in particular by focusing on the processes of policy formulation. (Ham & Hill, 1984: p.11, as cited in Codd, 1988)

Government action in this thesis concerns the formulation of the ICT4AD and ICTED policies and how they are being implemented in the Ghanaian education sector. Specifically, the current study focuses on the identification of *commonality capital* (the value placed on the collaboration between actors in the process of policy formulation for ownership and common understanding, the essence of policy implementation) of the Ghanaian government’s action through the ICT4AD and ICTED policies. These policies provide the framework for using ICT as a development tool for which the education sector provides the skills. This demand involves equipping Ghanaian graduates with creative ICT skills and knowledge for them to perform effectively in the global knowledge economy.

Policy analysis is based on available information on which the policy is formulated, or it is the “critical examination of existing policies” (ibid: p.237). Here, policy analysis is seen as an inquiry, which Gordon et al. called ‘analysis

for policy', while the latter has been referred to as 'analysis of policy' (1997: p.27). In this point made by Codd, with which I agree, 'analysis for policy' can take the form of

policy advocacy, which has the purpose of making specific policy recommendations, and information for policy in which the researcher's task is to provide policymakers with information and data to assist them in revision or formulation of actual policies. (Codd, 1988, as cited in Gordon et al., 1997: p.27)

In the same sense, 'analysis of policy' can also take two different forms:

analysis of policy determination and effects, which examines 'the inputs and transformational processes operating upon the construction of public policy' (Codd, 1988, as cited in Gordon et al., 1997: p.28) and also the effect of such policies on various groups; and analysis of policy content, which examines the values and goals (intentions), assumptions and ideologies underpinning the policy process. (Codd, 1988)

This thesis evaluates the extent of implementing the policy objectives as related specifically to the hopes encoded within the content of the ICTED and ICT4AD policy documents of Ghana, which requires the analysis of the policy content for the encoded hopes and intent. However, there is the argument of such documents being referred to as text with the potential of being decoded in varying ways depending on their audience and context (Ball, 1993). The understanding here is that the language content of a policy document may mean different things to different people and, therefore, may require a commonality of comprehension if the goals and objectives of the documents are to be achieved. Ball (1993) is one of those who see policy conceptualised as a 'text' and a 'discourse'. He further maintains that these are "two very different conceptualisations of policy" (Ball, 1993: p.10 and 2006: p.44).

In this sense, it is better to see policy analysis as a dynamic process that is "complex" (Trowler, 1998: p.49). Policy statements are often subject to divergent interpretations and reinterpretations by different actors, depending on their orientation and comprehension (ibid: p.49). Trowler (1998) also added that policymakers and practitioners usually have conflicting views regarding the desired goals and key issues or concerns necessitating the policy

statement. The question to ask is, *Can the multiple interpretations of policy text and the conflict over the policy intentions be minimised or avoided if both actors (policymakers and policy implementers) effectively collaborate in the development of the policy from the outset?* Otherwise, why might it be difficult for such collaboration to exist? In describing these concerns, Ball says that

Policy is text and action, words and deeds; it is what is enacted as well as what is intended. Policies are always incomplete insofar as they relate to or map on to the 'wild profusion' of local practice.
(Ball, 1994: p.10)

The perceived complexity of policymaking and interpretation is illustrated in

Figure 2.1 Policy encoding and decoding (Trowler, 1998: p.49) below:

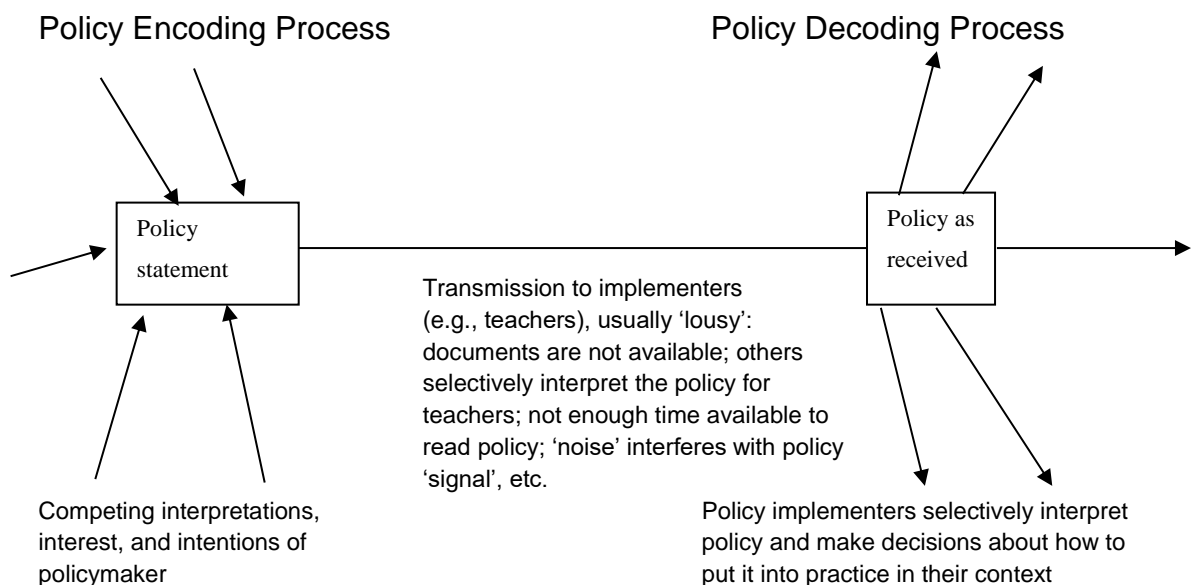


Figure 2.1 Policy encoding and decoding (Trowler, 1998: p.49)

So, at the inception of a policy, as seen in Fig. 2.1, the statement encoded is already full of the complexities of vague intentions and interests and embroiled in the competing interpretations by policymakers. Therefore, it should not come as a surprise that when the policy is transmitted to the implementers, the

complexities can become blurred, and the implementers have to choose how they want to interpret and implement the policy intentions. Critical to the complexities, is the identification that, sometimes, the policy document has not even been seen or heard of by the implementers, yet they are expected to take ownership of the policy, interpret it, and implement it the way they know how. Despite this, policy implementers, according to Ball et al. (2012:4) and referring to Spillane (2004:7), work hard to ensure that mandated policies are put into practice, and policy directives are not undermined. The discrepancy between the policy encoding and decoding is central to this study since my view is that policy implementers must hear what policymakers are communicating if they are to implement the policy for the intended purpose. Therefore, it may be argued that because policymakers are subject to competing interpretations, interests, and intentions, policy implementers at the receiving end may decode the policy content based on their interest, intentions, and interpretations. However, my argument is that if the ‘right’ policy implementers always had the opportunity to submit their views during the policy formulation, the discrepancies could be minimised and effective implementation enhanced, if all other factors remained equal. It is this view that this thesis seeks to explore and evaluate in the context of Ghana, which as discussed in the previous chapter has seen many policies and reforms in the past. In the context of this discussion, it is important to revisit “policy as text” from Ball’s perspective and propose a way forward.

2.2.3 Policy as Text

Policy as text (Ball, 1993) is the functional, interpretative and contextualised aspect of the policy, which contradicts the underlying assumption of linearity between policy formulation and implementation (Ozga, 2000: p.94). According to Ball (1993), policies are textual interventions in practice. As a text, Ball discussed policy as a representation, which is encoded and decoded in complexity. The tenets of a policy are the dictates of struggles, compromises, authoritative public interpretations, and reinterpretations (Ball, 1993; Ozga, 2000).

Conversely, the meaning and interpretations assigned to such policies are related to one's experience, history, skills, resources, and the context in which the individual views them. Careful consideration of the power of the individual and the collective view of groups in any social process, i.e., policy engineering, seems necessary for the aftermath of the decision-making process. I am aware that time and space often are constraints that deter policymakers from embarking on such an inclusive approach to policy formulation, but the time and space needed afterwards to resolve the struggles, compromises, interpretations, and mis(re)interpretations of policy text and encoded statements may not be worth the exclusion approach and may be a distraction from implementation. However, Ball (2003) also discussed the notion that policy authors do not have control over the meaning of their text, and if they do, it is limited to the resources at their disposal. But "governments still seek to manage their national systems" (Green, 2003: 86 as cited in Selwyn 2013:63) which in my view generally detects the direction that the policy authors have to take – policy authors do not seem to have control). In addition, policy texts are the work of multiple authors and rarely the work of a single production process (ibid: 11). Therefore, the implication is that the final product, the document that arrives at schools, is the result of a multifaceted approach and process involving individuals and groups with stakes and influence (Selwyn, 2011b). Compromises, negotiations, and renegotiations occur at various stages in the policy formulation process, which sometimes blur the meaning and intention of the text. Policy texts as well as meaning of policy texts change hands and have "their own momentum inside the state; purposes and intentions are reworked and reoriented over time" (Ball, 1993, 2006: p.45). As the political figures (main actors) change, so do the policy texts; they are written and rewritten. One could say that it is this *dynamism* of policy text that leads to differences in interpretation and the game of finding the meaning of what is handed down to the practitioner (ibid: 45). What then arrives at school has a different meaning from its original intention, because

Government policy has to be filtered through macro, meso, and micro levels, as policy is mediated through national agencies (macro) and regional agencies (meso) down to individual schools and teachers at the micro level. (Younie, 2006)

One could argue that what happens when enacting at the micro level determines the effectiveness of the policy but not the mere vocabulary and collection of words that form a document named 'policy'. It is thus intriguing to ask what the intentions of policy texts are and what happens when policy gets into the hands of policy implementers, in this case, teachers. As Ball (2008) discussed, policy texts are contradictory in most cases, and 'policy matters' need to be acted on to intervene in current practices. Policies are often messy, contradictory, confused, and unclear (ibid: 7). In fact, policies will usually create the enabling circumstances necessary to decide what cause of action is required for changing one's practice without actually prescribing it.

One could speculate that some texts never even are read first-hand and that policy poses problems to teachers as a result. One could also pose the question about whose policy text is. In other words, who owns the policy? Would the policy implementers be upfront with the meaning and tenets of the policy if they owned it? There is the issue of ownership and who is in charge—an issue power within which lie patterns of inequality. These patterns of inequality can potentially distort and blur the 'real' meaning and intentions of a policy. However, patterns of inequality seem so embedded in the fabric of our societies and nation-states that any attempt to totally eradicate them will lead to further inequalities. Therefore, the question is whether they at least be minimised to pave the way for achieving commonality of understanding of policy texts (meaning and intentions) among policy implementers and policymakers?

Policies, and for that matter policy texts, according to Ball, reinforce the existing patterns of inequality and power relations rather than simply attempting to change them (Ball, 1993, 2006: p.47), but the meaning of the text may be limited by conditions of power relations (Fairclough, 1992). This idea of power in its interpretation may hinder the very meaning of a particular policy text and demotivate policy implementers and derail their commitment, cooperation, creativity, and understanding, all of which are so needed to turn the intentions of policy text into reality. I agree with Ball on his discussion about the 'secondary adjustment' in teachers' engagement with policy. One could

argue for teachers' ownership of policies, in other words, for policies to do what they are intended to do. A change in the relationship between policy text and the policy enactment is needed. Change, however, is not swift but complex and slow and does not always achieve the desired impact and result because of procedural complexities regarding implementation (Younie, 2006). Clearly, the argument by Younie (2006) is that although the process of implementation is complex, the awareness of this complexity by all actors is essential for achieving the policy aims. This awareness may lead to further appreciation of the fluidity and non-linearity of policy implementation and how other socio-economic, political, and global factors interrelate to determine the direction of the process.

However, it is also important to note that no single defining moment is common to all policy processes. As with any other processes, policy process is continuous, and in continuity, as Ball said, the process can be a messy and contradictory involving not just those who conceive of the policy but also those who draft it, publicise the policy, and receive and implement it (Ball, 2006). Initiatives now aim to move analysis of policy from just knowing what is happening and why, to asking what can be done about the analysis (Troyna, 1994: p.72). Some policy analysis attempts to become influential in policy formation itself (Gane, 2005). This type of analysis likely moves to another level of not only focusing on the action(s) but also on the commonality of understanding the text and content of the policy, which in my opinion will be a move in the right direction toward providing shared ownership for the policy. With shared ownership, may come the acceptance of the desired change and willingness to participate in the change process.

Moreover, the discussions of policy text, the commonality of understanding, and hence shared ownership may be complex and unattainable as a result of the message policy text carries or seems to carry in relation to the "source of the policy," the "scope of the policy," and the "pattern of the policy" (Ozga, 2000: p.95):

- The source of the policy is centred on ownership and whose interest is being served: local, national, or global.
- The scope of the policy focuses on the workings of the policy in relation to what it is purported to be able to do and how the key issues are contextualised and framed.
- The pattern of the policy dwells on the existing historical links and the needed organisational variations or modifications necessary for changes to be initiated and implemented. (ibid: 95)

The policy source is crucial to this discussion as it centres on the motivation for the policy and the owner of the motivation. The influence of the policy could have a global dimension, a national outlook, or even a local overview. Whatever the motivation, it needs to take into account the policy scope of the agenda to be pursued, what the key issues are that need addressing, and what tools and resources are needed to address them. However, this cannot be done in isolation from policy patterns, the historical context of the proposed policy asking the question, and whether previous policies existed to address the same or similar issues like the one to be formulated, as well as the variations and alterations the new policy would bring to the organisational setting and nations like Ghana.

Therefore, in analysing policy text, motivation and ownership, agenda and historical context are imperative in aiding the understanding of such texts by all actors. With policy texts, Ozga (2000) reiterated, to think about them as carrying particular narratives is useful; that is, they portray what is potentially and probably achievable through policies in education and for that matter those relating to ICT use in education. What is desirable in terms of ICTED and ICT4AD in the context of this thesis is for “graduates from Ghanaian educational institutions – formal and non-formal – to *confidently* and *creatively* use *ICT tools* and *resources* to develop the *requisite skills* and *knowledge* needed to be *active participants* in the *global knowledge economy*” (Government of Ghana, ICT4AD 2003; ICTED 2008). ICT may be seen in this

narrative as a change agent, but the policy (or policies) that defines its use and broad agenda of implementation should take into consideration the “source, scope and pattern” Ozga (2000: p.95) of the policy.

From that point of view, the ICTED policy of Ghana should be implemented from divergent perspectives and dimensions taking into account the cultural and ICT infrastructure base of the country necessary for an effective pedagogical use of ICT in the classroom. The consideration of the cultural ethos and values within the system and the evaluation and understanding of the ICT infrastructure base are valuable in identifying potential issues for change management as well as the interpretation that actors give to the policy text. This calls for effective dialogue and consideration amongst all stakeholders. Teachers are responsible for the learning experience of their students and it is therefore important that they be involved in any decision that may affect their practice and classroom culture. The presence of ICT per se in the classroom is short of the purported impact of their use as envisaged by politicians, and, as discussed by Younie (2006) and Buckingham (2007), is arguably less dramatic than purported, though still problematic. Evidently, the huge investment in, and expenditure on, infrastructure and the development of teachers outweigh the derived benefit in relation to the expected or desired *transformation* of teaching and learning (DfES, 2001: p.18). Implicitly, the change that is to be associated with ICT use in education is yet to be realised and, according to Buckingham (2007), the educational use of digital technology is the centre of an enormous array of inflated rhetoric. Buckingham (2007) goes on to say that the notion of technology per se bringing radically transformed educational provision to the extent that the four walls of the school will be extinct is an “illusion.” My assertion is that policies have a role to play in this and the understanding of the policy text by actors in the narrative is paramount and key, which perhaps is ideal from the formulation to the implementation stages and beyond in the development of policy.

2.2.4 Policy as Discourse

Policies are part of the mobilisation of discourse by symbolic means as well as practical ones. In this policy mobilisation process, policy as discourse detects our thinking and words, which are dominated by social relations. This notion of policy discourse addresses structure (Ozga, 2000: p.94). Therefore, to understand a policy is to try to grasp a system's values and symbolic systems that legitimise and account for political decisions (Ball, 2008: p.13). Therefore, as policies are constructed documents of expressed intents, goals, and ideas, the purpose of analysis is to ensure that the texts are interpreted according to the intended meaning and agenda (Codd, 1988: p.3).

Discourse also refers to the meaning of language, the materiality of language, and the real effects of language use (Mair, 2000). Another aspect of discourse is the underpinning of shared assumptions established as integral to the formulation of the policy (Belsey, 1980: p.5). However, as people generally are involved in an array of discourse about science, religion, technology, and politics, various ways emerge in which their culture and way of life determine the conditions of their lived experiences and their understanding of a situation, their context, and their content (Foucault, 1980; Codd, 1988; Ozga, 2000). Again, this reveals discourse as a constituent part of subjectivity and integral to the construction of relative meaning and dialogue in a policy document (MacDonnell, 1986; Fairclough, 1992).

Centrally, the relationship between ideology and language is at the core of theories of discourse (Althusser, 1969; Saussure, 1974; Bourdieu, 1977; Foucault, 1980; Codd, 1988). Consequently, all the approaches of meaning making as a way of cementing the dominant relationship of "discursive power" need attention (Thompson, 1984). Perhaps a clearer understanding is necessary to appreciate policy as a discourse and a language entrenched with the ideology of power. As stated by Bourdieu:

Language is not only an instrument of communication or even of knowledge, but also an instrument of power. One seeks not only to be understood but also to be believed, obeyed, respected, distinguished. (Bourdieu, 1977: p.648)

Obviously, to understand this language-power discourse is to have a closer look at power itself, which at one level is referred to as “coercive force or restraint” (Codd, 1988), while at another level is seen as an exercise of power by consent or “ideological hegemony.” However, as power is easy to be recognised as sovereign or exploitative rather than an instrument of consent, “ideological hegemony” does not appeal readily to actors—largely incomprehensible. In the view of Codd (1988), power by consent may be normatively applied to misleading communication and false construction of social reality. In this form, power is exercised and pervasively expressed without the subject recognising it as such due to the underpinning institutionalisation of power by consent or, as I call it, ‘power by falsehood’. Foucault (1980), on the other hand, used the term ‘micro-technologies’ of power (*power by falsehood*), which produces all knowledge within power relations and rejects the Marxist distinction between knowledge and ideology (ibid: 240). Power can then be considered as a commodity and possession, which is then exercised for the benefit of holders of any nation state, developed or developing, nationalised or internationalised, localised or globalised. Foucault is of the view that

In a society, such as ours, but basically in any society, there are manifold relations of power which permeate, characterise and constitute the social body, and these relations of power cannot themselves be established, consolidated or implemented without the production, accumulation, circulation and functioning of a discourse. There can be no possible exercise of power without a certain economy of discourses of truth, which operates through and on the basis of this association. (Foucault, 1980: p.93, as in Codd, 1988)

Additionally, Foucault (1981) observed that “power may be understood in the first instance as the multiplicity of force relations in the sphere in which they operate and which constitute their own organisation” (p.92). As such, individuals and societies at the centre of policy discourse tend to be the subject as well as the object of material conditions perpetuated toward state

institutions such as education by the state through power discourse. Power as a discourse is associated with the need to bring change and in some instances to control such institutions. For example, apart from the large private education industry, the educational systems in all countries around the world, including the developed ones like the United Kingdom and the United States, are directly controlled by the state apart from the private ones (who are somewhat indirectly controlled through established rules, regulations, and policies within which they must operate). As a result, governments have direct control of the educational policy discourse, including curriculum management and leadership of state schools, educational use of ICT, assessment systems, and even prescribing how students should be disciplined. For example, in the United Kingdom, clear boundaries are in place for the number of minutes a student can be kept in detention for not following a school rule, and in Ghana, it is only the head teacher who is permitted by law to cane a student for certain type of misbehaviour.

In this power relation, Foucault (1974: p.49) in Ball (2006: p.48), who believes that “we are subject to policy discourse and any positions we take are prescribed by the policy and it may seem complex to interpret such discourses into language and speech.” We are at the centre of discourses through which real tasks are accomplished and the momentum of authority entrenched (Said, 1986: p.152 in Ball, 2006: p.48). Discourses are typically formed and legitimated in particular institutional sites and necessitated as a social reality, but discourse is not a sufficient concept in the development of an ‘analytics of power’, according to Ball (2006). This is because the state can only operate based on other, already existing power relations (Rabinow, 1986: p.64). The view embedded and portrayed in discourse, according to Ball, is to emphasise that

there are real struggles over the interpretation and enactment of policies but they are typically set within a moving discursive frame which articulates and constrains the possibilities and probabilities of interpretation and enactment. (Ball, 1993, 2006: p.49)

Furthermore,

The effect of policy is primarily discursive, it changes the possibilities we have for thinking 'otherwise', and consequently limits our responses to change, and leads us to misunderstand what policy is by misunderstanding what it does. Also, policy as discourse may have the effect of redistributing 'voice'. So, it does not matter what some people say or think; only certain voices can be heard as meaningful or authoritative. (Ball, 2006: p.49)

In my view, an attempt to create a balance and a commonality of understanding between what policy implementers say and think regarding what policymakers intended the meaning of the policy content and text to be is a necessary step in redeeming the potency and failure (or near failure) associated with policy implementation. The chairman of the Kenya Private Sector Alliance echoed this view during the Kenya ICT Convention on March 23, 2004, when he referred to people and government policy as both their greatest strength and weakness respectively and called for a clear and open policy (Etta & Elder, 2005: p.3). In addition, distorted policies have been accumulating since independence in the 1960s and are said to be primarily responsible for the economic crisis in Africa (World Bank, 1982; Bates, 1981 as cited in Olukoshi, 2004: p.43). Therefore, in embracing the ICTED initiative and policy framework, Ghana and Ghanaians need to aim for a common understanding of concepts such as 'globalisation,' 'creativity,' 'knowledge economy,' 'ICT tools and resources,' and 'ICT knowledge and skills'. The rest of this chapter focuses on these key terms.

2.2.5 Policy Regarding Globalisation

Globalisation, according to Dale (2007), constitutes varied forms of relationships amongst nations and economies of the world that impact outcomes of policymaking procedures within all nations without necessarily taking away their sovereignty or making the individual nation's procedures obsolete or irrelevant. It may be argued that nation-states have retained their territorial sovereignty but lost to some extent their independence of national policymaking through globalisation (ibid: 63). This may be true to some extent, especially in cases of developing countries such as Ghana whose developmental projects are largely financed through foreign aid. Therefore, the impact of globalisation on social services such as health and education could

be said to be indirect and subject to which countries are involved in the globalised dialogue or bid. The idea is that globalisation overcomes the limits of a national boundary and raises the question of the ability of nation states to steer the economy and its politics. At the centre of this is the influence of globalised characteristics on the existing *techno-socio culture* patterns of a host country such as Ghana. Knowledge of these patterns of social reality is the key to a well-defined policymaking procedure, and the owners of this knowledge are the local experts, the practitioners (e.g., in education, the teachers). True globalisation, must recognise this local knowledge and tailor every planned and targeted support to it if territorial sovereignty and cultural identity are to remain untainted.

However, it could be argued that because of globalisation, all countries should have the same rules, even though such an approach would seem tantamount to encroaching on a country's sovereignty and cultural identity. Globalisation, therefore, should not be reduced to a wholesale imposition of identical policies and rules (and their interpretations) by all districts, regions, states, and nations of the world without due diligence to local expertise, sovereignty, cultural identity, and social patterns. Though it is acknowledged that a range of areas of national policies is affected by globalisation, the precise nature of the effect or influence is hardly questioned or even analysed (Dale, 2007: p.65). Conversely, the mechanism by which globalisation influences 'local' policy is significant in identifying the intensity of the impact and influence on all national sectors. However, the mechanism itself is rarely free from influence and is not a neutral conduit because such a mechanism alters the nature of the impact it carries from one country to another and from one political institution to another. Dale (2007) is convinced that the mechanism of delivering the message may independently influence the message and the effects of globalisation on national policy (ibid: p.66). While such effects are rarely admitted, my view is that educational policies in general, and those of developing countries specifically, do not achieve their policy intentions and purpose, which is partly due to global influence. National policies are often designed to reflect global ideologies and initiatives irrespective of the local social realities that need addressing. The idea of a 'global village' has taken over local realities and

sometimes forms the main political rhetoric of politicians in developing countries like Ghana.

Within the cultural strand of 'globalisation' in Ghana, the dialogue amongst stakeholders regarding the meaning and nature of globalisation has been enormous and has exerted a major influence. Globalisation appears to be the driver of the conduit of national policy design without careful consideration and recommendation of local forms, nature, and direction of the policies (ibid: p.65). Globalisation in one form, in my opinion, is the means through which international ideas—power, views, and policies—are imported into the local fabric in an attempt to make them look national. However, globalisation as constructed may not seem to be the real driver of national policies but in practice has assumed this role, especially in developing countries where the thinking of political actors vis-à-vis their political orientation and identity has clouded their perceived intention for globalisation. As a result, global factors now affect national policies such as ICT4AD and ICTED in Ghana. Therefore, Dale (2007) asked the question: If national policies are influenced by 'global' factors, what is the nature and extent of the influence? (Dale, 2007: p.64). The nature of the influence will be explored in the subsequent paragraphs.

This discussion focuses on the three strands of globalisation: economic, political, and cultural. While each strand could be considered on its own merit, the impact of globalisation on each of them should be viewed separately. The impact transcends three main levels, regimes, sectors, and organisations, ranging from the school system to inter-sectorial departments and fields at all levels, which are rarely devoid of global influence. At one level, existing local structures and patterns are the media through which the complexities and demands of globalisation are defined. At another level, the societal and cultural effect of globalisation is manifested in the global tendency to transform the local systems and culture due to the intense proliferation of world systems on a large scale (Giddens, 1996). Gray's view is highly relevant— namely that globalisation is the "increasing interconnection between economic and social life, resulting from the particular interaction between technological innovation and development of capitalism" (Gray, 2000: p.32). The underlying view here

is that globalisation is engineered by technological innovation and the economic determinism of nation states. Likely, the view is to dissolve the local-global and domestic-international distinctions of relations, thereby creating and intensifying the politics of scale within which policy and practice are asserted and enacted (Ozga et al., 2006: p.5).

In this context, Giddens is right to define globalisation as

the intensification of worldwide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa *which* is a dialectical process because local happenings may move in an observed direction from the very distanced relations that shape them. Local transformation is as much a part of globalisation as the lateral extension of social connections across time and space. (Giddens, 1990: p.64)

My view of the definition of globalisation is aligned with Giddens'. Local social relations are influenced by the global and define what needs to happen at the local. As to whether the local can actually influence global happenings is relative to whom the local is and the position in the global structure. Developing countries seem to always be at the receiving end of global influence, and any view from the local to the global instead entrenches the global dominance of influence on developing local states and makes them more dependent. However, such a relationship between local and international under the influence of globalisation, as Sassen (2003) puts it, could lead to realignment of functional relations between nation states and the rest of the world:

Globalisation is partly endogenous to the national and is in this regard produced through a dynamic of denationalising what has been constructed as the national. And it is partly embedded in the national... and in this regard, requires that the state regulate specific aspects of its role in the national. (Sassen, 2003: p.83)

Therefore, there is demand on the local to take action in one form or another as the result of going global for economic, political, or social reasons. This demand may contravene the ideas and beliefs of the nation and the state, but for the sake of being part of a 'global village' and participants in the global knowledge economy, such global influences and ideas are accepted and

embedded in the fabric of the nation state. Obviously, there has always been coexistence between the people and state power in harmonious nations. In such states, citizens take ownership of development agendas and are willing to contribute their talents and skills. Domestication of ideas and policies occurs, which influence how power relations were built and exercised. For example, in Ghana, chiefs were the custodians and embodiment of 'Ghanaianess', full of power and influence. However, Green (1996) noticed that the beginning of the twentieth century saw the growth and strengthening of global commercial activity and multinationalism to the decline of the power of local states, all in the interest of globalisation and global economy. One key sector of the local state that has been affected by globalisation and commercialization is education.

Education, according to Prout (2004), has become a commercial instrument of marketisation for producing the skills and manpower needs of the global marketplace, and this has been accomplished through schooling and the stronghold of local politicians who can no longer control the global marketplace and its economic activities. Education, therefore, has become the main conduit for most governments to control the nation-state through the formulation of policies that are aimed at satisfying the demands of globalisation and not necessarily consulting the professionals who are to implement such policies. I call this 'ideological backstabbing' and Ward & Eden (2009) referred to it as 'invasive control', which they believe is inevitable in the global economic context, yet it is also part of what Bernstein (2001, as cited in Ball, 2008: p.203) described as "the totally pedagogised society," where everyone is to be engaged in education or training for lifelong learning, and every experience is to be a learning experience designed to recreate the individual needs for the global society.

In this situation, the professional world of teachers has been subjected to global, economically motivated national government policies and has reduced the teacher to a mere technician for implementing such policies, and the teachers' self-guided and self-motivated professionalism has eroded into globalisation and commercialism (Ward & Eden, 2009). In my view, the teacher

has become a commodity for politicians to be branded and rebranded for political gains to the extent that the teacher is removed from the realms of professionals and placed in the category of a craftsman. Nevertheless, policies are important in national development, but such importance depends on the ownership of the policy, who designs the policy, and who will implement the policy. The role of policy in national development could be necessary, but my view is that the end product, policy, is not all that matters; what matters is the process—the commonality (*commonality capital*) of understanding policy text and content among all actors, and in this case, teachers, so they are fully involved in this global discussion and definition of education and what the system of education could be. Education policies should be formulated with teachers' involvement from the outset, and their role as professionals should be recognised, especially in developing countries. I side with Bassey's (2005) passionate plea for trust in professionals:

It is time to stop: day by day it is teachers who know best what their pupils need. It is time for Parliament to require government to transfer to them the power to exercise that trust in the best interests of the pupils and parents whom they serve. (Bassey, 2005: p.43)

As Alexander echoed, ministers and officials are not the ones to solely own national education systems; they are to be owned by all of us. Hence, teachers need to be allowed to exercise their professional judgement informed by what they know about their students (Alexander, 2008). So, in developing the “requisite ICT skills and knowledge” needed by the graduates of Ghanaian educational institutions “to actively participate in the global knowledge economy” (ICT4AD, Ghana: 2004), the teacher as a social actor should matter more than the details of the policy to drive the attainment of the status of knowledge economy.

2.2.6 Policy in Terms of Knowledge Economy

Knowledge is said to have a particular significance in the context of contemporary globalisation. Knowledge may be considered a critical resource within late capitalism, which could be harnessed to underpin profitability. In this

sense, “globalisation and global employment encourage *active knowing*” (Ozga et al., 2006: p.6). However, creative thinking, innovation, and problem solving are valued over and above the consolidation of knowledge stock. Perhaps this underpins Castells’ view that we are moving from an industrial economy, in which productivity depended upon energy sources and their innovative applications, to an informational economy in which knowledge-generating technology, communication symbols, and processing of information are the key factors of production (Castells, 1996: p.17). Again, Ozga et al. (2006: p.6) noted that the kind of knowledge that is important is not just information and knowledge for knowledge sake that has always informed economic production, but active knowing.

Active knowing is at the heart of an ‘innovation economy’, and from this perspective, Castells argued that knowledge in action solely is key to productivity (ibid: 6), which is distinctive in contemporary global economic development. Knowledge, therefore, according to Stehr (2002: p.27), is a “capacity for social action,” and that knowledge is activated in situations that are not fully regulated or defined through routine processes. Such situations, where there is freedom in the course of action that might be chosen, support ongoing problem solving that leads to an increase in ‘how-to-do-it’ capacities that can provide a competitive edge in economic and social development. Active learning is not in isolation; it rests upon individual and collective (group) learning, as developed by Castaneda & Perez (2005). Active learning, which is at the heart of knowledge development and innovation, could be promoted through cross-cultural awareness, communication, and global networking and enhanced by sophisticated pedagogical skills and capabilities that are attuned to innovation and problem solving (Castells, 1996; Ozga et al., 2006). There is, therefore, a shared link and shared role between education and globalisation, in my opinion; however, this link is not distinct. *Is it education that promotes and enhances globalisation through active learning and knowledge development, or is it globalisation that drives education through which the emergence of active learning and knowledge development concurs?*

Globalisation is said to foreground education as a key instrument in economic and social development. Globalisation encourages attempts to transmit knowledge and technology by harnessing educational systems for aggressive and rapid growth and, as stated earlier, to drive lifelong learning agendas outside and inside established institutions of education and training (Ozga et al., 2006). The World Bank also identifies the human capital requirements of the innovation, adaptability, creativity, and flexibility that educational systems need to deliver through deregulated systems of education that allow for competition and the embedment of business (ibid: p.9). The preceding - indicates that nation states do not make policies in isolation and that an underlying 'global tune' needs to be played by all who want to occupy the existing global space. Finding such space in nation-states might be creating 'misunderstanding' among their citizenry rather than understanding, probably because established policies are either informed by 'embedded' or/and 'travelling' policy (Alexiadou & Jones, 2001). The discussion of how 'embedded' and 'travelling' policies impact local policymaking such as the ICT4AD and ICTED of Ghana is relevant.

According to Alexiadou and Jones (2001), a 'travelling policy' exists by feeding the information age by using multinational and transnational (global) sector strategies for human capital development through reformulation of the purposes of education and attempts to influence the local sector to adopt them through 'embedded policy'. So 'embedded policy' attempts to use global policy to dominate existing local priorities and systems and takes the form of patterns, ways of working, and organisation. Therefore, a clear link exists between the two processes that will call for interaction and re-interaction that is also underpinned by negotiation and renegotiation between the global and local until a compromise is reached and travelling policies are indigenized. Making the link between the two, Alexiadou and Jones (2001) reiterated how global agencies such as the United Nations and World Bank provide a point of reference for different countries in their national policy development. Some might say that accepting such points of reference is at the discretion of the countries, but in reality, they do not have the choice; moreover, in developing countries like Ghana, the funding for such policies largely depends on the

World Bank and other related agencies. Therefore, the implementation of such policies, according to Ozga et al. (2006: p.8), “may be controversial” and may be resisted and contested. In my view, indigenizing, contesting, and resisting a policy or policies may only be the consequence of having a common (or lack of common) understanding *commonality capital* of policy content and text, the absence of which will result in wholesale acceptance of policy content and text but implementation of which is problematic. However, the ‘easy to accept attitude’ of policy text emanating from a ‘travelling policy’ could be a result of its features.

Alexiadou & Jones (2001) emphasise the core aim of travelling policy in making the purpose of education responsive to the globalisation agenda and call for meeting the manpower requirements for the wider knowledge global economy, which has become a common concern for governments across the world, including Ghana. For example, during Ghana’s live presidential election debate on November 7, 2012, organised by the Institute of Economic Affairs (Ghana), the word “globalisation” was mentioned 25 times by all four of the presidential candidates, and ‘global economy’ and ‘information age’ were mentioned 18 and 7 times respectively, which is not a surprise as per the country’s ICT4AD and ICTED policies. Every country wants to have world-class everything, including education, which cannot be realised if local social issues are denigrated to the background. Without losing sight of the enormous importance of what happens inside and around schools and colleges and universities to the driving forces behind particular policies and practices (or their absence) and of their consequences for individuals and social groups in the education arena, an urgent need to recognise that “educational theory and educational policy that ignore wider social issues can be not only blind but positively harmful” (Whitty, 2002: p.139) is critical. Politicians, policymakers, and world organisations can pontificate on what a world-class education of the information age looks like, but ignoring from the outset the *commonality capital* of the policy content and the text of practitioners could prove problematic at the stage of implementation. Hence, the next section will discuss critically the key terms used in the ICT4AD and ICTED policies of Ghana in light of existing

literature and situate these policies in the socio-economic development agenda of Ghana.

2.2.7 Section Summary

This section on policy culture, examined the literature for what policy is and the process of its formulation, interpretation, required conditions for implementation, and related complexities and tensions within what this thesis proposed as policy culture. Policy culture considered from the metaphorical biological perspective epitomises the position of this thesis: policy is a living organism that must be owned, nurtured and supported so that it can grow, thrive, use and attain value. Policy as a living organism is an embodiment of goals, plans, legislative instruments, and acceptable procedures and actions necessary to achieving the macro-level goals intended to correct development and growth-related inadequacies within institutions at micro and macro levels, whereas the effectiveness of the policy and the value therein depend on achieving the intended goals.

However, the messages carried by the policy, whether as a text or discourse, is often a subject of divergent interpretations and mis(re)interpretation by different actors depending on their political orientation and political identity with policymakers and policy implementers who usually hold conflicting views regarding the intended goals and key issues or concerns necessitating the policy formulation. Additionally, the complexity of policy text and discourse of policy formulation and effective implementation therein are compounded by the process of policy encoding by policymakers with competing interests and intentions and policy decoding by policy implementers based on their own interest, intentions, interpretation and selective decision on what is not implementable and what is implementable—a clear dichotomy between policy encoding and decoding. As gathered from the literature, one reason for this is that policies are rarely the work of a single production process but rather the work of multiple authors. Moreover, sometimes the policy document has not even been seen by or heard of by the implementers, yet they are expected to be aware of its intentions and take ownership for its implementation.

Furthermore, policy texts are contradictory in most cases and are often messy and unclear but at the same time, policy texts carry within them language as an instrument of power not only to be understood but to be obeyed, to be believed, respected and distinguished. Whereas globalisation appears to be the conduit of national policy design without careful consideration and recognition of local forms, nature and direction of the policies—without due consideration of local expertise, sovereignty, cultural identity, social patterns and local practitioners are not necessarily engaged in the policy formulation instead, text and discourse are wholesale imposition of identical policies from the global space. Next, the professional world of practitioner—the policy implementer—has been a subject of global economically motivated national policies to the extent that the self-guided and self-motivated professionalism of the implementer [the teacher within the context of this study] has been eroded and reduced to a position of a technician implementing such policies under the influence of globalisation and commercialisation.

The dichotomy between encoding and decoding is augmented by the practice of policies travelling from the global space to the local space, and it is expected to make changes in the local space—alter social relations at the local space with education as the main conduit for most governments to control the nation-state. Through the formulation of policies aimed to satisfy the demands of globalisations without necessarily engaging local professionals who are to implement the policies carries with it ideological backstabbing. It is highlighted that there has always been coexistence between the people and state power in harmonious nations. In such states, citizens take ownership of the development agenda and are willing to contribute their talents and skills. For policies to do what they are intended to do, a change in the relationship between policy text and policy enactment is needed. However, change is not swift, but complex and slow, and it does not always achieve the desired result and impact because of procedural complexities regarding implementation. Although the process of implementation is complex, the awareness of this complexity by all actors is essential for achieving the policy aim. This awareness may further lead to appreciation of fluidity and non-linearity of policy implementation and how often socio-economic, political and global

factors interrelate to determine the direction of the process—which call for effective dialogue and consideration amongst all stakeholders.

The questions emerging from the literature review at this stage are: can the multiple interpretations of policy text and conflict over policy intentions be minimised or avoided if both actors (policymakers and policy implementers) effectively collaborate in the development of the policy from the outset? Furthermore, as the literature is explicit that policy formulation is a complex, often unpredictable and political process, if the process is infused with the involvement and participation of policy implementers would it lead to shared ownership of the policy and shared responsibility in the failure or success of the policy implementation? What about prioritising the value placed on collaboration between actors in the process of policy formulation so as to gain ownership and common understanding among policy stakeholders of the policy goals and intended purpose?

2.3 Technology Culture

Technology culture entails the mandates given to technology implementers by various policies, and in the context of this study, some of these mandates are discussed in the next section. The mandates include creativity, pedagogy, and transformation, which I will discuss after briefly reviewing technology and technology policymaking in the context of the study.

2.3.1 Technology and Technology Policymaking

Technology, as mentioned elsewhere in this thesis, refers to extending human capabilities and problem solving through knowledge application, tools, and skills (Smith, 1994: p.2). Information and communication technology (ICT) is a term for all hardware (machines) and software (applications) (Gillespie, 2006: p.2). In education, ICT might mean personal computers, digital cameras and video cameras, image scanners, printers and faxes, smartphones, hand-held computers, interactive whiteboards, calculators, the internet, Microsoft Office packages, Geometer's Sketchpad, school information management systems, and the list goes on. Buckingham (2007) adds, "The pencil and the chalkboard

are technologies just as much as the computer, the video camera or the latest mobile communication device.” This observation by Buckingham appeals to my view on the overarching dilemma about the claims surrounding the potential of ICT use in education.

ICT is purported to influence youth empowerment that will render the skills and preferences of the older generation obsolete (Tapscott, 1998). However, in my view, such claims are made because we have not been able to fully convince one another of the ‘real’ motive for the infiltration and proliferation of ICTs into schools and classrooms. Buckingham (2007) concurs that economic motives rather than education may be the reason for the massive investment in educational technologies by governments and nation-states. However, whether to use technology in education and classrooms and which technologies to use (and why and how to use them) have policy implications. Any policy of the kind that seeks to address this dilemma will be more effective if all actors are effectively involved in defining what constitutes ‘technology’ in their particular context and by reaching an agreement about what such technologies might help them achieve. This is what I will call ‘the what’s’, ‘the whys’ and ‘the how’s’ of technology use in education.

As said earlier, in the absence of such an agreed commonality of definition and purpose, we may just hide behind the cover of globalisation to adopt policies on a wholesale basis irrespective of our specific needs. For example, Tapscott (1998: p.40) argued, “for his kids using the new technology is as natural as breathing ... technology is the means of their empowerment, and it will ultimately lead to a generational explosion.” The concern is about what kids are using the technology for, as well as the aims of using the technology. The purpose of using technology at home may not necessarily be the same as for educational use. Therefore, while Tapscott’s claim could be accepted to some extent at an informal educational level and is close to some of the thinking in the discourse of ICT for education policymaking, Buckingham and Willett (2006: p.7) were right to say that such claims “lack scholarly caution and qualification, and the evidence on which they are based is unrepresentative and often anecdotal”. As I mentioned earlier in this thesis, there are

contributors (Bauer & Kenton, 2005; Flanagan & Jacobsen, 2003) who believe that there is a place for effective use of ICT in educational settings to enhance students' learning and teachers' teaching. However, Gillespie (2006: p.2) observed that though there is evidence to support the motivational benefit of ICT use in teaching; the same could not be said of students' attainment in any subject and at any level, therefore the need to acknowledge the existing gap between the possible benefits and the actual benefits of ICT use. Bridging and closing this gap, in my opinion, should be the centre of any policy aimed at revamping educational technology provision to aid teaching and learning. Also important is to clearly identify why ICT integration is necessary or beneficial and for whom the integration is needed and carried out. This 'why' and 'whom' should inform the 'what' and 'how' of ICT integration. ICT integration may even require a revamp of existing school curricula and training of personnel, which could be the beginning of an ICTED policy formulation dialogue with the involvement of implementers. Technology should not be provided for its own sake but for a well-defined and agreed purpose of integration.

However, technological proliferation is not static and "investing in technology for education is of an unprecedented complexity and magnitude" (Wright, 2000: p.12), which is, as a result of the rapid and frequent changes in educational systems and processes, mostly motivated by commercialism and globalisation everywhere both in developed and developing nations. In this context, policymakers perhaps should see the education and development aspect of technology as a base for exploring the ways in which technology can play a part in promoting and sustaining constructive and manageable change in education and development. Here, technology may be seen as a tool to serve human purposes rather than as an end in itself. According to Wright (2000), the effect of technology on human society supersedes its intrinsic attributes and potentials since technology is always a means to an end, never an end in itself (p.13). There is nothing inherently valuable about technology since it acquires value to the extent that it proves useful for and beneficial to human purposes. The value that is assigned to a piece of technology emanates from what humans profess it to be, without which it is valueless. The elimination of the human factor from technological integration will make it

worthless, and acquired educational technologies that cannot be integrated into the curriculum and used effectively are worthless. It is humans who make technologies work and not otherwise.

Consequently, it is paramount that in discussing technology for education, our primary concern and starting point should be that of human purpose: *the whats* and *the whys* of technology use, which should underpin any policy formulation and implementation. Such policy should recognise that critically, the technology that is required for education (and for that matter schools) is not necessarily the latest or the most sophisticated but the most appropriate for the purpose. Therefore, there is no linearity in the narratives of technological evolution but a series of cyclic loops that are constantly in motion and moving mainly in a forward direction (Wright, 2000: p.14). The implication is that the latest technology is not always the best, and those who do not keep up with the trends may not necessarily lose out in the development process. The existence of effective policy is important, but according to Wright (2000), discussions with policymakers in various countries suggest that while investments are being made in some form of technology for education, the underlying rationale, policy objectives and strategic plan are not always very clear (p.15). Hence, I agree with Selwyn (2011b: p.5), who said, “educational technology is simply not ‘performing’ as well as it could in formal educational settings” and that “academic discussion of educational technology is in urgent need of an overhaul.” In doing the overhaul, we need to consider education technology policymaking and its role.

2.3.1.1 **Technology Policymaking**

Since policies set the directions, provide the necessary framework, and determine the specific outcomes, I believe that implementation rather than the direction should determine the outcome. Having the end in mind is part of the implementation stage. Therefore, in making a technology policy of any kind, but more specifically in the context of this thesis, implementation and intended outcome(s) should be the core and the pivot around which the policy should rotate. Inadequate political support for technology in schools in the form of self and commercial interest when integrating technology into schools does not

help in formulating meaningful policies to that effect. As Selwyn (2011b: p.11) acknowledged, “the use of digital technology in school is influenced by a variety of stakeholders and interests long before it enters the classroom setting,” and technology policymaking in advanced and less developed countries is only successful in “increasing the physical presence of computer hardware and software in schools, but perhaps failed to achieve the transformation of teaching and learning, schools and schooling” (ibid: 12). Selwyn observed that there is a particular disconnect between education policymaking and technology-based practice. Conversely, other scholars have criticised national school technology policies for lacking consideration of the realities of the classroom—arguing that such policymaking has often lacked an “ethos that values ICT for classroom practice” (Younie, 2006: p.400, as cited in Selwyn, 2011b: p.15). A dichotomy may be created between ‘the who’ and ‘the how’ of policy production.

The claim could be that such policies lack rationality and consensus between intended implementers and the policymakers in the policy production. ‘The who’ and ‘the how’ of technology policymaking need to be identified and well defined to give clear meaning to the policy objectives and aims. Gale (2003) suggests,

Traditional representations of the democratic process, in which policy is produced through mutual agreement while authority to produce it is invested in elected representatives (often supported by technical expertise) – consigning all else and others to the domains of implementation and consumption – are both theoretically naive and politically abhorrent. (p.220)

Consequently, dwelling on *the who* of policymaking enables one to name the inherent underlying values and the technical expertise required of all people in the processes and serves as a legitimate basis for policy’s authority (Lummis, 1996), “whereas drawing attention to the ‘how’ of policymaking challenges not only the premises of rationality in policymaking but also how particular individuals and groups are involved in various contexts as policymakers” (Gale, 2003). I later argue that educational technology policies are unsuccessful and will fail when the thin line between ‘the who’ and ‘the how’ of

the policymaking has not been aligned for achieving the desired goals. The involvement of policy implementers to achieve commonality of understanding (*commonality capital*) from the beginning of policy formulation will enhance the thin line needed later at the implementation stage.

Unfortunately, the nature of educational technology policymaking, according to Selwyn (2011a), is said to be fundamentally a 'top-down' process. As a result, critics have long bemoaned the government-sponsored 'dumping' of hardware into schools, which conveys the sense that digital technologies have tended to be 'inserted into' rather than 'integrated with' school cultures and practices. These policies are also said to "lack an ability to meet local needs of specific schools and teachers who may be operating in very different conditions" (Younie, 2006: p.399). Selwyn (2011b: p.4) further observed that factors for apparent rejection of technologies such as interactive whiteboards use in schools include government policy requirements to insert an interactive whiteboard in every school regardless of demand. Because of such policies, schools are found in situations of 'making do' and 'getting by', which, according to Selwyn (2011b) sums up the 'messy' realities of digital technology use in twenty-first century school systems.

A call to look beyond the apparent 'clash' between schools and technology was made by Selwyn (2011b). The use of the word 'clash' was attributed to Larry Cuban, who said: "digital technology meets classroom—classroom wins" (Cuban, 1986). According to Selwyn (2011b), while digital technology appears to be "an integral part of education provision," the reality is that it remains a marginalised aspect of the day-to-day milieu of contemporary schools and schooling. Looking at technology and schools with the opposing lenses have resulted in an 'unhelpful blame game'. Selwyn affirmed that teachers, schools, and policymakers are often cast as fundamentally lacking the necessary digital disposition and understanding required to make effective use of technology. These criticisms are used to portray "teachers as outmoded, obstructive or ignorant" (Green & Hannon, 2007, as cited in Selwyn, 2011b). These criticisms in turn transfer a set of 'dangerous moral imperatives' (Convery, 2009: p.30) onto teachers and schools to adapt and modify their pedagogy and culture in

line with the affordance of digital technology. Selwyn (2011a) invites commentators to give serious thought to “the social relations that surround the use of digital technologies in schools” (p.4). In this case, the social relation(s) that surrounds Ghana’s ICT in education policy formulation and implementation (the meaning assigned to the policy text) is central to this thesis. The social relations are fundamental to the roles that technology policies aim to achieve.

Nevertheless, educational technology policy matters inasmuch as it sets the “rules of engagement” and “whose games we play” (Considine, 2005: p.2), although it does not necessarily set out how the game is played or for what purpose. Education technology policies seek to both direct and influence the nature of digital technology use in schools but lack “homogenous and predictable effects” (Selwyn, 2011b: p.60). One of the influential, although usually unintended, aspects of policymaking is its role in shaping wider understanding and expectations of education—with states using education policies to play an important legitimising and normalising role. However, the implementation may require policy implementers to be equipped with the needed skills and knowledge to effectively participate in the policymaking process; thus, effective implementation of policy is jointly and collaboratively made and enacted. Teachers need to be equipped to take ownership of self-learning and self-development in areas of policy formulation and technology use for teaching and learning. Teachers need to be at the forefront of policy initiative and

focus[ed] on mastering the business of planning and managing the settings and the processes through which learning takes place; concerned about promoting and strengthening active self-learning, rather than passive acquisition of knowledge and information; feared to promote the supporting of professional self-development efforts on a systematic and sustained basis; committed to the appropriate use of technology as an aid to teaching and learning; dedicated to reflecting on their practice and seeking constant improvements; and willing to try out a range of technologies that may be relevant to improving the learning process. (Wright, 2000: p.113)

In this way, teachers are empowered to take control of the content and text elements of education technology policy should be in their particular circumstances. Technology policymaking is to be “what is done with teachers—the policy implementers—and not what is done for them,” which seems an important step in making such policies meaningful and relevant. To this end, it could be argued that if digital technology has not been introduced into school systems primarily for educational reasons, then it cannot be expected to be used in educationally effective ways (Selwyn, 2011b). Policymakers may not have developed such policies and initiatives with purely ‘educational’ intentions in mind, so schools’ technology policymaking could be seen as an ideological concept for which the internal contractions and complications serve “to mask the social, political and economic agendas it is used to propagate” (Selwyn, 2008).

As said elsewhere by other researchers (Selwyn, 2011a and Wright, 2000), educational technology should serve human purposes and enhance the business of education and schooling: teaching and learning. This purpose is what Wright (2000) called “old rationale” for investing in technology for education, which he claimed was mainly for improving pedagogical skills and renewed emphasis on technology as an aid to support learning through teaching. Additionally, a “new rationale” has come up for technology investment in education with the aim of dealing with the more complex and fundamental issues (Wright, 2000 p.117). However, why invest in ICT in education at the national level at all? How does this investment relate to the core business of education? Moreover, what is the core business of education? If it is teaching and learning, then any investment in education and schooling should be directed to enhancing the teaching, learning, and experience of stakeholders. An educated mind will inadvertently be in a position to “deal with more ... complex issues” (ibid: p.119), and it could be argued that if the focus is on the ‘new rationale’ (ibid: p.117), then schools and nation-states may miss out and policy statements may be irrelevant to the people who are to implement them. Finally, education policymaking should be seen as significant for how it is interpreted and re-enacted, as much as for how and why it is initially produced. Approaching schools’ technology policy from a

'performative' (Selwyn, 2011a) point of view by ensuring the impact of the technology policy use is evident at the point of implementation is important; therefore, one needs to travel with the policies to some of the places where they have settled and taken effect.

2.3.2 Pedagogy and Learning Mandate of Technology

Research on the use of ICT in learning has shown that its use is not a panacea for problems in education provisions, and the potential of ICT should not be overplayed (Green, 2002). Teaching and learning in education are supported by 'aids', which are largely the extensions and enhancements of the basic face-to-face method of teaching. In the view of Wright (2000), technology as a tool and aid supplements the fundamental process of pedagogical practice and the process of engaging the minds of students, as well as creating avenues for them to explore and create (Wright, 2000: p.102). According to Wright, this process involves the provisions of information and modelling expectations from students in the learning process: questioning, demonstration, task performance, and illustration and explanation of principles and concepts (ibid: p.103). At the centre of all these processes is the teacher; hence, the best of aids cannot be a substitute for a good teacher. The teacher is an expert at promoting and facilitating learning by making the most intensive and systematic use of pedagogy.

What then is pedagogy? Knowles (1990) notes that the term derived from the ancient Greek word *paidagogos*, which refers to the slaves who led children to school. Pedagogy is defined as the "art or science of teaching" (Beethan & Sharpe, 2007: p.1). The pedagogy of United Kingdom Universities is said to embrace an essential dialogue between teaching and learning, two terms that have come to be understood as being opposition to one another. In extreme cases, the term 'teaching' is seen as denying the active nature of learning and the unique capacities to learn of an individual (Alexander, 2008). However, a case to reinstate 'learning' as the central concern of pedagogy could be made, with the underlying argument that undue emphasis had been placed on the content of what was taught that, as a result, led to rigid and unhelpful ways of

instructing (Beethan & Sharpe, 2007). According to (Beethan & Sharpe, 2007) a new emphasis on the individual capacities and needs of learners is now happening. Learners are seen as 'citizens' in the process of learning and not tourists in the acquisition of knowledge and skills (ibid: 2). Pedagogy, therefore, seems more about what is done with the learners rather than what is done to them in the process of inculcating and imparting needed knowledge and skills.

This idea obviously relates to a socio-cultural constructivist view of imparting and acquiring skills, which De Lisi, writing in O'Donnell (2006), sees as one of the bases for most modern work on using technology to scaffold learning in schools and colleges. Some of the main ideas espoused by De Lisi follow:

Constructivism: students are active learners; cultural tools and artefacts play a formative role in learning processes... and modern technology is an important example of a cultural tool that can be used to support learning in both scaffolding and co-constructing relationships. (O' Donnell, 2006: p.16)

However, the benefit of technology used as a tool to enhance the learning of students has been the subject of controversy and uncertainty, which Selwyn (2011b) referred to as "messy realities." Student motivation has been heralded as one of the benefits of using ICT for teaching and learning but receives less explicit attention in socio-cultural constructivist approaches. This lack may be due to the assumption that students are active, intrinsically motivated learners rather than passive learners who need extrinsic motivation. According to De Lisi, motivation cannot necessarily be assumed and may require specific attention in various learning contexts (O'Donnell, 2006: p.17).

From the perspective of the constructivist, learning can be considered a dynamic process of knowledge construction. Knowledge can be regarded as a composition of many *chunks* of information that have been given meaning in complex networked relationships. A knowledge network can be viewed as a dynamic construct and ever-changing due to internal and external stimuli (Beethan & Sharpe, 2007). The complex network relationship can be atomised to the collaborative learning experience provided to students in their

classrooms. In this collaboration, students are given the opportunity to engage in information searching and critical discussion of questions and provide answers and have the chance to make proposals and suggestions as to the direction of their learning (ibid: 327). It is this active engagement with the learning process in a collaborative environment that makes knowledge and skill acquisition emergent. Collaboration is more effective when participants are actively involved in making the needed decision with the freedom to amend such decisions when the need arises. Pedagogy, as well as referring to the activities of learning and teaching, are also about how we think, talk about, plan, and structure those activities when we are not engaged in them. Pedagogy, therefore, involves ways of knowing as well as ways of doing. Most importantly, pedagogy seems concerned with how we understand a practice, and how we apply that understanding in practice.

Policies could play a part in defining and enhancing such practices through collaboration and interaction between various actors in the policy development process. Such policies and strategies could be those relating to the use of ICT for improving pedagogical practice. However, policies and strategies relating to the use of technology for improving pedagogy and the quality of teaching and learning in education should not only support the good teachers but also help to change less effective teaching by supporting implementers to take ownership of them and how and for what they are used. The decision regarding the introduction of any ICT (into the learning space overseen by the teacher) should be made and owned by the teacher, which implies an urgent need for self-development on the part of the teacher (Wright, 2000: p.103). In fact, the development of quality teachers also demands an effective policy, which should underpin any development agenda of every country, including developed countries like the United Kingdom and the United States.

Therefore, the move to use ICTs in the classroom should be viewed in relation to their effect on the training of teachers and their pedagogical skills, the nature and structure of the curriculum, and how judiciously school funds are utilised to derive the best value for money. On the other hand, the implications may be subtle since the claim that greater use of ICTs for teaching and learning may

result in “digital divides” (Chapman et al., 2004), unequal (yet unintended) access to ICT as a learning tool, which may have the potential of jeopardising the country’s commitment to equitable distribution of wealth and resources. Another pedagogical challenge is that even if access is broadened, the question raised is who is controlling the teaching and learning content associated with the ICTs.

Successful ICT use in schools perhaps depends on to a greater extent the existence of an enabling environment and a political will coupled with a policy that is supportive. According to Lei et al. (2005), policy can help emphasise important factors, increase interactions, and create a supportive environment for technology integration. Lei also indicated “teachers are the major influence on how students use technologies” (ibid: p.6). The tenet of good policy, in my opinion, is that policymakers can advocate specific interventions and clearly communicate anticipated impacts (UNESCO, 2004). Some claim that only as government and gatekeepers in education comprehend and come to terms with the enormity and complexity of the nature of the problems now facing education in its pedagogical adoption of ICTs and come to terms with the implementation of intended solutions can any meaningful progress be made in making ICT relevant to the core business of education (Chapman & Austin, 2002) and to the development agenda of countries such as Ghana. This calls for collaboration between the macro- (central government) and micro-level (school) actors in identifying actions that need undertaking and anticipation of their wider consequences.

However, Buckingham (2007) observed that schools have a pedagogical regime underpinned by the testing of decontextualized skills knowledge, which is different from the culture of children outside school, where they are motivated and inspired to assume the role of active participants who individually work through a complex multimodal media environment. Therefore, what I will call a ‘pedagogy-technological dichotomy’ (disconnect between technology use in school and home use of technology) exists between how students use the technology outside of schools and how the school wants them to use it. Outside the school environment, students have

the freedom to try technology through playing games and connecting with friends on social media while in school, students are restricted in the use of the same technologies. Such restrictions, as observed through my professional practice, include a ban on using calculators on mobile phones during mathematics lessons, cameras on phones during media lessons, and social media and internet on tablets and phones for research. One thing that Buckingham (2007) acknowledged with regard to this is the “view that the opportunities available in students’ leisure time to use technology are wide and varied (which is not necessarily the case in Ghana) but narrowly defined, unimaginative and uninstrumental in their use in the classroom” (ibid: p.74). In contrast, individual teachers use technology in innovative ways, he added, keeping the transformative power of the tools in mind. However, what constitutes transformative use of technology and what is transformation?

2.3.3 Technology and Transformation

Digital technologies introduce a distinctively ‘individualised’ way of doing things in everyday life (Selwyn, 201a: p.21). In my opinion, the ‘individualised’ way of doing things could be at the personal (micro), institutional (meso), and societal, national or global (macro) level. At each level, technology (as with any pedagogical tools) connects individuals in diverse ways. Selwyn (ibid: p.21), collaborating with Negroponte (1995: p.237–238), are the claims of digital technologies becoming a natural force of bringing people together to create greater harmony in the world. The implication is that technology becomes a central point in attracting individuals and societies to one another. However, this implication sounds simplistic in that the personification of technologies as a natural force bringing the world harmoniously together ignores the claim that technology is not an end in itself but a means to an end.

Digitalisation has led many people to assume that education is becoming the leading sector of the economy where technology will bring the changes and improvements needed. One of the claims about technology as a transformational and change agent in education is that it is seen to have a pivotal capacity to change many aspects of education if used in a particular

way. Selwyn (2011b) called this the 'internal imperatives' of digital technology use within educational settings. In addition, according to Selwyn (ibid: p.22), the internal imperatives are complemented by an 'external imperative', which is the act of societal digitisation and its correlation with the increased use of technology in education. The claim here could be that the use of technology is engineered and motivated by society and in a way, defines how technology is used. I agree with Selwyn in asking the question, "Why do we need digital technology in education?" (ibid: p.22). On this point of ICT bringing about a transformation of teaching and learning, Fisher et al. (2006) argued that the term 'transformation' is

modern educational change vis-à-vis changes involving new technologies and 'education for the information society' [and] suggests fundamental changes to structures for learning and teaching but the evidence is little more than the same thing being done somewhat differently. (Fisher et al., 2006)

At this point, one might ask if 'change' means the same thing as 'transformation'? Does change mean doing the same thing somewhat differently?

In discussing this, Fisher et al. (2006) reiterated that the meaning of 'transformation' goes beyond mere 'change' and connotes changing "completely; radically; profoundly; fundamentally; out of all recognition; [and] having undergone a metamorphosis." This implies that the use of the term may also carry a contextual meaning, which one needs to be aware of, especially when such terms are used in policy documents. The use of 'transformation' may mean one thing to governments and policymakers and another to the policy implementers (the teachers). Teachers are unclear about the rationale for ICT in the curriculum (Watson, 1997). According to Fisher et al. (2006), Deryn Watson called this 'dichotomy of purpose'. This confusion over purpose regenerates confusion over implementation. The 'transformation agenda' is unclear. The 'policy text' is blurred in its purpose, and as Hargreaves (2003) voiced, policymakers seem comfortable with 'transformation' but are unsure about its meaning, which can go beyond continuing improvement and in the

language of policy transformation implies something more than incremental change—something more than ‘the same but different’.

Clearly, when an issue occurs regarding the meaning of policy content at the level of implementation as the result of a term(s) used, the question of ownership comes up. Who owns the policy? One could argue that if the ownership rests with the interpreter of the policy who also assumes the role of implementer, then policy dichotomy of purpose will have been eradicated or remedied, and profound and radical change and improvements that ICT initiatives envisaged emerge. Are there lessons to be learned from countries that have adopted the top-down approach in their transformational strategy with ICT?

2.3.4 Section Summary

This section interrogates the technology culture that policies are mandated to policy implementers within the context of this study. Technology is situated within the study as extending human capabilities and problem-solving through knowledge application, tools and skills, while ICT is a term for all the hardware and software in addition to Buckingham (2007) viewing pencil and chalkboard as technologies just as much as a computer or the latest cable communication device. However, the educational use of technology is the centre of an enormous array of inflated rhetoric with a claim of its potential to bring about youth empowerment to the extent that the skills and preferences of the older generations will be made obsolete. This claim links an economic reason rather an educational reason as the ‘real’ motive for the infiltration and proliferation of ICTs into schools and classrooms by governments. At the core are the key concerns of why and how to use the technologies introduced into the education sector and the policy implications therein. Context matters, so is the view of all actors in defining what constitutes technology in their particular context and by reaching an understanding of what such technologies might help them achieve in answering the dilemma often associated with ‘the what’s’, ‘the why’s’ and ‘the how’s’ of technology use in education will be minimised and create a sense of ownership among policy implementers. However, there is the potential of

hiding behind the cover of the globalisation hype and commercialisation of technology use in education to adopt technology policies on a wholesale basis from the global space, irrespective of local and national specific needs.

Technology use in education is said to have the potential to transform students' learning and teachers' teaching, but the literature is clear that such claims cannot be made of ICT use contributing to students' attainment in any subject at any level and there is need for policy actors to be aware of this gap between the possible benefits and actual benefits of ICT use in education (which can be achieved through effective collaboration between policy actors). Whilst investments are being made in some form of technology for education, the underlying rationale, policy objectives, and goals or intentions are not always clear; education technology as Selwyn (2011b p.5) has said 'is simply not performing as well as it could in the formal educational settings, and that academic discussion of educational technology is in urgent need of an overhaul.' Essentially, therefore, the intention to close the gap between possible benefits and actual benefits of ICT use should be the pivot around which ICT for education policy rotates and critically 'the why' and 'for whom' of ICT use in education should be at the centre of the 'what' and the 'how' of ICT integration in education and could be the fundamental consideration for actors' engagement in policy formulation dialogue from the outset.

Key concerns are that technology use in education is influenced by a variety of stakeholders and interests long before they are introduced into the classroom, which is underpinned by the disconnect between education policy-making and technology based practice. As a result, national school technology policies at times lack consideration for the realities of the classroom with policy-making deviating from the ethos of ICT for classroom practice values. There is a yet another dichotomy between what policymakers intend and what policy implementers actually need – the dichotomy of 'the who' and 'the how' on one side and 'the what' and 'the why' on the other. One reason for this dichotomy is the "top-down" process of educational technology policy-making, in particular, that has been linked to promoting the insertion of technologies into school culture rather than integrating them. This often lacks the ability to meet

the contextual demands of specific schools and teachers who may be operating in very different conditions and context—the pedagogical requirements of the school context may be different. Social relations within which such policies are formulated and implementation thereafter are essential considerations for pedagogical use of ICT and related technology policy-making that is done with the teachers (policy implementers) rather than doing it for them. Otherwise, the policy intention, the transformative agenda of ICT use is unclear and the policy text is blurry in its purpose. This dichotomy of purpose is linked to the question of policy ownership and how the status of policy ownership can be attained as a prerequisite for effective implementation.

2.4 Development Culture

As mentioned earlier, Ghana sees the introduction of ICTs into the fabric of society as the key to unlocking the developmental challenges facing the nation-state. The fundamental reason for the formulation of the ICT4AD policy of Ghana is to map out those developmental issues and propose solutions that demand the use of ICT. The developmental culture of Ghana defines the related developmental challenges facing the country, as well as the sectors or segments therein that are affected and the solutions that lie therein for Ghana to mature into an ‘intelligent country’. Some of these challenges relevant to the study are discussed in the next section.

2.4.1 Developmental Challenges Facing Ghana

The *Integrated ICT-Led Socio-Economic Development Policy and Plan Development Framework for Ghana* (PDF4G) identified a number of socio-economic, critical development challenges that Ghana claimed to be experiencing. Some of the challenges, which are relevant to the present discussion, are

- Youthful demographic characteristics of the population
- Rapid population growth and low per capita income

- Low professional and managerial manpower base
- Underdeveloped and poor infrastructure

(Republic of Ghana; 2003a in Institute of Statistical, Social and Economic Research [ISSER], 2014).

2.4.1.1 Youth Demographic Characteristics of the Population

According to the Republic of Ghana (2012) population census of 2010, Ghana's population includes 61.7% of youth, with the population projected to double over the next approximately 28 years if the current annual inter-censal growth rate of 2.5% is maintained. This, nevertheless, puts pressure on the country's socio-economic development and presents the challenge of turning the youth into developmental assets. However, even turning the youthful population into a developmental asset is a challenge of its own in the form of high social capital expenditure, which involves training and making education accessible to all, as well as effective by improving the quality of teaching and learning in all pre-tertiary institutions (Republic of Ghana, 2008) and, I will add, in tertiary institutions. The need for a skilled and well-resourced youthful and energetic population is paramount to Ghana achieving its developmental agenda. Therefore, capitalising on the opportunities provided by being a youthful population, in my opinion, is 'not negotiable'. Cautious and calculated efforts must be made by policymakers to ensure that other social amenities such as health and housing are accessible, as well as provisions for educational amenities and infrastructure. In contrast, if Ghana is unable to effectively harness the opportunities provided by the youthful population and turn them into assets, then in the near future, they will be 'a liability' in the form of joblessness and social vices, which the country will have to deal with. Therefore, redirecting the energy of the youth through effective education and training in the light of the growing population poses a challenge to Ghana's socio-economic developmental agenda.

2.4.1.2 Rapid Population Growth and Low Per Capita Income

The second developmental challenge facing Ghana is the rate at which the population is growing and the rate at which per capita income is rising. As

mentioned earlier, the rate of Ghana's population growth, which has been "constant at 2.5% since the 2000 population census," means that by 2020 Ghana's population could reach 30 million and rise to 37 million by 2028 (Republic of Ghana, 2012). This population growth rate, nonetheless, is a challenge if adequate measures are not in place to meet the proportionate social challenges that could arise. The growing population, which is predominantly young, will need more schools, housing, and jobs, and the elderly will need more care facilities and health-related provisions. Typically, the 30.4% population growth recorded in 2010 over the 2000 census (ibid: p.2) is alarming and could impact per capita income and further aggravate the poverty level of the population. According to the World Bank (2011), the country needs to improve efficiency by digitalising key services for the growing population, which in my view also poses a challenge. Therefore, it seems that Ghana is in a 'no win' situation, but I contend that with the currently consented efforts on the part of policymakers, some of which are already showing an impact (e.g., in gaining a 110% rise in primary school enrolment and reaching the lower-middle-income benchmark in 2012 [Republic of Ghana, 2012]), the future of Ghana's socio-economic development is bright only if the developmental challenges posed by the rapid population growth are effectively identified and minimised, if not completely addressed.

2.4.1.3 Low Professional and Managerial Manpower

Further to the challenge of a youthful population and rapid population growth is the low level or small pool of professional and managerial manpower in the Ghanaian population. This challenge is twofold. First, there are Ghanaian professionals and managers who had migrated outside the country (e.g., the 2010 population census indicates that 16.7% of Ghanaian emigrants in Europe were gainfully employed [Republic of Ghana, 2012]); second, the Ghanaian educational system does not seem to produce the number of professionals and managers needed for efficient service delivery. Moreover, the perception of ICT employers regarding Ghana's educational system is that it "does not produce critical minds and people who can take responsibility, particularly for project management and implementation in the ICT field" (World Bank, 2011) and "turn Ghana into a medium-income country" (Republic of Ghana: ICT4AD,

2003b). Coupled with the perception of ICT employers is the fact that 25.9% of Ghanaians 15 years and older are not literate, though the literacy rate increased from 54.1% in 2000 to 71.5% in 2010, as indicated by the 2010 population census (ibid: p.7). This significant increase in the literacy rate will not have any proportionate impact on the professional population if their skills are not relevant to the developmental needs of the country. PDF4G mentioned the need for doctors, engineers, accountants, lawyers, ICT experts, researchers, and scientists. However, the census data of 2010 show that of the economically active population aged 15 and older, 41.3% are engaged in skilled agriculture, fishery, and forestry while about 21% are involved in services and sales, and the remaining 15.2% are craft and trade workers (ibid: 9). Generally, 86% of the economically active population 15 years and older are engaged in the private informal sector, while the private sector has 7% and the public-sector accounts for 6% (ibid: 10).

A related challenge is the prevalence of a top-down approach in the implementation of policies and projects. The World Bank highlights this in its *Ghana Study* by indicating that “the top-down approach where the government is both the gatekeeper and implementer... is not a recipe for getting things done” (2011), and I will add, done properly and effectively for the betterment of all rather than a few. Therefore, the challenge facing the country in its socio-economic agenda is to improve access to tertiary education and equip graduates with employable skills and strategic leadership acumen to contribute to infrastructure planning, development, and management of the country.

2.4.1.4 Underdeveloped and Poor Infrastructure

Finally, the underdevelopment of physical infrastructure, including poor and limited communication infrastructure, poses a unique socio-economic development challenge to the nation-state of Ghana. The country, until the last two decades, had suffered from unstable government and military rule. As a result, social amenities such as roads, schools, hospitals, universities, and communication facilities suffered setbacks. Even as recently as March 2010, for example, the Ministry of Education in its *Policy Framework for the Deployment of ICTs in Education* also identified factors such as very poor

infrastructure, inadequate installation of ICT, lack of electricity, and no telephone connectivity in rural villages and towns as barriers to effective implementation (Republic of Ghana, 2010). Even the ICTED coordinator of Ghana reiterated these challenges during my initial pilot study of Ghana in June 2011.

However, like many parts of Africa, Ghana is said to be making tremendous progress in ICT infrastructure development, especially in urban areas, but the “ICT revolution in Ghana has left behind the Internet and computing” (Mangesi, 2007). The cost of internet access is also comparatively high and unaffordable for the majority of Ghanaians in the urban areas where Internet penetration is 5.3 as compared to 10.2 in Kenya and 11 in Uganda (World Bank, 2011). Consequently, the improvement, enhancement, development, and modernization of infrastructure to support the ICT4AD agenda of Ghana, and in so doing realise her ambition of “becoming the business platform of West Africa as Kenya is to East Africa” (ibid: p.25), must be a priority and approached through collaboration with all stakeholders.

According to the PDF4G, the socio-economic development challenges as discussed above may be worsened by “globalisation and information age” discourses that had penetrated the fabric of Ghana policymaking and political dialogue. This is a challenge because aside from “Ghana lacking ICT leadership... culture is the hardest thing to change” (ibid: 27) among individuals and collectively as a country. Ghanaians generally seem comfortable doing things the way they have always done: following the status quo, especially if it seems to be passed down to or imposed. Perhaps there is a need to change this mindset through education and training in ICT and science if Ghana is to be on the same footing as other countries like Malaysia, with whom they often compare themselves. Therefore, it can be said that Ghana sees ICT as the answer to the socio-economic development challenges and is making frantic efforts to turn the challenges into assets for development. The education sector has been assigned a unique role in producing the needed manpower of global quality, which also assumes that the education

sector itself already has the requisite capacity and the needed manpower to deliver on the mandate.

2.4.2 ICT as a Panacea to Ghana's Development Challenges

There is strong optimism among politicians and policymakers in Ghana regarding the potential of ICT and the knowledge to help Ghana achieve her developmental agenda. There is optimism regarding graduates in Ghana being equipped with the requisite skills and knowledge to enhance their functionality not only in Ghana but globally. There is hope that

ICTs can be a key factor for achieving progress in economic and social development in Ghana. The information and knowledge-based economy could generate opportunities across all sectors within the Ghanaian economy. And it can be a new source for the creation of quality jobs, wealth generation and redistribution, rapid economic development and prosperity as well as a source for facilitating the global competitiveness of Ghana. (Republic of Ghana, 2003a)

Therefore, the hope of Ghana for ICT to unlock the developmental doors of the country is ambiguous. The youthful population challenges of unemployment and pressure on the social services of health, education, and housing may be addressed when ICT and knowledge are embedded and implemented in education, health, agriculture, and other public sectors in Ghana. Also, hope of income and welfare equality among Ghanaians is present, as well as the desire to be competitive and entrench their ambition of being the gateway and future of Africa with ICT. Though the use of ICT as a source of facilitating this global competitive agenda may require a paradigm shift in the attitude and culture of Ghanaians, a collective responsibility on the part of policymakers and implementers in aligning the ownership of the agenda *vis-à-vis political identity and political orientation* may be the catalyst to have policies implemented according to the intended purpose and goal. As I have said earlier, there is need to be a distinction between the national development agenda and partisan development agendas so that a change in government will not mean a change in the development agenda of the country. Continuity of national development projects from one government to another is key in

achieving the global competitiveness that Ghana hopes to achieve through the creative use of ICT by her graduates.

The role of human agency cannot be undermined in successfully using ICT for social and economic development since ICTs are integrated into existing social activities and arrangements (May, 2002), which implies that there should be a conducive environment for the implementation process to be embedded in the activities to achieve the desired outcome. Therefore, the ICT policies of Ghana could be the key to unlocking the socio-economic development of the country if they are underpinned by shared *commonality capital* between policymakers and implementers. Moreover, on the ICTED policy of Ghana, I agree with Ball et al.:

Policymaking in education has some additional complexities. It is concerned primarily with children and young people, so has an orientation to the future that brings out many people's ideals and also their anxieties. (Ball et al., 2012: p.43)

The ideals and anxieties of policymakers and implementers when held in common from the onset of policy formulation may enhance effective implementation at the end and may help countries such as Ghana achieve their developmental aims with ICT. This may seem simple but in practice is challenging as "any educational reform is a political enterprise" (ibid: 42). However, as mentioned earlier, the separation between *political orientation* and *political identity* in policy formulation and implementation is key in attaining leverage within the *orientation* and *identity* necessary for creating a national front and not a partisan tendency toward policy implementation.

However, ICT policies and not implementation, in my opinion, are seen as the main strategies for addressing the socio-economic developmental challenges as discussed earlier. For example, to address the challenge of 61% of the population being youthful (and turning these youths into developmental assets), the PDF4G document listed a number of policy initiatives as shown in Appendix A.

In response, the Ministry of Education (MoE) of Ghana in 2008 launched its *ICT in Education Policy* (ICTED), and in March 2010, as mentioned earlier, the *Policy Framework for the Deployment of ICTs in Education* was published. These two documents reinforced the ICT4AD policy goal:

To enable graduates from Ghana educational institutions – formal and non-formal – to confidently and effectively use ICT as tools and resources to develop the requisite skills and knowledge needed to be active participants in the global knowledge economy by 2015. (ICT4AD, 2003, as cited in the Ghana Ministry of Education, 2008: p.13)

Will Ghana be able to achieve this goal by 2015? If policies per se can solve the developmental challenges of Ghana, then I can optimistically acclaim that Ghana will have already reached the pinnacle of its developmental agenda. However, implementing agencies have not been able to coordinate and consolidate the various ICT activities and initiatives needed to accelerate the development of the country (Mangesi, 2007: p.8). Again, why is this the case? Is it because they were not involved in the policy formulation, or not clearly informed about policy intent and goals? Table 2.1 shows other factors that are said to be weighing against the successful adoption of ICT as planned by the government of Ghana.

Table 2.1 Factors influencing ICT adoption in relation to enabling features and constraints

Factors	Enabling Features	Constraints
Policy framework and implementation	Both the national and the proposed educational sector policies provide clear strategies for achieving significant growth in ICTs and education.	Coordination among the various implementing agencies has not been as good and consolidation of activity is needed.
Advocacy leadership	The president has placed human resources development as part of his key objects and all sector ministries and departments within the education sector have been advocates.	There is a need for adequate resources to match the talk.
Gender equity	Both national and education policies focus on promoting gender equity.	The perception that science courses are for boys can hinder policy objectives.
Infrastructure and access	Progress has been made in these areas within many tertiary and secondary schools equipped with computer laboratories.	The primary sector is still behind in access to infrastructure, especially in rural areas.
Collaborating mechanisms	With increasing support by major donors and the private sector, there is hope for meeting policy objectives.	Sustainability remains an issue.
Fiscal resources	Highest percentage of national budget continues to be allocated to education.	
Learning content		No structured ICT in school content is available.
Procurement regulations	A policy that encourages the setting up and sourcing of ICT equipment on the local market is emphasised.	
Attitudes	Positive attitudes with high levels of government involvement	Lower expectations of ICT at the school level among administrators.
Sustainability		Inability of certain schools to charge the mandatory ICT levy.

Source: ICT in education. In: Ghana, Ghana Country Report (Mangesi, 2007: p.9)

Table 2.1 highlights the main factors that facilitate and weighed against the educational integration of ICTs in Ghana. In terms of attitude towards the

integration of ICT, according to Mangesi (2007:9), is positive at high governmental levels, but my question is why the ICT is used by school leaders and administrators less than expected, and why is coordination among implementing agencies not as good as it should be? Is it because the implementing agencies were not effectively involved in the development of the policies, or is it due to the dichotomy of the comprehension of the tenets of the policies between the policymakers and implementers? The backdrop for my questions is born out of curiosity in the claim that at the presidential and ministerial levels, there is general “commitment to improving the quality of education through ICTs” (ibid: p.10). Mangesi further added that

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. Also, there is a lack of adequate collaboration between the Ministry of Education and the Ghana Education Service or other implementation agencies such as ministries, departments and agencies. (Mangesi, 2007)

Again, why is the ability of teachers and educators in implementing the policy low, and why are they averse to its adoption in the classroom? A common view is that effective use of ICTs in the classroom requires the acquisition of new skills and knowledge and a pedagogical shift on the part of the teachers regarding the nature of dialogue and discussion with students and time spent on preparing lessons (Hernes, 2002; UNESCO, 2002). Consequently, I agree with Fullan that teachers sometimes resist not because the *claimed* educational benefits of ICT are ambiguous but because they are not motivated to undertake the increased workload, do not understand what the expectations are, or do not know how to cope with new demands imposed by technology and the values relating the individualisation of practices and action underpinning educational technologies (Fullan, 2001; Selwyn, 2014:127).

The ICTED for Ghana could be viewed from the perspective of Cuban (2001):

In seeking to achieve the purposes of ICT in schools, techno-promoters across the board assumed that increased availability in the classroom would lead to increased use. Increased use, they further assumed, would lead to efficient teaching and better learning which, in turn, would yield able graduates who can compete in the workplace. (p.18)

This assumption was made explicit in 2000 by the then U.S. President, Bill Clinton:

Frankly, all the computers and software and Internet connections in the world won't do much good if young people don't understand that access to new technology means... access to the new economy. (Seipel, 2000)

The hope of producing able graduates from the formal and non-formal sectors who have got the requisite skills and tools for the new (knowledge) economy, and who are able to compete in it, implies the need for the right culture and strategy. Perhaps the strategy to pass on to the graduate could be the ability to use ICT to bring about transformation and change, which in my view requires a focus on a new practice in line with the educational vision of the country and a need for policy change in favour of the strategy for technology use and innovation. Although a top-down approach may be preferred in Ghana's policy formulation, there could be a call to embrace a bottom-up model of policy design, emanating from practitioners, to ensure a sustainable culture of change, transformation, and development. In my view, ICT policy, pedagogical use of technology, transformation, and development are cyclically connected. This is shown in Figure 2.2:

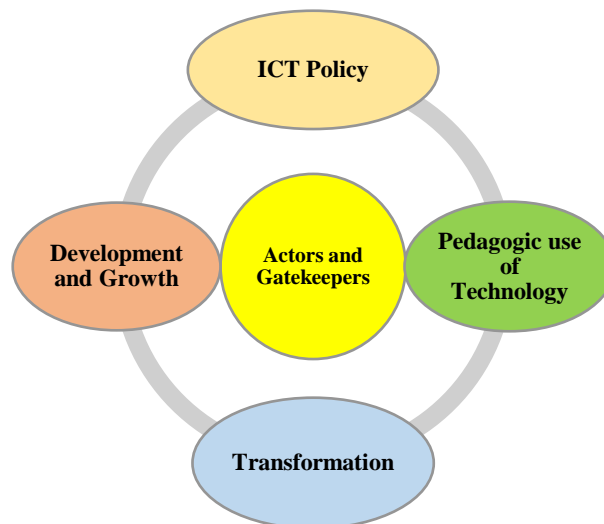


Figure 2.2 Perceived Ghana ICT Policy relations.

Transformation demands the desire to experiment with initiatives and new ideas, which may lead to success or failure. However, if transformation is regarded as a dynamic and ongoing procedure and not a static practice, then even setbacks could be seen as steps toward achieving transformation. Perhaps creativity could be said to be emanating out of this, and creativity could lead to transformation and hence, development and growth. On the other hand, failing to create consequentially produces outdated systems that provide irrelevant experience to the citizenry. Growth and development could be thwarted. Moreover, in the educational system, learners may be provided with skills and knowledge that do not match the needs of the nation state even before talking about global economy. Therefore,

learners of all ages need the chance to use ICT well to support their learning. In some cases, this learning is an investment for the future, in others it is more informal, but importantly it can lead to greater productivity and prosperity, personal fulfilment, and a stronger community and fairer society. (BECTA, 2008)

Again, the teacher is the main actor in creating the enabling environment for learning, whether with technology or not. However, it is suggested that when teachers adopt technological innovation, it is to typically “maintain rather than alter existing classroom practices” (Meham, 1989; Schofield, 1995). However, it is argued that within the constrained context in which teachers find

themselves as gatekeepers to their classrooms, they act on their belief in choosing what ICT to endorse, reject, or modify (Cuban, 2001: p.170). To this end, I will argue that teachers as gatekeepers have a significant responsibility to decide which ICTs are integrated into the secondary schools and curriculum of Ghana with the hope of benefitting from the acclaimed transformative power of ICTs. However, my position in this thesis is to investigate what ICTs are like in Ghanaian secondary schools but with the understanding that it is not ICT equipment that will make graduates innovative; rather, they must be innovative to be able to use the ICTs for the intended purpose. Yet, innovative use of ICTs within the context of ICT4AD and ICTED policies of Ghana may involve risk-taking and failing forward, with likely underlying factors that are either enablers or hindrances, which this thesis now seeks to explore.

2.4.3 Section Summary

In this section, the focus has been on reviewing Ghana's view of the power of ICT as a tool for unlocking the developmental challenges facing the country as has been captured in the Integrated ICT-Led Socio-Economic Development texts and the intention of ICT4AD policy as the panacea to the developmental issues and the solutions proposed therein that demand the use of ICT. The Integrated ICT-Led Socio-Economic Development Policy and Plan Development Framework for Ghana highlighted the development of human capital, social capital, economic capital and political capital through the use of ICT in education with the intention to solve four main developmental challenges of (1) youth demographic characteristics of Ghana's population that stands at about 62% of youth as at 2010 population census, (2) rapid population growth at a constant rate of 2.5% since 2000 with the population estimated to reach the 30 million mark by 2020, thereby aggravating the issue of low per capital income, (3) low professional and managerial manpower base of Ghana's economy and (4) underdeveloped and poor infrastructure. By using ICT in education, the youth population is to be transformed into developmental assets which then requires high social capital expenditure—training and improving the quality of education, especially at the pre-tertiary education institutions, and making such education accessible to all. Ghana is to digitalise

key services to ensure efficiency in service delivery to boost socio-economic development in the face of low level and a small pool of professional and managerial manpower. Ghana, through ICT policy initiatives, is demonstrating the intention to implement the social change agenda of creating new breeds of doctors, engineers, accountants, lawyers, ICT experts, researchers and scientists needed for the socio-economic transformation.

Concurrently, Ghana is bedevilled with the social challenges of underdeveloped infrastructure and the Ministry of Education's Policy Framework for the Deployment of ICTs in Education (2010) highlighted a very poor infrastructure base, inadequate installation of ICT, lack of electricity, and no telephone connectivity in rural suburbs and towns as critical issues facing the socio-economic transformative agenda. Although urban areas seemed to be making tremendous progress in embracing the ICT revolution, there is a concern that the Internet and computing are being left behind due to comparatively unaffordable high costs of installation and related top-down decision-making and policy drive to improve ICT use across the socio-economic development spectrum. Within the context of technology determinism, ICTs can be a key factor for achieving progress in economic and social development in Ghana but it needs policymakers' recognition of the human agency requirement for successful use of ICT and integration into existing social activities for socio-economic development. This also requires existence of an environment conducive to the implementation process to be embedded into the existing social structure for the desired outcomes. Policymakers and policy implementers need to collaborate to deal with the additional complexities that policy-making in education, for example, brings.

The ICT4AD and the ICTED policies are fundamental to the intentions of how Ghana sees policy as an instrument for social change and its role in bringing about the country's socio-economic development. Such an agenda requires not only a collaborative effort from all social partners and stakeholders to make it a reality but also huge education and social reforms, which are political enterprises in themselves. The collaboration between policymakers of Ghana and policy implementers needs to be done within the separation between

political orientation and political identity of each actor during the policy formulation and implementation process so as to leverage the creation of a national front and not a partisan one towards implementation and enhancement of social change for development. The actors and the gatekeepers need to be aware of the intentions of ICT policies be they for pedagogic use, for transformation, or for development of the educational system and its experts—the teacher has a key role.

2.5 Chapter Summary

The chapter examined the literature for three identified cultures of policy, technology and development within the context of the study that seeks to evaluate the anatomy of ICT policy for education and development implementation. Policies are not an end in themselves, but a means to an end and carry with them intentions and goals that must be realised through effective implementation. Policy formulation and effective implementation are subjects of contestation and the policy documents are domains of multiple interpretation and reinterpretation. Policies are top-down instructions to a social space to be implemented by individuals who rarely have been engaged in the formulation process. As it is the case with policy culture, technology use in education and for development and ,the hype around ICTs' usefulness in transforming specific terrain of social relations thereby enhancing the human, economic, social and political capitals of the specific space of function, is a top-down imposition necessitated by globalisation and commercialisation. Two dichotomies then emerged: the gap between policymakers' intentions and interests of specific policy text and that of implementers; and the policy motive of introducing ICTs into the school system and the actual motive for which ICTs are to be integrated into the school system—the dichotomies of purpose.

In addition, policy ownership and the complexity of the process of achieving policy ownership is both a social and political consideration that policy actors need to embrace and value. However, there is the tendency to hide behind globalisation and the influence of travelling and embedded policies to impose technology and developmental policies from the global space onto the local;

with the outcome of such policies not being owned by the local experts and professionals—the policy implementers and thereby not implemented. Whereas the value of a policy lies in its implementation, the prerequisite for effective implementation in the context of Ghana lies in its ownership by the implementers, which can be achieved through policymakers' engagement with policy implementers from the outset. As mentioned earlier, social relations within which such policies are formulated and implementation thereafter are essential considerations for pedagogical use of ICT and related technology policymaking that is done with the teachers (policy implementers) rather than done for them. Otherwise, the policy intention—the transformative agenda of ICT use—is unclear and the policy text that carries the intention and the agenda is also blurry in its purpose. The dichotomies of purpose are linked to the question of policy ownership and how the status of policy ownership can be attained as a prerequisite for effective implementation.

Policies per se are not an end in themselves but a means to an end—and so are ICTs. There is the element of the human factor in both which must be identified and utilised at the right time, in the right context and in the right quantity, so as to create the space needed for policy to be nurtured, grown and to achieve the intended purpose. The transformative power of technology that policies carry is nothing in itself unless implementers make it happen, which is rarely the case due to the dichotomy of purpose emanating from non-engagement of implementers in policy engineering. Essentially and within the context of this study, policy as a living organism is an embodiment of goals, plans, legislative instruments and acceptable procedures and actions necessary to achieving the macro-level goals intended to correct development and growth-related inadequacies within institutions at micro and macro-levels, whereas the effectiveness of the policy and the value therein depend on achieving the intended goals.

This characteristic of policies also carries with it the critical roles that policies can play in bringing about changes in social relations for good and for development, if well implemented for the right purpose and with the right intentions. The why, how and what of policy engineering and implementation

should be fundamental consideration at the outset of any policy development dialogue. I will therefore argue that educational technology policies are unsuccessful and will fail when the thin line between 'the who' and 'the how' of the policy-making has not been aligned for achieving the desired goals. The alliance between policymakers and policy implementers to achieve common good, intent and purpose from the beginning of policy formulation will enhance the thin line between policy implementation success and failure and the need to garner policy ownership as an essentiality at the implementation stage.

Chapter 3 Research Methodology

3.1 Introduction

This chapter focuses on the overall methodological approach of the thesis and comprises nine sections, each focusing on a distinct methodological strategy and concern. Methodology in the context of this research is the whole research approach to the phenomenon being studied (Silverman, 2000: p.79), and the methods chosen are the specific techniques that support that methodology (Mason, 1996: p.19). Mason argues that one's choice of methods should reflect an overall research strategy as one's methodology shapes which methods are used and how each method is used. In doing this, the aims of the research should be borne in mind. Therefore, grounded theory methodology (GMT) and discourse analysis are considered appropriate for the thesis. So, discourse analysis within the framework of Charmaz's (2006) model of Grounded Theory are used for the study. The combination of these two approaches reflects the complexity of the issues that the research seeks to investigate and allows for the robustness of the data collection and analysis.

The methodological overview provided in the chapter also includes an elaboration of the rationale for the methodology and strategies used to ensure the validity and reliability of data collection and research findings. The first part highlights key findings from pilot study, briefly reiterated the research questions formulated in Chapter 1, and situate them within the methodological discussion. The second part considers a detailed discussion of GTM as a data collection and analysis strategy and its appropriateness as a method within the context of the thesis in addition to exploring the general methodology of discourse analysis.

3.1.1 Pilot Study

Early in the life of the study, I conducted a pilot to test my research instrument in the field to determine its relevance for the purpose of the study. The aim of the pilot study was to find the level of contribution the study could make to knowledge about technology policy formulation and implementation in

developing countries regarding ICT use for development and education. The findings from the pilot indicated whether I needed to refine my methodology and the research questions. The pilot study was performed over three days from May 30 – June 2 in 2011. My initial intention was to evaluate the promise and realities of ICT policy implementation. I wanted to find out how the implementation of the ICT4AD and ICTED policy objectives is reflected in the pattern of practice in Ghanaian secondary school classrooms. However, one of the biggest lessons learned from the preliminary data of the pilot study necessitated a change of focus for the study because there was a clear disconnect between what the literature discussed and the actualities of the field.

From the outset of the study, Ball's view of conceptualising policy as a 'text' and as a 'discourse' (Ball, 1993: p.10) was central to my thinking about the questions and direction of this study. My intention was to explore the meaning of (or meanings attached to) policy text by policy implementers and how such understanding is translated into the implementation of the policy according to the formulated intention(s). I have raised these questions:

- (a) Whose policy, is it?
- (b) What are the 'whats', the 'whys', and the 'hows' of the policy?
- (c) If both actors (policy makers and policy implementers) effectively collaborated at the onset on the formulation of the policy, would this minimise the misinterpretation and conflict surrounding the interpretation of the policy text and intent?
- (d) Should the globalisation paradigm instead of the cultural and social perspective of Ghana underpin the formulation of policies?
and,
- (e) Is the understanding of policy elements similar or different at each stage or for each stakeholder (policymakers and practitioners), and if not, why not?

Ultimately, I posed the following questions:

1. As constructed in the ICT4AD policy document, what does it mean to use ICT creatively?

2. As per the ICT4AD document, what are the 'requisite skills' and 'requisite knowledge' that need developing?
3. What is the meaning of the term 'global knowledge economy', and what does it mean to 'actively participate in the global knowledge economy'?

A total of five respondents were interviewed during the pilot study, which was made up of three policymakers (two from the Ministry of Education and one from the Ghana Education Service headquarters) and two policy implementers (one ICT coordinator and one head teacher, both from one of the ICTED policy implementation pilot secondary schools). I have also examined secondary data from the Associated Schools Project Network (ASPnet). The findings from the pilot generally centred on the ICT policy landscape – indication that ICT4AD and ICTED policies are more centralised than decentralised, ICT integration practices – that integration of ICT into teaching and learning are not widespread but concentrated in few advantaged schools, and challenges – availability of appropriate software and hardware, infrastructure including laboratories and electricity.

For this reason, my research questions were revisited and reframed after the pilot study when I had a comprehensive understanding of the field of policy formulation and implementation in general in Ghana and those relating to ICT specifically.

3.1.2 Research Questions

As stated in Chapter 1, the primary research questions necessitating the current study specifically looked at ICTs in Ghanaian secondary schools and whether the ICTED and ICT4AD education policy objectives, as stated earlier in Chapter 1, had been effectively implemented; and if not, why not? And if so, how?

The main questions, therefore, are

1. What factors contributed to or hindered the successful implementation of the policy objective of ICT4AD and ICTED?

2. From teachers' and policymakers' perspectives, how successful is the implementation of the ICTED and ICT4AD policies in Ghanaian secondary schools?
3. To what extent do Ghanaian secondary schools believe they own the ICTED and ICT4AD policies?

These questions lend themselves to the use of a combination of methods. As Yin (2014: p.10) states, if research questions focus on 'what', 'how', and 'why' questions, exploratory and/or explanatory methods may be used. Further, I am also looking at a contemporary event specifically relating to Ghana over which I have no control. As indicated by the title of this thesis, the study examines the anatomy of Ghana's ICT Policies for development and education implementation. I set out to investigate the status of Information Communication Technologies in Education (ICTED) and Information Communication Technologies for Accelerated Development (ICT4AD) education policy objectives within secondary schools in Ghana for which GTM seems the appropriate methodology. Further, as per the objective of this study — the implementation of the objectives of the ICT4AD and ICTED policies of Ghana the extent of their implementation and success or not — supports my methodological approach to gathering evidence from multiple sources through distinct methods leading to theory building and generalisation.

My adopted approach requires that I systematically pursue the data collection around the phenomenon of the implementation of the ICT4AD and ICTED policies. The approach requires the researcher to take small step towards a grand generalisation, which is why, in my view, it implies taking a deliberate systematic inquiry approach to unveiling the theory underpinning a phenomenon is relevant Campbell (1975). Similarly, within Bassey's (1999) position on "theory seeking" and "evaluative" investigation in education, the objective of the study relates the ability to be able to produce results that are good and convincing enough to support what is called a 'fuzzy generalisation', defined as a "statement which makes no absolute claim to knowledge, but hedges its claim with uncertainties" (ibid: p.12). Acknowledging Bassey's position on the "theory seeking" role of research in education and its function of producing good results is appropriate for the research focus of my thesis.

The context of this thesis relates to the success-hindrance discourse and implementation of the ICT4AD and ICTED policies of Ghana on the one hand. On the other hand, the context relates to teachers' perspectives, the implementation of the policies, and the extent to which teachers claim ownership of the policies. This thesis aims to contribute to the debate on the implementation of the ICTED and ICT4AD policies of Ghana by generating a theory to enhance stakeholders' comprehension of the key enablers of and drivers for effective ICT policy implementation. As contained in the ICTED and ICT4AD policies of Ghana, the thesis illuminates the interplay between the national development agenda and the burden on the educational sector to deliver at the micro, meso, and macro levels. The investigation into the context of Ghana is designed to build a theory about the status of the policies implementation—what the ICT4AD and ICTED implementation is like in the secondary schools of Ghana—and to explore the hopes of policymakers and policy implementers regarding the benefits of integrating ICT into their day-to-day practices on the one hand and the reality that policymakers and policy implementers face in their day-to-day practices on the other. I am using the grounded theory approach because it gives me the flexibility, focus, and tools to get started with my research, stay involved in the research, and successfully finish the research by generating theory grounded in the data analysis itself.

For now, it is relevant to state that in situating a theory generation approach within the research design, I am with Yin (2009: p.35 in Cohen et al., 2011: p.294) when he argued that “theory generation should be included in the research design phase..., as this assists in focusing the study” Additionally, some of the respondents for the data collection are individuals with whom I have interacted in my professional network regarding issues connected to this study but have not yet used an in-depth approach to study their situation. I therefore feel that using the GTM will bridge that gap and enable me as Cohen and Manion (1989) have positioned it, relates to:

the typicality of a researcher observing the characteristics of an individual unit, child, a clique, a school or a community. The purpose of such observation is to probe deeply and to analyse intensively the multifarious phenomena that constitute the life

cycle of the unit with a view to establishing generalisations about the wider population to which the unit belongs (p.124–125).

Moreover, the GMT has the potential of enabling me to produce and use data that is authentic and the emerged theory may be directly put into practice (ibid. 1989: p.150), which corroborates my plan to use the outcome of my research as a tool to influence practice in Ghana and, therefore, gives an added boost to the use of the approach in relation to the research questions.

3.1.3 Research Framework

The overall research framework provides the methods for gathering the necessary data for answering the research questions. After carefully considering the research aim, the setting for the research, and the findings from the pilot study, I decided to use a mixed method research framework using qualitative and quantitative approaches. Mittler (1985), in a review of research methods in education, affirmed that methods are often used in combination by researchers. In addition, a combined-methods work is not that new, appearing in the work of Campbell and Fiske (1959), for example. Furthermore, it is beneficial to combine both methods since the debate over both has never been settled, and the dichotomy between the two has been well argued by Hammersley (1992) as discussed by Scott and Usher (2011). Then, Teddlie and Tashakkori (2003) claim that there have always been studies using mixed methods. Erzberger and Prein (1997) also traced combined-methods approaches in sociology to at least 1855. By combined methods, I mean the same thing as 'mixed methods research' (Teddlie & Tashakkori, 2003), sometimes referred to as 'multi-method' or 'integrated' research (Creswell, 2003).

Mixed methods are used, for example, when the phenomenon to be researched is "complex or when, for instance, the researcher wants to explore a question at the macro (e.g., the group) level as well as at the micro (e.g., individual) level...alternatively the researcher wants to explore different aspects of the same phenomenon" (Morse et al., 2009: p.13). In addition, "A mixed method design is a scientifically rigorous research project, driven by the

inductive or deductive theoretical drive, and comprised of a qualitative or quantitative core component with qualitative or quantitative supplementary component(s)” (ibid: 14). The core component of the research is a complete method used to address the research question, while the additional component is a methodological strategy different from the method used to extend the investigation. The supplementary component is said to be incomplete in itself and is regarded as complementary to the core component (ibid: 15). This incompleteness of the supplementary component, Morgan (2004) noted, could be the basis of the criticism of research lacking rigour, being unsound, weak, and the basis of rejecting findings. However, what the supplemental component does is complement the strength, rigour, and soundness of the core component by “providing answers of adequate quality, so that researchers may progress with their research with certainty” (ibid: 15).

Another reason advanced for mixed-methods research is that research claims are stronger when based on a variety of methods (NRC, 2002). In addition, mixed research often has greater impact because figures can be persuasive and stories are easily remembered. Mixed research also leads to less waste of potentially useful information (Gorard & Taylor, 2004). Consequently, in my research, I propose using both qualitative and quantitative approaches. Quantitative and qualitative methods are not merely tools for researchers to use as appropriate but are “nearly always more powerful when used in combination than in isolation” (Gorard & Taylor, 2004). The core component of the current research is the qualitative method, while the quantitative approach is the supplemental component meant to contribute to the study theoretically and enable me to provide a full explanation of the emerging themes and formulate a sound theory relating to *Commonality Capital* for the ICTED policy formulation, especially in developing countries.

Qualitative research offers numerous strategies of inquiry, yet there is little consensus as to how to classify these. Wolcott (2001), for instance, identifies 19 qualitative research strategies, while Tesch (1990) suggests 26. Creswell (1998), on the other hand, proposes only five approaches: biography, phenomenology, grounded theory, ethnography, and case studies. Despite

these differing perspectives, Miles & Huberman (1994:p.6) were of the view that qualitative research strategies share common features: they allow for multiple interpretations of data; they engage with a given 'field' or 'life situation' with the aim of achieving a holistic overview of the context; they seek "to capture data on the perceptions of the local actors 'from the inside'"; and they elucidate "the ways in which people in particular settings come to understand, account for, take action, and otherwise manage their day-to-day situations".

Finally, Yin (2012: p.11) argued that research evidence, regardless of its source, can include both qualitative and quantitative data that is systematically collected and presented in tables or narrative form, as I have done in this study. This approach implies getting data from the same as well as different sources. However, in gathering these types of data, I have constantly rechecked to ensure that there is consistency in the findings. For example, the findings from one policymaker during the data collection were checked against other policymakers and policy implementers. In the same way, findings from policy implementers in one setting were checked against those of other implementers in another setting. This approach as will be seen also aligned with my intention to generate theory from the data through a combination of exploratory and descriptive approaches was used for the research. I used the exploratory during the preliminary data collection from a pilot study, the results of which enabled me to reframe my research questions and formed the basis for the overall methodology and further data collection. Creswell (1994) says that to illustrate the descriptive model of the study, the descriptive method of research is used to gather information about the present existing condition. The purpose of employing this method is to describe the nature of the situation as it exists at the time of the study and to explore the causes of particular phenomena surrounding the situation. Descriptive research, according to Best (1977) and Best and Kahn (2006), is concerned with:

A condition or relationships that exist; practices that prevail; beliefs, points of view, or attitudes that are held; processes that are going on; effects that are being felt; or trends that are developing. At times, descriptive research is concerned with how what is or what exists is related to some preceding event that has influenced or affected a present condition or event (p.118)

A detailed and contextual discussion on grounded theory and discourse analysis follows.

3.2 Strategies of Inquiry

After carefully reviewing the strategies of inquiry and taking the research questions into consideration, I settled on the use of a qualitative strategy with a focus on Denzin and Lincoln's (1994: p.2, quoted in Bassegy, 1999:x) generic definition of qualitative research as multimethod in practice which uses interconnected methods that focus on the study of subject matter in its natural settings to get a better understanding and meaning of a phenomenon. In the context of this thesis, the implementation of the ICT4AD and ICTED policies of Ghana and the impact on practice in secondary schools is the subject matter and the phenomenon. Interviews and surveys were used to collect the data, and Charmaz' (2006) model of grounded theory methodology was used for the analysis. This methodology will be discussed further in subsequent sections.

3.2.1 Grounded Theory as a Research Methodology

Grounded theory is a research methodology (GTM) developed by Glaser and Strauss (1967). Glaser and Strauss (1967: p.1), the originators of grounded theory, defined it as a research methodology that facilitates "the discovery of theory from data". A new 'theory' is developed in grounded theory from empirical data, which means that "the researcher does not enter the research environment with predetermined hypotheses or a specific theoretical framework" (Cutcliffe, 2000). It is, therefore, a general methodology for developing theory that is grounded in data systematically gathered and analysed (Strauss & Corbin, 1994) and describes perfectly the intention of my research to generate theory about policy implementation by examining the implementation of the ICT4AD and ICTED policies in the context of Ghanaian secondary schools. This intention, as I have gathered during my pilot study, is needed in Ghana, and the policymakers that I have interviewed are optimistic about the outcome of the study to serve as a springboard and an essential reference for policy formulation and implementation in Ghana. The systematic collection of data that goes along with the analysis appealed to my strategy

and research question, which also motivated my choice of GTM. Ghana is vast and diverse, and it is, therefore, prudent to enter the field of research in such a setting with the view of collecting and comparing data until the point of saturation is reached rather than starting with a predetermined sample size. GTM is more suitable for this type of approach than other qualitative methods such as ethnography. Moreover, GMT encourages not only a systematic but also an inductive and comparative strategy of inquiry in theory construction (Charmaz, 2006; Charmaz & Henwood, 2007 as quoted in Bryant & Charmaz, 2013: p.1). As a result of the simultaneous interplay of data collection and analysis, theory develops and evolves during the research process and enhances the continuous engagement and interaction of the researcher with the data *pari passu* with the analysis. Thus, at the core of grounded theory is the generation of a theory consisting of a set of plausible relationships proposed among concepts and sets of concepts. However, grounded theory methodology, according to Bryant and Charmaz (2013: p.4), is a concept that is contested by Gallie's 1956 'essentially contested concept' and espoused by Bryant (2006), but argued for its values and contributions above the distractive nature of the contention. Therefore, there is a strong argument in favour of GTM.

3.2.1.1 Versions of Grounded Theory

As mentioned earlier, in their book *Discovery*, Glaser and Strauss opened the door to the flexible and varied use of GTM as Charmaz (2006) articulated: Glaser and Strauss "invited their readers to use grounded theory strategies flexibly in their own way". With this opened door, GTM has been at the centre of different interpretation and definition (Cutcliffe, 2000; Miller & Fredericks, 1999), which Glaser (1992) in particular found uncomfortable at the time of his split from Strauss in the 1990s. The split between Glaser and Strauss was also linked to their disagreement over GTM, with reference to the version of GTM proposed by Strauss and Corbin (1990). Glaser saw the 'axis coding' at the analytical stage of the theory development as forcing the data into preconceived categories and that it was contrary to the fundamental ideas of the original GTM (Charmaz, 2006; Walker & Myrick, 2006). Consequently, Glaser referred to their method as a "full conceptual description" (Glaser, 1992:

p.122) and declined to accept it as GTM. As quoted by Dunne (2008: p.62) in Glaser and Holton (2004) also proposed key differences about what constitutes GTM and outlined from their perspective the differences between GT and qualitative data analysis. Their argument was that those who do not recognise the differences as they have proposed are using the original GTM of 1967.

However, Strauss and Corbin (1990) took a stand to propose something different, taking full advantage of the flexibility of use as was originally proposed. What GTM offers is a set of principles, guidelines, and not prescriptions, which has taken away any form of rigidity and strict compliance to the original. The fact that the fathers of GTM had predicted multiple definitions, interpretations, and versions when they stated that “a child once launched is very much subject to a combination of its origins and the evolving contingencies of life; can it be otherwise with a methodology?” (Strauss & Corbin, 1994: p.83) opened the floodgates to the versions of GTM and should tacitly end the debate. Arguably, Dey (2004) espoused and advised that anyone attempting to use GTM needs to specify which version is being used because if one assumes that GTM is “a single, unified methodology, clearly specified and tightly defined ... then there is no such thing as grounded theory” (p.80). Therefore, there are versions of GTM, and the one that a researcher selects is dependent on research questions and aims. Initially, I was aiming to use the Glaser and Strauss (1967) version, but after careful reflection on the research questions and considering the flexibility that Charmaz’s version offers about systematic data collection and analysis, I have adopted the GTM proposed by Charmaz (2006). As quoted earlier, Charmaz explained,

Grounded theory methods consist of systematic, yet flexible guidelines for collecting and analysing qualitative data to construct theories grounded in the data themselves. The guidelines offer a set of general principles and heuristic devices rather than formulaic rules (Charmaz 2006, p.2).

The researcher therefore has the freedom that comes with Charmaz’s perspective, unlike Strauss and Corbin’s version, for example (which comes

with overt restriction on data analysis approaches), and not Glaser's version for its perspective on data collection methods and the use of existing literature. However, I agree with Gibson & Brown (2014) that there are weak and strong versions of the method and add that while Glaser and Strauss's (1967) view and Glaser's (1978) perspective represent the stronger version, other versions are weak. Nevertheless, at the core of my research, questions are these heuristic devices and the systematic but flexible data collection and analysis that is needed to construct theories. Therefore, the constructivist version of grounded theory of Charmaz, as mentioned above, is preferred to the strong version, or what I will call the 'strict version'. I will go on to discuss the form of GTM and its implementation, whether strict or flexible, below.

3.2.1.2 Tenets of Grounded Theory

This section explores the core aspects of GTM to establish the relationship between the versions of the method and will justify my choice of the constructivist version of GTM. The tenets of GTM have to do with "the openness of the grounded theory method, explanatory power, the difference between generation and justification, theory structure, and the research process", which are not isolated from each other but interconnected (Gibson & Brown, 2014: p.33).

The openness tenet of the grounded theory method was perhaps in reaction to the application of preconceived theories in other qualitative methods, which is opposite to GTM in which the researcher is to approach the study with an open mind and not with "preconceived concepts or ideas" (ibid: 33). For GMT, the premise is that concepts and hypotheses should emerge from the data and guided by the research questions; such questions are usually based on social units of analysis such as schools, classrooms, and hospitals. Again, this is not to say that individuals cannot be used in a grounded theory research. The Openness tenet, according to Gibson & Brown (2014), is one of the characteristics that distinguishes the stronger versions of GTM from the weaker ones:

The openness of grounded theory is designed to protect the theory-building process from becoming preconceived and forced. Grounded theory in its basic form just specifies a phenomenon and a location in which it exists and then begins to study that phenomenon. This does not mean that the researcher starts with no preconceptions (ibid: 34).

The phenomenon in this study is the status of ICT policy implementation in secondary schools in Ghana. It is rare to start a research project without ideas of some sort that need exploring, which Glaser and Strauss (1967: p.45) referred to as the “sociological perspective”. The “sociological perspective” they conceded, forms the basis of initial data collection underpinned by general subjects or problems for the purpose of theory building. The idea is to start with a framework that will then lead to questions that open in grounded theory to aid data collection and analysis. The data collected should also be used in its entirety with none discarded before the start of the analysis, which is an ongoing process. The implication here is not a call to start research from an empty head or not having preconceived notions but a call for not using a preconceived notion as having not a preconceived notion at the start of research can be impossible if not totally challenging because human brain is not a robot. The message is that the researcher should be well read and be well vested in the literature as this will help with discerning what is relevant and what is not.

For this study, I have carefully reviewed the existing literature on policy and technology in the context of the developed world, which has increased my understanding of the domain of policy and technology and made me more familiar with the current practice and issues. The critical review of the literature informed my preconceived ideas on the implementation of the ICT4AD and ICTED policies of Ghana and energised me to explore the field more to develop a theory in relation about the implementation of ICT policies in the context of less developed countries such as Ghana. My understanding of what has happened with the implementation of major ICT policies in countries like Singapore, the United States, and the United Kingdom has increased my interest in the case of Ghana. Additionally, my review of the literature earlier provided me with the advantage of finding what is relevant during the study.

Another advantage of having a preconceived notion is the awareness of 'theoretical sensitivity', which means that I was able to use different theoretical codes to identify what is happening in the field, which again, as Glaser and Strauss (1967: p.46) have iterated, meant that I needed to know the theoretical codes that are in the field. I got this through reviewing the existing literature, while at the same time ensuring that my notion does not contaminate the line-by-line coding of the data I have systematically collected from 10 secondary schools (3 secondary schools in phase 1, 2 in phase 2 and 5 in phase 3) across Ghana and policymakers behind the ICTED and ICT4AD, returning to the field during each phase through theoretical sampling until the point of saturation was reached.

3.2.2 Existing Literature and Grounded Theory

As mentioned earlier, the grounded theory method is not theoretically innocent, and the researcher generally commences the data collection exercise with some elements or level of perspective and an opinion relating to the field of study. The researcher may have read the literature to achieve a theoretical understanding of the field. This is one of the differing characteristics of Glaser's work and of Charmaz', and I will refer to the former as being 'conservative' regarding the literature review prior to data collection while Charmaz is 'liberal' regarding the pre-data collection literature review. Over the years, the place of the literature review has been problematic and misunderstood (Charmaz, 2014: p.306) as the conservative stance advocates that the review of existing literature is delayed until post-data analysis (Glaser & Strauss, 1967; Glaser, 1978). Charmaz (2006: p.165, 2014: p.306) reasoned that though Glaser and Strauss's stand is problematic, their intention is to avoid importing and imposing preconceived ideas onto the work and encourages articulating one's ideas. However, Charmaz was quick to add that while it is "fine in principle", "in practice it can result in rehashing old empirical problems and dismissing the literature (Charmaz, 2014: p.306).

Many scholars reject Glaser and Strauss's traditional stand and Glaser's astute position and adherence to it. According to Charmaz, Bulmer (1984), Dey

(1999), and Layder (1998) perceived Glaser and Strauss's pronouncement as being naïve and assumed that researchers are a *tabula rasa*, and Clarke (2005: p.13 referring to Elkins, 2003) opined, "there is something ludicrous about pretending to be a theoretical virgin". Further, many more grounded theorists such as Clarke (2005), Lempert (2007), Dunne (2011), and Thornberg (2011) have acknowledged that a lack of fluency with existing literature is indefensible and implausible. Thornberg (2011), for example, put forward a solid argument against discourse favouring delaying the literature review and pronounced what he called "informed grounded theory". Along with others such as Charmaz (2005), Dey (1999), and Kelle (2014), Thornberg (2011) opposes the idea of avoiding early engagement with extant theoretical literature and calls for an approach that assumes and necessitates taking a critical, reflective position. Also, prior engagement with the literature provides the argument and rationale for the study and ensures that I am not just starting anew (Chiovitti & Piran, 2003) but supports the conceptualization of the study (McCann & Clark, 2003); prior engagement also shows that the study is performed in relation to the phenomenon (Denzin, 2002) and above all to achieve theoretical sensitivity (Strauss & Corbin, 1998).

With all of the above arguments and from my personal perspective, I see the idea of starting any kind of research without a preconception and knowledge of some kind as unrealistic. In our interaction with others as social beings, what we watch and hear through the media, for example, affects our reasoning and perspective, which we bring into any research setting. It is also infeasible for a PhD candidate to delay early engagement with the extant literature (Nathaniel, 2006), and for the professional researcher, the requirement for a research or grant proposal will demand a sophisticated knowledge in the field, which necessitates early engagement with the literature (Charmaz, 2014: p.307). In any case, I am in agreement with the following:

The open-mindedness of the researcher should not be mistaken for the empty-mindedness of the researcher who is not adequately steeped in the research traditions of a discipline. It is, after all, not very clever to rediscover the wheel,

and the student or researcher who is ignorant of the relevant literature is always in danger of doing the equivalent (Coffey & Atkinson, 1996: p.157).

Amidst these disputes, the arguments in favour of the early literature review are compelling, and my reasons for doing so for this study are well articulated by Charmaz (2014: p.309), who states that a literature review provides a place to engage the ideas and research in the areas that [my] grounded theory addresses and provides the opportunity to fulfil the following objectives:

- To demonstrate my grasp of relevant work
- To prompt me to make explicit and compelling connections between my study and the earlier studies in the field of ICT policy in education and development and how they relate to the context of Ghana
- To permit me to make claims from my grounded theory

Furthermore, I used the literature review to analyse relevant works relating to my research problem, which backed up my developed grounded theory. In so doing, I have been able to enlist my conceptual argument in framing the literature, revealed gaps in the extant knowledge, and stated how grounded theory fills them; from this, I have been able to position my study in relation to original and significant contributions to the field of ICT policy for education and development implementation in the context of Ghana. Therefore, in the current study, though literature was reviewed, the engagement with the theoretical concepts that directly relate to the findings from the research was not done until after the chapter on the presentation of these findings.

3.2.3 The Research Questions and Choice of Method

The research questions and aims of the study informed my choice of the grounded theory method. Gibson & Brown (2014) advises that the research questions should be open and usually start with a unit of analysis, i.e. the setting, which can be a country or a group of people, and in this case Ghana, with a specific focus on national ICT policy implementation in secondary schools. Appealing to me as well were the explanatory power and openness of GTM and the desire to generate a useful and applicable theory grounded in

the data as these attributes relate to the implementation of the ICT4AD and ICTED policies of Ghana. The grounded theory method offers me, as Bryant & Charmaz (2013: p.79) put it, “an excellent tool for understanding invisible things” and for me to discover something useful from the hidden realities of ICT policy implementation in the Ghanaian context, which does not seem to be of much interest to researchers in and concerning Ghana. The reality is that our social structure and world are constructed and organised around the experiences and challenges of individuals and units within such structures, and our ability to conceptualise such organised experiences and problems is as important as understanding the social reality itself. In the context of this study, GTM offers, as discussed previously, the highest level of systematic interaction between me and research participants and, consequently, the data; as a result, the theory will fit into the experiences of the participants and the patterns of the social reality of ICT policy implementation in Ghana. The theory will be substantive and can be put to use.

I chose to use the grounded theory method for its flexibility with data collection and analysis, and it fits better with my research aims and purpose and enabled me, as stated by Coyne et al. (2006: p.501), “to develop theory that will explain the dominant process in the social area being investigated” and to “generate knowledge about the behavioural patterns of a group” (McCann & Clark, 2003: p.203).

3.2.4 Challenges of Using Grounded Theory

Preceding disputes portrayed grounded theory methodology as challenging and laborious, especially when it has to be with the deliberate effort to put aside previous ideas and conceptions pre-data collection and analysis to achieve a preconceived-, contamination-free grounded theory. The interactivity and constant comparison of the data as an attribute of grounded theory can also be demanding (Backman et al., 1999; Glaser, 1978, 1998, 1999) with its related challenge of collecting data sufficiently (Charmaz, 2006) for grounding a theory, but is said to offer both a methodological and theoretical fit between interaction and ethnography. Obviously, therefore, the challenge

this brought was whether to use an ethnographic method and/or the grounded theory method. I am convinced that using the latter allowed me with some level of confidence through coding to differentiate between “the noise and music in (*my*) data” (Bryant & Charmaz, 2013: p.496). The key for me in the context of this study was to be willing to accept the messy realities that various strategies and methods of inquiry bring and aim to derive concepts from the data collected and through systematic analysis pursue the next set of data to be collected. The approach was to have in mind the goal: the benefits that the completion of this study brings to the country of Ghana and the contribution it makes to knowledge.

Thus, as previously mentioned under ‘The Research Questions and Choice of Method’, and as can be deduced from the quote below, the benefits of using the grounded theory method far outweigh the challenges and limitations. According to Bryant and Charmaz (2013: p.496), grounded theory presents an analytical choreography with a deep immersion in data and then transcendence of this data to reach higher levels of abstraction. If performed well, the resulting dance emerges from lived experiences, actions, observations, and conversations while simultaneously engaging in conceptually dense and theoretically abstract writing. Grounded theory methodology contains pointers on where to find data, how to sharpen one’s observational sensibilities, and how to gradually make the steps from pages of jotted notes to the final manuscript. Grounded theory’s greatest benefit may well be that it forces researchers to become acquainted with their own data in order to decide which of the many painstakingly gathered materials can be safely put aside (Bryant & Charmaz 2013: p.496).

In facing up to the challenges of using grounded theory methodology, not only was I able to generate a theory but also, I have enhanced my research knowledge using grounded theory, my interpersonal skills, creativity in using survey data, and quantitative approach and data analysis, to mention but a few.

3.3 Research Procedure

The procedure used for setting up the study is outlined in this section. It focuses on the setting for the data collection, sampling techniques, and discussion on confidentiality and anonymity.

3.3.1 Selection of Data Setting

After careful deliberation and based on the findings from my pilot study during which I met with the country coordinator for the implementation of ICTED policy in Ghana, a head teacher and ICT coordinator of one of the ICT implementation initiative pilot schools, the deputy country coordinator of ICTED policy implementation, and the director of teaching resources at the Ghana Education Service headquarters in Accra, I had to make the decision to reframe my research questions so that they closely reflect the research aim and the desired methodology. This change in research questions had a significant implication for selecting my data site and sampling strategy, considering my ability to gain access to the potential participants. The final decision was made to focus on the chair of the committee who wrote the ICT4AD policy documents and the person who wrote the ICTED policy. Further, some of the schools mentioned by the policymakers as places where the implementation of the policy started were selected as data sites (as engaging all of them would require sizable financial and time resources). The decision not to select all the schools mentioned by the policymakers ensured regional balance between urban and non-urban settings in the data collection to achieve reliability. The caveat was to identify a research environment conducive for the study, and with an approval and letter of introduction from the headquarters of the Ghana Education Service, I was able to gain access to the data sites.

3.3.2 Preliminary Data Collection

The initial data involved telephone discussions with three of my previous colleagues who were still teaching in Ghana; two of them are senior teachers and the other is an assistant district director of education responsible for school

inspection. The findings from this initial discussion suggested the need for a study of this kind. The transformative power of ICT and how the introduction of ICT into the Ghanaian classrooms would make 'teaching easy' were mostly referenced. However, the journey to bring ICT into the school system remained unclear to my colleagues. These discussions were followed by my need for secondary data on the ICT landscape of Ghana. I found little to no valid and reliable information except for the ICT4AD policy document and the framework document for implementing the policy. Finally, I went into the field to engage with three policymakers at the Ghana Education Service (under the Ministry of Education) and two practitioners, including a head teacher, for a preliminary data collection and study. It is important to mention that the Minister of Education, who had agreed to meet with me, could not honour the appointment as she was "called out on an emergency" and rescheduling another face-to-face meeting was not possible as I had to travel back to the United Kingdom. A telephone meeting was arranged, but on the day of the meeting, the Minister was affected by a Cabinet reshuffle. I decided not to pursue this line of interview as the non-involvement of the minister may not have significantly affected the research findings.

The purpose of this initial data collection was to help me understand the setting for the research and to familiarise myself with the various stakeholders. It also enabled me to refocus the research in terms of questions and reaffirm my methodology.

3.3.3 Sampling Technique

As mentioned earlier, the population for the current study is the ICT4AD and ICTED policymakers of Ghana and teachers working in the 652 public and private SHSs and TVIs in Ghana. In terms of sampling, I have interviewed separately and at different times the chairpersons of the committees responsible for engineering the ICT4AD and ICTED policies respectively, while semi-structured interviews have been used involving five selected secondary schools from the Greater Accra, Ashanti, and Volta regions of Ghana. Also, a survey to get a general feel of teachers' perspectives from a wider group on

the matter under consideration was undertaken involving five schools selected from the Northern, Eastern, Western, and Central regions of Ghana. The schools are mostly suburban and rural. This means that out of the ten regions in Ghana, seven are represented in the study with at least one from the Southern, Northern, Eastern, Central and Western parts of Ghana.

The five schools involved in the interview were purposively selected. A deliberate sampling technique was used and achieved diversity in the interview and survey. I only ceased sampling when saturation occurred in the data collected. I personally have some knowledge about some of the schools, and my nephew and cousin who were once in education also assisted through their contacts with administering the survey in all the schools. In addition, the committee chairs have also helped in purposefully selecting the 'best' schools (in terms of their responsiveness and perception that they are engaged in ICT) to be in the study. Among the schools recommended on the basis of implementing the policy, the following were selected for the interview: *A-Girls'*, *O-Girls'*, and *K-Academy*, while *Anloga*, *A-Vocational* and *Bawku* were selected to complete the questionnaire. Table 3.1 summarises the sampling technique:

Table 3.1 Summary of Sample Technique

Strata	Number and Setting	Approach
Chairperson & Author of ICT4AD Policy	1	Semi-structured interview
Chairperson & Author of ICTED Policy	1	Semi-structure interview
Secondary School (policy implementers – teachers and school leaders)	5 schools from 3 regions of Ghana: Greater Accra (2 schools); Volta (2 Schools) and Ashanti (1 school)	Focus group interview: Greater Accra – 4 groups of 5 interviewees each Volta – 4 groups of 6, 3, 3 and 4 interviewees respectively Ashanti – 3 groups of 2, 7, and 5 interviewees respectively Formation of groups was done around the availability of the interviewees
Secondary School (policy implementers – teachers and school leaders)	5 schools from 4 regions of Ghana: Northern (1 school); Western (1 school); Eastern (1 school) and Central (2 schools – 1 TVI and 1 SHS)	Survey – Questionnaire administered: 3 respondents selected from each school as: Head teacher ICT Coordinator Teacher

I have used theoretical saturation as a way of structuring the sampling and interviewing process so that it can be iterative and developmental rather than completely fixed in advance. So, a combination of probability and non-probability sampling methods was used. As mentioned earlier, five secondary schools in Ghana were selected for the survey. Whilst surveys are rarely used in grounded theory research, the stage in my research when the survey was used did not take anything away from the method but robustly enhanced the data collected and achieved theoretical saturation. The selection of respondents for the survey was done purposively using the criteria of urban, suburban, rural, and pilot (ICT initiative) schools. The selection of the specific

respondents was informed by the patterns emerging from the data as they were being analysed concurrently with their collection. Three respondents made up of the head teacher, ICT Coordinator, and a teacher were selected from each of the five schools for the survey. The head teachers and ICT coordinators were selected using purposive sampling, of which the teacher was selected using a simple random sampling in order to select a representative of the teaching staff without bias. Policymakers (ICT4AD and ICTED committee chairpersons) were selected purposively. The sampling throughout is aimed at achieving diversity among the people interviewed.

3.3.4 Selecting Participants

The decision on who to include as research participants was initially problematic, purely because of the nature of the research. The decision was made to engage with people (as will be discussed later) who were knowledgeable in the field and have some involvement with policy decisions. In addition, practitioners who were also willing to be involved were selected for the interview. As a result, interviews at each setting included at least a member of the senior leadership team, middle leaders, and classroom teachers. The ICT coordinators at all the settings participated. With the exception of one school, respondents from each school generally were made up of the Head teacher or the Assistant Head teacher, ICT Coordinator, and all Heads of the departments (Mathematics, Science, Business Studies, Visual Arts, English, Humanities, and French). In one school, the departments were represented mostly by teachers as the head of departments delegated to individuals whom they thought were knowledgeable about the subject.

In terms of the policymakers, the initial decision was to include some of the committee members, but following outcome of the pilot study, I had to drop this and selected only the chairs of the committee, who were also the authors of the policies. It was going to prove difficult and expensive in terms of time and cost to engage other members of the committees. Another difficulty was getting the contacts of the committee members, as some of them either have retired or have changed jobs. Selecting participants for the survey was easier

as a purposive decision was made to include from each setting the head teacher/principal, the person responsible for ICT in the school, and a willing practitioner. What was achieved at the end was that every representative participant took part in this research, which further enhanced the validity of the findings and supports generalisations.

3.3.5 Key Ethical Considerations

Anonymity and confidentiality were key ethical considerations that I handled with rigour from the outset, securing all documentation and requests for ethical approval, informed consent, and non-disclosure of information. Ethics concerns the morality of human conduct. In relation to social research, it refers to the moral deliberation, choice and accountability on the part of researchers throughout the research process (Edwards & Mauthener, 2002: p.16 in King & Horrocks 2010: p.104, BERA, 2011). Such moral obligations as a researcher, centres on how I frame my questions, for example, and the impact such questions will have on my respondents. It is also the hallmark of confidentiality and consent that I need to get from the participants. Central to this is the respect that I have to accord my research participants, who have willingly and voluntarily participated in my research. There were two broad ethical concerns that informed my decision for this research. According to Reese and Fremouw (1984), three areas of ethical concern in scientific research are the ethics of data collection and analysis, the ethics of treatment of participants, and the ethics of responsibility to society. However, for the purpose of this study, the first two were of greater focus. As a first step in securing the ethics of data collection and analysis, ethics approval was obtained from the Institute of Education Ethics Committee and letters of introduction secured from my Supervisors (Appendix 2). A letter in support of collecting data from secondary schools in Ghana was also granted by the Ghana Education Service Directorate of the Ministry of Education (Appendix 3). I also had a Police Clearance Certificate (equivalent of a DBS in the United Kingdom) from the Ghana Police Service Headquarters. Other ethical considerations for the research included informed consent and non-disclosure of information, as discussed below.

In sum, the ethical considerations that guided my research are outlined by Willig (2001: p.18 and quoted in King & Horrocks, 2010: p.108):

1. Informed consent: The researcher should ensure that participants are fully informed about the research procedure and give their consent to participate in the research before data collection takes place.
2. No deception: Deception of participants should be avoided altogether. The only justification for deception is when there is no other way to answer the research question and the potential benefit of the research far exceeds any risk to participants.
3. Right to withdraw: The researcher should ensure that participants feel free to withdraw from participation in the study without fear of being penalised.
4. Debriefing: The researcher should ensure that, after data collection, participants are informed about the full aims of the research. Ideally, they should also have access to any publications arising from the study they took part in.
5. Confidentiality: The researcher should maintain complete confidentiality regarding any information about participants acquired during the research process.

One of the most important ethical steps that I had to take was attaining ethical clearance and approval from the Institute of Education Ethics Committee to conduct of this study.

3.3.5.1 Informed Consent

Before the start of the study, potential participants were given an information sheet explaining the aims and purpose of the study and the methods of data collection in which they would be required to participate. I have personally spoken to all participants during data collection interviews and given them the opportunity to ask for clarification (if any was needed) before signing the

consent form. They were also informed of the freedom to withdraw from the study at any time and that in the event of this, any provided information would be destroyed at their request.

3.3.5.2 Non-disclosure of Information

For the purpose of privacy and anonymity, it is important that individual participants were unidentifiable in this thesis, subsequent journal articles, and any presentations unless permitted. In the case of non-permission, any distinguishing information would be altered or deleted from the text. In addition, in order to enhance anonymity with the demographic data, the socio-demographic data collected in the survey were aggregated by grouping the respondents' ages into ranges. Unless permitted, the names of participating schools were altered to preserve anonymity. In addition, while interviewees at all the data collection sites consented for their full names to be used in the reports, I have opted to use pseudonyms to protect their identity and make it difficult for those within each site to recognise each other.

3.4 Data Collection

I have outlined in this section the methods of data collection used. The decision to combine interviews with surveys in a phased approach is also discussed. A phased approach of QUAL + QUAN, with a sequential quantitative supplementary component (Morse et al., 2009: p.25), was used in gathering evidence for the thesis. For ease of illustration, I have put the phases into three non-linear categories, all informed by the information emerging from the preceding data collected and analysed.

Phase 1: This phase comprised interviews with policymakers. The aim was to establish the rationale for the policies from their perspective and perception of the implementation of the policy to date in relation to the effectiveness factors and 2015 deadline.

Phase 2: This phase focused on interviews with practitioners. I endeavoured to find out what the practitioners' views were on ICTs in the school and their understanding of the interplay between the ICT provision in the school and

policy objectives underpinning such provisions. Their perspective on policy implementation factors were discussed and compared to that of policymakers. My plan to pursue the data collection through classroom observation of ICT use was not carried out as a result of the emerging data. ICTs are not generally being used in the schools and, therefore, delving into the possible reasons for non-use in the classroom is more relevant to the research aims. This does not in any way affect the validity and reliability of the data, as the decision was purely motivated by theoretical sensitivity and sampling. Semi-structured interviews were conducted in a focus group consisting mainly of practitioners from different geographical regions and settings.

Phase 3: The third phase was a survey of practitioners that explored the typicality of the understandings identified to this point relating to the secondary schools' ICTs and the underpinning policy implementation factors. The survey questionnaire was used to gather data from areas that were difficult to reach for interviews about their understanding of the patterns identified. In all, 15 practitioners from the five secondary schools participated. The purpose of the survey at this stage of the data collection was to confirm the extent to which practitioners held particular understandings regarding the ICT4AD and ICTED policies, to expand the scope of the research, to identify further patterns, and to compare findings to date so as to test the emerging theory. As a supplemental component, the questionnaire included a list of questions on themes arising from the policy, and for each of the themes, a list of the different ways in which the theme could be interpreted and generated from the interviews to date.

The use of the three phases ensured that I effectively contextualised the interview data and avoided self-reporting and improved the validity and reliability of the research findings.

3.4.1 Interview and Survey as Methods of Data Collection

As discussed above and informed by the research question and chosen method, I chose to use interviews and surveys as the primary data collection

tools knowing well the strengths and weaknesses of each. Combining them would address some of the weaknesses as previously discussed at length earlier in this chapter.

3.4.1.1 Interviews

Interviews are said to be the mainstays of qualitative research and are a central method of data collection (Savin-Baden & Major 2013: p.357). In addition to data collection, another purpose of using interviews is its potential to enable the researcher to gain in-depth information from interviewees (Wengraf, 2001 in *ibid*: p.358). The interviews for this research were conducted from two philosophical standpoints: a pragmatist stance, because I aimed to find some meaning in the interview, and a constructionist one, because I considered the interviews as an opportunity to construct and add to knowledge. These standpoints largely influenced the questions I asked during the interview and the selection of the participants.

A number of interviews were conducted with key actors associated with Ghana's ICT4AD and ICTED. These included individuals who played key roles in the formulation of the two policy documents. In selecting the policymakers, characteristics such as the "quality of a good informant" (Spradley, 1979) were taken into consideration. A participant interviewed must

- have the necessary experience or information;
- be willing to participate and have available time; and
- be articulate, expressive and reflective.

As illustrated in Table 3.1 a total of 11 focus group interviews were conducted involving 50 practitioners from the selected schools in the Greater Accra, Volta, and Ashanti regions of Ghana. In addition, one school was selected from each of the western, eastern, northern, and two schools from the central regions of Ghana to participate in the survey, as will be discussed later. I am conversant with all the participating schools and have in various ways had connections with them through professional networks. Further, a careful decision was made to have a representation from more than half of the regions in Ghana, so seven

out of the ten regions from all the geographical corners of the country were selected. In this way, the data collected was a representative view of all stakeholders.

In selecting the interview method, I was informed by the four classified types of interviews as enumerated by Patton (1980: p.206) and quoted by Cohen et al. (2000p.271). The informal conversation interviews, interview guide approach, standardised open-ended interviews, and closed quantitative interviews were considered separately, taking into account their relevance to my research questions and the purpose of the study. The semi-structured or interview guide approach was finally settled on as “it increases the comprehensiveness of the data and makes data collection somewhat systematic for each respondent” (ibid: p.271). In addition, as a controlled interaction, it enabled me to decide on the sequence and wording of the questions as the interview interaction progressed. As a result, I was able to ask supplementary questions, asked for clarification and elaboration, and at the same time gave participants greater opportunity and freedom to discuss their experiences and express their views.

One caveat, though, according to Patton (1980: p.206,) Cohen et al. (2000: p.271), and Burns (2000: p.426), is that the flexibility and the freedom that the interviewer has in determining the sequence and wording of questions during the course of the interview is a weakness because it can result in substantially different responses and hence make the comparability of responses less feasible. However, as the purpose of this study was to generate a theory grounded in the data collected, the need to compare data was not an issue as the previous data collected only informed the questions to ask in the next interview until data saturation was achieved. Another weakness of semi-structured interviews according to Savin-Baden & Major (2013: p.359) is that they do not always offer the participants the chance to provide their own unique perspective. To address this, I gave the interviewees the opportunity to provide their views clearly through the questions I asked and by sending the transcript of the interview to them for amendment and provision of additional information.

The interview was also conducted as a conversation with pauses for additional points between topics and issues.

Further, use of interviews is not without likelihood of methodological issues arising. As noted from Briggs's (1986) review of sociological literature on interviews as a research method, the characteristics of the researcher and participant can bias the response to the questions. He further noted the concomitant assumption that if this bias could be eliminated, then the real or true response would emerge. Briggs argued that researchers' lack of attention to the interview situation precluded any examination of their role in the research process. Mishler (1986), on the other hand, argued that there *is* a fundamental difference between a formal interview and everyday speech, that these represented two different discourses, and that the gap between these two modes of speech is a problematic issue that has not received sufficient attention. In any case, interviewing, whatever form it takes, "whether structured or unstructured, is an almost full proof strategy to obtain useable empirical materials" (Bryant & Charmaz, 2013: p.496).

In sum, the flexibility of employing the semi-structured interview model, which enabled different accounts to be compared, facilitated a greater understanding of the subject and worked well with my chosen qualitative method of inquiry and grounded theory. The purpose of the interview, as stated earlier, was first to explore the policy processes through which the ICT4AD and ICED policies were formed, and secondly, to discover how the policymakers, together with the institutions to which they belong, perceived the implementation of the policies and the factors that hindered or enhanced effective implementation. The technique of triangulation was used to resolve the issues stated above. This technique was devised by Webb et al. (1996), developed by Denzin (1970), and endorsed by Davies (2000) and Lilleker (2003). Triangulation involves the use of multiple observers, theoretical perspectives, and sources of data and/or methodologies, so that data can be crosschecked and researchers confident of their findings.

As an interviewer, I have been guided by Patton (2002) and Marshall and Rossman (1999) on the awareness that I am an instrument for data collection and therefore need to undertake the data collection from a position of value neutrality (Berg, 2007:126). I endeavoured not to impose my own view on the interviewees but offer them opportunity to express their perceptions and views freely and by avoiding leading questions. One factor that worked well to ensure the validity and reliability of the data and eliminated interviewer-imposed views was the setting for the interview. With the exception of one policymaker interview, all the rest took place in either a classroom of the interviewees' or an office of one of the participants, environments with which they were familiar and comfortable. The importance of ownership of the setting by the interviewees was clearly evident in their approach and the level of confidence they demonstrated in engaging with me.

Also, the depth of knowledge I have about Ghana and its educational system, the understanding of local slang, and my level of English language proficiency put me in a solid position when a Ghanaian language (Twi) was used. These personal characteristics have contributed to the richness and robustness of the data collected.

Further, my years of experience and skills in chairing meetings and conducting job interviews were relevant for the focus group interviews. Hermanowicz (2002) was of the view that focus group interviews demand "skilful chairing and ... group size" (p. 490), and the need to "listen" (Dörnyei, 2007:140) and not just talk guided my approach during the data collection processes. I also gave interviewees the opportunity at the end to sum up and clarify the points made during the interview. Interviewees were delighted and keen to be involved and made their views clear, which I did not take for granted by ensuring that groups had the time needed to think through their responses. My role as an interviewer, therefore, is summed up in Berg (2007:45), who said that interviewees are given to opportunity to "... develop ideas collectively, bringing forward their own priorities and perspectives, to create theory grounded in the actual experience."

3.4.1.2 Survey Method

The survey method used is the Delphi survey. A Delphi survey is a research method involving the use of questionnaires or interview schedules. These are given to respondents who are usually experts in their field to seek their opinion or views on the area of interest (Ehrlich et al., 2006; Katcher et al., 2006). It is an interactive multistage process, with each stage building on the data of the previous results to gain consensus from the participants (Windle, 2004; Beech, 2001). Roberts & Taylor (1998) describe the Delphi survey technique as a

questionnaire survey method of obtaining and analysing a range of expert opinions on a topic or issue without having a face-to-face meeting of the group, usually involving several rounds of the questionnaire (Roberts & Taylor, 1998: p.399).

For this study, three experts carefully selected from five schools from each of the eastern, Volta, central, northern, and Greater Accra regions of Ghana were involved in the survey. (See Appendix 4 for the Map of Ghana showing the selected Regional settings for the data collections). A total of 15 questionnaires were administered to 15 experts comprising the ICT coordinators, head teachers, or principals and teachers from each school that took part in the survey. With the help of my former colleagues, who are now either district or regional directors of education in the sampled regions, I attained a 100% return rate from the questionnaire. The survey was necessary and motivated by the pattern identified through the coding and systematic analysis of the data collected through interviews. In addition, the logistical challenge of visiting all the regions in person and the potential of the survey method in enhancing the theoretical sampling of the research were other factors.

3.4.1.3 Development of Interview Guide and Questionnaire

The development of the initial interview guide was generally guided by the research aim and questions. The findings from the pilot also guided me in finalising my interview items and the questionnaire.

3.4.1.4 Formal Interview Process and Survey

It was not easy to determine the number of participants at the start of the study as the whole process of theory generation from the ground informed by data

is about concurrent or simultaneous data generation and analysis. As previously discussed, this section was purely directed by theoretical sampling. The selection of the next participants was informed by the emerging theoretical constructs as a result of constant comparison and analysis. The approach I used is in line with the views of King & Horrocks (2010: p.30) that sampling and selection of participants occur at several stages during the research process, as based on the outcome of the preliminary analysis of the data from the initial sample; a further sample is defined to address particular emerging issues, which is typical of grounded theory.

Each interview session lasted a maximum of one hour and all participants were informed of this timing at the start but could exercise their right to opt out at any time during the interview. With the permission of the participants, all interviews except for that with the ICT4AD policy author were tape-recorded and later transcribed. The advantage of tape-recording, as Bassegy (1999: p.81) suggested, is that it offered me the opportunity to focus on the direction of the interview rather the details of the content of the interview as I know I will be listening intently and attentively to the recording afterwards. I transcribed word by word everything on the tape instead of paraphrasing in order to avoid self-reporting. The transcribed notes were emailed to all the respondents to check for authenticity and they were free to make any amendment that they wanted. No amendments were received from the respondents. All participants also signed an informed consent letter and were happy for their names to be used in the thesis. The authority note (letter of consent) from the Ghana Education Service headquarters gave me the mandate to engage any Ghanaian schools in the research. In addition, I also telephoned and emailed the head teachers of the selected schools, all of whom approved my entering their schools.

I am confident that the process adopted has further enhanced the reliability of my data and the strength of the findings.

3.5 Process of Data Analysis

This section summarises the steps undertaken to analyse the data collected. It highlights the process of coding and types of coding used in relation to concept development and categorisation. Memo writing as a process of writing ideas down during the research journey was explored and discussed. Figure 3.1 adapted from Goulding (2002: p.115), and summarises the whole research process leading to the generation of theory. The systematic and phase-by-phase approaches as depicted in Figure 3.1 shows how my thesis was actually worked out including the methodological activities. Discussion on research problem including literature review, which informed the methodological considerations for the study, was undertaken in the preceding chapters. Further discussion on Coding Process and Memoing are carried out in the subsequent sections below.

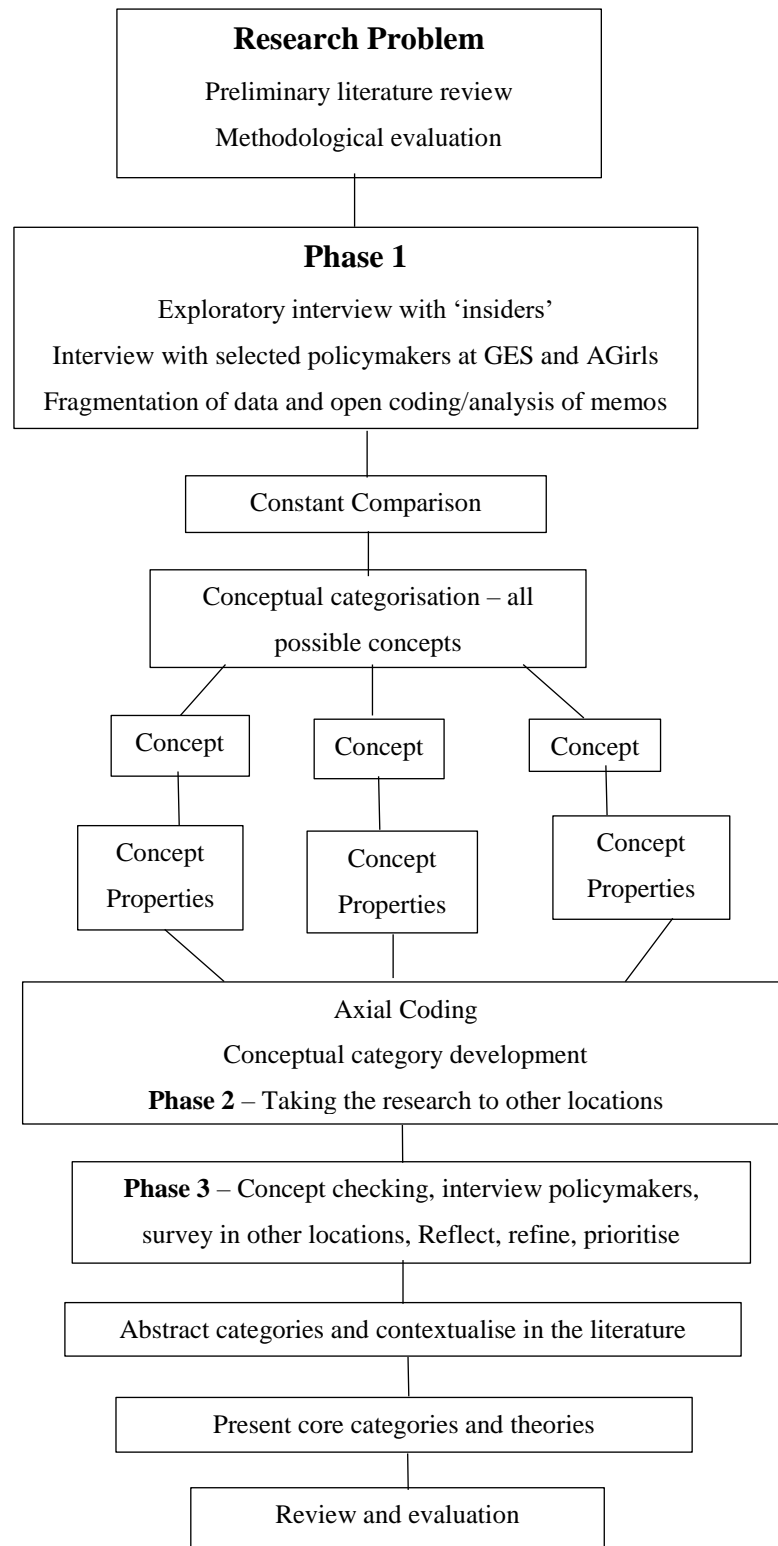


Figure 3.1 Theory building through the research process.

3.5.1 The Coding Process

According to Weitzman (2003: p.310), the use of “computer-assisted qualitative data analysis software” (Lee et al., 1998: p.1), or CAQDAS packages such as NVivo, allows the researcher to specify relationships among codes and use these relationships in the analysis. The links could also be used to write memos and connect them to codes and texts.

I developed my own coding method using Excel after technical difficulties with the NVivo. The interview data as transcribed and the survey data were analysed with the help of Excel software. Simple tables and percentages were used for presentation and analysis of the data. I chose these tools to avoid complexity and to benefit from the clear and easy-to-understand facilities that they provide.

The process required that I pause and inquire analytically into the data in order to comprehend and identify emerging issues, patterns, and concepts. It also provided me with the broad understanding and steps for subsequent data gathering, which was strategically guided by what Charmaz (2014) referred to as “initial coding” and “focused coding” since it fit well into my emergent three phases of data collection.

During initial coding, we studied fragments of data—words, lines, segments and incidents—closely for their analytic import. From time to time, we adopted our participants’ telling terms as codes. Initial coding continues the interaction that you shared with your participants, while collecting data brings you into an interactive, analytic space (ibid: p.109).

Coding for the purpose of generating a theory is about adding definition to the data collected by analytically finding out what the data is communicating. In this way, I was able to establish links between the data and the respondents (Star, 2007: p.80) that were essential for understanding the field and where a particular pattern and characteristic emanates and directed me for follow-up. By keeping up with the emergent patterns, I was able to determine what was happening in the data and the any underlying meaning. In fact, there was

significant meaning making for me at this stage. What constituted the critical factors in the implementation of the ICT4AD policy for Ghana started to emerge at the initial data coding stage and led to the subsequent data collection phases (2 and 3). It also helped to reframe and redirect the interview questions and process. For example, as a result of the emerging information from the data, I had to travel by air within Ghana to the Ashanti region just three days after the data collection interview in the Volta region with the aim of exploring the field further for concept development. The concepts developed were not without properties, which also formed the basis of learning further emerging scenarios and an analytical approach to the subsequent data collection setting, especially from the author of the ICT4AD policy for Ghana. Charmaz (2014) aptly put this as follows:

We learn through studying our data. Initial grounded theory coding guides our learning. Through it, we begin to make sense of our data. How we make sense of it shapes the ensuing analysis (ibid: p.114).

As motivation, I engaged from the outset of my data collection in a line-by-line and sentence-by-sentence coding with the aim of breaking down the data into distinct units of meaning. This initial process is called 'open coding' and may comprise sentences, phrases, and keywords and is an outcome of early analysis and defines what the data is revealing (Goulding, 2002: p.170). This process led me to the development of concepts and identification of their properties emanating into axial or more focused coding. This phase of coding comprised more relationship building through incident-by-incident analysis and constant comparison of the data and is more sophisticated as it sometimes called for situation-by-situation analysis as well as in the main categories linked together. The categories, which are groups of codes representing a common theme or concept (Mills et al., 2006), develop and form the basis of the theory generated. To this end, it is also important to add that categories in grounded theory, whatever kind they are, are constructed and not discovered or observed (Gibson & Brown, 2014: p.69) and can adopt several features. Charmaz (2014: p.115) listed some of these features as precision, analytic direction, general reach, and potential to create abstract, while Dey (1999:

p.56) and Birks & Mills (2011: p.98) provided additional features of reaching saturation and contributing to theory integration.

Coding for me is, therefore, that critical process during the research which is iterative and emphasises action and enabled me to see emerging concepts clearly from the perspective of the respondents; my data collection was then focussed, upon which groups of codes were generated and categories established. Throughout, the data was analytically coded by comparing data to data, identifying gaps in the data, searching for tacit assumptions, and looking for meanings and actions, which all follow that initial stage of fragmentation of data into individual properties, components, and groups. More importantly, I diligently and analytically wrote a memo of key ideas that came across my mind. My ideas were consistently 'memoed' throughout the study, which proved to be useful during the data presentation and analysis phase of this thesis.

3.5.2 Memoing

Memoing (Birks & Mills, 2011; Charmaz, 2014) is one of the distinguishing characteristics of GTM and captures the process of thinking from the outset on the research process. Memoing also provided me with the opportunity to keep a record of the key ideas that came into my mind and the necessary operational steps I had to take to support my analysis. My memo largely dictated the decisions I made regarding coding and categorising. In this regard, I am with Birks & Mills (2011) when they said, "[M]emo is the lubricant to the research and also the grease and the oil that drives the engine of grounded theory". It is imperative to assume that one cannot use grounded theory method without doing a memo.

The importance of memos in a grounded theory cannot be understated. As a subjective but reflective note, it provided the interpretative focus for my research, especially as I have used it to record various decisions, such as why I used a particular sample rather than another and the assumptions (about what I expected to find) made at the start and during the research process.

One thing I have discovered from my analytical memo writing is that it is a useful communication tool that helped me to explain my position and aided me in desisting from imposing my ideas on the data; my memo has clearly recorded my ideas. More importantly, the record of my ideas and thinking enhanced my theoretical sensitivity and my engagement with the research participants and the data because through my analytical memo writing, I was able to define and check the properties of my codes earlier in the research process, bring data into my narrative at the outset, and compare codes and decisions based on which codes were moved into categories (Charmaz, 2014: p.113). Consequently, my insight into the settings for the data collection, my level of inquiry into the ICT4AD and ICTED, and for that matter the policy culture of Ghana as they relate to development and education, were subsequently enriched.

Theoretical sensitivity, as Mills et al. (2006) illustrate, is something experienced by the researcher and the participants through the interactive process of data collection. I thus gained more personal insight into the substantive area of study and inquiry, which has improved the level of theoretical sophistication around the data analysis. Sophisticated theoretical analysis emanating from theoretical sensitivity is a much-needed platform to be able to extract elements from the data that are relevant to the development of grounded theory. A high level of theoretical sensitivity, according to Birks & Mills (2011), has a high potential of resulting in sophisticated grounded theory—a view I agree with, although I am not confident about the use of ‘sophistication’ in the context of this study. Therefore, my preference is to say that the grounded theory thusly enabled by the high level of theoretical sensitivity fits the problems being experienced by the people in the study and is relevant to the people in the setting; moreover, the theory must work and remain modifiable in light of new findings, which according to Gibson & Brown (2014: p.36) summed up the explanatory power of GTM (one of the motivations behind my choice of GTM).

3.6 Discourse Analysis

Discourse has to do with language in the form of text, images, codes, and talk; discourse is everywhere and has the power to influence the world. Discourse for Cohen et al. (2011: p.574) is a way of thinking, perhaps culturally, that is then institutionalised and legitimised by the society and people of influence, or those with power. The term 'discourse' has various connotations in scholarly communities, one of which is to denote a particular way in which language of any form is used that is peculiar to a specific community of practice. More appropriately and in the context of my thesis, "discourse is not a monolingual, unitary phenomenon but rather any situation that is characterised by multiple discourses simultaneously" (The New London Group, 1996, quoted in Roth, 2005: p.317; Gee (2014: p. 25)). There are divergent and convergent discourses embedded in the ICT4AD and ICTED policies of Ghana, and the multiple meanings that they denote could either be an enabler or 'disenabler' to the extent that the various policy actors symbiotically engage in the policy implementation.

Discourse analysis or discourse studies as a method of qualitative data analysis have many varieties ranging from ethnomethodology, textual linguistics and conversation analysis, narrative analysis, deconstruction, semiotics, and critical discourse analysis. Discourse analysis is concerned with language use in a social context. Thus, I corroborate Roth (2005b in Roth, 2005) in saying that when one knows a language, it is like knowing one's way around the world. It is with this view that the study is interested in knowing the degree of involvement of the policy implementers in the 'policy engineering and architecture' process, which I believe will enhance the level of understanding of the text and the interplay of text in the final textual document that they are to implement and lead in implementing. A case for policy democracy is central to policy implementers knowing the 'world' around the policy, but knowing the world without necessarily being part of its creation can be a struggle — a struggle between knowing and not knowing and what does not want to be known — which is fundamental to understanding what

resources to request to take ownership of the 'world', in this case, the textual document (the ICT4AD and ICTED policies of Ghana).

There is an opportunity to theorise language, and since the focus of my study is to evaluate what ICTs are like in the secondary schools of Ghana as a result of the implementation of ICT4AD and ICTED policies, using an aspect of discourse analysis is appropriate. This thesis uses Fairclough's (2003) approach to discourse analysis with a focus on the resources policy implementers in Ghana have available to them for implementing the ICT4AD and ICTED policies as a result of their social position. The approach in its simplest form involves the scrutinising of text with the purpose of making meaning or examining how different meanings are constructed from a given text (Fairclough, 2003:8). Text, according to Fairclough (ibid), enables individuals to learn from analysis and, as a result, bring about "changes in our Knowledge, our beliefs and our attitudes." Text as social construct has the potential to bring changes in educational, social, and political relationships through the process of meaning making, and such meanings are made by the recipients of the text and through the interpretative work of the recipient. In this case, one would say that texts are valuable in the context of the meaning assigned to them by the author, reader, or the listener. Text as a transcript of what is said is often loaded with meaning and carries the motivation, intentions, values, and interests of the author. An analysis undertaken by a researcher of such text is rarely exhaustive in representing all that there is to be known about the text. It is for this reason that a certain level of selectivity is required when using textual analysis for the purpose of meaning making and theory generation, which requires that the most appropriate questions be asked of the text within the context of the intention and purpose of the analysis. The texts available for this research includes interview transcripts, the completed questionnaire, and sections of the ICT4AD and ICTED policies of Ghana.

To assure that the analysis is worthwhile and supportive of Fairclough's position that "questions we ask of a text analysis are based upon certain motivation," I carefully considered my research questions and the research aim and the purpose of the study, and I was convinced that it is vital for the purpose

of triangulation to use discourse analysis on the interview transcript, the completed questionnaire, and the ICT4AD and ICTED policy documents. In doing this, I relied on the four instances of discourse as identified by Wetherell et al. (2001) and quoted by Cohen et al. (2011) that involves

- analysing words in context with a focus on how context influences the meaning associated with language
- analysing interactions conducted through language
- analysing patterns of language use focusing on information dissemination, expression of emotions, reactions, and wishes.
- analysing the link between language and the constitution with a focus on power and power reproduction (ibid: p.575).

These illustrate the argument that text on its own in a given context carries different meanings and expressions, as I mentioned earlier while corroborating Roth's (2005) statement. I have used triangulation for determining the actual content of the actors involved in the Ghanaian ICT4AD and ICTED through the use of a questionnaire, interviews, and engagement existing documents (the ICT4AD and ICTED policies themselves). Therefore, the use of terminology such as globalisation, knowledge economy, and creative use of technology as stipulated in the ICTED and ICTED policies may carry different meanings for different agents and actors depending on the context. For example, the term 'transformation', as used many times in the ICT4AD policy, can be located in several discourses and can also be deconstructed into several meanings, and the interplay of the social context of usage for a particular word needs full consideration as it pertains to the implementation of the ICTED and ICT4AD policies of Ghana. However, textual analysis can also be an analysis of what people do (Potter, 1997: p.147). The interview questions and the survey data obtained through the questionnaire had items in them that inquired about what policy implementers (teachers) do with ICT and the ICT policy. Text generated

and analysed contribute to the understanding of the implementation of the ICTED and ICT4AD policies and the challenges therein.

Another aspect of the analysis is the quantitative dimension of the text. It is Fairclough's (ibid:14) idea that for the purposes of meaning making, and especially as texts have social, political, and material consequences and effects that we must attempt to understand, the use of quantitative features of texts can, in my view, contribute to such understanding by providing evidence of the level of emphasis by the author. The analysis of text considering the quantitative features of text, is done through comparing different type of texts within the context of the research question, e.g. "transformation" and "change" in the policy document, the commonality of statements made by the interviewees, and the responses from the questionnaire. The comparison is made by accounting for the frequency of word use in the text and the number of times a particular or similar statement is made. Combining the quantitative and the qualitative approaches for the analysis not only enhances the instant visualisation of the main priorities and issues for policy implementation in secondary schools of Ghana but also improves the robustness of the data and the analysis. In addition, since what is said in a text often implies what is not said (ibid:11), using a combined approach allows for the identification of underlying assumptions through the emerging patterns from the data.

3.7 Reflection on Chapter

This chapter has presented the methodological frame and approach to the study. In doing so, I have outlined the rationale for using the case study method and the purpose of using the discourse analysis and grounded theory strategies for data analysis. The aim is to generate theory from primary data collected through the use of semi-structured interviews and the administration of questionnaires to both policymakers and implementers connected to the ICT4AD and ICTED policies of Ghana. The rationale for using the discourse analysis method for exploring the emerging themes from these policies and the interview transcript was also undertaken to provide the context for the core categorisation of concepts and the generation of theory. The chapter has also

elaborated the ethical considerations that had informed the very steps taken in the collection, analysis, presentation, and interpretation of data. Finally, the methodological issues that arose were categorised as political, social, cultural, and technological.

The methodological approach of the case study aimed at achieving construct validity, internal validity, concurrent validity, reliability, and avoidance of bias; these concepts as discussed by Cohen et al. (2011: p.295), were ascribed to and applied to the study throughout. The flexibility of grounded theory enabled me the chance to pursue data to the point of saturation, though this was challenging in most cases due to the distance, time, and cost of travel.

The next chapter provides the presentation of findings from document analysis, survey, interviews and personal observation.

Chapter 4 Presentation of Findings

4.1 Introduction

Chapter 4 includes findings from the triangulated approaches of document analysis, survey, and interviews combined with personal observation. Further, the chapter focuses on presenting key themes and categories that emerged from the data. The main findings from the document (ICT4AD and ICTED policies) analysis are used to identify key themes, and the interview analysis and the findings from the questionnaire are presented.

First, as discussed in Chapter 2, the involvement of policy implementers in the policy engineering process from the outset is the *pinnacle of the essence* in garnering policy ownership and possible effective implementation. Also, other mitigating factors are present that combine with policy ownership to ensure that policies are effectively implemented. Therefore, the data presented closely examined

- a. through documentary analysis the hope of the ICT4AD policy and its related ICTED policy;
- b. through questionnaire, observation, and survey analysis
 - i. the factors that policy implementers and policymakers perceived as enablers, and which were hindrances to the successful implementation of the policy objective of ICT4AD and ICTED,
 - ii. the perspective of teachers on how successfully the ICTED and ICT4AD policies were implemented in Ghanaian secondary schools, and
 - iii. the extent to which Ghanaian secondary schools believed they owned the ICTED and ICT4AD policies and were equipped to implement them.

The data gathered through the documentary analysis, observation, and further interview and survey analysis provided enough information to ground the data into a theory. Figure 4.4.1 ICT4AD policy, hope of ICT integration, and

demand on education relations below illustrates a grounded theory that emerged from the data around *commonality capital*, which will form the basis of the presentation in this chapter and the subsequent ones.

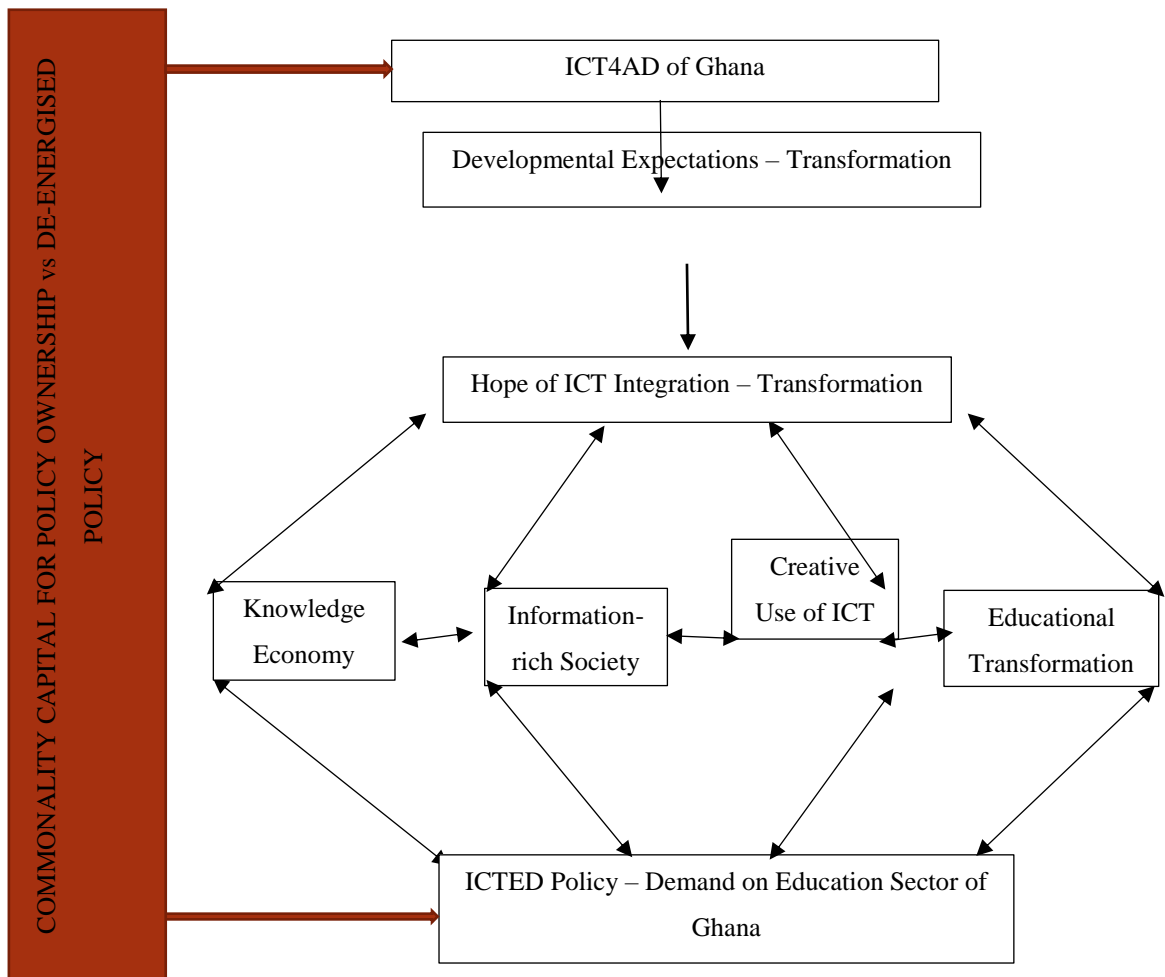


Figure 4.4.1 ICT4AD policy, hope of ICT integration, and demand on education relations

The chapter systematically examined the above issues beginning with the ICT4AD and ICTED document analysis. The document analysis was done by analysing recurrent thematic patterns in the ICT4AD and ICTED policy text about the policy intent. The aim is to situate the analysis in the extent to which policymakers of the ICT4AD of Ghana have embraced the currency of *commonality capital*, or policy ownership. As mentioned in Chapter 1, *commonality capital* is one of my contributions to the debate about the process of building a *policy culture of policy ownership* as a prerequisite for effective

policy implementation. A detailed explanation of the theory of *commonality capital*, including strategies for its development and the associated challenges, is presented in Chapter 6.

4.2 The ICT4AD Policy

4.2.1 Hope of ICT Integration – Transformation

As previously mentioned, the ICT4AD policy of Ghana is one of the main steps taken by the government to address through effective use of information and communication technologies (ICTs) the developmental challenges of the country. The ICT4AD policy is defined as

A policy statement for the realisation of the vision to transform Ghana into an information-rich knowledge-based society and economy through the development, deployment and exploitation of ICTs within the economy and society. (Republic of Ghana, 2003b)

Along with perceived gains from the use of ICTs, the motivation behind this agenda is for Ghana to position itself on a par with other countries that have taken bold steps, notably South Korea, Malaysia, and Singapore (Republic of Ghana, 2003a; MIMOS, 2004). The ICTED policy document sets out the vision of the country in the information age and provides the definition of the vision, mission, and strategies in the hope of aiding and setting the country on the path of development and “transforming it into an information- and knowledge-based society and economy” (Republic of Ghana, 2003b: p.18). The policy also makes a bold statement to support the development power of ICT by stating, “Ghana’s accelerated development within the emerging information and digital age will not be possible without an ICT-driven development agenda” (ibid: 8). ICT is clearly seen as the enabler for Ghana’s development and “needs to embrace and harness ICTs to facilitate her development process” (ibid: 14). In summary, the policy statement carries with it the agenda to transform Ghana in all sectors of the economy, and the theme of transformation runs through the document starting from page 13 to the end. Table 5.1 provides an illustration, and I have highlighted recurrent use and forms of the word ‘transformation’.

Table 4.1 Analysis of the term 'transformation' and forms in the ICT4AD policy of Ghana

#	Theme	Page #
1	... being transformed into knowledge-based technology-driven services-dominated economies	13
2	... to transform government machinery to facilitate efficiency in operations and services delivery	13
3	... enable them to transform their economies into information- and knowledge-based economies	13
4	... aid the process of transforming the nation's economy and society into an information-rich and knowledge-based economy and society	13
5	... and transform their subsistence agriculture-dominated economies into service-sector-driven, high-value-added information and knowledge economies that can successfully compete in the global market	13
6	... vision to transform Ghana into high-income economy and society that is predominantly information-rich and knowledge-based within the next two to three decades or less	14
7	... structural transformation since independence...	15
8	... transform the economy from its current low single-digit growth rate to a double-digit growth rate	16
9	... aid the process of transforming it into an information- and knowledge-based society and economy	18
10	To transform Ghana's economy from being dominated by the public sector to the ... private sector, supported by an efficient system of administration	19
11	To transform the economy from one based on smallholder agriculture to a purposefully diversified and productive economy ...	19
12	To transform society to become more scientifically based and to improve technology to secure increased productivity in all economic sectors	20
13	To transform Ghana into an information-rich, knowledge-based and technology-driven high-income economy and society	21
14	To transform the educational system to provide the requisite educational 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	22
15	To transform Ghana into an attractive destination for ICT-related foreign direct investment	22
16	To transform Ghana into an information- and knowledge-driven ICT-literate nation	22
17	... to transform Ghana into a middle-income, information-rich, knowledge-based and technology-driven economy and society	24
18	... to transform Ghana into an information-rich, knowledge-based and technology-driven high-income economy and society	25
19	... its goal of transforming its agricultural-based economy into an information-rich and knowledge-based economy	32
20	... transformed into an asset by adding value to human resources and providing the environment for utilising these resources for socio-economic development process	33
21	Transform Ghana into an information- and knowledge-driven ICT-literate nation	34
22	... transform the educational system to provide the requisite educational, and ...	37
23	Transform Ghana into an information- and knowledge-driven ICT-literate nation	38
24	Transform the educational system to ensure that there is uninterrupted high-quality education for all Ghanaians from pre-school to age 17 to reduce poverty and create the opportunity for human development	39
25	... transforming Ghana into an ICT-literate nation and promoting basic literacy and ICT literacy ...	40
26	To transform Ghana's economy from one that is dominated by the public sector...	45
27	To transform Ghana into an attractive destination for ICT-related FDI with the potential to become a competitive regional ICT and business hub	47
28	To transform the economy through rapid industrialisation	50
29	... experience a major structural transformation since independence	53
30	To transform Ghana into an attractive destination for ICT-related FDI with the potential to become a competitive regional ICT and business hub	74

So clearly, the agenda and *hope* for the introduction of ICT into the state of Ghana were that of transforming the various sectors of the economy. In all, 'transformation' occurred on at least 34% of the pages of the ICT4AD policy document and alongside the use of 'improve' and 'modernise', used as synonyms for 'transform', thus nearly 44% of the pages addressed the concept of 'transformation'. This analysis is significant for two reasons:

- The analysis indicates the premium on the transformation mandate of ICT in the context of Ghana.
- The analysis reveals the various sectors of the economy that need transforming.

As discussed in Chapter 2, Fisher et al. (2006), reiterated that the word 'transformation' might mean different things to different people depending on the context of use. The analysis affirms that the commitment of the government to the implementation of ICT is informed by a strong belief in the purported, speculative, and promising transformative power of ICT use. This rhetoric has led many countries, such as the United Kingdom, Sweden, the United States, and Canada to invest huge amounts of money in teacher training (Jung, 2005) and to procure technology equipment (OECD, 2004: p.67) that in some cases is not effectively utilised due to a lack of skilled practitioners. In this regard, the analysis found that an expectation exists of ICT use to transform the educational system and empower it to provide the needed practitioners with the requisite skills. In this way, the skilled individuals can deliver on the other developmental and transformation agendas such as an "information- and knowledge-driven ICT-literate nation," with Ghana becoming an industrialised middle- and high-income country and an attractive destination for direct foreign investment through the use of ICT.

Fundamentally, the prerequisite for all of the transformative hopes is the ability of the education sector to produce the needed human capital. It may be for this reason that even before the formulation of the ICT4AD policy, the initiatives to integrate ICT into education, such as SchoolNet and the Science Resource

Centre Project in 1996, were unsuccessful, as mentioned in Chapter 1. The implementation of the SchoolNet Project and Science Resource Centre Project predates any formalised government policy, as I gathered during the pilot study, and the educational reform that mentioned the introduction of ICT into the school system was an afterthought-initiative (ICTED coordinator at MoE). The failure of those initiatives emphasises the point that initiatives and projects should be policy driven, but in the context of this study, I will add that policy formulated like this should not be for its own sake. The intention of the policy should be clear and designed through a collaborative and nationalistic approach since policy-driven initiatives were also not successfully implemented, or the realities of their implementation were disconnected from the hopes surrounding them. In some cases, one would agree that it does not matter if the policy implementation realities are not coordinated with the proposed outcomes. However, the validity of this argument implies that the due diligence of gaining a nationalistic approach and buy-in from a broad-spectrum of implementers and potential implementers is bypassed during the formulation process. The validity of the argument will also mean that the initiatives can be implemented with *policies done to them*, even later; after all, the outcome is what matters. However, this afterthought-policies resulted in policy implementers feeling isolated from the design process of the policy for the projects as the implementers are almost always called upon only at the implementation stage, as has been gathered during this study. This feeling of isolation is expressed by an ICT coordinator of one of the case schools:

In Ghana, I have come to realise that teachers do not have any role in making policy that affect their work; we do not have a choice, we are just implementers. The government creates the policy and just gives it to us to implement. We have no control over it. It is done from the top and we are to implement it. Sam, I am not complaining, but that is the way it is done here in Ghana. (ICT coordinator, July 2014)

Related to the hope transformation is the emergence from the analysis of Ghana transforming into a *knowledge-based or knowledge-driven, ICT-led economy* and an *information or information-rich economy or society*. In the current dispensation and from the Castellsian perspective, any economy that is information-rich/informational and knowledge-based is positioned to

“compete in the global economy” (Castells, 2010: p.100). Castells sees an information and knowledge-based economy as the next phase after industrialisation and added that “industrial economy had to become informational and global or collapse” (ibid: 100), and various forms of an informational economy—informational manufacturing, informational agriculture, and informational services activities—are embodied in the increasing power of information technologies, added Castell (2010: p.101). In light of this argument, it is overwhelming that Ghana, an agro-based economy, aims to become information and knowledge-based without the necessary transitioning through the industrialised phase. If achieved within the period of the stipulated 20 to 30 or fewer years, this attainment truly will be an accelerated development. However, critically analysing the findings, as presented in Table 4.1, and those from the *Integrated ICT-Led Socio-Economic Development Policy and Plan Development Framework for Ghana* (PDF4G) document of ICT4AD, it is convincingly clear that the policy is ambitious at birth and pregnant with ‘probables’, with mere hope and rhetoric. Since the ICT4AD policy is the first of such policy documents on ICT integration into all sectors of the economy, one could allude to this observation to say that at least a reference point for the introduction of ICT into the Ghanaian economy is present. However, in the spirit of globalisation, the policy seems borrowed from the global space, and hence full of hopes and mere rhetoric.

Essentially, if a knowledge-based economy refers to an economy driven by science and technology, then the process of making science and technology the engine of growth in the Ghanaian economy needs some consideration. Clearly, the educational sector is the gatekeeper here without which scientists and technologists cannot be educated and trained for the needs of the country. The ICT4AD policymakers have taken notice of this need and proposed the transformation of the educational system to produce the needed human resources with the technology and scientific knowledge for the accelerated development of the country. The successful and effective implementation of the objective to enable graduates from formal and non-formal education sectors to acquire the skills to creatively and functionally use ICT tools for the advancement of a knowledge-based economy and information-rich society is

the cornerstone for effective implementation of other transformational agendas. Therefore, the implementation framework and the actors involved in the consultation process of the ICT4AD policy formulation were another important condition to consider.

4.2.2 Conditions for Successful ICT4AD Implementation

Further textual analysis for identifying implementation discourses was performed. The ICT4AD document, which is regarded as the policy representation of the planned destination of Ghana in the information age, is informed by the framework document PDF4G as I mentioned Chapter 1. The framework document provided the secondary data source through discourse analysis. This 208-page fundamental policy framework, which gave birth to the ICT4AD policy, is said to be the outcome of a 'nationwide consultation' with both private and public sectors by the committee set up to formulate the ICT4AD policy. The successful implementation of the ICT4AD policy was also conditional on a number of prerequisites to achieve the expected outcome. In the context of the study, this next section explores those conditions along with the implementation frame and the constitution of the nationwide consultation.

4.2.2.1 Critical Success Factors and Requirements

The ICT4AD policy document identified that ICTs on their own cannot bring about the needed development and transformation highlighted in the earlier pages of the document but depend on 30 "critical success factors and conditions" (ICT4AD: p.80). The 30 conditions were further subdivided into five, as shown in Table 4.2:

Table 4.2 Critical Success factors and requirements

#	Subdivision of Critical Success Factors and Conditions	Quantity in Subdivision
1	Broad critical success factors and requirements	9
2	Key enabling environment critical success factors	10
3	Necessary law, regulatory, and institutional environment critical success factors	3
4	Number of organisational-level critical success factors	3
5	Facilitating environment critical success factors	5

Notable among the broad factors is the need for dedicated economic and political leadership at the highest level who were ready to champion the vision of the ICT4AD. The ICT4AD document identified that the Head of State of Ghana was the lead national ICT champion and was required to assign the coordination and facilitation of the plan and development process of the policy to specific industries, committed policy decision-makers, and professionals from the public and private sectors. Moreover, the support and goodwill of the citizenry were recognised as being critical for successful implementation and therefore required that a nationwide policy and plan development consultative exercise of the main stakeholders be undertaken for their inputs into the processes and deliverables. The ICT4AD framework recognised the need for a collaborative approach to policy formulation and implementation which I later called *elements of commonality capital* to be spent during the policy formulation stage to ensure successful implementation at a later stage. Another important factor was the request for logistic and facilitation support for the ICT4AD implementation process from the central government. Though the elements of this factor were not explicitly stated, it was impossible if logistics and facilitation support (e.g., human resources and equipment) were not adequately provided to engineer and enable successful implementation.

Furthermore, the critical success factors of the enabling environment were centred on the attainment of good governance, equity, social justice, peace, national security, uninterrupted political stability, economic liberalisation, and a policy environment that were stable in a climate suitable for economic investment and sound socio-economic development policy. This requirement

not only depended on what happened within Ghana but also relied on what happened within the sub-regions; therefore, for the ICT4AD policy to be successfully implemented, there should exist a sub-regional political stability and calm. This implied that any instability in the neighbouring countries such as Togo, Benin, Nigeria, Burkina Faso, Liberia, Cote d'Ivoire, Sierra Leone, and Guinea could be blamed for unsuccessful implementation of the policy. In addition, an enabling and conducive legal and regulatory environment coupled with the availability of structural, institutional arrangements for the implementation of the policy was also clearly highlighted. The commitment of the central government to creating this required environment was ensured and in place.

At the organisational and institutional levels, relevant changes in processes, structures, and procedures and changes in attitudes are needed, including a well-paid, motivated, and disciplined workforce for the effective implementation of the policy. These factors were then finalised with a list of five facilitating environmental success factors: a well-educated and informed society, modernised and efficient civil and public services, availability of technological and financial resources, human resources in key skill areas, and patriotic citizens led by political, economic, and social leaders who were not corrupt. Clearly, the policy has identified the political, social, economic, and human factors needed for effective implementation and the realisation of the vision to attain an information-rich, knowledge-based economy, but I do wonder how this fits into the ICT4AD implantation rolling plans. The review also revealed that there was much that needed to be in place to enable the ICT4AD to be implemented effectively without an ambitious period and set to likely make implementation challenging in the context of mere government commitment to ensure that the implemental issues were timely addressed.

From the above, it is, therefore, evident that my quest for *commonality capital* as an essential discourse in implementing the ICT4AD of Ghana, or any other policy for that matter, is momentous and needs careful consideration by professionals and academics in the field of ICT for education and policy engineering for development. The need for pragmatic political leadership and

champions for ICT utilisation for the development of the enabling environment and the existence of an effective legal and political framework are the very discourses emanating from institutionalised and embedded *commonality capital*. When *commonality capital* takes root in the socio-cultural and geopolitical structure of any system, the impact is expected to be evident in the free-willed involvement of citizenry in the decision-making and in the building of social cohesion and social enterprises to leapfrog the development of the system at all levels—micro and macro. Ghana is at a very pivotal point in its developmental journey and needs to embrace *commonality capital* as the mantle for its ‘policy architecture’. Therefore, it is important to further analyse the available data for emerging patterns of *commonality capital* (or lack of it) in Ghana’s journey to become a knowledge-based economy through the use of ICT.

4.2.3 Implementation of Policy Commitments

The implementation of the ICT4AD policy was to be executed through a phased approach. A phased approach underpinned the implantation and operation of the ICT4AD policy and was envisaged to have a life of between 15 and 20 years, at which time there would be full implementation. The document sets out four-year periodic reviews in relation changing developmental objectives and priorities. Each four-year rolling plan had a set goal and priority areas of focus, as shown in Table 4.3:

Table 4.3 A four-year rolling plan for the implementation of the ICT4AD policy of Ghana

Time	Goal	Priority Policy Area
2003–2006	Supporting: economic-based development, environment for accelerated development and growth in Ghana	e.g., Human resource development, ICTs in education, deployment and spread of ICTs in the community, promoting local and FDI drives in ICTs, national security and law and order, national health promotion, etc.
2007–2010	Improving: economic base and environment for further accelerated growth and development	e.g., Human resource development, ICTs in education, deployment and spread of ICTs in the community, promoting local and FDI drives in ICTs, national security and law and order, national health promotion, etc.
2011–2014	Supporting the consolidation of the economic base and environment for further accelerated growth and development	e.g., Human resource development, ICTs in education, deployment and spread of ICTs in the community, promoting local and FDI drives in ICTs, national security and law and order, national health promotion, etc.
2015–2018	Further enhance and strengthen the production base of the economy to accelerate development and growth	Promoting local and FDI in ICTs, modernising agriculture and agro-business industry development, export-oriented ICT product and service industry development, capacity development in R&D and industrial and scientific research [all were part of the 3 phases above]
2019–2022	Facilitating the process of sustainable economic development and growth for national prosperity and global competitiveness	Promoting local and FDI in ICTs, export-oriented ICT product and service industry development, capacity development in R&D and industrial and scientific research and developing a value-added service sector that is globally competitive [part of all the above]

Source: Republic of Ghana, 2003a.

From the analysis, clearly the promotion of ICTs in education started with the launch of the ICT4AD in 2003, with implementation expected to be completed in 2014, by which time the deployment and use of ICTs in education would be consolidated, and the graduates from the education sector well equipped to function on the global stage. From the outset, the policy strategically planned to focus less on the development, production, and delivery of ICT products and more on the deployment and exploitation, but during the third phase, the focus was equal; the strategic focus for the fourth and fifth phase is the reverse of the first and second. The expectation of the policy and plan, therefore, is centred on eight thematic areas of ICTs in education: human resource development, private sector development and facilitation, development of ICT infrastructure, the drive for FDI in ICTs, deployment and spread of ICTs in the

community, service delivery and facilitation of government administration, and legal, regulatory, and institutional provisions and standards (Republic of Ghana, 2003a: p.71). ICT was seen as the enabler for the social, economic, industrial, agriculture, private and service sectors, and wealth creation - in fact, ICT for the accelerated development of Ghana. However, as said earlier, and as is emerging in the context of this study, the involvement of key actors in the formulation of the policy is one of the critical success factors.

4.2.4 Consultation for the Formulation of ICT4AD Policy

The Ghana ICT4AD policy development process is said to be a “bottom-up process involving nationwide stakeholder consultation within the public and private sector, including civil society ... the public has made significant inputs and contributions into the policy formulation process” (ibid: 151).

Findings from the textual analysis of the framework document (Republic of Ghana, 2003a) indicated that there were 51 separate meetings with over 1,000 participating individuals from public and private sector organisations, institutions, and establishments starting on 27th August 2002 and finishing on 23rd May 2003. The consultation is said to have involved 29 presentations and 22 meetings that seemed extensive, but as we will see later, the level of involvement of policy implementers within the context of this study remained unsubstantiated in the document. Moreover, the data collected from the field as part of the research for this thesis contradicts this position of extensive consultation. The distinction between the meetings and the presentation is not evident in the document. The format of the consultation is also not evident, but there is an observation that some of the groups were large and comprised more than 30 representatives, and in some cases, an entire student body of a university were mentioned as participants. With the student population in some of the universities being in excess of tens of thousands, one could assume that there were large enough facilities to accommodate all at the same time for the consultation. Having visited three of these universities as part of this research, and in consultation with my colleagues who work in some of the

universities on this issue, the validity and reliability of the consultation process as contained in the document seems weak and unsubstantiated.

While there is evidence that representatives of more than three universities from different regions of Ghana were consulted, the same cannot be said about the secondary schools engaged in the consultation. Only two secondary schools from the northern region of Ghana were included in the consultation, but in the outcome of the committee meeting, the whole student body of each school involved, as mentioned in the preamble of the ICT4AD, was not evident. Therefore, one could conclude that it was a manifestation of the intention of the committee to consult with stakeholders, but the methodology of actually undertaking the consultation was blurred in the document. The various stakeholder groups that were consulted were also not comprehensive enough, and the rationale for consulting only those groups was also not clear. For example, why meet with only the most important chiefs from the western and the eastern region, and why meet with the representatives from the police, immigration, and prison services and not fire, military, and customs? In any case, it is essential that the ICTED policy document also is reviewed in light of the process of consultation and implementation. Therefore, where there were attempts to use the available social, cultural, and political capital in the policy formulation process, the document was silent on the approach and the outcome. Therefore, it is important to pursue this thesis to find out from the stakeholders in the context of the study their involvement in the policy formulation process through the interview and the survey.

4.3 Summary

The findings from the analysis of the two documents indicated some of the thematic areas need further exploring. The objectives of the policy and the introduction of ICTs into the fabric of the Ghanaian society have been made clear in both documents, and the mandate given to education as a critical sector to help pull all together was evident. What was not evident was the involvement of the implementers in the policy formulation and/or the consultation process, and if they were involved, the input from their

involvement has not been found. These points centred on the ownership of the policies, which has been revealed by the analysis as government owned since the majority of the consultation leading to the writing of the ICT4AD policy document happened in Accra and involved mainly government departments and institutions.

Furthermore, an emergence of factors may have hindered or favoured the successful implementation of the policy. These ranged from the policies themselves (content) to the implementation plan. In between were government involvement, capacity building, curriculum planning reforms, infrastructure, development partner involvement, effective stakeholder involvement, the enabling regulatory environment, the attitude of implementers, and the embedded culture of Ghanaians. Therefore, the analysis of the two policy documents and the framework document provide useful insights into the emerging codes that I explore for the theoretical categorisation from the interview data and the questionnaire.

Chapter 5 ICTED Policy – Demand on the Education Sector of Ghana

5.1 Introduction

Chapter 5, the presentation of findings, focuses on the demands that the ICT4AD policy places on the education sector and the manifestation of the realisation of the demands from the data. The data from the documentary analysis as presented above indicates the transformation mandate of ICT for education. The integration of ICT in education is expected to: “transform the educational system to provide the requisite educational 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” (Republic of Ghana, 2008: p.22) and “transform the educational system to ensure that there is uninterrupted quality education for all Ghanaians from pre-school to age 17 to reduce poverty and create the opportunity for human development” (ibid: 33). This mandate implies that the individuals with the appropriate and creative ICT skills to transform Ghana into a knowledge-based economy and information-rich society must be produced by the education sector. For this reason, the thesis here focuses on the ICTED policy formulation process and implementation to determine from the data the enablers, hindrances, and the perceptions of policy implementers and policymakers about the ownership of the policy and the effectiveness of implementation.

Detailed analysis of the questionnaire and survey data will examine the factors that either enable or hinder the implementation of the policy and determine the perception of schoolteachers about the policy formulation process and whether they perceive the policy as done for them or with them.

5.2 ICTED Policy Consultations and Implementation Plan

The ICT in education policy of Ghana that was launched in 2008, as I have found, is the Ministry of Education’s response to the mandate given to it as stipulated in the ICT4AD policy document. The policy document sets out the

steps to be taken to deploy ICTs in schools and the deliverables to be achieved from the integration of the ICT tools into the Ghanaian education system. It affirms the view of the Ghana government that the deployment of ICTs will transform the learning culture of students from the practice of just recalling facts to a culture of creative thinking and problem solving needed to meet the 21st century challenges the country faces.

In addition, the ICTED policy formulation is claimed to be the product of a comprehensive consultation process, but there is no evidence to support the claim. What is evident, however, are the statements that the policy formulation relied on a workshop organised under the ICT4AD consultation process in 2001 involving the education sector stakeholders and an additional workshop organised in 2002 on the integration of ICT in education for policymakers. My observation is that there is centralisation or near centralisation in the consultation process for ICT4AD and ICTED as the majority of the people or organisations consulted (mainly government departments) are based in Accra, the capital city. While this process of consultation works well for the purpose of cost saving, it limits the reach and scope of effective stakeholder dialogue and weakens the strength of policy ownership, an essential element of *commonality capital*. However, the ICTED policy is clear on seven thematic areas of implementation and the various groups, agencies, departments, and institutions that are to support the process of implementation—in three phases without a periodic timeline for each phase but with an overall timeline for 2015—by which time “the ICT in education policy goal that every learner in general and tertiary education and training institution will be ICT capable is achieved” (Republic of Ghana, 2008: p.33).

The seven thematic areas centred on the use of ICT for the management of educational institutions and ministries and their agencies, capacity building e-readiness and equity in access to eliminate the digital divide, integration of ICTs into the curriculum, ICT content development, technical support including maintenance, and monitoring and evaluation. Clearly, the effective use of ICTs in education has the potential to bring new ways of learning and acquiring skills and knowledge, all of which is dependent on the users having the competency

to use the tools for the intended purpose. Therefore, capacity building, including the training of teachers, featured prominently throughout the policy. Integrating ICTs into the curriculum, development of ICT contents, and monitoring and evaluation all seemed to rest on the capacity building strand and, therefore, itemised the training of all persons involved in education service delivery, the creation of a pool of highly trained, skilled personnel, and continuing professional development of teachers so that they could be confident and creative users capable of enhancing their teaching repertoire through the use of ICTs. Finally, the implementation was set on a priority scale of 1 to 6 (1 being the highest priority) as reproduced in Table 5.1 below:

Table 5.1 ICTED policy implementation priority scale

Level of Priority	Institution/Sector
1a	Ministry of Education and Agencies
1b	Colleges of Education
1c	Teacher Universities with ICT
2a	Other Universities/Polytechnics with ICT
2b	Other Universities/Polytechnics – General
2c	Second Cycle Institutions (Senior High Schools, Technical & Vocational Institutions)
3	Junior High Schools
4	Primary Schools
5	Pre-Schools
6	Community Information Centres (Outside the remit of education)

Source: Ghana Ministry of Education, 2008: p.17

The capacity building of the Ministry of Education staff and its agencies was envisaged as the first priority while implementation at the pre-school level was the least (implementation of the Community Information Centre project was categorised as being outside the remits of the education sector). Secondary schools, on the other hand, fell into the middle range, with the capacity building of teacher trainees and staff working in colleges of education as the second-most priority. While there was no indication of linearity in implementing 1 through 6, a completion date of 2015 was in place to leverage the capacity of policymakers and practitioners through the deployment and exploitation of ICTs in those institutions. The policy also revealed that the successful implementation of the priority areas was dependent on the highest level of political and governmental leadership and commitment, funding, active

participation by stakeholders, effective monitoring and evaluation, and the involvement of national and international development partners such as Parent Teacher Associations, Alumni Associations, the World Link for Development Programme, the GLOBE Programme, DFID, the World Bank Institute, UNDP, USAID, Computer Aid International, and the Microsoft Foundation.

5.3 Presentation of Findings from the Interviews and Questionnaire

This section further explains the emerging codes and the findings from the interview and questionnaire data from my engagement with policymakers (those who wrote the ICT4AD and the ICTED) and the practitioners. The codes and the related themes are set to explore the three research questions as previously stated and shown here as:

1. What factors affected the successful implementation of the policy objective of ICT4AD and ICTED?
2. From the perspective of teachers and policymakers, how successful is the implementation of the ICTED and ICT4AD policies in Ghanaian secondary schools?
3. To what extent do Ghanaian secondary schools believe they own the ICTED and ICT4AD policies?

5.3.1 Policy Implementation – Enablers and Hinderers

One of the critical aims of the study was to find out how successful the implementation of the ICT4AD and ICTED policies had been and what success factors had been responsible. In the context of the 2015 implementation date, the study found that the ICT4AD and ICTED policies of Ghana were yet to be successfully implemented. There was a consensus between policymakers and policy implementers on the bold step taken by the government to formulate these policies in the first place and the intention of using ICTs for the socio-economic development of the country. There was also agreement that the 2015 implementation deadline of the core objective was ambitious and set the policy to fail from birth, and less was being done to intentionally pursue the implementation of the policy in a more coordinated manner, even though all ministries had an implementation plan.

All sector ministries had their implementation plans, but when it came to doing the job of translating the plans into action, they were doing less. The Ministry of Education has various programmes, e.g., one laptop per child and community computer labs in collaboration with the Ministry of Communication, but could not say if the policy was being effectively implemented to our expectation (Policymaker – ICT4AD).

This statement was corroborated by a policy implementer:

Least! We agree... the little that we have we are able to offer something to our students. As ICT madam said, if the children leave this school they are able to use basic ICT packages. So, we are getting there gradually but for 2015 it is just nice on paper. (8 December 2013)

Therefore, factors relating to the current state of affairs in the implementation of the policies have been categorised into six thematic discourse areas of stakeholder involvement discourse (S); equipment discourse (E); capacity-building discourse (C); infrastructure discourse (I); political discourse (P); and curriculum discourse (C), from which I have developed a SICPEC model as a tool for the effective integration of ICTs into Ghanaian secondary schools. Each of the thematic areas (discourses) is presented in the next section.

5.3.1.1 Stakeholder Involvement Factor

One of the concerns of this thesis is the level of involvement of actors in the formulation of the ICT4AD and ICTED policies of Ghana and how this involvement influenced the seemingly successful policy implementation. The intellectual understanding of these concepts and the evidence of them in practice are essential in grounding a theory from the study. Stakeholder involvement in the ICT4AD and ICTED policy architecture is as a critical factor and enabler for their successful implementation in achieving the intended objective. The faith of the implementers in the policy is crucial; the teachers, as discussed previously in Chapter 1, have to implement the two policies to achieve the intended transformational objectives and developmental hopes, irrespective of the implementers' involvement in or dissociation from the policy architecture. The interpretation that the stakeholders attached to the ICT4AD

and ICTED text also enhances their faith in the transformational potency of the policies that their implementation would bring and ultimately make the stakeholders take ownership of the policies.

Table 5.2 Implementation Factor: Stakeholder Involvement in Policy Formulation

Stakeholder Involvement in Policy Formulation – Ownership		
Category	Codes	Frequency
Stakeholder involvement	1.0 No, I have not heard of them (ICT4AD and ICTED policies) [52] This is the first time we have heard of them. We cannot achieve by 2015 [11]. I do not know if ICT use in schools is influenced by any policy [5]. We wouldn't get this document (ICT4AD and ICTED policy) [51]	119
	1.1 Teachers' involvement in ICTED policy formulation is key in helping teachers to incorporate ICT in education [24]. Teachers with the technical know-how should be involved in the policy formulation, in that way they will be informed about the expectation and implementation [48]. Policy implementation will then succeed [1]. We need to be consulted when formulating policies like this. I don't know what they have done before. Maybe they have consulted teachers in Accra, but it should be nationwide to cover rural areas as well [21] They can also use teachers' associations [1]. Teachers and policymakers should work together on developing ICT policies and policies in general [25].	94
	1.2 There should be a periodic review with teachers' involvement.	51
	1.3 In Ghana, I have come to realise that teachers do not have any role in making policy that affects their work, we do not have a choice, we are just implementers. The government does the policy and just gives it to us to implement. We have no control over it. It is done from the top and we are to implement. Sam, I am not complaining, but that is the way it is done here in Ghana [51].	51
	1.4 ICT4AD – Oh yes, I have heard of this but did not know it was linked to our work [1]. ICTED – it seems I have heard of it before [2].	3
	1.5 That is what we have done. From Panga to Accra we involved people at the regional level and sectorial level. Ministries are doing the same. We consulted!	1

The question of who owns the ICT4AD and ICTED policies rests more on society's understanding of the level of involvement of stakeholders from the

outset in the policy formulation process and how collaboratively policymakers and implementers engaged within the process.

However, the data, as displayed in Table 5.2 above, indicates that while policymakers believe that policy implementers were involved in the formulation of the policy, when they were consulted, the views of the implementers indicated the opposite. All the policymakers interviewed mentioned that consultations with various stakeholders occurred, and the author of the ICT4AD policy added that there “were nationwide consultations” (i.e., “from Panga to Accra we included people at the regional and sectorial level”), which differed from the view of the implementers involved in the study who were experienced practitioners. The mean average educational working experience of the implementers involved in the study was 15.5 years of continuous service, which implies that some of them taught during the 2002 and 2007 consultation process leading to the launch of the ICT4AD and ICTED policies. The implementers also represented practitioners from more than 50% of the regions of Ghana. A clear dichotomy exists between what policymakers understand as consultation and the policy implementers’ views about the consultation and the process.

The general view among the implementers is that they were not consulted or involved in the formulation of the ICT4AD and ICTED policies, nor were they aware of the existence of the policies that they are expected to implement. With the exception of two practitioners (a head of faculty and a head of an ICT department) who seemed to have heard of them (1.4), all the other respondents in this category “have not heard of them” (1.0). This view is further supported by the survey response when implementers were asked about their view on aspects of the implementation of the ICTED policy in their school. As can be seen in below, 80% of the respondents disagree (60% and 20% of the respondents, respectively, disagreed and strongly disagreed) that they were well informed about the ICTED and ICT4AD policies, with only 13.3% agreeing. The evidence strongly supports the assertion that policy implementers in the context of Ghana were not effectively involved in the formulation of the ICT4AD and ICTED policies and that the policies, when

finalised, were not effectively disseminated and shared with the practitioners. Here are symptoms of *de-energised policy*. Expectations from the government were that the policy was effectively implemented, but the support that was given to schools to aid the process of successful implementation was considered inadequate, with over 70% of respondents (Table 5.3) supporting this claim.

Table 5.3 Implementers' Perception: Extent of Successful Implementation

	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
a. You are well informed about the ICTED and ICT4AD policies	0	13.3	6.7	60	20
b. Support to implement the policies is adequate	0	6.7	20	53.3	20
c. The implementation of ICTED and ICT4AD in my school was a success	0	6.7	13.3	33.3	46.7

Furthermore, within this discourse of the non-involvement from the outset of Ghanaian secondary school stakeholders' in the policy architecture was the claim in favour of policy dictatorship as mentioned above in Table 5.2. The respondents were of the view that policy formulation was a prerogative of government, and they did not have any role in its formulation but were at the receiving end to get the final product; however, in this case, the final products of the ICTED and ICT4AD documents had not even reached the school gates of the secondary schools. The argument in favour of policy democracy was valid in this context and can provide the diagnosis needed to avoid *de-energised policy*. If the policy implementers are not involved in the policy formulation, they at the least should be educated and informed about the policy and the expectations therein, so they can take ownership of it and make it work. The views of Ball et al. (2012b) on "how schools do policy" are highly relevant here and provide support for the claim that policies on their own are not a sufficient tool to bring the necessary change into a given space but have the ability to make meaning of such policies. The top-down approach to policy formulation may not necessarily recognise the complexity of policy implementation, which according to Spillane (2004), is "a complex cognitive

process.” Failure to attain this cognitive state soon enough will either bring about an uncoordinated approach to the implementation or unsuccessful implementation of the policy. Therefore, within the context of this study, effective coordination and implementation of the ICTED and ICT4AD policies are critical elements of *commonality capital*. Getting policy actors involved, thinking, and working to bring about the necessary changes to particular space demands a high level of coordination and planning, and Spillane (2004) sees it as a recipe for failure if this is not achieved.

Regarding whether the implementation of the ICT policies in schools has been successful, 80% of the respondents (in Table 5.3, 33.3% disagreed that the implementation of ICTED and ICT4AD policies in their schools was a success, while 46.7% strongly disagreed) indicated that it had been unsuccessful, with 13.3% remaining indifferent. Aside from their non-involvement in the policy formulation process and their perceived lack of knowledge about the existence of the policies, the non-availability of the required equipment needed to implement the policies was seen as another contributing factor.

5.3.1.2 ICT Equipment Provision Factor

Schools must be provided with the right equipment and tools to support the ICTED and ICT4AD policies of Ghana. Technological equipment is a social tool that can be likened to a living organism that needs to be supported, fed, nurtured, and maintained. At the same time, technological equipment is a matter of give and take. Every new technology that is acquired means, another needs to be discarded, and each comes with both positive and negative aspects, but what is important is that each must feed a particular need or do a particular job, without which the investment is not worthwhile. Therefore, acquiring of ICT tools always starts from the point of providing, and in this case, providing the right technological equipment needed for the job. The lack of computers, non-functioning computers, and lack of subject-specific software availability are some of the discourse factors of ICT equipment provision.

Table 5.4 Implementation Factor: Equipment Provision

Equipment provision		
Category	Codes	Frequency
Equipment	2.0 Accessibility to computers is a problem	52
	2.1 The computer-to-student ratio is a challenge	51
	2.2 GES should also provide Internet for schools and GES pays for it	48
	2.3 Non-availability of subject software, the right software for all subjects	41
	2.4 We do not have enough computers that function well, the computers are not a branded type; they were assembled in Ghana, are not durable. They break down frequently, Provision of more computers that actually work is needed	40
	2.5 Secondary schools do not have ICT equipment and you are talking about primary. ... how many primary schools have got computers and other ICT tools? Even in our school, which is in an urban area, we have only 55 units and only 25 are working properly and there are over 1200 students. The policy is just on paper; it is nice on paper. They bring the equipment to the students and not teachers, they should provide the teachers with the equipment as well, Through the 1-laptop-1-child initiative, students have laptops from the government, what about the teachers? They should use laptops as well; my child received one so I know what I am talking about. Teachers should be equipped with iPads, computers and modern gadgets ...	17
	2.6 The ICT equipment in this school is: projector, microcomputers, telephone, Internet and calculator. There are printers and a copier	3
	2.7 I think the government should provide solar computers to schools	2
2.8 Yes, it is achievable because the government is providing schools with computers, the ICT tools to enhance teaching	1	

Non-accessibility to computers and lack of computers and associated software was a common theme emerging from my engagement with policy implementers, which is contrary to the phenomenon in countries like the United Kingdom and Japan, who according to Selwyn (2013), funded an estimated £5 billion into schools' educational technology (p.66); in Japan, an estimated cost of 100 trillion Japanese yen was spent on internet connectivity in educational and health institutions (p.68) in the 2000s. Therefore, the case of Ghana is somewhat revealing; even though the ICT4AD and ICTED policies were to be fully implemented in the education sector by 2015, schools generally did not have enough of the basic necessities (such as a computer) to enable them to start translating this hope into reality. The concern is in school A: with 1,200

students, only 25 computers out of 55 functioned—a staggering ratio of 48 students to one computer. Such a ratio implies that per the school timetable, some students would not have access to a computer during a three-month school term. Otherwise, one computer was available per classroom, which I referred to as the teacher’s computer and was without the software to ensure optimal use for an enhanced learning dialogue and skills acquisition, as stipulated by the ICT4AD and ICTED of the country.

However, consensus exists among the policy implementers that they could make do with the sparse equipment they have if only they had the right software, i.e., subject-specific software. In addition, as the students were being given laptops by the government through the 1-Laptop-1-Child Initiative (1:1 Initiative), a provision to provide teachers with the same, even on hire purchase, will enhance the implementation of the policy. Therefore, even though there was mainly *de-energised policy* resulting from *commonality deficit* (created when policy implementers are not involved in the policy formulation), they were willing participate in the ideal environment where equipment is also provided. The significance of *commonality capital*, which is a motivation for taking ownership, is paramount for policy implementation in the Ghanaian context. Policy implementers are always willing to ‘go the extra mile’ to make policies work, even if they do not know anything (as I have discovered during this research) about the policy, including the tenet and letters therein. The centrality of the debate with this specific discourse of ‘not enough equipment’ is not whether the policy implementers are able to use the equipment but about recognition of their professional acumen and the need for them to be involved in the decisions that affect their practice. Amid the political identity and politicisation of many things and all things a word from people of influence in Ghana, I have also gathered that these practitioners were not sabotaging initiatives that were earmarked to develop the country and provide suggestions to address their concerns.

With reference to Table 5.4 the respondents clearly identified their concerns, including the call for government to provide “teachers with iPads, computers and modern gadgets ...” (2.6). The argument perhaps was a request for the

equipment for the sake of them and the mutation of the idea I referred to as *technolarisation* (owning technological gadgets for the sake of it, for fun, and as a fashion). This undoubtedly may be true, as I have noticed during my involvement in development projects to engage policymakers and high-level government officials in prioritising youth capacity building in the mathematical sciences across Rwanda, Tanzania, and Ghana, a role I performed from August 2013 to December 2015. During this tenure, educational practitioners were quick to ask for iPads (tablets) and computers, but when probed on their rationale, the common response was for checking emails. In this situation, my view is that the provision of training in the use of ICT equipment and the provision of the equipment should be simultaneously implemented in order to avoid the challenge of underutilisation of ICT tools as has happened elsewhere (in some English schools, for example, as discovered in my masters research of 2006, where some schools in England spent their ICT credit provided by the then Labour government to acquire ICT tools, which were not really used but remained in their packaging and kept in store; in my view, the tools were acquired for 'the sake of it') (Awuku, 2006). As I mentioned previously, this is what Selwyn (2011b: p.4) referred to as the 'messy reality' of technology use in educational institutions. However, I am also aware that the debate about providing technology before training or vice versa is an area for further exploration, but the reality in the Ghanaian context is that adequate ICT tools need to be provided to the practitioners.

Furthermore, as can be seen from Table 5.5, the majority (80%) of the policy implementers (teachers) confirmed that the ICT facilities provided at their places of work were inadequate to implement the policies. This, in my view, makes the 2015 timeline for full implementation of the ICT4AD policy objective relating to education rather ambitious and mere rhetoric motivated by Ghana, who was proposing to be a key player on the global stage as other countries. However, to think that this can happen without a fundamental appreciation for the need for building the necessary *commonality capital*, which is an asset and a currency for the future, has caused the ICT4AD and ICTED policies to suffer from de-energised policy.

Table 5.5 Perception of Teachers: School ICT and Available ICT Facilities

N=15	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
a. The ICT facilities provided at your school are adequate for implementing the objectives of the ICTED and ICT4AD policies	0	13.3%	6.7%	80%	0
b. Curriculum resources necessary for integrating ICT into the school including support have been provided	0	33.3%	20%	26.7%	20%
c. The challenge brought with the introduction of ICT into your school is embraced by key Stakeholders in your school	0	33.3%	26.7%	40%	0

Therefore, the current state of ICT equipment provision in the case of Ghanaian secondary schools is a barrier and not an enabler to the implementation of the policies. Also, with 46% of respondents disagreeing and 20% indifferent to the statement as to whether the curriculum resources needed to support the integration of ICT have been provided in schools, another important question is raised regarding the level of ICT curriculum understanding and appreciation of practitioners. My argument is that if they are not yet equipped with how ICT can be used in their subject teaching and what curriculum resources are necessary in this regard, then the process from the outset should have focused on equipping the practitioners with the required technological skills. In the absence of this education, and perhaps the misappropriation of *commonality capital* and misuse of policy democracy, the challenge brought by the introduction of ICT into Ghanaian schools has not been totally embraced by key stakeholders in the schools, which further demonstrates the gap between the hopes and reality of ICT use in Ghanaian schools. The 33% of respondents presented in Table 5.5 who agreed to statements *b* and *c* above are all ICT coordinators who have some form of ICT qualification. My call for ICT education and capacity building for practitioners is thus further supported, which is also supported by the respondents as represented in Table 5.6. Capacity-Building Factor

The respondents were clear in their view that the acquisition and possession of the requisite skills by teachers for ICT use in teaching and learning was one of the necessary conditions for effective implementation of the ICT4AD and ICTED policies. The policy implementers need to have the capacity (1) to interpret the policy and make meaning of it, (2) to make the policy work, and in this case (3) to integrate ICT into their daily work to produce graduates with the requisite skills to use ICT creatively and to function in the global knowledge economy. The issue of capacity, therefore, is further aggravated when policy implementers are isolated from the policy formulation process and unaware of the ICT4AD policy and ICTED policy yet expected to make the policies work. The capacity-building factor as a *commonality capital* discourse posits that for all stakeholders to make a significant contribution to the decision-making process, including policy engineering and architecture, they must be equipped with the requisite skills and knowledge. The possession of technical knowledge about specific matters at stake, in the views of the respondents, is a reason for such individuals to want their views known and press for their views to be accepted in any decision-making. In this sense, for the ICT4AD and ICTED policies to be effectively implemented, the experts who can make the policies and technology work must find their place in the space created by the policies. The implementers need to possess the skills to deliver the curriculum, to integrate ICT into their lessons, and to use ICT to communicate and engage with other stakeholders, including students, within the education space.

However, as illustrated in Table 5.6, there are limiting factors in relation to the capacity of the teachers leading the implementation of the ICT4AD and ICTED policies within the school system. The respondents, including teachers, confirmed that teachers lacked the requisite skills to use ICT, as they had no training in how to use the computers, even when computers were provided to the schools.

Table 5.6 Implementation Factor: Capacity-building for Teachers

Capacity Building for Teachers		
Category	Codes	Frequency
Capacity Building	3.1 Provide INSET to teachers, all teachers, on how to integrate ICT into their subjects	52
	3.2 Though to use ICT confidently and creatively in this school the students are not very confident	52
	3.3 I remember we went for training 2 years ago organised by Intel to enable us to train others but it did not happen. We did not have the opportunity to train others ...	51
	3.4 Teachers lack the skills to use ICT	49
	3.5 No training is offered by the school. They had no training and I have not heard of any training	47
	3.6 Teachers should be trained before they finish training and come to the classroom. I learnt all colleges of education now have an ICT use for teacher training programme for teacher trainees	21
	3.7 Teachers themselves are not aware of how they can use IT. The should teach the teacher how to teach the students first then they bring the equipment	16
	3.8 Knowledge base – not everybody knows how to	7

Therefore, the ‘equipment provision’ discourse was made worse by a lack of skills, meaning that even when the equipment was provided now, *teachers* (i.e. *the implementers*) did not have the expertise to optimally make use of it, which was a challenge to effective implementation. Teachers, as important stakeholders in the implementation of the policy, need greater involvement in the decisions that affect them, in the decisions they champion and implement. It may be argued that teachers can always interpret and reinterpret the policies within their particular context and situation when they arrive in the education space. While this may be the case, another centrality of *commonality capital* propounded that the time needed and the understanding that is afforded may respectively be worthwhile and enormous if policy implementers, and in this case teachers, are involved from the outset in the formulation process. Continued delays, confusion, and misinterpretation upon misinterpretation from miscomprehension of policy intents are potentially disastrous to effective implementation, especially when the policy is time bound, as was the case with ICT4AD. The respondents were of the view that engaging stakeholders and

implementers from the outset (but as seen earlier in Table 5.2, codes 1.0 and 1.1, this view was not held) is a “key to identifying the potential challenges to implementation” (Ghanaian policymaker)—lack of skills, perspective, and perception of implementers, as well as availability of equipment to aid implementation, required setting of a realistic timeline for implementation.

As such, the fact that the respondents were not aware of the reason for the use of ICT in their lessons even ten years after ICT4AD was launched indicates that the commonality deficit is endemic and further supports the need for harnessing *commonality capital* in the context of Ghana to enhance policy ownership and effective implementation. The respondents identified the need to incorporate ICT in the pre-service teacher education programme to equip teachers with the skills needed to integrate ICT into their future classrooms and work for enhancing the learning experience of their learners. Respondents added that “all teachers should be trained before they finish training; in this way, they are able to integrate ICT into their lessons; you can’t give what you don’t have.” The perceived delay in training teachers to see teachers seamlessly integrating ICT into their daily lessons is, therefore, associated with complexity and convergence of factors within commonality deficit. My argument at this stage is that with the prevalence of *commonality deficit*, even when the technological tools are supplied and training provided to teachers, they will remain separate as add-ons and not as integral to the daily practice of the teacher. *Commonality capital*, which is further described in Chapter 6, is needed to ensure policy ownership and autonomy to apply technological tools to the work of the teacher as has been the case with other professions when technology tools have been applied to medicine and engineering, for example.

5.3.1.3 Infrastructure Factor

ICT in Africa, as in the rest of the world, is set to transform Africa (Jejdling, 2015). ICT is seen as a technology infrastructure, which is moving towards becoming or has become, a social infrastructure with the potential to connect individuals, organisations, and communities. The transformative potential of ICT, calls for seamless infrastructure development in Ghana that takes into

account the rapidity of ICT advancement, which will enable the educational sector to deliver on their mandate. Within the infrastructure factor of the study is the respondents' identification of the infrastructure challenge of intermittent electricity supply, as well as challenges of space and computer laboratories in secondary schools. The findings are presented in the Table 5.7.

Table 5.7 Implementation Factor: Infrastructure

Infrastructure Factor		
Category	Codes	Frequency
Infrastructure	4.0 Electricity is intermittent	18
	4.1 We do not have enough labs, so sometimes there are clashes on the timetable. Sometimes a class would have to forfeit their session because of clashes	12
	4.2 Space for lab is not enough. The issue is not with computers per se, it is with space. They are constructing additional classrooms, as soon as they complete we will have space. I know if there is space they will be filled with computers	10
	4.3 There is 1 computer lab with 22 computers but only 8 working effectively for the whole school. We have over 1000 students in this school	1
	4.4 There are 10 departments; there should be a separate lab for each department	1

The ICT use in education is likely to flourish in a conducive and enabling environment, which is necessary for optimum use and implies that ICT use does not happen 'in a vacuum' and electricity is needed to use the computers provided

However, findings emerging from the data indicate that secondary schools in Ghana have infrastructural challenges and that, *ceteris paribus*, the successful implementation of the ICT4AD and ICTED policies could still be a problem. While issues of available computers exist, a respondent stated, "the issue is not with computers per se" but the availability of enough space. In Table 5.7, the point was made that computers were not bought because there was no space for them and in 4.2 "... if there [was] space they will be filled with computers". This situation was made worse when departments had to struggle for the use of the limited computer laboratory space, resulting in some classes forfeiting their computer lessons. In one school, I was shown a box of 25

computers donated by the Member of Parliament (MP) for the constituency where the school is located. The MP is also an alumna of the school. These computers had been donated seven months before my research visit but were still not installed for lack of, or perceived lack of, space. Further inquiry revealed that the leadership wanted a dedicated lab to be built for the use of the laptops, though they could have made use of existing space within some departments (like the room I was assigned for my interviews), but the use of existing space was not an option. Some respondents were taken aback by the decision of the leadership: "Had they consulted us we would have recommended the use of the available space." Therefore, it seems there is *commonality deficit* at all levels of the spectrum, at macro and micro levels. Two key issues that need consideration by the schools are

1. Due to the lack of space, the school should acquire laptop trolleys.
2. Laptops do not need a lab, which could be cost-effective, but investment should be made to improve the security of the laptops.

Further, when ten departments have to make use of one small computer laboratory, the question is raised about how much the implementers were involved in the decision-making process regarding the integration of ICT into the curriculum and the steps for its teaching. This point is well made when situated in an engine and car scenario: what use is a car without an engine, and what use is an engine without a car? Both must coexist to have a driveable car. This is the challenge of having a computer without a building for as it is the case, most classrooms that I observed were overcrowded and practically had no space for computers. On the other hand, what good is it to have a computer lab without computers? Both must coexist to support the implementation of the ICTED policy.

In addition, the survey result (shown in Table 6.10) indicates that 93% of the respondents mentioned the infrastructure challenges as being the result for not implementing the ICTED policy, and 87% of them linked this to insufficient funding made available by central government. The point here is that schools

tend to be at the receiving end of the policies and left to make them work in whatever way possible. It is not always the case that policies will work this way, even with appropriate intentions and skills, especially when the demands of the policy are technical, as was the case of this study. The demands of the ICT4AD and ICTED policies naturally require a collaborative approach to their formulation and marshalling of a macro space for their delivery, so that when they come back to the micro space in the schools, the enabling environment for implementation at best will have been created, or at worst minds will be prepared to embrace the policy objectives and turn them into action.

5.3.1.4 Political Factor

Critical to *commonality capital* is the political factor, discourse. The political landscape within any social space determines the level of interplay and engagement of various actors and defines specific outcomes. The identification of policies that need formulating, the definition of the development agenda, and the space that the policy is to occupy in many countries is a political exercise. The leadership that is needed to make a developmental initiative relevant to the need of the citizenry is critical in ensuring that policy implementation is effective. Moreover, the extent to which policies are seen as nationalistic or apolitical is essential to galvanising a broad-based policy ownership. Indeed, if one is persuaded that the political dimension is decisive in human endeavours, any analysis of technology can be evaluated as to its political salience, and it becomes possible to give an array of prominent analyses (Durbin, 1972). Technology in education is a political initiative, as technological tools were not initially meant for the classroom but for business and industry. This political initiative is one of the reasons for the study: to understand the political discourse within the *commonality capital*. In Table 6.8 respondents identify the various political themes that either support or do not support the effective implementation of the ICT4AD and ICTED policies of Ghana.

Table 5.8 Implementation Factor: Political

Political Factor		
Category	Codes	Frequency
Politics	5.0 Yeh... leadership I mean goes beyond this school. That is why we are saying it is (achievement of policy objective) a long way ahead. The leadership involves politicians, directors of education and the like...	28
	5.1 ...success of the policy depends on the ideology of a particular government in office. If it is a nationalistic agenda, then it is possible, but if not then forget about it...	25
	5.2 The current government wants to relaunch the ICT4AD document ... because the momentum and zeal when it was first launched has died off	18
	5.3 Yes, there should be clear policy free of politics	15
	5.4 The one-laptop-per-child programme I think is good. But because of politics it is not being done properly. How are the laptops distributed?	1
	5.5 The future of ICT.... I am looking at the leadership. Sometimes leadership is not ready to invest. We need leadership to be willing and ready to drive things forward. Some are rigid, others are too political	1
	5.6 It takes leaders to bring the change. ICT-related leaders make a big difference	1
	5.7 ... but with the right leadership, we will get there but not by 2015	1
	5.8 The implementation is not integrated and coordinated as it is supposed to be but a pocket of practice from here and there	1

From the data, it is obvious that there is a need for a strong political will to ensure technology use in education and to support national development. Some initiatives by the leadership of the country, including one-laptop-per-child, were mentioned by the respondents as good initiatives yet also criticised as political; in other words, one-laptop-per-child is claimed to be motivated by the political identity and orientation of the beneficiaries. The distribution of laptops was meant to increase access and promote ICT for learning, but the pace at which laptops were being distributed, according to the respondents, made full integration a near impossibility; moreover, where computers had been distributed, the skills to make effective use of them were rare. This case if laptop distribution could be likened to a situation where access to computers and skills for effective use were not a problem, but the ability of ICT to penetrate the pedagogical space of the classroom and do what ICT was

intended for in the school system was not being achieved; thus, the political discourse, within which was leadership for technology, becomes important. Leadership needs to take ownership of the why, what, when, where and how of ICT use in education to invest and ensure adoptions from teachers. When practitioners, and in this case implementers, felt that policies and reforms were being done to them by politicians, leadership adoption suffered and so did implementation. Speaking with a group of 224 colleges of education leaders in Ghana as part of my professional work, it emerged that education practitioners were 'fed up' with national policies and the reforms being 'dumped' on them; further, these leaders felt they were not effectively consulted and saw policies arriving in their institutions as politically motivated and promoting the agenda of the political party in power: "What teachers have to do and what politicians expect of them are poles apart" (school leader) and there "should be policy free of politics." The respondents viewed policy from a nationalistic standpoint as a broad-based participatory process and good practice to attract all for effective implementation; herein is found *commonality capital*.

Another critical observation from the data as presented in Table 5.8, is the identification of the role of leadership and policy leadership as one of the essential factors in aiding effective implementation of policies. As the respondents, have indicated, "it takes leaders to bring change," and leaders who are ICT savvy make a difference to ICT adoption in their institutions. Collaboration and partnership are two approaches that leaders, both political and educational, can use to garner practitioners' acceptance of policies and their implementation. However, the effective use of commonality capital with policy formulation and implementation minimises or eliminates potential factors of implementation failure. In the absence of this approach, respondents reiterated that "the implementation [was] not integrated and coordinated as it [was] supposed to be but a pocket of practice from here and there" and this could be enhanced through engagement of the implementers from the outset. It is also important to be clear about the ideology of the government and power as mentioned by the teachers interviewed for "success of the policy depends

on the ideology of a particular government in office. If it is a nationalistic agenda, then it is possible, but if not, then forget about it.”

5.3.1.5 Curriculum Factor

An argument I want to put forward at the start of presenting the data on the curriculum factor is that *the type and nature of curriculum provided to ensure the policy objectives are achieved is as important as the mode of delivery of the curriculum and the environment in which they are delivered*. A curriculum for ICT without the necessary pedagogical drive and a conducive technological ecosystem is unlikely to bring the desired outcome. A case in point: six years after the launch of the ICT4AD policy of Ghana in 2003 and a year after the ICTED policy was formulated, ICT courses were introduced in 2009 in all schools, including both basic education (primary and junior high secondary) and senior high schools. According to the policymakers interviewed, the introduction of the ICT as a subject is to ensure that graduates of these levels of education in Ghana are adequately prepared to function in the knowledge economy, thereby fulfilling the policy objectives. With the attainment timeline of the 2015 policy objective, the 2009 launch of the curriculum implied six years of implementation to achieve the objective, which against the backdrop of six years of primary education meant only the first cohort of students would have graduated by 2015 and started junior high secondary school in the 2015–2016 school year, which also implied that the first cohort of junior high secondary school students to graduate with ‘ICT skills’ would be in 2012 without the opportunity of studying ICT at the primary level. The same scenario equally applied to the senior high students, who also would not have the opportunity to acquire a basic education level of ‘ICT skills’. This finding reveals the seemingly ambitious timeline for the policy implementation and the probable impediments to the successful rolling out of the policy in education for the desired outcome. Table 5.9 presents the findings from the research interview related to the provision and arrangements of the secondary school curriculum being seen as a hindrance to implementation. Moreover, the content of the syllabus, the mode of delivery, and the arrangement in schools to deliver the syllabus were a barrier rather than an enabler to effective implementation of ICTED and ICT4AD relative to the policy objective.

Table 5.9 Implementation Factor: Curriculum Provision

Curriculum Provision		
Category	Codes	Frequency
Curriculum	6.0 Curriculum Time - Timetable allocation, i.e. contact hours are limited to 35 minutes per week per class [2]. Time allocated for ICT is also small [9]. Allocate more time to teaching of ICT with clear policies in place [22]. 80 minutes of lesson per week is not enough for what we need to teach the students [9]. ... A timetable allocation of 1 hour 20 minutes per week for practical with a class of 50 to 65 students is challenging [5]	45
	6.1 Syllabus - The ICT syllabus from GES focuses on word processing, basic Excel, PowerPoint, and hardware – we look at the components of the computer [11]. The syllabus is basic enough to teach but there is too much concentration on Microsoft [11]. ... the syllabus seems okay... I would not change anything in it if given the opportunity... Microsoft has taken over the world, so we think it is appropriate for our students [5]. We teach the students spreadsheets, word processing and research [5]. First-year students only do theory and each class has 60 students and form 2 and 3 students do practical [2]	34
	6.2 ICT for subject teaching - Integrating ICT in other subjects is a challenge	22
	6.3 Link with Careers - The curriculum should relate to careers as well to achieve the policy object but not just focus on word processing	5
	6.4 Examinations - Look, even the students do not do any external examination in ICT, we assess them internally. They do not take lessons seriously as there is no qualification at the end	5

According to the data in Table 5.9, the ICT syllabus in secondary schools focuses mainly on ‘word processing, basic Excel, PowerPoint and hardware—we look at the components of the computer’ with limited time allocated for its study on the timetable. The majority of the respondents echoed this situation of not having enough time to teach the ICT syllabus and cover all that the students had to learn. The curriculum was theory-driven—so there was a focus on theory (concentration on history of computers and ICT-related vocabularies and terms) throughout the first year, with only the opportunity to do some form of practicum in years two and three. This could mean that any

student without a computer at home in the first cohort of these secondary students would only have booted up a computer for the first time in the second year but was expected to develop the required ICT literacy and competence to function effectively in the global knowledge economy. Critical to the finding was the fact that ICT as a subject in secondary schools in Ghana is not externally examinable and therefore did not command the same interest and currency from the students. Therefore, ICT is a subject to be done for fun and placed in the same category as physical education. It is essential to remember the reason for introducing ICT into the fabric of Ghana and the mandate placed on the education sector by the ICT4AD policy: to enable graduates from the Ghana education system—both formal and non-formal—to function in the global knowledge economy because they had the requisite ICT skills. The rhetoric of ICT skills impartation at the point of exit in the Ghana education system is a real hope and mere faith placed in the words of the ICT4AD, but the reality of the implementation requires a critical analysis, as this study has undertaken.

As can be deduced from the data as presented in Table 5.9, policy implementers in the educational system were willing to make the policy work, even though they were not involved in its formulation. They were of the view that with the allocation of more time on the school timetable for the study of ICT, they were able to effectively cover the syllabus and make it work. This willingness to ‘make things work’ is what policymakers need to harness for *commonality capital*. What is not explicit, however, is the appropriateness of the syllabus and the ICT curriculum for equipping graduates with the skills needed to function in the global knowledge economy. The suggestion that the curriculum should “relate to careers as well to achieve the policy object but not just focus on word processing” (5.3 above) is an indication of the disconnect between the policy objective and the curriculum for achieving the objectives on the one hand, and on the other hand, an indication that the involvement of implementers from the outset was an essential platform for design thinking and shared ownership of policies and curriculum. The critical curriculum factors for the effective implementation of the ICT4AD and ICTED policies are therefore suggested as being (1) a career-oriented curriculum; (2) enough time allocated

for ICT study; and (3) a form of external assessment of students' learning of ICT. These factors for enabling the curriculum clearly corroborate the intentions of the ICT4AD policy as being the introduction of ICT to achieve accelerated human capital development, private sector development, physical infrastructure development, industrial and scientific research development, business industry and modernised agriculture development, export-oriented industry development, and quality education development.

5.4 Additional Factors

One of the survey questions was to find out from policy implementers the reasons for not implementing the ICTED and ICT4AD policies in their schools. The results are presented in Table 6.10 below:

Table 5.10 Schools' Reasons for Not Introducing ICT

Reason	Response	Percentages
Inadequate facilities	14	93.3
Insufficient funding	13	86.7
Inadequate instructional time/timetable allocation	10	66.7
Lack of software/appropriate content	9	60
Inadequate ICT-skilled teachers	5	20
Insufficient/lack of technical support	5	20
Time constraints in developing new content	2	13.3
Other	1	6.7

According to the Table 5.10, 93% of the respondents mentioned a lack of inadequate facilities and 87% stated insufficient funding. Further, 67% of those who responded attributed their inability to implement the policies to inadequate instructional time or timetable allocation, with 60% of them giving the lack of software or inappropriateness of the content as the reason. Clearly, there are factors related to infrastructure (facilities), curriculum, and funding. The school's lack facilities as mentioned earlier under equipment, curriculum, and infrastructure factors are internet connectivity, reliable source of electricity supply, computers, and supporting curriculum arrangements and provisions. These challenges, coupled with the exclusion of policy implementers from the ICTED and ICT4AD policy engineering process, which resulted in a lack of policy ownership, were a recipe for unsuccessful implementation of the

policies. Therefore, in spite of the hype and high hopes that ICT would transform the educational system of Ghana and change Ghana into a knowledge-based economy and information-rich society, the hype seemed to fall into the category of mere rhetoric.

However, from the political identity and orientation standpoint, as a policymaker (a respondent) has stated, this transformative hope in ICT is still alive “with the president of Ghana, John Mahama on Monday 18 May 2015 commissioning 800 kilometres of fibre optic backbone infrastructure, an investment of €38 million aimed at connecting 120 communities to the Internet. The president re-echoed the hype surrounding technology use by saying that ‘the fibre optic is going to allow the nation to do a lot of things’ and it will bridge the gap of the digital divide between urban and rural communities.” This shows the fluidity and dynamism of the infrastructure discourse by which progress is being made to address some of the challenges. What is clear, however, is that the secondary schools in Ghana have not effectively integrated ICT into their curriculum to achieve the policy objectives. At this point, presenting the data from the investigation into the perception of policy implementers at the secondary school level is appropriate to respond to the question foregrounded in the findings and already presented within the overall frame of the thesis.

5.4.1 Perceptions of Policy Implementers about ICTED and ICT4AD

As I have deduced from the interview data, the perspective of the teachers is that the policies have not been successfully implemented, which is central to the research aim to focus on the implementation of the ICTED and ICT4AD policies of Ghana. As discussed earlier, there are specific factors that are necessary for the successful implementation of the policies for the intended purpose(s). From the practitioners’ perspective, it is essential for the purpose of theory building in this thesis to understand what their views are regarding the success of the implementation of ICTED and ICT4AD, especially as they pertain to secondary schools and changes to patterns of practice.

The premise of this is to find out from the teachers specifically where ICT is adopted in their schools and the reason(s) why they will adopt the use of the ICTs. In all, 15 respondents were involved, and the chart below shows the distribution of the responses.

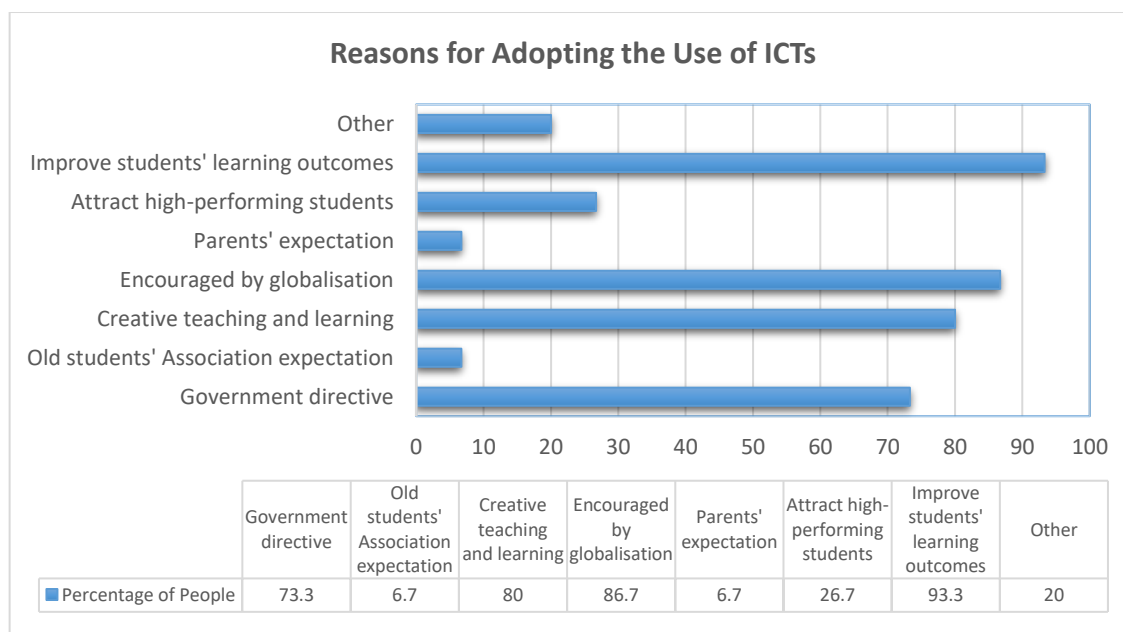


Figure 5.1 Survey data: Reasons for adopting the use of ICTs

From the data, it is evident that the majority (93%) of schools in the sample adopted the use of ICTs because they hoped it would improve the learning outcomes for their students, which is in line with the general hype surrounding the use of ICTs in the school curriculum. While recognising that the use of ICTs in the school curriculum is encouraged by globalisation, the respondents were also convinced that with the introduction of the ICTs, they were able to teach creatively, and learners were able to learn creatively. Only 27% of the respondents did not think that the introduction of ICTs in their schools was motivated by a government directive. As the data has revealed, government directives and globalisation were key motivations from policy implementers' perspective for the use of ICT in education, and they were convinced that their integration would bring about renewed pedagogy of creative teaching and learning that has the potential to improve the learning outcome of students. Notably as well, though only 20% of respondents agreed with this, there were

four other reasons for adopting ICTs in the Ghanaian secondary schools, three of which centred on teaching and learning, while the others related to globalisation:

- To facilitate teaching and learning
- To help students learn some difficult topics through images and videos from the internet
- To facilitate learning very difficult topics
- To match the technological advancement of other nations—causing global competition

This perception that the reason for adopting the use of ICTs is first and foremost renewed teaching and learning was further corroborated when the respondents were asked to indicate the main objectives and purposes for using ICTs in their schools— in other words, for what aspects of their practice they use ICTs. The chart below illustrates the main objectives and shows that over 90% of the respondents mainly use ICTs in their school for teaching and learning.

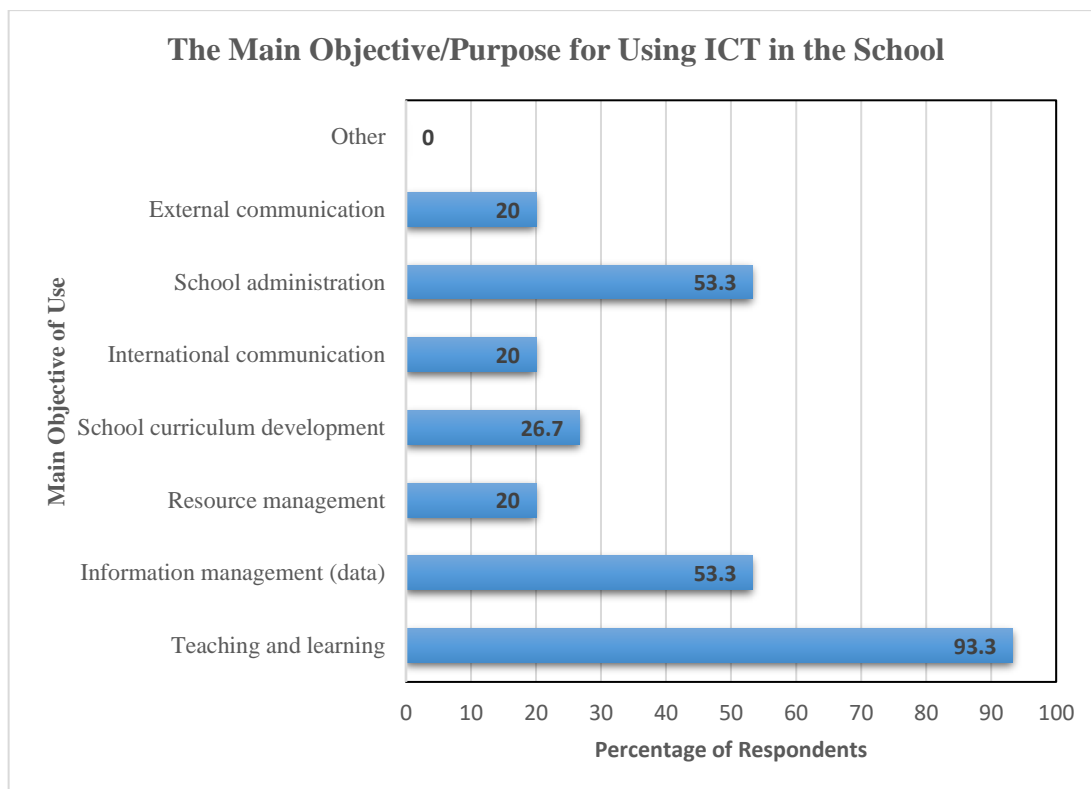


Figure 5.5.2 Survey data: Schools' main objective/purpose for using ICT

Bearing in mind that the stated purpose of introducing ICTs into education in Ghana was to equip Ghanaian graduates—both formal and informal—with skills needed to use ICT tools creatively and confidently to function effectively in the global knowledge economy, then the main purpose of using ICT in schools needs to relate to this objective (Republic of Ghana, 2003b). However, the main rationale for its use currently in schools that are fortunate to have functioning computers is for teaching. Further observation and follow-up shows that when teachers indicate their use of ICT for teaching and learning, they actually mean using basic tools like word processors to compose examination questions, and in two cases (one in Ashanti and the other in the Volta region) science teachers use PowerPoint to teach. In other cases, with the introduction of ICT in the participating schools, it has been noticed that student-centred and independent learning are taking place in three of the schools while project-based and open knowledge-oriented learning was noticed in six schools. One respondent indicated, “Students only memorise ICT terminologies instead of practical-oriented lessons.”

A general lack of skills and non-involvement of teachers in policy formulation were identified as two of the reasons for the inability of teachers to effectively use ICTs in their lessons, though the goodwill was there. Table 5.11 indicates that while over 90% of respondents in the sample disagree with the statement that the current skills of teachers are enough to incorporate ICT in education, 93.3% also confirmed that teacher training was useful to help teachers incorporate ICT in education. More importantly, however, was the fact that all of the respondents were of the view that *commonality capital* was essential for ICT policy implementation by agreeing that the involvement of teachers in ICTED policy formulation was key in helping teachers to incorporate ICT in education.

Table 5.11 Skills of Teachers and Involvement in Policy Formulation

Statements	Agree	Disagree
Teacher training is useful in helping teachers to incorporate ICT in education	93.3%	6.7%
Current skills of teachers are enough to incorporate ICT in education	6.7%	93.3%
Teachers' involvement in ICTED policy formulation is key in helping teachers to incorporate ICT in education	100%	0

The data suggests that the involvement of implementers in policy formulation is an essential aid to implementation.

The investigation into the perceived impact of ICT use on the aspects of school practice produced mixed responses, with only three areas showing an obvious impact. While 60% of the respondents stated that an improvement has been made in students' embedded understanding of teaching and learning materials, and 80% mentioned improved ICT literacy among students, 80% of the respondents indicated that ICT use in their school resulted in an improved quality of teaching. Notable as well was the indication that about 67% of the respondents acknowledged that with the introduction of ICTs, an improvement has occurred in the school leadership and management.

Table 5.12 below indicates the extent to which respondents viewed aspects of the school to have improved after the introduction of ICT into their schools.

Table 5.12 Extent of Impact of ICT Introduction on Aspects of School Practice

Aspects of School Practice	Much Improved	Improved	Neither	Deteriorated	No response
a. embedded understanding of teaching and learning materials by students	6.7	60	13.3	6.7	13.3
b. improved performance of students in external examinations	0	13.3	53.3	6.7	26.7
c. ICT literacy among students	20	60	6.7	0	13.3
d. quality of teaching	6.7	73.3	6.7	0	13.3
e. school-community relationship	13.3	20	46.7	6.7	0
f. school leadership and management	20	46.7	20	13.3	0

Investigating the anatomy of Ghana's ICTED and ICT4AD policy implementation as it pertains to the education sector more generally and specifically in secondary schools is incomplete without seeking to find out the policy implementers' level of support for the key education-specific policy objectives. Teachers were asked, therefore, to indicate their level of support for the key objectives of the ICTED and ICT4AD policies as one of the attributes of their attitude to the implementation of the policies. The findings are presented in the Table 5.13 below.

Table 5.13 Key Objectives of ICTED and ICT4AD Policies - Teachers' Level of Support

	Strongly Support	Support	Neither	Not Support	Strongly Not Support
a. students have a positive attitude towards ICT and are prepared to use ICT to assist their learning process	53.3	46.7	0	0	0
b. students use ICT safely, responsibly and effectively	13.3	60	13.3	13.3	0
c. students perform exercises unassisted in an ICT-supported learning environment	0	33.3	20	40	6.7
d. students learn unassisted in an ICT-supported learning environment	0	26.7	26.7	40	6.7
e. students use ICT to give creative expression to their own ideas	13.3	33.3	13.3	33.3	6.7
f. Students use ICT to help them seek, process and store digital information intended for them	6.7	46.7	20	20	6.7
g. students use ICT to present information to others		66.7	6.7	20	6.7
h. students use ICT to communicate safely, responsibly and effectively	6.7	53.3	6.7	26.7	6.7
i. students satisfactorily choose from various ICT applications in light of the goal to be achieved	13.3	33.3	13.3	33.3	6.7
j. students are able to adjust their approach after considering how they and others use ICT		66.7	26.7		6.7

Reassuringly, all respondents supported the policy objective of introducing ICT into schools to instil into students a positive attitude towards ICT and the use of ICT to assist their learning process. Here again lies the hope among practitioners that with the introduction of ICTs into schools and classrooms, students' attitude toward learning will improve. Moreover, the responsible use of ICTs by students was also strongly supported by 73% of the respondents, with 27% of them neither supporting nor not supporting the objective. Generally, however, there was split support for the policy objectives.

In Ghana, 50% plus 1 is constitutionally used as an indication of a majority approval of a decision; therefore, using this benchmark as the determinant, five out of the ten statements were supported by the respondents, while none of the statements received a clear 'no support'. On the other hand, on average, about 10% of the respondents were indifferent to various questions. Clearly, the statement relating to the creative use of ICT and the use of ICT for independent learning received 47% and about 27% support respectively, with over 46% and 40% respectively of the respondents not thinking that ICT use in schools would enhance creative use and independent learning. These findings were critical in determining how much support the practitioners had for the ICTED and ICT4AD policy objectives and, for that matter, the policy.

5.5 Summary

The findings from the data indicated that the implementation of the ICTED and ICT4AD policies of Ghana within the education sector, and specifically in secondary schools, has not been effective and successful in relation to the timeline. Factors such as inadequate infrastructure, equipment, and capacity of policy implementers hinder successful implementation. Further, the rigidity of the curriculum provision and arrangements, political discourse, in addition to the lack of policy implementers' ownership of ICT4AD and ICTED do not support effective implementation and successful integration of ICT into Ghanaian secondary schools. The issue is further aggravated by a lack of funding to support the schools to make the policies work, even though they do not know anything about them or their existence. Within the context of Ghana, therefore, a vacuum exists in the ICT policy formulation-implementation space that urgently needs to be filled. Hence, in chapter 6, I will be proposing ways to fill the gap and understand this phenomenon as my contribution to the ICT policy formulation-implementation discourse to bridge the gap between policy hopes and realities.

Chapter 6 Commonality Capital for Policy Ownership Vs. De-energised policy

6.1 Introduction

As I have discovered through the document analysis, the hope in introducing ICT into the Ghanaian economic space is to bring about a transformation by turning Ghana into a knowledge-based economy and information-rich society where graduates from Ghanaian educational institutions are able to use ICT productively in Ghana and globally. The transformation agenda, as presented in Chapter 5, has within it hope and the expectation of developing human, economic, political, and social capital (HEPS), which are needed to progress Ghana into the global knowledge economy. My argument is to build ownership of the policies that inform the professional practices of teachers and any other sector where ICT is to be the transformative agent. Arguably, the quest for *policy ownership* from my respondents, as presented in Chapter 5, Tables 5.2 and 5.3, can be achieved through what I have referred to as *commonality capital* and situated within the literature as discussed in Chapter 2.

Commonality capital is a term I use to describe the value emanating from collaborative and deliberate involvement of key stakeholders—in this case the policy implementers—and in policy engineering so as to achieve policy ownership. *Commonality capital* posits that engaging policy implementers from the outset creates a sense of ownership and willingness to make the policy as formulated work for its intended purpose. In the absence of this, policy implementers and policymakers stand to be in conflict with each other over whose policy and what needs to be resolved to pave the way for effective implementation. Policymakers who participated in the study believed that policy implementers were involved in the study (see Table 5.2, code 1.5) while the implementers said the opposite (see Table 5.2, codes 1.0 and 1.1). This is an indication of conflicting views between policymakers and implementers with a potential to hinder effective implementation. As one respondent retorted when I showed them the ICT4AD and ICTED policies, “[T]here is one playing for us and another for them [policymakers]...they will not even give us these

policies.” This makes the case for my call in Chapter 1 for *commonality capital* as a deliberate strategy for achieving policy ownership among policymakers and implementers to minimise or remedy *de-energised policy*. The case for *commonality capital* is important because all hopeful elements of developing human, capital, political, and social capital (HEPS) are underpinned by policy formulation. Hence, if those policies are created in isolation of the policy implementers, as seems to be the case under review, all that is left is wishful thinking and *de-energised policy*. *Commonality deficit* can be avoided by embracing *commonality capital*. *Commonality capital* in the context of this thesis is discussed in section 6.2.

6.2 Commonality Capital

Evidently, the sentiments expressed by the respondents indicated the dichotomy between the intentions at the national (macro) level and the intentions at the micro/ground (individual) level. Ghanaian stakeholders need to embrace *commonality capital* as a key concept of seeing technology as a cultural and social phenomenon—the use of technology to enhance human, economic, political, and social capital. The underlying notion here is the relationship and the dichotomy between society and technology since technology does not exist in a vacuum but is meant to occupy a specific space and to serve an intended purpose. A disconnect exists between the intended provision and what is actually needed, resulting in compromise and placing additional demand on available resources. My argument is that where such resources do not exist to re-engineer different uses for the technology, those resources lie idle and go to waste; this situation could be avoided by engaging stakeholders from the outset, reconsidering the provided technology as human and economic capital, as well as political, cultural, and social phenomena (the engagement of stakeholders) that are *the pinnacle of the essence of commonality capital*.

However, Bullen et al (2006) posit it that, the culture and social systems of technologisation, globalisation and societal change in relation to quest for knowledge within the knowledge economy is a motivation for policymakers to

pursue vested interest with the tendency to ignore the human factor in the policy formulation process. This vested interest is contested and relates to manufacturers of technologies within the techno-economic context – an element of techno-deterministic paradigm. Obviously, “technology ‘opens a door’, it does not compel one to enter” (White 1978:28). Policies have a role in determining how one enters such a door and if one should enter the door at all, which then rests on who the gatekeepers are – the decisions of educational institutions and others, policy implementers and politicians, and the extent to which they ‘know how’ and responsible for the decision to enter or not and their motives for doing so, is essential for effective diffusion of such technologies within the relevant social space and create the opportunity of access for all.

Contextually, Ghana, as I will discuss later using the available evidence, is not entirely suffering from *technology poverty* (lack of access to technology or lack of available required technology). However, there is a tendency to believe if the value to be derived from a particular policy (*commonality capital*) is not embraced as a panacea to the challenge of policies not reaching the implementers but remaining on the shelf, *de-energised policy* and *technology poverty* in the midst of abundant technology and technology policies could be evident. This is a point of technology within approaches to social change, being seen as independent of social forces (May 2002:26) but in reality, technological innovation is represented as a social force over which we have no control (Bullan et al, 2006). My argument as emanating from the literature reviewed and presented in Chapter 2, is that we may not have control over technological innovation as a social force, but not the policy that will guide its integration into the education and development space. We can make policies to guide the introduction and use of technology and what kind of technology to introduce and at what time, which is dependent on the process of making such policies. The available data also indicated that technology availability and technology policy engineering in themselves do not constitute technology use for the intended purpose(s). My position, as grounded in the data from the study, is illustrated in Figure 6.1 and further discussed in the following pages.

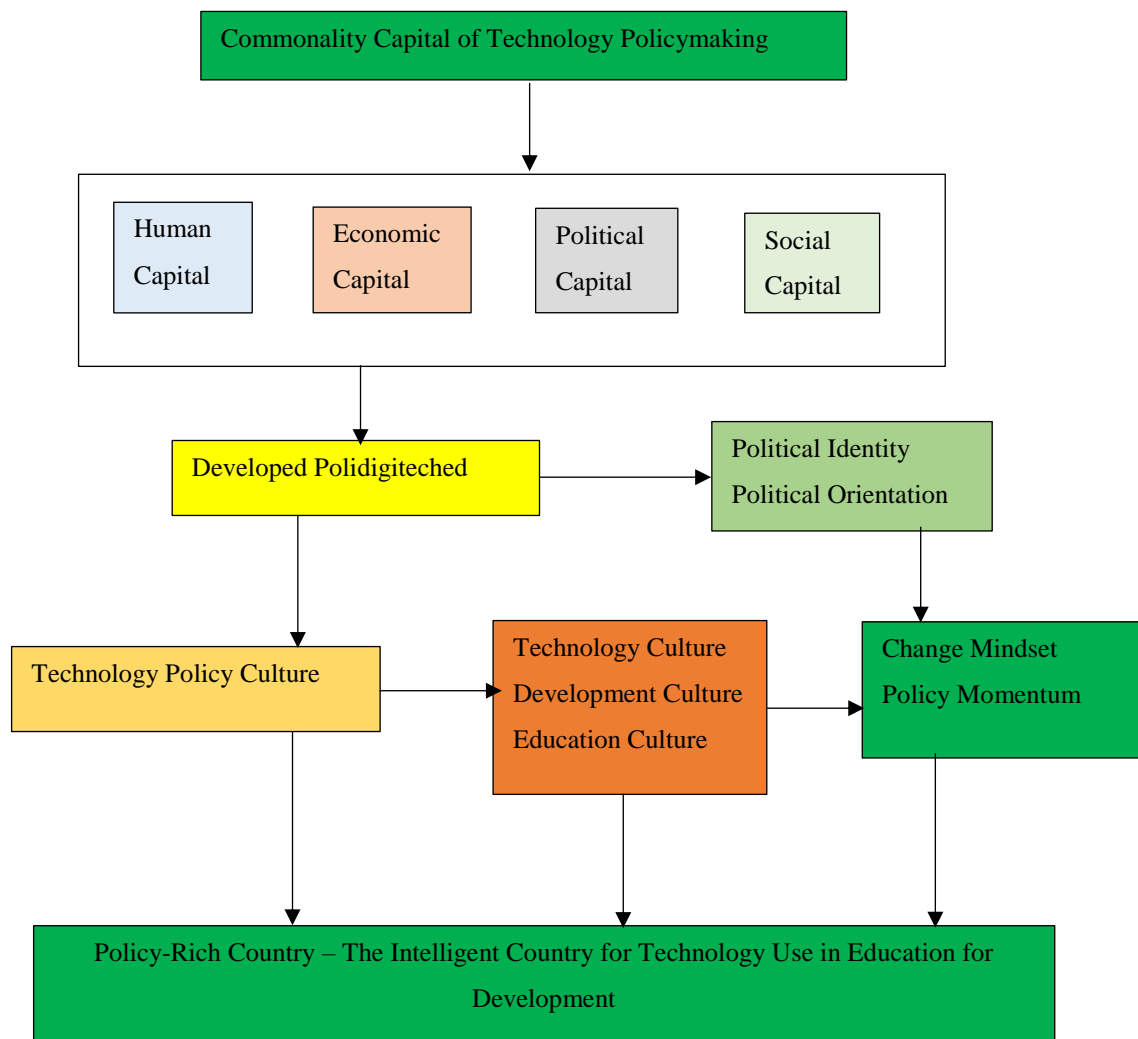


Figure 6.6.1 Organogram - Commonality Capital for technology policy making

6.3 The Theory of Commonality Capital

The concept of *commonality capital* developed in this thesis suggests that a country's development is effectively enhanced through a collaborative and deliberate involvement of key stakeholders in policy engineering and architecture to achieve Human, Economic, Political and Social (HEPS) capital. In doing so, policymakers have to recognise the development of *polidigiteched* (a term I use and explain in this chapter to refer to the interplay between the politics of ICT introduction into education within the domains of political orientation and identity, as well as the transformative potential of ICT use) which need to be underpinned by a change in mindset as an enabler in the

context of policy culture. However, such policy culture should as a necessity, aimed at developing a policy-rich country—a healthy country devoid of *de-energised policy* through the enabling environment of the technology, development, and education culture of Ghana. The key driver for Ghana's performance and productivity in the global technological arena is necessarily and critically linked to *commonality capital*.

Commonality capital is a great resource with both finite and infinite value when embraced and developed by a country. *Commonality capital* is finite when the right environment is not created for it to exist and be utilised, which leads to a point of continuous depreciation. The infinite character of *Commonality capital* lies in its sustainability, judicious spending (expending), and utilisation. In particular, as with many other areas that need developing in Ghana and Africa, the issue is not a lack of resources but the efficient management of the resources, i.e., lack of effective leadership. Effective leadership at all levels is essential for accountable and impactful expending of *commonality capital*, which means that *commonality capital* as developed by a country can be misappropriated and, therefore, requires all stakeholders and policymakers at the macro- and micro-levels to ensure its effective utilisation and sustainability. Also, it demands that policies developed carry the value and currency (*ownership*) of the *commonality capital* and, therefore, require “policy entrepreneurship” (a term first used by John Kingdom [1984] in his work ‘Agendas, Alternatives and Public Policies’), which I take to mean *policy has no value of its own except that bequeathed to it through effective implementation*. Arguably, policy entrepreneurship is critical within the context of *commonality capital* because a policy that has been beautifully packaged but not put into use is no different than a beautifully packaged policy haphazardly implemented; however, one can argue that the latter is partially successfully implemented. However, in my view, success is success and should be as such with no middle ground because I have yet to see a policy or project whose aim is to achieve a partial success. In other words, policies only derive their value from effective use of *commonality capital* to garner ownership and effective implementation (and not the design). However, effective policy implementation seems to be a complex reality rarely happens.

Implementation calls for the dynamic interplay of cultural, social, moral, human, economic, and political capital (the *commonality capital*). Perhaps Ghana’s policy architects and engineers (policymakers), as well as those elsewhere, need to be policy entrepreneurs with the view that policy for the sake of policy is valueless; moreover, policy only becomes valuable and acquires its currency when it is effectively implemented. In this way, a calculated effort to invest in nurturing *commonality capital* will avoid early diminishing returns, rapid depreciation, and eventual disposal of the policy.

Commonality capital only becomes dynamic and strong the more policy entrepreneurs are willing to expend it and vice versa, which also implies a relationship between *commonality capital* use and policy failure, as illustrated in Figure 6.2

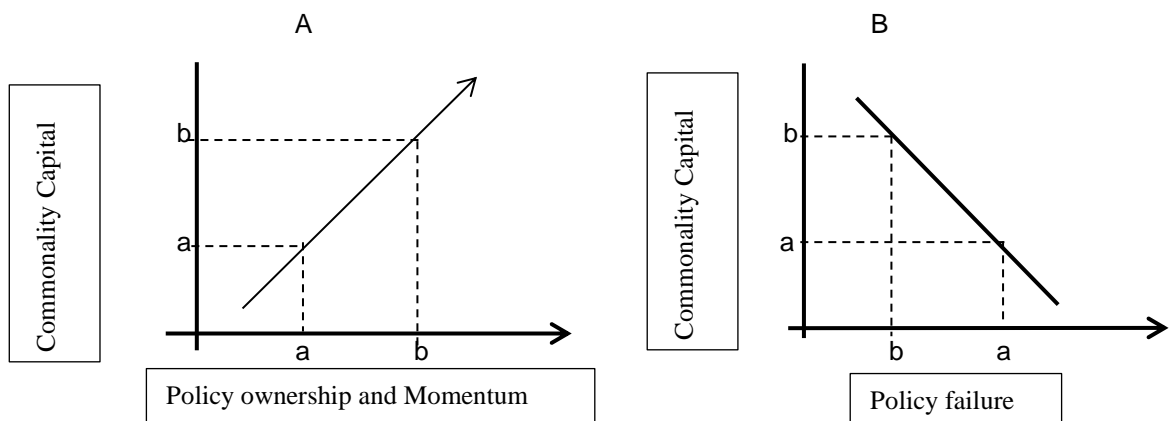


Figure 6.6.2 Relationship between *commonality capital* use and policy ownership and policy failure

The correlation between *commonality capital* use, *policy ownership* and *momentum*, and policy failure is illustrated by diagrams A and B. From the data, *commonality capital* is positively correlated to *policy ownership* and *policy momentum*. As I presented in Chapter 5, Table 5.2 and Table 5.3 policy implementers have clearly stated that they would have preferred to have been involved in the policy engineering process; they want the policies to be created with them rather than being imposed on them. Within the conditions for successful implementation of the policies with reference to the ‘broad critical success factors’ as presented in Chapter 4, Table 4.2, the support and goodwill

of the citizenry is recognised as being critical for successful implementation and, therefore, it is required that a nationwide policy and consultative exercise for plan development with key stakeholders be undertaken for their input into the processes and deliverables. There is a case for policy implementers being engaged from the outset, hence *commonality capital*. Therefore, as shown in Figure 6.2 the more policy implementers are engaged in policy formulation from the outset, the more they take ownership of the end product; further, policy implementers are more willing to share with others the policy, its content, and intent (policy momentum). According to diagram A, when 'a' quantity of *commonality capital* used brought about 'a' level of policy ownership and *policy momentum* and an increase to 'b' in the *commonality capital* use, it resulted in a proportionate increase in the policy ownership and momentum. Simplistic though this view may seem, arguably, and as generated from the field, policy implementers assume ownership of policies if they are part of the engineering process. Hence, the more implementers are involved, the more successful the policy implementation.

On the other hand, the relationship between *commonality capital* use and policy failure is negatively correlated. The more *commonality capital* is used, the less the failure in policy implementation; further, the less *commonality capital* is used, the more it negatively affects the level of policy failure. According to diagram B, when *commonality capital* use is at quantity level 'a', the proportionate level of failure is at point 'a', which is higher than point 'b' at a corresponding higher level of *commonality capital* use of 'b'. At this rate, *de-energised policy* abounds and the policy culture of Ghana is derailed with policies being formulated for their own sake and remaining on shelves without getting to the people who would own and implement them. This phenomenon, combined with the discourses as have emerged from the data, is fundamental to the theory of *commonality capital*.

In proposing the *commonality capital* paradigm, the related concepts and their interplay therein deviate from the conventional way of creating policy, but I am aware that conventional and traditional has not always been successful, at least not in the context of Ghana; therefore, a paradigm shift and change is

required to reflect the reality of the field and space. Over two years of travelling across Africa in my professional capacity has enabled me to engage with policy architects, politicians, and academics, social entrepreneurs, and industry leaders. One certainty is the strong, goodwill among policy implementers in Ghana and Africa in their quest for involvement in decision-making about things that affect them; they want the best for their societies and, therefore, want to be part of any decision that directly and indirectly affects their life and the fabric of their societies. As presented in chapter 5, Table 5.8, 48 times during the interviews statements like “teachers with technical know-how should be involved in the policy formulation, in that way they will be informed about the expectation of implementation. Policy implementation will then succeed” were mentioned. The finding revealed a great opportunity to build a strong *commonality capital* currency for Ghana.

Furthermore, it is imperative that policies in themselves are not a panacea for the developmental challenges that Ghana faces. A formidable and a-well-thought-policy with no plan or procedure to ensure implementation will be a *de-energised policy*, which requires a closer look at the ‘what’ and ‘how’ of policy engineering and architecture. The ‘what’ identifies the tenets of the policy, what should be included, the focus, and the objective, which will make a difference to the lives of the citizenry and in education regarding the lives of students. This standpoint, as has emerged from the study, is best designed from the voice of the people—involvement of the people. The ‘how’ ensures that the policy works in practice. In both cases—the ‘what’ and the ‘how’—the attainment and effective use of *commonality capital* is essential and paramount; without *commonality capital*, the value of policies is derailed and unattained. Therefore, I propose a five-step characteristic of a policy influenced by *commonality capital*. The policy

1. Is immediately relevant to the needs of the individual, groups of individuals, the society, and the country with a buy-in that comes with minimal convincing and effort.
2. Provides a platform that encourages active participation by the citizens, without which they are tourists to the policy implementation. Citizens are people who are keen to get on

board to ensure that the objectives of the policy are achieved, and the outcome is beneficial to all stakeholders.

3. Has a clearly phased implementation plan or framework with an effective monitoring and evaluation strategy.
4. Takes into account policies of the past and why they failed—lessons learned.
5. Is practice-oriented and not just theoretical, adopting instead the best link between practice and theory in the sector that the policy fits.

Within the five-step characteristics of a policy influenced by *commonality capital* is the need to conduct a thorough baseline study into the ability of the sector to implement the policy, their peculiar needs and experiences, and the skill set and potential of the individuals and groups of individuals within the sector. The study should also capture the available resources for implementing the policy and identifying as possible the support systems to be put in place to mitigate potential capability gaps in material and human resources. In the context of this study, policies should be about more than ICT skills acquisition, they should be about developing the human, economic, political, and social capital of the nation, which *commonality capital* aims to achieve. In other words, “creative, critical and intellectual capital of the nation” (Scott, 2003: p.68) should be the topmost priority.

6.3.1 The Drivers of Commonality Capital

I will use this section to outline the four drivers behind *commonality capital* as I have illustrated earlier in Figure 6.1 The four drivers are human/cultural, economic, political, and social capital. As deduced from documentary analysis, presented in Chapter 4, Table 4.1, these drivers summarise the intentions of the ICT4AD and ICTED policies beyond the intention of ICT-skills acquisition. The development and use of human/cultural, economic, social, and political capital, through a collaborative approach to policy engineering and implementation, is necessary and essential for developing the technology culture and the mindset needed for Ghana. The drivers are discussed in the next section

6.3.1.1 Human/Cultural Capital

The implementation of the ICT4AD and ICTED policies of Ghana, as I have gathered from the document analysis, is intended to facilitate the human-capacity building of graduates from formal- and non-formal institutions at any point of their exit from education. The creation of this pool of skills, abilities, and competences of individuals within a nation state constitutes the needed human capital for socio-economic development. Such individuals are expected to contribute to the productivity and development of the nation, hence the need for clear policy ramification that considers the human capital baseline and the projected human capital needs. The process of generating this baseline data, as I presented in Chapter 4, Table 4.1, is an essential component of *commonality capital*. The process calls for the engagement of different stakeholders, some of whom are gatekeepers or prospective gatekeepers.

As I illustrated in Chapter 2, Figure 2.3 (reproduced here for ease of reference), the role of gatekeepers is pivotal in realising and sustaining the cyclical relationship between ICT policy and the intention of building human capital with the ability and skills to use ICT creatively.

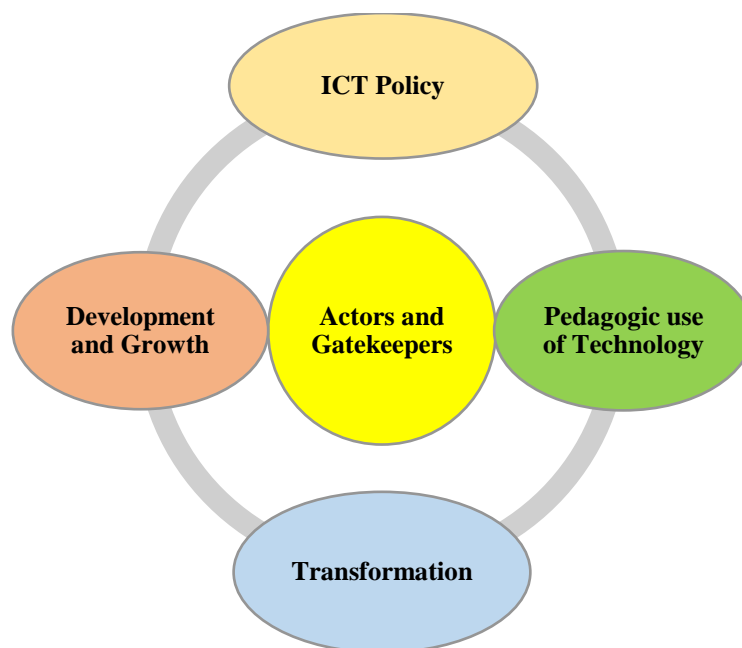


Figure 2.2 Perceived Ghana ICT Policy relations. *Reproduced from Chapter 2*

The creative use of ICT is to bring about transformation, to create a new culture within the nation state where individuals are able to use their technological creative skills to bring about development and economic growth.

Additionally, is the stakeholders' agreement on the kind of human capital Ghana actually needs. In this way, policies crafted will specifically enable the enhancement of the mental or physical ability of individuals who can adapt, and individuals who are patriotic and law-abiding. There are many skills associated with the use of ICT and technology that Ghana intends to impart to individuals, and these clearly need to be captured in the policy. The school has the responsibility of instilling in individuals the best way of doing things and the desired way of behaving in using technology in the digital age. Also, this also implies that it is not enough to have mental or physical skills, but it is important to have mental and emotional resilience—the ability to comply with regulations relating to the use of ICT to operate within corporate organisations, which means that 'civic-ness' is an integral part of human capital.

On the other hand, if the aim of the ICT4AD policy objective is to make ICT tools accessible to the few who can afford them, Ghana has achieved this objective since individuals mainly in the urban settlements such as Accra, Kumasi, and Cape Coast have access to online resources and media tools and spend time on social media and networking. In my view, though there is a significant digital divide and the emergence of new culture in the urban areas (which sometimes seem unprecedented) with effective use of *commonality capital*, gains can be made in embracing, for example, what Potter (2012: p.6) refers to as 'new curatorship' as an enabler for digital human capital development among the youth. In this way, graduates of Ghanaian institutions, both formal and informal, will become potential curators capable of using the digital tools they have to effectively position their presence on social media, e.g., through publishing their CVs, blogging, and capturing and sharing positive content about Ghana. These skills can enhance the economic capital of the youth if judiciously put to use.

6.3.1.2 Economic Capital

The burden on education through the use of ICT to create, improve, and sustain the economic capital of Ghana requires one to understand what the key stakeholders and policymakers mean by 'education' in the context of Ghana. It also requires one to search the literature to identify what position is taken on this subject by other researchers. Bassey (1999: p.38) contends that 'education' means different things to different people, with which I agree. Bassey (1999) further states that education may be seen as acquiring useful skills and knowledge for the purpose of achieving a high-quality life, developing socially and personally, and creating wealth to increase the gross national product of a country. Evidently, education has a role to play in contributing to the economic capital of a nation, and for that matter, Ghana.

However, it is important to recognise that the development of economic capital does not happen in isolation but is at the centre of interrelatedness between all other capitals. Bourdieu (1986), in his discussion about the 'forms of capital' emphasised that all forms of capital can be converted or transferred into economic capital. Therefore, there is enough evidence from the data as presented in Chapter 4, Table 4.1, corroborated by over 86% of the respondents as presented in Chapter 5, Figure 5.1, that with the introduction of ICTs into the nation-state of Ghana and her educational system, the hope is to bring about an enhanced human/cultural, social, and hence economic capital. Individual Ghanaians will have the ICT skills, knowledge, and qualifications to function effectively and creatively in the global knowledge economy (human and cultural capital); this is then transferred to a stable and well-paying job with benefits to include high levels of remuneration (economic capital) and associated increase in social status and recognition, which attracts a network of people to the individual (social capital). Within this social capital are opportunities that give rise to other capitals, including economic capital. The hope is that with all this well-developed capital, Ghana will take her place in the global-knowledge economy because it has transformed. The data as presented in Table 5.8 further indicates the wish of policy implementers I have interviewed is the formulation of the ICT policy (expected to bring about the transformation) is done using an inclusive or nationalistic approach, and

through efficient use of the available political capital “should be a nationwide consultation including rural folk” (1.7).

6.3.1.3 Political Capital

From observation, one can say that Ghana is so politicised that the views of individuals are not necessarily deemed as their own but those of a political party. However, this may not necessarily differ from what happens elsewhere, but considering the level of political maturity of Ghanaians, this could be a challenge. Therefore, individuals are not seen as having a voice of their own but that of a political party. The level of political understanding of non-political issues within Ghana, in my view, is political capital, and the intention of the ICT4AD policy of Ghana to achieve good governance through the implementation of this ICT policy for accelerated development is worth critical consideration. This is because good governance does not happen in a vacuum but involves the participation of the citizenry; good governance requires accountability from office holders and demands that the views of the people are considered in policy formulation and in decision-making.

Therefore, with regard to political capital, as previously mentioned, Ghana and Ghanaians easily identify themselves with groups and associations, and there is a high level of political identity and political orientation, which are essential in defining the political status of policymakers in some instances. It is rare to divorce the political identity of the individual from his or her political orientation and the decisions that such an individual is expected to make. The personal attributes of the individual, in addition to the position that the individual occupies either through election or by appointment, practically define the available political capital. Therefore, the development of a country can be determined by the level and amount of political capital, which is again enhanced by the involvement of the people—*commonality capital*. In the absence of appropriate expenditure of *commonality capital* in the context of political capital for the intended purpose creates policy dictatorship. Technology use in Ghana, therefore, aims to break this barrier, and because of a fully implemented ICT4AD policy, citizens’ access to political establishments will be enhanced; moreover, engagement in political decision-

making, including policy engineering and architecture, will be further developed and embedded in the practices of the nation.

However, political capital as an asset can depreciate and, therefore, requires provisions to be made for such depreciation to ensure that it is sustained and available when needed. Provisions in this case are through the institutionalisation of *commonality capital* processes and practices, which require the building of trust and engagement of the stakeholders, empowering them to identify the problem and work to craft the framework to guide and develop policies needed to address the problem. The process is not linear and not necessarily a systematic process but cyclical and centred on the policy implementer. One such problem in this context is the technology use in Ghana's educational system to enable graduates from formal and non-formal institutions to be confident users of ICT for problem solving in a global-knowledge economy. While I accept that technology can never be neutral or apolitical since technologies emerge from a particular social situations or social relations, my view is that this position is problematic and has a tendency to polarise technology advancement initiatives in countries such as Ghana, where political identity is supreme. And as Potter (2012:4) has written, "[G]overnments and politicians in systems under their control increasingly take short-term decisions based on political expediency and not on the longer view with the result that school curricula are in a constant state of change", and in the context of Ghana, these decisions sometimes occur without consultation or more appropriately with rare extensive consultation with key stakeholders including policy implementers. The defining line, therefore, is the effective use of *commonality capital*.

6.3.1.4 Social Capital

Though there is disagreement between policymakers and implementers on the ambitiousness of the ICT4AD policy, I agree with the implementers to some extent that the policy was ambitious given the implementation timeline and the amount of transformation required. The policy does not really seem to have captured the existing cultural, developmental, and attitudinal barriers at the time of promulgating the policy. While acknowledging that some consultation

had taken place—broad and wide consultation with wider stakeholders—the implementers of the policy would have set the policy in the right context and alleviated some of the implementation bottlenecks. For this reason, there is a call for giving careful consideration to the garnering of *commonality capital* in policy architecture, especially in the context of developing countries such as Ghana, if the desired outcome is to be attained and the culture of shared ownership for success and failure of such policies is to be institutionalised.

Sectors will not implement the policies unless they see it as being desirable, relevant, and feasible to demand their active participation and to do so in line with other priorities. The motivation for implementing the policy is the fuel that will diffuse or spark any doubt surrounding the successful implementation of the policy. The question of what is in it for us has been the most common statement during my engagement with stakeholders during the data collection stage, which clearly indicates the quest for ownership. The exchange rate for *commonality capital* is shared ownership. The challenges of political orientation and political identity as they affect policy formulation and implementation will also have been minimised if not completely eradicated. In this way, the citizenry will take ownership of the development of the country and have a strong sense of being part of the process rather than the feeling of exclusion—the feeling that it is being done to them and imposed on them. Policy democracy (the idea of policy being done with the implementers, by the implementers, and for the implementers), the brainchild of *commonality capital*, is key in policy ownership, without which to some extent brings a likely *policy dictatorship*, leading to *commonality deficit*, *de-energised policy*, then lack of ownership and exclusion. I propose linear relationship between these negative discourses in the development of policy architecture, as shown in Figure 6.3 below:



Figure 6.6.3 Negative policy discourse relationships

The instance of a thousand students with 22 computers but only 8 actually functioning, as the data has indicated in Table 5.4, is a recipe for *de-energised policy*, which is a result of *commonality deficit*. This situation does not augur well for development and calls for a purposeful paradigm shift to make ‘active citizen participation’ and an ‘inclusive approach to development’ the central focus of policy architecture in Ghana. The individual should be involved and considered an integral part of the development process, including policymaking at all levels, micro and macro. *Commonality capital*, to me, is synonymous with an engine of development and must be embraced by development practitioners if the motive of their work is to help nations like Ghana develop. Therefore, policies should not be written just for the shelves but with the people, for the people, and of the people. The avoidance of *de-energised policy* is the wheel to development, and purposeful ownership creation is the remedy for *de-energised policy*. Policies are written and recycled repeatedly, but implementation in some cases is zero. The policy, development, and political calculus of Ghana demands that a closer and deliberate attention be paid to the elimination of *de-energised policy* and commonality deficit to attain commonality capital, leading to shared ownership, nationalism, and inclusiveness, which are so needed for the success of ambitious policies such as the ICT4AD of Ghana.

6.3.2 Strategy to Gain Commonality Capital in the Context of Ghana

Implementing the ICT4AD and ICTED policies entails change management, and change is non-automatic and difficult in practice. As a result, to gain *commonality capital* for policy engineering and architecture in the context of Ghana, it is imperative that one formally recognises that Ghana is knitted

socially and ethnically and harnesses available cultural and social capital. There are numerous associations and councils in Ghana, ranging from professional to regional and religious. Examples of such associations include

- Professional – Ghana National Association of Teachers (GNAT), National Association of Graduate Teachers (NAGRAT), Mathematics Teachers Association of Ghana (MTAG), Ghana Bar Society (GBS), Colleges of Education Tutors Association of Ghana (CETAG)
- Regional – Volta Region Students' Association, Regional Houses of Chiefs
- Religion – Christian Businessmen Fellowship, Ghana Christian Council, Muslim Council of Ghana

The ability of policymakers to engage these groups in policy formulation is critical to gaining *commonality capital*. These groups are self-organised support groups but unfortunately, they are underutilised in development dialogue by policymakers. In contrast, politicians are very good at using them for their political gains, which is not necessarily for the benefit of society. I advocate for knitted collaboration between policymakers and these social groups, which seem to be a conduit for maximising the social capital for the development of Ghana. Putnam (2000) argues that “tight-knit groups may exclude themselves, but they may also be excluded by the wider community,” but my view is that since social exclusion works both ways, if the group is not utilised (or underutilised), they will create ‘jobs’ for themselves to be happy; therefore, to avoid this situation, they need to be engaged, which is the essence of social capital in my view. Social groups, when effectively engaged, lead to the emergence of new groups, national groups with a national agenda, and groups whose aims and objectives transcend ethnic and professional boundaries beyond political orientation and political identity but with a shared national belief and interest.

Another strategy is to engage the Ghanaian diaspora. All Ghanaian embassies in Europe and America, for example, have a database of Ghanaian professionals overseas. This wealth of resources and knowledge is also underutilised. It is worth noting that even Ghanaians in diaspora also

organised themselves into social, professional, and regional groups with the same aim of being there for each other in times of need. In addition to that, there are also national associations. For example, in the United Kingdom, there are Ghanaian churches, Ghanaian doctors' and nurses' associations, and the Ghana Union of the United Kingdom. In addition, there are many alumni associations such as the University of Ghana Old Students' Association, Achimota School Old Students' Association, Adisadel Old Students' Association, and Accra Academy Old Students' Association, among others. These groups have contributed to developmental projects in Ghana, e.g., in the donation of hospital equipment and computers to schools and the construction of schools and libraries. However, the involvement these groups in decision-making regarding Ghana is rare. The president of the Ghana Union in the United Kingdom, in his frustration when I contacted him for his opinion on this situation of non-engagement of groups, said, "[T]hey [government and policymakers] think Ghana belongs to them, and they are doing whatever they want to do with it... we are also here, time will tell..." The statement of the president of Ghana Union was corroborated by a respondent during my data collection interview when she said,

[A]t least they should have engaged some of you, those of you overseas and that have the skills; you, for example, you know our culture and you are a teacher also, so they could have involved you. Or have they, did they? (Ms. C, ICT coordinator, Ola)

So, as I have discovered, while those Ghanaians in the diaspora represented by the president of the Ghana Union, U.K. Branch, are willing to be involved in shaping the development agenda of the country, including policymaking, the policy implementers in Ghana also agree with the suggestion and gave their backing for the engagement of Ghanaians in the diaspora in nation development, including policymaking. Politicians and policymakers should take advantage of the willingness of the people to be involved to build the strong *commonality capital* necessary to catapult the country into the next phase of its development journey.

Moreover, gaining *commonality capital* for ICT policies requires ICT leadership. A need exists for a sustained and proactive effort on the part of

leadership at all levels, including government, heads of departments and sectors, civil society organisations, associations, and societies in Ghana to ensure that ICT policies that are formulated are done so with a wide and broad uptake by all stakeholders, especially those who will be leading the implementation and implementing the policies. The ICTs that are needed to drive the development of Ghana to equip graduates of Ghanaian institutions with the functional skills for the 21st-century global- and knowledge-economy demand a strong leadership driven at the country level by a strong political leadership and will.

6.3.3 The Challenge of Gaining Commonality Capital in Ghana

Central to this study is the interplay between the transformative potential of ICT as highlighted in the ICT4AD and ICTED policies of Ghana and the political culture of Ghana. The interplay between politics of ICT introduction into education within the domains of *political orientation* and *political identity* (both of which define the political culture of Ghana) is what I have termed *polidigiteched*, a challenge that needs to be overcome to ensure commonality capital for a nationalistic approach to policy engineering for the purpose of achieving *policy ownership*.

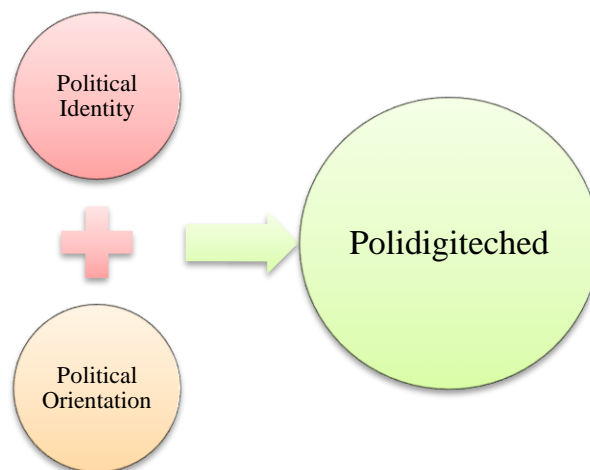


Figure 6.6.4 Transformation: politics of ICT use in education (*Polidigiteched*)

As previously discussed Chapter 1, the *political identity* and *political orientation* that cloud policies also permeate the fabric and intended purpose of technology introduction into the school system.

Polidigiteched comes with the commodification and marketing tendency of education itself and technology, which should be a tool for enhancing the purpose and objective of education in any particular setting. If the purpose of education is to prepare the youth for the workplace only, then redefinition of what that process entails is necessary to positioning the role of ICT. However, the temptation for me is to view educational provision, and for that matter all other facets of it, as being seen as a political game. Consequently, at the macro and micro levels, society is made to believe in the transformational power of ICT and never is there a mention of what ICT cannot do in education. This “rhetoric of absolute change” (Selwyn, 2014: p.10) clouds one’s objectivity in critically viewing what ICT can and cannot do in educational systems such as Ghana and its ICTED and ICT4AD policies. The hopes for using ICT in education, in my opinion, are in the distant future. Therefore, it seems best to agree with Selwyn (ibid: 9) that the purported transformation by education technology should best be seen as a matter of faith rather than of fact, as inspirational and exhortative (and I will add aspirational) claims rather than actual accounts of ICT use in education.

However, according to the author of the ICTED policy of Ghana, “[A]s with any educational teaching aid, it is not the tool that does the teaching but it is the teacher who decides how to use the tool to achieve the intended learning outcome now and over time. The teacher needs to be convinced that the tool in hand is what is needed to get the job done” (ICTED policymaker, June 2011). In addition, an assistant head teacher interviewed for the study stated,

[F]rom my over 20 years of teaching experience, the conviction and willingness that teachers have to take risk, to try new things, is more than any political talk; for me it is the fuel that keeps the engine working in the teacher. The conviction does not come by chance but from my experience it comes with an overall mindset of the individual; a mindset underpinned by deeper learning conviction in the individual. (Interviewee, June 2014)

As a result, the teacher has to reach what Mintzberg (2004) referred to as an “action mindset.” Mintzberg provided five mindsets or perspectives: reflective (which is about the self), worldly (which focuses on the context), analytical (with the focus on organisation), collaborative (which is about relationships), and action (which emphasises change). The teachers at the first four levels of the mindset paradigm are those prone to political identity and political orientation tendencies and who are not ready to take ownership of what goes on in their classrooms, including what tools to use to enhance the learning experience of the students.

In the context of Ghana, ICT use in education, both formal and informal, aims to bring transformation, that is, specific changes in the socio-economic paradigm of the country through the production of graduates who can use ICT creatively to bring about much needed development of the country. The transformation needed calls for an action mindset to be engrained in the citizenry, including politicians. The rhetoric of transformation and development through the use of ICT in education in Ghana should be part of the general discussion about education provision in the country, but not in isolation. An action mindset is an enabler for other mindsets, and Ghana might reap the benefit of integrating ICT into education and society through making deliberate efforts to produce and mobilise action-minded individuals or game changers. The involvement of individuals who are action-oriented individuals, those who look beyond the ordinary and mundane day-to-day activities into the policy formulation, provides the answer for the ‘who’ aspect of commonality capital. Policy ownership is critical to implementation, and it is evident that policy owned by the implementers comes with the definition and establishment of the platform for its implementation.

In this sense, arguable though it may be, it is my view that transformation is not a state of being but a process of impactful progress and change that is dynamic and sustainable. Davis & Carlsen (2004) stated a widely-held view that ICT, once introduced into a space, continues to “catalyse change *and* the nature of ICT is to pervade a system.” Figure 7.5 presents this transformation process, which I refer to as ‘the transformation chain model for Ghana’.

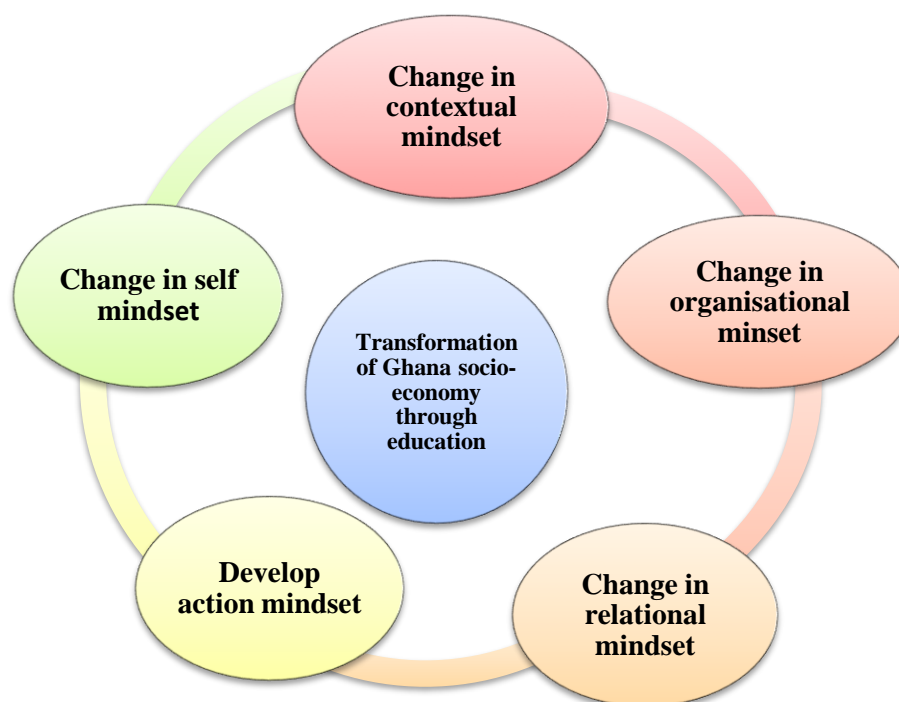


Figure 6.6.5 The transformation chain model for Ghana with policy defining the transformation process and its framework

The nature of the policy formulation process adopted by Ghana is essential in shaping and determining the process of implementation. It also defines the transformation process and the nature of the framework designed to enhance effective implementation, which evidentially is successful if policy implementers are involved in the policy engineering process from the outset. Moreover, in deciding the *commonality capital* machinery, a self-mindset has the potential to hamper the policy engineering progress and the development agenda of using ICT in education; thus, individuals are generally narrow-minded, self-seeking, and do not look beyond their immediate environment, of their political identity and their political orientation, while the organisational mindset has the potential of engaging individuals who lack creativity and prefer doing business as usual. However, for the lasting transformation and development that Ghana is clamouring for, a paradigm shift and identification of what actually needs transforming is required. Moreover, the fact that transformation is not a state of being but a dynamic and sustainable process

of impactful progress and change, and this change, as Potter (2012: p.5) has argued, “is primarily institutional and cultural in nature,” confirms that change does not happen in a vacuum but requires the existence of an enabling environment.

While not presenting the use of commonality capital for policy engineering as an opposition to the traditional - top down approach to policy formulation, this work seeks to offer a lens through which policy engineering and implementation for intended purpose can be viewed and constructed. It also offers some insight into the value of collaboration between policymakers and policy implementers and reveals that through the lens, the global discourse of technology use for education and development, and technology use to bring about transformation and the encoding and decoding of related policy text – such a policy is valueless until it is owned and effectively implemented – using commonality capital to bridge the gap between hopes and realities of ICT4AD and ICTED policies implementation in Ghana.

Chapter 7 Hopes and Reality of ICT4AD and ICTED Policy Implementation in Ghana

7.1 Introduction

As I have put forward in Chapter 1 and reproduced here for clarity, this thesis provides a window to enable understanding of the phenomenon relating to the implementation of the policies in the government secondary schools of Ghana by closely examining

the extent to which the government has successfully implemented its ICT4AD policy objective of enabling graduates from Ghanaian educational institutions – formal and non-formal – to confidently and creatively use ICT tools and resources to develop the requisite skills and knowledge needed to be active participants in the global knowledge economy by 2015” (Republic of Ghana: ICT4AD, 2004).

The main areas of focus as presented in the previous chapters are

1. Implementation Factors – Key factors that have contributed to or hindered the successful implementation of the policy objectives of ICT4AD and ICTED
2. Teachers’ Perspective – The perspective of teachers on how successfully the ICTED and ICT4AD policies have been implemented in Ghanaian secondary schools
3. Policy Ownership – The extent to which Ghanaian secondary schools believe they own the ICTED and ICT4AD policies and are equipped to implement them.

The data as presented in Chapters 4 and 5 indicate that Ghana has embraced the technology revolution that has engulfed the world, and the hopes of her citizenry are well founded. As the President of the country (2003 – Kufuor) and the subsequent designated ministers and leaders of the country on various platforms unequivocally stated, Ghana is part of the globalised village and as such should not be oblivious to the technological advances happening elsewhere in the world. This position clearly indicates that Ghana feels the need to belong to this internationalisation and globalisation agenda. In this agenda is the belief that anything emanating from the globalisation stream is

good for the country, for her knowledge economy capacity development. Herein lie the hopes of the country purported by the ICT4AD for the country, which have (as can be deduced from the findings) subsequently given birth to further hope at societal and individual levels. I entered this study with the aim of looking into the individual-level hopes and realities of ICT4AD and ICTED policy implementation in Ghana.

However, the reality as it has emerged from the data presented in the previous chapter, is that the implementation of the ICT4AD and ICTED policies with its good intents and purposes is pregnant with six mitigating discourses or factors: stakeholder involvement, ICT equipment provision, capacity building for implementers, availability of enabling infrastructure, political goodwill, and curriculum delivery. These present a challenge to the successful implementation of the ICTED and the ICT4AD policy. The nation-state of Ghana hopes that the implementation of the ICT4AD policy, within the full implementation deadline, will transform the country and realize the human, social, economic, and political development of the country to be crucially important for the country to attain its middle-income goal. The development of human, social, political, and economic capital is intentional regarding the needs of the country and is well articulated in the ICT4AD policy. The mandate given to the education sector to produce the needed labour to drive this developmental agenda is ambitious, as the study has found. Thus, the hopes at the national level (government) are clear, but at the individual level are seen as “wishful thinking and ambitious” (Mr. K, policy implementer), especially regarding the 2015 attainment milestone. As some of the respondents for the study argued, “[W]hy should they stay in Accra and just be telling us what to do?” (Ms O, policy implementer); “[I]t is good to think that way but the reality is that it cannot be done by 2015, we are in 2013, not possible, no it cannot...maybe in 100 years” (Ms B, policy implementer); and “You see they play politics with everything...what I want to know is who wrote the policy?” (Mr. L, policy implementer).

7.2 ICT4AD Policy – Transformation and Change in the Context of Ghana

From the argument that transformation is a dynamic process needed for impactful progress and change, coupled with culture as a dynamic phenomenon, it is logical to conclude that change is dynamic and not a state of being at rest. It is also rational to say that change must be initiated, nurtured to grow, supported to survive, sustained to bear fruit, and revived to live; change is a process. As such, in the context of this study and the ICT4AD policy's purpose of transformation [Policy as a living organism as discussed in Chapter 2 under *Policy Culture*], as well, I will metaphorically refer to Ghana as a living organism that needs to be nurtured to develop along the change and progress continuum. The living organism needs to grow through a transformation process. The ICT4AD policy of Ghana has been described as the conduit through which Ghana will be transformed technologically.

As a result, with Ghana being a living organism and being faced with these six developmental or transformational challenges, it requires the right diagnoses to be identified to transform these challenges to technologically transform Ghana into a knowledge economy. The proposal within the change-culture perspective is the three-culture paradigm of a policy culture of technology, development, and education as the first step to making policies work in Ghana. In other words, Ghana as a living organism comes with three paradigms embedded within the kind of policy culture that Ghana requires: policy engineered by Ghanaians (albeit with support from experts from elsewhere) for Ghanaians to solve Ghanaian challenges (policy democracy). The creation of a policy culture of democracy, momentum, and nationalism is essential for policy ownership and successful identification of other resources and elements to support Ghana as a living organism within the creation of a technology, development, and education culture—a mature Ghana.

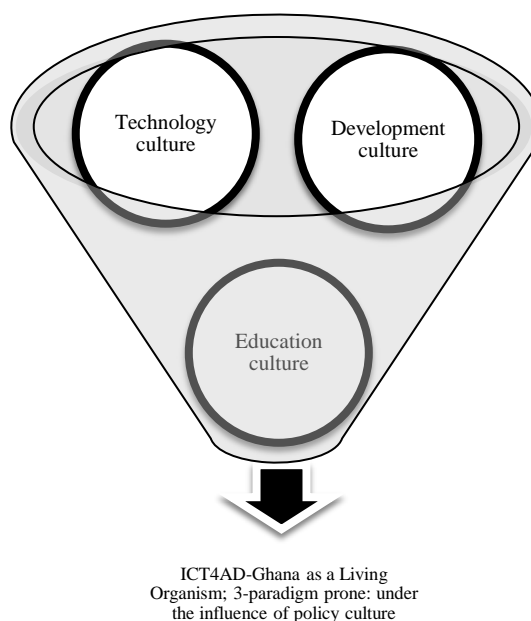


Figure 7.7.1 The three dimensions of policy culture

Figure 7.1 is the developmental paradigm maturity that is needed by Ghana, which has the key enablers (political stability, geographical position, youthful population, and relatively good economic index) to accelerate its development. However, the attainment of this level of maturity will not be easy in the context of Ghana, as it requires a complete cultural and attitudinal change. As mentioned earlier, change of mindsets—the way we have always done things here—is crucial to enabling Ghana to develop and mature. This calls for intentional long-term planning to include change in the school curriculum, in-service training for decision-makers on good governance, and public lectures and engagement activities to educate the nation.

The ‘educate the nation agenda’ requires the capacity of the citizenry to be developed in areas needed for the accelerated development of the country. This capacity building involves guiding the individual to design his or her own learning plan and sticking to it. The agenda is about individuals taking ownership of their development and the development of their country, which is only possible if the individuals are equipped and have the requisite knowledge. The universities in Ghana also need to take a hard and fast look at their training programmes and processes, and as necessary and applicable review some of

the modules and change their content and related pedagogy. It might also be the case that the Ghana Education Service (GES) takes a second look at the practising teachers and their skills to find out whether they have the requisite skills to deliver on the demands placed on them by the ICT4AD and ICTED policies. A skills audit of this kind will enable the GES to identify the gaps in the system and the resources needed to address these gaps and may even require teachers to be retrained in addition to ensuring that graduates of the colleges of education are fully equipped with the needed ICT skills before they complete their studies. In this way, teachers will have the expertise and the confidence to deliver the curriculum. When ICTs are provided, the teacher has a pivotal role in ensuring that the ICTs so provided are used by teachers as well as students to bring about the development of a society of critical thinkers, that is problem solvers who are able to contribute to and function effectively in the global-knowledge economy.

Success requires an individual to allow part of him or herself to fail (Maxwell, 2013), but in this case, I believe that room should only be made to view or consider policy failure as acceptable in the context of all efforts gaining *commonality capital* that were unsuccessful due to factors such as the unwillingness of implementers to get involved or because they were willing to be involved but did not make themselves available. Also, in the same context, perhaps a lack of resources, trained personnel, time, and money should not be the excuse for *de-energised policy* but instead policies that remain on the shelves and do not make their way to where they are most needed (to the micro level, to the implementers) should be the excuse. Predominantly, as this study has found, *de-energised policy* is a characteristic of *commonality deficit* and *policy dictatorship* because acquired *commonality capital* reveals all these potential bottlenecks to policy dissemination at the outset of policy design and formulation with the appropriate steps taken or provision put in place to address them effectively. *Commonality capital* requires implementation planning to go along with policy formulation. Again, policy in the context of *commonality capital* is a process and work in progress and never carved in stone. As a result, there should not be a provision for “let us finish the policy then we can start developing the implementation plan.” In this way, at both

macro and micro and societal and individual levels, there is a clear resumption of ownership of the policy and implementation of the policy.

Table 7.1 Dimensions of policy culture related to mitigating factors of ICT policy implementation as presented in Chapters 4 and 5

Paradigm	Key Questions	Mitigating Factor	Elements
Development Culture	What are the prevailing strategies and attitudes, the 'hows', 'whats' and 'whys'? Who are the gatekeepers?	Stakeholder Involvement; Political	Policy democracy Effective use of Commonality Capital Policy ownership
Technology Culture	What is the landscape of technology penetration? What are they using? Why are they using them? How are they using them?	ICT Equipment; Infrastructure	ICT skills ICT leadership ICT access ICT budget
Education Culture	What is the general purpose of education in Ghana? Whom are they educating? Where are they educating them? What are they educating them in? How are they educating them?	Capacity building; Curriculum delivery	Well-qualified teachers and policymakers A balanced curriculum Modern pedagogy and tools

I am yet to encounter any development programme that is not underpinned by a policy or policies, which is good, and the manner for achieving successful implementation should be concern for all. National and international development of any kind is embroiled, if not always crafted, within the collection of text and discourse. These collections clearly intended to set out the vision, mission, goals, and objectives that need to be achieved to achieve the intended economic, social, and political development. This is where it is obvious that mere proliferation of technological devices alone may not be a sufficient reason for the massive spending that governments are incurring. An effective investment is perhaps critical in the realisation of the intended purpose of the text-discourse collection—the ICT4AD and ICTED policies of Ghana.

As my research has shown, there is goodwill among policymakers and implementers in Ghana for technology and the acclaimed benefit that heralded their socio-economic, *poli-economic*, and *poli-socio-economic* use. The challenge rests with where the burden of implementation lies: education. The educational sector, formal and informal, is assumed to have the magic wax of turning the hopes surrounding the 'power' of technology into reality, which cannot happen in a vacuum but ideally should be supported by an enabling environment and the techno-policy ecosystem. Therefore, I propose to position the theory of *commonality capital* within the ecological perspective of technology integration of Zhao et al. (2003, 2005) in support of my view of Ghana as a living organism.

Ghana as a living organism, is a modern society which is as any other modern society is faced with the dilemma of how to balance rapid social change and the related techno-deterministic tendency and other social conditions to ensure development and sustainability - to maintain order and stability in society. The inability to build policy ownership is a sign of low of social integration which is counterproductive to a cohesive process of social change that Ghana so need as developmental agenda catalyst – herein grounded commonality capital within historically frame propagated by Emile Durkheim that modern societies are held together by organic solidarity because of complementarity between actors engaged in different pursuits (Lewis, 1984; Giddens, 1990). Durkheim concluded that the shared value systems of a society has the function of pulling together members of society by emphasising what people have in common and how their commonalities creates a sense of community (Mokhtarzada, 2012). This thesis [which is my critique of policy construction in developing countries] proposed a process of creating a sense of community for policy engineering – policy ownership, within which I advocate that a policy and for that matter a development policy such as ICT4AD should not die with a political party, policy statements and documents should not suffer from de-energised policy just because they have been marred by the political identity and orientation within the policy engineering process. Policy construction process that emphasises what people have in common as I have proposed should take full consideration of the local and national context (the shared value systems

of the people) and should be devoid to a large extent of what I earlier referred to as *cultural backsliding*; putting aside the values of national identity and way of life in the interest of foreign values and identity. Commonality capital as proposed is about communitarianism, building of local and national ownership of policy goals and intentions so that the reliance of policymakers on unintended benefits that arise from implementing policies is minimised if not totally eradicated.

7.3 Implementation of ICTED and ICT4AD Policies from an Ecological Perspective

Viewing technology introduction into the classroom space from the ecological perspective, Zhao et al. (2003) metaphorically likened it to the introduction of the zebra mussel into the Great Lakes of Canada. The mussel was a new organism in a new environment but managed to spread and thrive well under the prevailing and suitable conditions and environment coupled with the absence of opposition, perhaps in the form of other already existing organisms. With this ideally suited environment, the mussel then spread even further to the extent that it brought about an extensive ecological transformation and became a menace to other species that were on the increase and blooming before the mussel was introduced. From the evidence, I have gathered within this study, the introduction of ICTs into the Ghanaian education space, as with the case of the introduction of the mussel into the Great Lakes, has the potential to disrupt existing practices with a high degree of opposition if the introduction is not carefully thought through to create an environment ideally suited to support the ICT integration. From this perspective, using *commonality capital* to diffuse such potential opposition by creating a policy and project ownership for stakeholders, especially the policy implementers, offers a platform to garner ecological balance in the ICTED policy implementation.

The benefits and opportunities that the ICTED and ICT4AD policies potentially present by introducing ICTs as the new species with the aim of creating a robust ecosystem are supportive of the development agenda of Ghana. From

the standpoint of *commonality capital*, the introduction of ICTs into the classroom has the potential to be disruptive to the existing ecosystem and to attract opposition from practitioners, but with effective use of *commonality capital*, the disruption and opposition are turned into contribution and support, which lead to the development of a strong ecosystem of technology use. The role of a supportive policy in engendering technology integration in the classroom and ensuring that an enabling environment is created for teachers to use it is essential (Zhao & Lei, 2005) to create the balance between the hopes and reality of ICT use for Ghanaian teachers. The aim is to ensure that ICT integration is more likely to be successful with a less harmful effect on the existing organism and ecosystem. With this achieved, my proposition is for Ghana to develop an ecosystem of ICT integration and use from the perspective of *commonality capital* that leads to the creation of what I call a 'healthy country'. Just as in the Great Lakes, where the mussel needed a suitable environment to thrive, Ghana needs *commonality capital* for policy formulation (engineering) to become an intelligent country free from *de-energised policy*.

Understandably, with Ghana being a living organism, it needs to be fed with the right nutrients at the right time and at the right place with the aim of reducing, if not totally eradicating, the *de-energised policy* that can derail Ghana and rob her of development through the use of technology. Removing the challenges of *de-energised policy* from the fabric of the Ghanaian development agenda is to become *healthy*. To be a healthy country within the context of this study, in my view, is the prerequisite for clearly defining the intention of Ghana in terms of technology use for development. Arguably, every country must become *healthy* to develop, which requires the institutionalisation of certain attributes and characteristics, as illustrated in Figure 7.2.



Figure 7.7.2 Attributes of a healthy country - Ghana as a healthy country

The journey to becoming a healthy country starts with the identification of national priorities through effective engagement of stakeholders, harnessing the *commonality capital* of the nation. In the case of Ghana, some of these priorities have been overwhelmingly chorused in the national media of Ghana and on political platforms, including education and health, which in a way is a recognition of the demands of the Millennium Development Goals (MDGs) and currently the Sustainable Development Goals (SDGs). Furthermore, the development of policies through the use of *commonality capital* as a nationalistic policy is an essential attribute of a healthy country. Nationalistic policies call for policy engineering underpinned by policy democracy—policy designed by the people, with the people, and for the people. Policy dictatorships, which are policies that are done for the people and to the people, may require reverberation to attract the energy and momentum necessary for their effective implementation. People are required, and are made, to take ownership of such policies, and it is only when this ownership taking is in place that the journey of effective implementation of policies begins. However, people detest being at the gate of the finished product and being told to make good what has been made bad, especially when they have not been involved

from the outset. This aspect of policy engineering, if well addressed, can be the key to developing Ghana into a healthy country.

Furthermore, as deduced from this study, my argument is that the purpose for which countries are engaged in *policy engineering* and *policy economics* (policy economy is a derivative of *commonality capital* and refers to policy formulation, dissemination, and implementation of policies by engaging different actors at a different or at the same time for a common purpose. The actors can be individuals, societal, organisation, and nation-state. The interplay between these actors further enhances the currency of *commonality capital* for policy formulation in Ghana within the goal of Ghana to become intelligent and have a competitive advantage in the knowledge economy. My argument is that *commonality capital* is a currency for ensuring that policies attract ownership, achieve their intended purpose because they are democratically crafted, and where the outcome of implementation deviates from the intended purpose, a collegial approach to finding solutions exists, and faith is engrained in ownership. In sum, as in Figure 7.2, such a country has eight priority areas that determine and define their course of action. An intelligent country values the local and national expert knowledge and uses it, is development-oriented, planning is need-focused, nationalism is highly promoted and adhered to, leadership is visionary and honest, education policy focuses on quality and not quantity, and basic health care are key nationalistic priorities. The theory of *commonality capital* encapsulates these eight attributes, which are inherently essential in shaping the development initiative of Ghana. These are the capsules and the remedies for healing the wounds of *de-energised policy* that have engulfed Ghana's policy engineering landscape.

I have argued earlier that as much as I agree that policy implementation can lead to attainment of unintended benefits, I do not think that this 'benefit by accident' of policy implementation is good for policy engineering. Many human and material investments go into policy engineering, and if in the end, they mostly achieve only those objectives that were unintended, it would not be unreasonable to call the entire process into question. Involvement of the policy

implementers from the outset in the policy engineering is both fundamental and crucial for policy ownership building and its implementation for the intended purpose and achievement of policy economics. Commonality capital is not yet in the western literature and not used in global discourse on policy, technology integration and social change but has a place in creating ownership for policy engineering. With its adoption and operationalisation through the five-step approach I have proposed, commonality capital will gradually find space in the heart of governments, policymakers and multinational organisations – for profit and not – for – profit who want to see policies work for the intended purpose constructed collaboratively, commonly owned and collectively implemented.

7.4 The Hope of Ghana's ICT Ecosystem – Transformation

As Figure 6.1 has shown, a functional relationship exists between the development discourses of HEPS capital, which is connected and cannot happen in isolation. The ultimate objective of ICT4AD is to bring transformation to the economy and development fortune of Ghana through the type of education provided for graduates from the formal and non-formal sector by 2015.

One of the critical factors that needs to be considered is whether any transformation has taken place or is taking place. According to the data, this depends on the context and the perspective of the respondents relative to the available evidence where there are 'yes' or 'no' responses, which confirms that 'transformation' is relative. If it is defined as a change in practice and learning of new things, then indeed Ghana has reaped, and continues to reap, the benefits of embracing ICT as a developmental tool. Some of these changes are enumerated in the following paragraphs, which review data use in schools, teaching, and administrative use of ICT, ICT use of 'civic-ness', and connecting through social media. However, transformation is taken to mean the effective use of ICTs in the education sectors, and especially at the basic school level (in secondary schools), transformation is yet to take place. The following sections discuss these standpoints in relation to the available data within the

policy culture of Ghana and the developed concepts of *commonality capital*, *commonality deficit*, *policy momentum*, *de-energised policy*, and *political orientation or identity*.

The findings from the data as I have presented in Chapters 4 and 5, including my observations, indicate some level of ICT use in some schools (albeit not at the level that was predicted for this period and within the timeline of ICTED and ICT4AD policy implementation), especially in the urban centres of Ghana. The view of the policymakers is that transformation is taking place, and with the 'techno-educacentric' space of the country, transcending the challenges typically associated with the implementation of projects. This position by policymakers which may not be totally true in my opinion, is a manifestation of the dichotomy between the hopes and realities of implementing the ICTED and ICT4AD policies of Ghana, bearing in mind the set objectives and purported outcomes. From the perspective of the respondents, especially the policymakers, transformation in the terrain of ICT use is illustrated in the following paragraphs, which briefly show the meaning of the term.

7.4.1 ICT Use for Administration and Teaching

Administratively, letter writing and emailing are common observable current practices in schools and other sectors. As one of the policymaker respondents indicated, "[W]ith computers and telephones, communication has improved and the execution of administrative tasks has been effectively enhanced" (Professor D, policymaker). Regarding mobile phone ownership in Ghana, according to the World Bank (2014), subscriptions were 13.4 per 100 people in 2005, 63.4 in 2009, and in 2012 stood at 101 per 100 people. In terms of coverage, it was 59% in 2005 compared to 87% in 2012. Furthermore, it is reported that 21% of Ghanaian adults own smartphones (World Economic Forum, 2015). This trend is clearly seen on the continent of Africa where as of December 2013, there were 778 million mobile subscriptions in Africa and now predicted to reach one billion by 2016 and 1.2 billion by the end of 2018, according to Informa Telecoms and Media (2015).

Furthermore, as has been discovered, those schools do not have enough computers that are actually working. Some teachers have seen the need to acquire their own desktop computer, and some have obtained laptops that they use in planning their lessons. Though the majority of teachers still handwrite their lesson plans due to a lack of computers, they are happy to acquire one if their employers can assist them in the form of a loan or guarantee for hire purchase. During the data collection period, I was able to communicate with the respondents through emails and telephone calls before meeting them, which was possible because of “the enabling environment that the introduction of ICT into the Ghanaian economy has created” (Revered D, -policymaker).

7.4.2 Civic-ness Enabled Through the Use of ICT

In the 1980s, Ghana had one main national broadcasting (television) and five radio stations. This increased in the 1990s due to the privatisation of the sectors. As at the first quarter of 2012, according to the Ghana Communications Licensing Authority, the number of authorised radio stations in Ghana stood at 286, of which 225 were operating. With the proliferation of mobile telephone technology, the citizens of Ghana call in to radio and television programmes to contribute to discussions, though sometimes, due to political identity and orientation, the comments and contributions lack a nationalistic tendency and are embroiled in the fabric of politics. For example, a caller in a discussion on the election results of 24 December 2012 made these comments: “[E]veryone in the NDC party is a thief and Ghanaians cannot see; they have stolen the vote ... we will take them to court” [www.myjoyonline.com] asempa 94.7 FM Live Radio). Another caller on 15 February 2015 called into a discussion programme on the electricity crisis that the country was facing and also made a partisan comment: “[T]he ruling government lack ideas, why should they be asking us to suggest our solution to the problem...? when we come to power we solve the problems” (Joy 99.7 FM). Though this participation was politicised, technology that made them possible, which was not the case in the past.

This, however, indicated the need to make deliberate efforts to engage the citizenry in policy issues from the outset, to attain *Commonality Capital* and shared ownership. Creating a knowledge economy where people cannot take ownership of the wider development agenda of the country but view this as work for politicians is not in any way inclusive and development oriented. It is for this reason that the currency of nationalism through *Commonality Capital* is essential and crucial from my standpoint, especially if 'transformation' is perceived to mean one can call into a radio or television programme and say whatever comes into one's mind.

7.4.3 Connecting Together Enabled Through the Use of ICT

The proliferation of social media has made it possible for people to connect globally for business or just for social interaction. The use of mobile phones in Ghana, for example, has seen an astronomical increase to the extent that the Head of State in February 2015, during a speech in the Gambia, blamed the increase in mobile phone use for the energy crisis the country was facing. Mobile money transfer was a practice in Ghana before its adoption in the UK, for example, in 2014. It is also common practice that the average Ghanaian fancies owning more than one mobile phone. With the associated increase in the number of main mobile service providers (from three in 2000 to over seven in 2014) and with the provision of data, it is easier to connect to social media. My observation is that Ghanaians have actually not fully taken advantage of the many benefits and potentials of social media. For example, whilst social media is being used for the promotion of business and major events in some countries like Kenya, Ghanaians predominantly use the social media platform to *stay connected* to one another. In addition, some use it to engage in inappropriate behaviour; the popular one among secondary school students is 'Sakawa' – a practice of impersonating others online for financial gain and making money through deceit. Therefore, whilst the infiltration of ICTs is gradually gaining ground in Ghana (in Ghana, 25% of adults use the Internet at least occasionally or report owning a smartphone (World Economic Forum, 2015)), the transformation that is to be experienced by Ghanaians by 2015 has not really gained ground.

This is because, when one considers transformation as an impactful and sustainable change in the area of social capital, human capital, economic capital and political capital and in equipping graduates from Ghanaian educational institutions, formal and non-formal, with the knowledge and skills needed to function in the global knowledge economy, then the answer that has emerged from the study in the context of ICT4AD is that it is a hope and wishful thinking within the set timeline of 2015. The following paragraphs further position the discussion in the findings from the research and propose what Ghana needs to do with policy design and its implementation.

7.5 The ICTED Policy Implementation in Secondary Schools of Ghana

The school is the powerhouse of knowledge creation and, at the same time, the place where knowledge can be stifled if the wrong climate and culture are unintentionally created. ICT is just one of those pills that is needed to heal the woes of a malnourished school—a conglomerate of many such schools means creating an educational culture of low standards and ill-prepared graduates with inadequate skills to effectively participate in a global knowledge economy. Development initiatives and regeneration of new ideas necessary for effective take-off of such initiatives require a policy culture characterised by nationalistic tendencies and non-partisan values, as I have previously discussed. What goes on in the schools is inevitably a manifestation of the tenet of policies in place, and in this context, how ICT is perceived and used in the secondary schools. Figure 8.4 is a pictorial representation of school culture as a subculture within the education culture of ICT use. The hopes and reality of ICT integration in the Ghanaian secondary schools are poles apart due to commonality deficit, compounded by factors such as a lack of adequate

infrastructure and technological equipment, the inadequate skills set of teachers to use ICT and the rigidity of the curriculum.

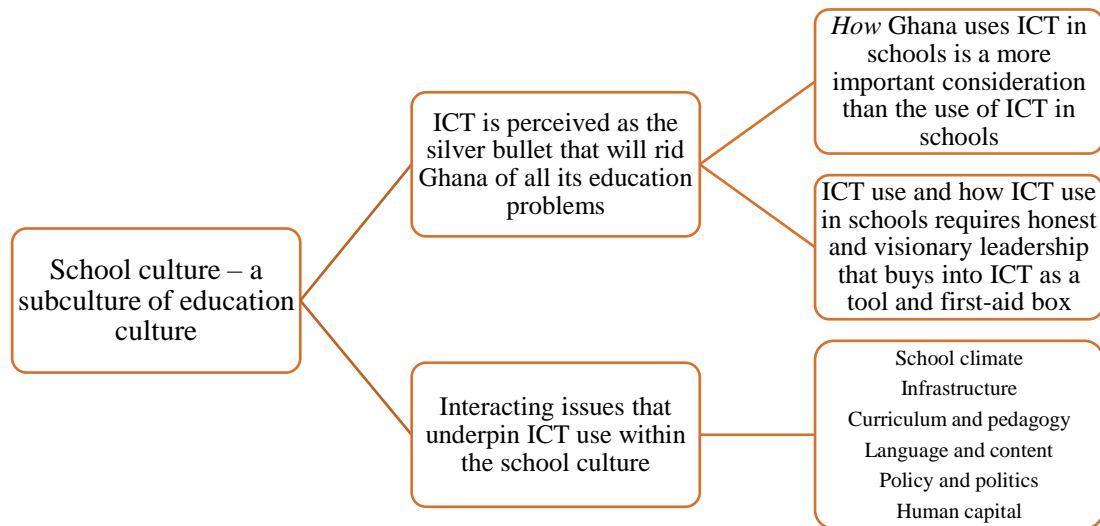


Figure 7.7.3 School culture as a subculture within the education culture of ICT use

As has been deduced from the data presented in Table 5.1 the prevailing school culture in relation to the creation of technology culture views ICT as the silver bullet that will bring about transformation in the way students learn and the way teachers teach. ICT is perceived by both the policymakers and implementers involved in the study as having the potential to rid Ghana of its educational problems. Again, the *how of ICT use* in school is a more important consideration than the use of ICT in school per se. My argument here is that the context is more important than some generic policies will allow and policies within the school culture should be underpinned by *commonality capital*. This is because “technology in school is not independent and isolated artefacts, but rather is situated in the network of changes and connected with the context” (Lei et al., 2008: p. 178), and the individuals who own and the understand the changes and the context are the policy implementers who should have been effectively involved from the outset.

However, the main problem, as gathered from my observation and involvement in a DFID project in Ghana that is aimed at Transforming Teacher Education and Learning (T-TEL), is the underperformance of students at the basic school level. Therefore, to assume that ICT integration in the schools will improve performance, which by the way was not the explicit aim of the ICTED policy but rather to provide access to and impact on ICT skills, in my view, is mere rhetoric. At the core of this are the many issues within the schools that make it difficult, if not impossible, for learning to flourish, some of which have been identified by the study and discussed in Chapters 5 and 6. In addition to creating a culture of ownership, I suggest,

- Equal emphasis should be placed on access to, and use of, ICT within the school culture.
- Leadership within the school culture has the moral purpose, the honesty and the vision to drive provision and use.
- More importantly, the school climate that is created supports policy ownership (people policy). The infrastructure and the equipment are adequate to support implementation of the ICTED policy.

The overarching view here is that a school culture that supports a dynamic technology culture is underpinned by a curriculum that makes room for ICT to be used and creates the environment for creative pedagogical approaches including talk for learning, questioning, and problem solving. The students should be provided with the e-learning contents and the language culture of the schools should have a clear drive for creating an inclusive approach to policy engineering and implementation, with the intention of building a strong and creative human capital. It is therefore evident that a school culture so created through the existence of honest and visionary leadership has a tendency to contribute to the development of Ghana as an intelligent country.

7.6 Summary

There is an endemic level of *de-energised policy* as a result of *commonality deficit*. Within the deficit are SECPIC discourses that hinder effective implementation for the intended purpose. It is evident that policy implementers

(teachers) perceived the ICTED and ICT4AD policies as being done to and for them. They do not feel they own the policies, let alone being exposed to the content of the policies. Not a single policy implementer has indicated their knowledge of the existence of these policies and none has even seen a copy before. The first they saw of them was during the interview when copies were shown to them. Moreover, not a single school has any policy of their own on any aspect of their practice, let alone the schools 'ICT Use for Teaching and Learning Policy', for example. In this case, there was a tendency for the respondents to refer to the Ghana Education Syllabus as a policy. The policy culture of Ghanaian secondary schools is non-existent, and the introduction of an ICT course of study in the schools with reference to the content and the curriculum seems disconnected from the 'by 2015' deliverable objective of the ICT4AD policy.

The available evidence illustrates the disconnect between the hopes of reaping the transformative power of ICT integration in education in Ghana and the reality of integrating ICT in education in Ghana at all. Furthermore, it is also a clear indication that the development of policies and plans does not necessarily imply implementation of the policies, hence the need to embrace *commonality capital* and achieve at least the policy culture of ownership. Policy implementers, with their involvement from the outset, would own the vision and objectives that the policy articulates and accept the practical framework and the associated challenges of implementation and make them work. It is also evident that any attempt to adopt short cuts in policy engineering in order to avoid the reality of the complexity of the process of education policy engineering is detrimental to future implementation. Adopting a model of policy engineering that does not *effectively* engage practitioners from the outset (traditional model) results in *de-energised policy*, a situation that Ghana needs to avoid at all cost if the potential of ICT for accelerated development is to make the planned impact on the economy and bring the transformation hoped for in future. Critical to this is the need for governments and policymakers to recognise that people make policies work — to bring about change — and policies per se will not bring change. This position as have constructed through this thesis is strengthened by the argument made

by Unterhalter and North (2017) when talking about connecting policy and practice [analysing practice in cross-country settings of Kenya and South Africa] that “locations and relationships of people are important part of how policy comes to be realised” (p.2). The need to respect the local space and make good use of it is also essential in creating ownership. The “terrain of a middle space” – the space between the global and local according to Unterhalter and North (2017: 3) is crucial for flow of ideas and practices which can be impediment to effective implementation of policies. It is this “middle space” that within the tenets of commonality capital must be engaged from the outset of policy engineering and not excluded from the process and handed the finished policy to implement the way they know how. The research has shown that by adopting a real process of engaging the “middle space” through deliberation, public argument and evaluation; a culture of policy ownership is built within the “middle space” which pivotal for effective implementation *ceteris parabus*.

Of course, the degree to which commonality capital is central to any policy engineering process is dependent on the willingness of government and policymakers to close the gap between the global and national interest and in terms of technology integration, the gap between local and national interest on one hand, and national and multinational profiteering organisations’ interest on the other. However, as commonality capital is about “communitarianism” (Benhabib, 2011) through galvanisation of local and national interest, skills and relations into a conglomeration of asset, capital for common good — hence commonality capital — contestation over meaning of policy text, ideological hegemony, challenges of translating policy into action, dichotomy of purpose between policy encoding and decoding, the issue of recognising the teacher as social actor of significant importance in social policy engineering — that are associated with traditional top down approach to policy formulation, can be minimised under the right conditions as I have highlighted in the Chapter 6. There are therefore, opportunities that Ghana can capitalise on in developing and using *commonality capital for policy engineering* and cultivating a culture of a collaborative approach to development. These opportunities include a safe and politically stable economy, the presence of a Public Private

Partnership (PPP) to implement government services, the availability of huge social and cultural capital and the goodwill of the government and citizenry to see ICT drive socio-economic development. The development of the needed ICT leadership as presented in chapter 5, Table 5.8 coupled with the needed investment in the capacity building of practitioners so that they are able to contribute meaningfully to the policy culture and technology culture of Ghana, will be discussed in chapter 9 as part of my recommendations to make ICT policies work in Ghana as an intelligent country. The foregoing is my conclusion that the involvement of stakeholders improves policy *commonality capital* and *policy momentum*, otherwise there is *commonality deficit* and *de-energised policy*, and hence policy implementation failure.

Chapter 8 Conclusions and Recommendations

8.1 Introduction

The focus of this final chapter is to highlight and discuss the contribution that the study has made to knowledge in the area of the process of ICT policy formulation and implementation in the context of Ghana, discusses the challenges of the study, and finally makes recommendations on areas of future research and provided conclusions.

8.2 Contribution to Knowledge

The thesis has proposed a way of understanding ICTs in Ghanaian secondary schools by investigating how ICT policies work in the Ghanaian context regarding the process of formulating and implementing an education policy for ICT use in education and development. The position of the thesis is that in the policy engineering process, by effectively using *commonality capital* from the outset, policies so formulated are owned by policy implementers, which is *the pinnacle of the essence* in policy implementation. By taking this position, the study makes a valuable contribution to existing knowledge in the field of ICT policy formulation and implementation, specifically as it pertains to ICT policy for development and education in developing countries, and in this case, Ghana.

The study makes a significant contribution to knowledge and existing research in the areas of information and communication technology policy formulation and implementation for national development and education. This research, within the context of Ghana, is one of the few studies with a clear focus on the process of ICT policy formulation and implementation from the perspective of the policymakers and policy implementers and the interplay of the dichotomy of intentions therein. This thesis is one of the studies on Ghana that has critically explored how effectively specific national policy has been implemented within a particular sector and given timeframe. The study, therefore, is a response to the call for adaptation of a broad-based approach to national policy formulation, and by helping to identify and find meaning in

the working of ICT policies in Ghana and factors for successful implementation of the ICT4AD and ICTED from policy implementers' and policymakers' perspectives, the study serves as a framework to inform strategies aimed at ICT policy formulation and the implementation process in Ghana.

Furthermore, the study illustrates the benefit of combining qualitative and quantitative inquiries of textual analysis, interviews, observation, and survey for investigating a phenomenon that has been rarely explored in Ghana. Adopting the mixed-methods approach to data collection for the study has successfully contributed to the building of theory grounded in data. This approach fits well into a space such as Ghana where research culture is developing, and it can sometimes be logistically cumbersome collecting data and accessing relevant contextual literature on the subject. Combining more than two strategies enhances the validity and reliability, especially for the purpose of reaching a saturation point in data collection and theory building. The research finding indicates the usefulness and validity of this approach.

As the study, has unveiled, the successful implementation of the ICT4AD and ICTED policies in education is hindered or enhanced by factors such as infrastructure, politics, curriculum, and equipment, but more importantly the *involvement of policy implementers in policy formulation and decision-making*. Therefore, by focusing on the involvement of policy implementers from the outset, the need for greater attention to policy implementers' perspective in the field of ICT policy formulation and implementation, this thesis has proposed a concept of policy culture, *commonality capital* or *commonality deficit*, *policy momentum* or *de-energised policy*, and *political orientation* and/or otherwise *political identity* as factors that contribute to or hinder successful implementation of ICT policies among secondary schools in Ghana. These concepts were located within the ICT policy direction of Ghana and defined their relevance in ensuring effective policy formulation, implantation, and implementation.

Finally, the study has focused on the implementation of the intended educational purpose of the Information and Communication Technologies for

Accelerated Development (ICT4AD) policy framework and its related policy, the Information and Communication Technologies in Education (ICTED) policy of Ghana, which have provided good sources of reference for policymakers and political decision-makers in the future so that policy ownership is centrally on the policy implementers. There is no study of this kind in Ghana; hence, the thesis is a good source of reference for future researchers in the area of technology policy engineering and implementation for education and development.

8.3 Challenges to the Study

The challenges faced during the study were mainly methodological, but I am aware that there is hardly any research that is without such issues, and for approach- and strategy-specific issues, those have been discussed earlier. More generally, the issues of political, cultural, economic, and technological dimensions are presented below.

Political: Ghana was preparing for an election during my pilot study, and there was the challenge of getting timely approval from the Ministry of Education, and for that matter the Ghana Education Service, as the gatekeepers were overly protective their interest. It took over ten comings-and-goings before approval was finally granted. In addition, getting the participants, especially the policymakers, was an issue as most of them did not keep a record of appointments and were hard to meet in their offices. Moreover, the interview participants generally needed to be convinced that my research had no political influence or affiliation before they would participate, some even after asking for further clarification on issues bothering them or whether they would be paid for participating or about whether laptops would be provided in future and signing the consent forms.

Cultural: Two head teachers were hesitant about granting me an interview on the grounds that 'Ghana Education Services' kept on imposing research requests on them without consultation. Culturally, they felt they were in charge of their schools and should be the ones making the call. In the same schools,

when I was finally allowed to conduct the interviews, the head teachers did not see the need for me to ask the teachers individually for their consent, as this amounted to 'undermining their (head teacher's) authority'. I had to politely explain to them the importance of each selected teacher participating willingly, which they understood and then gave their approval. However, the outcome of this in one of the schools was that the head declined to be interviewed; instead, the assistant head teacher was interviewed.

Economic: The cost of travelling to the interview settings was high and resulted in timely gathering of data. In one instance, a policymaker requested that the interview take place in a restaurant in the morning, as it was a very quiet place and near his residence. Another reason he gave was that the traffic to his office would make it impossible for me to meet him if I were not able to meet at his proposed place. I accepted the offer, but it came at a cost. I had to pay for food he bought before the interview and had to pay for a car to take him back to his house to pick up his car. These were not discussed beforehand, and I was caught unaware in meeting these demands.

Technological: The technical issues were twofold: transcription of the interview recordings and the use of NVivo. The tape recorder I used came with Dragon software that could transcribe the interview, however, due to its ability to recognise the accent of the participants, I had to manually transcribe. Furthermore, as I have already mentioned, the Mac version of NVivo that I used could not do the job because it was not fully developed at the time.

8.4 Recommendation for Further Study

As no research has ever been exhaustive, the thesis provides a framework for future studies in the area of ICT policy for education and development. There are many themes that may be pursued by other researchers but the main ones follow.

First, a study into the symbolic relationship between the various actors and agents (policymakers and policy implementers) in the ICT4AD and ICTED policy engineering process in other countries like Kenya, Rwanda, and

Tanzania and how that has affected implementation and influenced patterns of practice among practitioners.

Second, in Ghana, the tertiary education sector has a mandate to produce graduates for the knowledge economy. A repeat of the study with a focus on the tertiary education sector will be a good step to adequately inform future policies on ICT integration into education.

A longitudinal study on engineering and implementation of a specific policy that is underpinned by *commonality capital* within the context of Ghana will be momentous for the theory of *commonality capital*. With the involvement of policy implementers from the outset and the policy ownership garnered as a result, what impact has it made on the implementation of the policy? The research journey from the birth of the policy to the implementation, evaluation, and review of the policy in this way will be telling regarding the position of this thesis and further provide a reference point for ICT policy for education and development engineering in Ghana and elsewhere.

8.5 Conclusion and Manifesto - ICTED and ICT4AD Policy Implementation in Ghana

In bringing down the curtain on this thesis, it is critical to set out what I call my manifesto for ICT policy working in Ghana for education and development. Typically, the position as revealed by the study, is effectively using of *commonality capital* to garner policy ownership as an essential enabler for effective implementation. Policy implementers in Ghanaian secondary schools do not see themselves as owners of the ICTED policy nor the ICT4AD policy because they were not involved in the design process. The study corroborated the argument that policies have multiple interpretations but takes the position that any negative effects of multiple interpretations can be minimised through the use of *commonality capital* where both actors (policymakers and policy implementers) effectively collaborate in the engineering of the policy from the outset. This will eventually bring about policy ownership, which, according to the policy implementers engaged in the study, is essential for ensuring the

policies are implemented. However, a lack of *commonality capital*, coupled with other factors, results in the policies not being effectively implemented in the secondary schools of Ghana. The data as presented in Chapters 5 and 6 support the view of *commonality capital* for ICTED policy formulation and implementation regarding changes to patterns of practice among policy implementers as a driver for successful implementation. As a step to remedy the current state of affairs regarding the ICTED and ICT4AD policies of Ghana, I conclude with my manifesto for Ghana, a call to create two main cultures: technology culture and policy culture.

8.5.1 Technology Culture

Technology culture is one of the domains of policy culture, as I previously mentioned in Chapter 8. Within this is the revelation in Chapters 5 and 6 of the study that there is a place for technology for education and national transformation, but I also revealed that to reap the benefit of technology, there are issues that need to be addressed. As discussed in the previous chapters, especially in the data presentation in Chapters of 5 and 6, the issues of infrastructure, capacity, and the capability of teachers to use the technology and make policy, the nature of the curriculum, political leadership, and equipment needs to be addressed. More importantly, however, is the factor of policy implementer involvement from the outset of policy engineering. The issues demand that Ghana understands and adopts a technology culture that is comprehensive enough and captures the ideology, hopes, and climate with the aim of healing the past ills and leading Ghana to become mature and intelligent. Figure 9.6.1, illustrates the ideologies that may be pursued or continue to be pursued in a more coordinated way, the hopes that need sharing and embracing by all, and the climate or the remedies that need instituting.

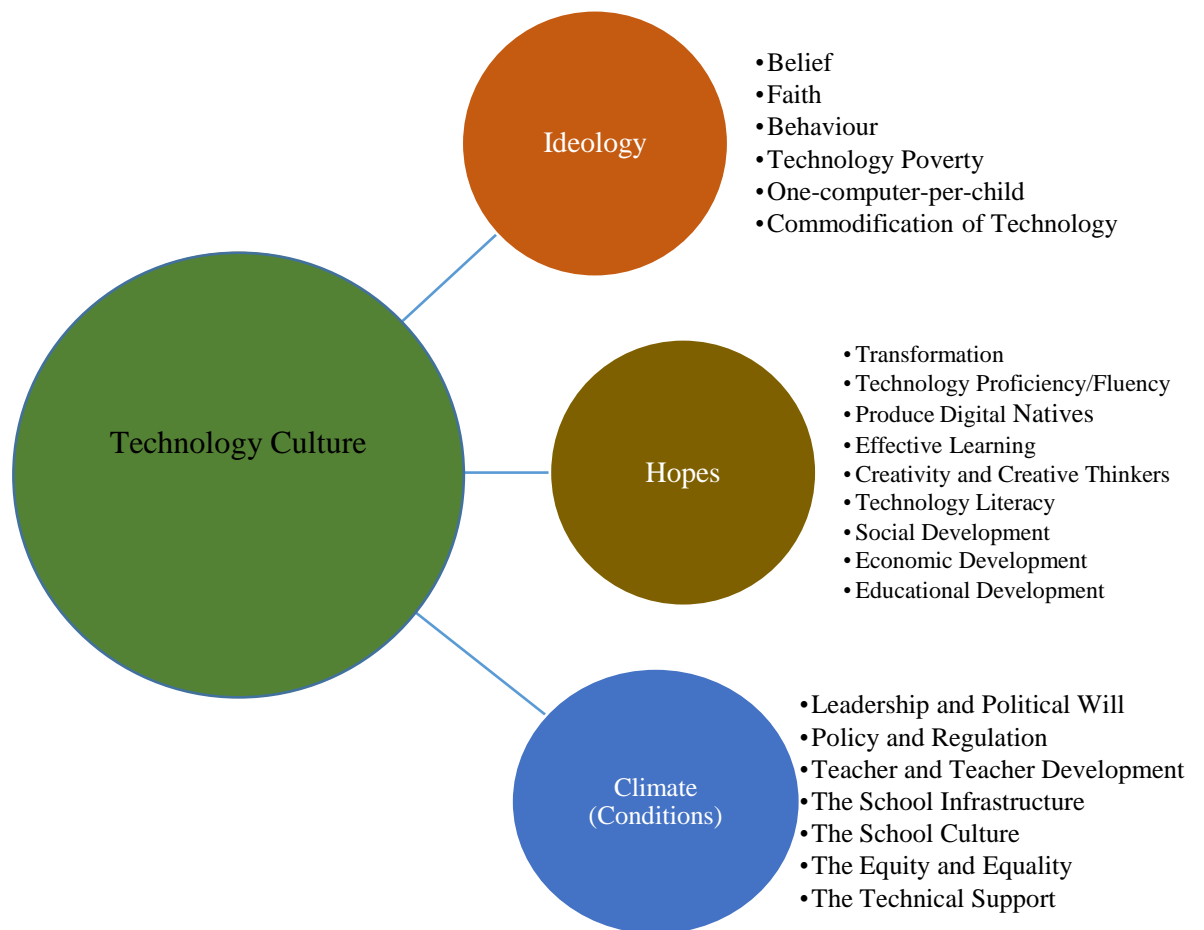


Figure 8.8.1 Technology culture proposed for Ghana

Within the ideology component of the technology is the element of mindset change and *Polidigiteched* as discussed in Chapter 8. Initiatives such as one-computer-per-child need to be well coordinated so that they do not look like political activity, as respondents for the study have claimed. Beyond this, the technology needs to be provided to the teachers or policy implementers as well. The policy implementers interviewed for the study called for computers to be provided to teachers on hire purchase, as they were unable to afford an upfront payment for the computers. In this way, technology poverty would be minimised and many more people would own the equipment. In education, the equipment provided needs to be identified as a teaching and learning aid and not just a commodity, and those selling to the education sector need to adopt the same mindset so that from the outset provision will be made for the right and appropriate software targeted at teaching and learning.

Furthermore, the hopes of the transformative power of technology, the hopes of graduates of Ghana becoming technologically fluent and digital natives, the hopes of technology supporting students learning effectively and creatively, using the technology as creative thinkers and becoming creative thinkers, the hope of developing technology literates, and the hope of using technology for socio-economic and educational development need to be disseminated and shared with all stakeholders in a clear language that they can understand. The situation, as identified by the study, is that of a lack of thorough knowledge about these hopes among the policy implementers and, as a result, their unawareness of the existence of the policy documents that contain the hopes. The level of ignorance as to why ICT in the education landscape (except for what the syllabus says) is not a good recipe for effective use for transformative learning and teaching. It does not promote the coordinated approach that is needed from all stakeholders and sectors to ensure that approaches being implemented are intended for a common purpose, hence leading to the reality of *accidental benefits* of ICT use. *De-energised policy* becomes a common malaise that needs to be remedied—a move away from symbolic policies to policies that actually work.

Consequently, within the technology culture, I propose that specific actions be taken to create the climate needed to ensure that technology policies work in the context of Ghana. This action involves the creation of specific *conditions* for effective functioning of critical elements and sectors of the Ghana economy. The critical elements include leadership, including political and academic leadership, policy and regulatory framework and environment (as the documentary analysis revealed and presented in Chapter 5), teacher and teacher development (response to the teacher capacity issue), the school infrastructure, the school culture, equity and equality, and technical support. These are elements that have been identified by the respondents I have interviewed and revealed by the document analysis. Metaphorically, the climate is conducive for Ghana as a living organism that needs to be nurtured to grow into maturity, therefore becoming intelligent requires the healing of the current ailment that is making it impossible for the attainment of the various hopes. The required doses of the pills identified, however, need to be viewed

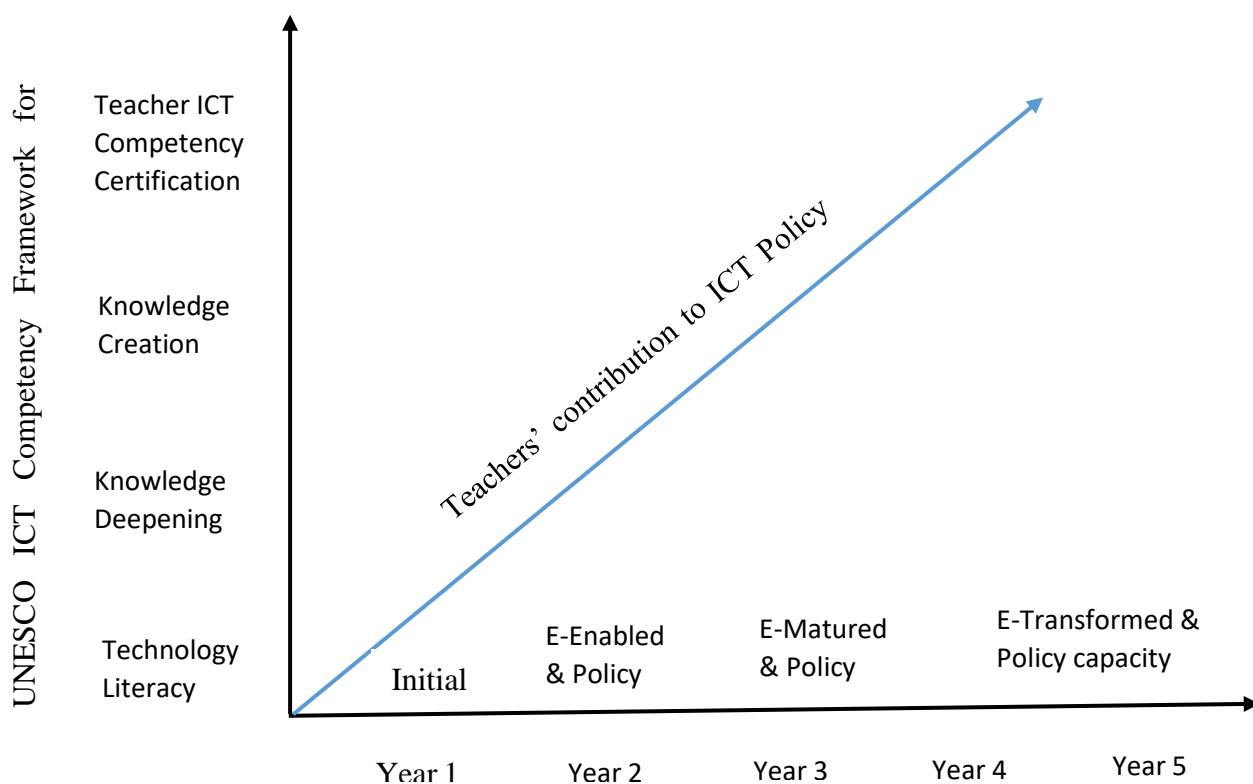
within the bigger picture of policy culture (of which technology culture is a domain). The final section of the thesis now focuses on the position of policy culture that has been recommended for Ghana.

8.5.2 Policy Culture

The policy culture recommended for Ghana has three main domains of education, technology, and development culture with the view of Ghana as a living organism and policy as a colony. Considering policy as a colony of objects, values, goals, and intents with the potential of being effectively implemented in the ideal environment requires that the colony is embedded within the culture of policy ownership. Policy ownership, as the study has proposed, is an outcome or value emanating from effective utilisation of *commonality capital* in the absence of which appear commonality deficits and *de-energised policy*. Therefore, the right environment, according to the findings from the study, is the one in which policy implementers take ownership because they have been effectively engaged or involved from the outset during the policy engineering process and, *ceteris paribus*, this should lead to effective implementation. However, this calls for two main critical actions manifested through the study: teacher capacity building, which has been identified as one of the pills for creating a climate conducive for ICT integration, and *commonality capital* utilisation, which is critical and central to the research findings.

First, all respondents for the study recommended that the capacity of teachers be developed in the use of ICT so that they are able to develop the content needed and integrate ICT into the curriculum. The respondents require such training to be intensively provided to all pre-service teachers and in-service teachers. Hence, to make this work, I recommend that Ghana adopts UNESCO's ICT Competency Framework, which is being used by GESCI as part of their African Digital Schools Initiative (ADSI). This five-year initiative is

being implemented in Kenya, Tanzania, and Cote D'Ivoire. Figure 8.6.2 is the visual representation of the initiative that Ghana should adopt.



GESCI Digital Schools of Distinction Framework *Infused with Policy*

In adopting the UNESCO – GESCI teacher capacity framework, my proposal is that Ghana infuses the framework with policy design and development capacity building of teachers. As a result, I recommend that after the initial technology literacy competency development in year 1, the subsequent years' training should include training in policy development. This recommendation is corroborated by UNESCO's position on national policy development capacity building (UNESCO, 2016). The first-year technology literacy training that UNESCO proposed included policy awareness with hope that at the end, learners, citizens, and workforce would be equipped to use ICT productively to support social and economic development (UNESCO & Microsoft, 2011). It is the contribution of this thesis that afterward, teachers should be well equipped with policy development strategies so they are enabled to take an active part in the policy engineering process. Ghana should take advantage of the initiative to equip its teachers with the skills needed to take ICT integration into

education forward. Within the context of this study, however, a decision that is taken should involve the teacher from the outset so as to ensure ownership.

So, in considering the critical action of *commonality capital*, the study in no way suggests that policies underpinned by *commonality capital* per se will automatically lead to successful implementation. To say so is to ignore the other important factors such as *political identity, political orientation, infrastructure and resources, curriculum and equipment, teacher capacity, cultural dynamism, and policy momentum*. The marriage between policy and *commonality capital* as proposed and supported in the thesis aims to ensure that policy implementers take ownership of the policy and make it work when it arrives at the gate. Through *commonality capital*, such a policy at the gate is a product of policy implementers' involvement and their input from the outset, which according to the findings enables them to take ownership. Ultimately, marrying these two concepts also requires a buy-in from policymakers. Therefore, the proposed marriage is conditional on the interplay and overlap of various decisions between all stakeholders, without which the intended outcome will not be achieved. Such a decision may relate to a past, present, or future condition and policies are formulated to implement the decisions pertaining to the previous, current, and future conditions. As a result, the more effectively *commonality capital* is used, the greater the ownership and the clearer the underlying decisions to improve certain conditions. The use of *commonality capital* leading to *policy ownership* is what Ghana needs to unlock the prospects of policies working to bring about transformation and development.

Finally, positioning the conclusion within a general debate about policy, I will revisit the discussion in Chapter 2 on policy as a text. Policy is text and action, words and deeds; policy is what is enacted as well as what is intended. Policies are always incomplete insofar as they relate to or map the 'wild profusion' of local practice (Ball, 1994 p.10). Policies go through the transmission process of encoding and decoding, as discussed in Chapter 2. Policy statements encoded by a policymaker have competing interpretation, intentions, and interests to the policymaker, and when transmitted to policy

implementers (e.g. teachers, the policies are usually 'lousy') the policy documents are not available; some policy makers selectively interpret the policy for teachers; enough time is not always available to teachers to read the policy; and 'noise' sometimes interferes with policy 'signal'. The study revealed that in the case of the ICTED and ICT4AD policies of Ghana, the implementers have not even seen or known about the existence of the policies. The only time the implementers have seen the policies and heard about them was during my interviews. At this rate of dissemination, at the point of decoding when the policy is eventually received, the policy implementers will selectively interpret and make decisions about how to put them into practice in their context (Trowler, 1998: p.49), in some cases *leading to benefit by accident*.

Therefore, at the birth of a policy, the statement encoded is already pregnant with the complexities of the vagaries of intentions and interests embroiled in competing interpretations from policymakers and policy implementers. These complexities and variations in policy intentions among stakeholders can be costly (*not effective use of policy economics*), but this cost can be minimised with effective use of *commonality capital* and *policy democracy*. The common denominator for any policy, in my view, is the people—the people who will implement the policy, the people for whom the policy is aiming to serve, and the people who will be affected by unsuccessfully implemented policy—thus, the people must be involved in the policy engineering and must own the policy so they are held accountable for the working of the policy. Specifically, I propose, within the context of Ghana, that what will work is the development of a *policy culture* of *policy ownership* through *commonality capital* during *policy engineering*.

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Appendices

Appendix 1: Extract: An Integrated ICT-Led Socio-Economic Development Policy and Plan Development Framework for Ghana (PDF4G) document policy initiatives

The PDF4G is designed to put in place and implement the necessary policies and plans capable of addressing the developmental challenges facing Ghana to accelerate the socio-economic development process of Ghana and move it towards an information and knowledge based economy and society. The policy and plan development process is being carried out in three phases with each phase aimed at specific deliverables. The phases are the Framework stage, the Policy stage, the Plan stage and Implementation stage.

Phase 1—The Framework Document: The first phase concentrates on the development of an Integrated ICT-led Socio-Economic Development Framework for Ghana. This framework document is in two Volumes. Collectively the framework document among other things provides the basis for the development of the subsequent Policy document and the Plan.

Phase 2 ---- The Policy Document: This phase of the process will concentrate on the development of an Integrated ICT-led Socio-Economic Development Policy and Strategies for Ghana. The Policy Document will provide details of specific policy commitments in relation to WHAT need to be done towards the realization of the vision to transform the economy and society through the development, deployment and exploitation of ICTs to support the country's socio-economic development process. The Plan, to be developed in the 3rd Phase of the Process will provide details of HOW these policy commitments can be translated into concrete programmes and initiatives for implementation.

Phase 3 ---- The Plan: This final phase of the process will be devoted to the development of the plan guided by the policy commitments detailed in the Policy Document. This Plan, the first of 4-yearly Plans is to support the development of the necessary economic base and environment for accelerating Ghana's development towards an information-rich and knowledge-based economy and society.

The Developmental Challenge: The Social and Economic Pressures of a Youthful Population

Nature of the Challenge: Ghana's relatively young population of close to 60% of the population under the age of 25 years do present the country with a

number of development challenges. Some of the developmental challenges that Ghana could face as a result of having a relatively young population include those relating to heavy social expenditure budget in areas like: education, training and provision of health and other social services.

Possible Information and Knowledge Economy (IKE) Development Policy Actions and Initiatives to...

Directly Address the Challenge: -

- Policy initiatives targeted at promoting basic literacy and ICT literacy of the population at large through the implementation of special initiatives targeting both the formal and informational educational system from basic educational level to higher education level.
- Policies aimed at improving basic literacy through both formal and informal educational avenues
- Policy initiatives targeted at promoting basic literacy and ICT literacy of the population at large through the implementation of special initiatives targeting both the formal and informational educational system from basic educational level to higher education level.
- Policy initiatives aimed transforming Ghana into an ICT literate nation
- Policies aimed at improving basic literacy through both formal and informal educational avenues
- Policies aimed at facilitating and supporting the development of the requisite pool of highly skilled human resources; knowledge workers and expertise capable of facilitating the process of developing and supporting a technology-based knowledge-driven industrial sector.
- Policy initiatives directed at building the capacity of the nation's technological universities, and polytechnics
- Policies directed at modernizing the educational system using ICTs to improve and expand access to educational, training and research resources and facilities;
- Policies targeted at facilitating the deployment, utilization and exploitation of ICTs within the educational system to support teaching and learning from primary school upwards.
- Special policy initiatives targeting the improvement of the quality of education and training at all levels of the educational systems

Indirectly Address the Challenge: -

- Policy initiatives aimed transforming Ghana into an ICT literate nation
- Policies in the area of developing the human resource based of the economy

- Policy initiatives directed at building the capacity of the nation's technological universities and polytechnics
- Policies targeting the implementation of national ICT applications; including multipurpose community telecenter projects; teleducation and SchoolNet projects among others
- Policies targeting the implementation of initiatives aimed at modernising the civil and public service to improve its efficiency, effectiveness and service delivery through the deployment and exploitation of ICTs
- Policy to facilitate and promote the implementation of community-based ICT initiatives
- Policy instruments and initiatives aimed at facilitating the development of the private sector as a whole.
- Policies and strategies aimed at promoting the development of a globally competitive local ICT industry for the development, production and the sale of information, knowledge, and technology products and services
- Policies aimed at the development of a comprehensive human resource base in critical skill areas required for facilitating the development of a vibrant value-added services sector and ICT services industry;
- Policy initiatives aimed at enacting the various legislations and laws that could promote the development of a vibrant and modern industrial sector
- Policies initiatives targeting the commercialization of the key sub-sectors of the agricultural sector and industry to improve their competitiveness
- Policies to promote and facilitate the development of the physical and social infrastructure; targeting the rural areas to support the development of agriculture sector
- Policies aimed at developing the necessary highly skilled ICT human resources required for supporting the development and maintenance of an advanced information and communications infrastructure and systems

From Chapter Five – Linking Ghana's Developmental Challenges with the Recommended Policy Actions and Initiatives

Appendix 2: Ethics Approval Letter and Introduction Letter from Supervisors for Data Collection

Institute of Education, University of London Ethics Approval for Doctoral Student Research Projects: Data Sheet

Please read the notes before completing the form

Project title	Technology in Education: Hope and Reality; an evaluative case study of ICT in Education Policy Implementation in Ghanaian Secondary schools		
Student Name	Samuel Kwaku Awuku		
Supervisor	Liesbeth De Block & John Potter		
Advisory committee members	Martin Oliver, Neil Selwyn, Liesbeth De Block, John Potter		
School/Unit	LKL	Faculty	FCP
Intended start date of data collection	01/06/2011		
Funder			
Professional Ethics code used	BERA		

Has this project been considered by another (external) Research Ethics Committee?
If your research is based in another institution then you may be required to submit your research to that institution's ethics review process. If your research involves patients or staff recruited through the NHS then you will need to apply for ethics approval through an NHS Local Research Ethics Committee. In either of these cases, you don't need ethics approval from the Institute of Education. If you have gained ethics approval elsewhere, please detail it here:

NO

Research participants

Does the research involve human participants?

- Yes, as a primary source of data (e.g. through interviews)
 Yes, as a secondary source of data (e.g. using existing data sets)
 No Please explain _____

If the research involves human participants, who are they? (tick all that apply)

- Early years/pre-school
 School-aged children
 Young people aged 17-18
 Unknown
 Adults *please describe them below*
 School teachers
 Head of Education departments
 Policy makers: ICT policy for Ghana

Research methods to be used (tick all that apply – this information will be recorded on a database of the types of work being presented to Ethics Committees)

- Interviews
 Focus groups
 Questionnaire
 Action research
 Observation
 Other
 Systematic review
 Randomised controlled trial
 Literature review
 Use of personal records

Institute of Education, University of London
Ethics Approval for Doctoral Student Research Projects:
Planned Research and Ethical considerations.

1. Summary of planned research (please indicate the purpose of the research, its aims, main research questions, and research design. It's expected that this will take approx. 200–300 words, though you may write more if you feel it is necessary)

<p>The purpose of the research is to evaluate the introduction of Information and Communication Technologies into secondary schools in Ghana and how the technologies are being used to enhance teaching and learning of students.</p> <p>To what extent has the government successfully implemented the ICT4AD policy of:</p> <ol style="list-style-type: none">1. introducing computers into all primary, secondary, vocational and technical schools?2. improving the quality of education and training and make the educational system responsive to the needs and requirements of the economy and society with specific reference to the development of the information and knowledge-based economy and society?3. transforming the educational system to ensure that there is uninterrupted quality education for all Ghanaians to age 17 to reduce poverty and create the opportunity for human development and promote ICT awareness and computer literacy within the public at large?4. enabling graduates from Ghanaian educational institutions – formal and non-formal, to confidently and creatively use ICT tools and resources to develop requisite skills and knowledge needed to be active participants in the global knowledge economy by 2015 . <p>A combination of probability and non-probability sampling method will be used. Three secondary schools from Ghana will be selected for the study. The selection will be done purposively using the criteria of Urban, Rural and pilot (ICT initiatives) school. Respondents in each school will be selected using stratified random sampling in order to select a representative from each department of the schools. A focus group will also be selected from the School Representative Council (SRC) of the Ghanaian school. Headteachers of each school will be in the sample using purposive sampling. Policy-makers will also be selected purposively.</p> <p>Questionnaire, interviews, and observation will be used to collect the data needed for the study. Secondary sources of Data in the form of policy documents and survey reports will also be used. I will use triangulation.</p>

2. Specific ethical issues

(Outline the main ethical issues which may arise in the course of this research, and how they will be addressed. It's expected that this will require approx. 200–300 words, though you may write more if you feel it is necessary. You will find information in the notes about answering this question)

The research will be conducted within the ethic of respect for all participants irrespective of their sex, age, and beliefs.

The main ethical issues have to do with:

**involvement of secondary school children
anonymity and confidentiality
participation
benefit of the study**

Involvement of students below 18 years: by virtue of my profession, I am already CRB checked in England and Ghana respectively.

Anonymity and confidentiality: Data collected will only be used for the purpose for which they were collected. Participant will be assured of confidentiality and anonymity. The participants will also be informed about their right to privacy.

Participation: Individuals agreeing to take part in the study will do so after they have truly understand the aim of the study and given the opportunity to voluntary consent. They will also be informed about their right to withdraw for the research. I will get an Introductory Letters from my supervisor and Director (Secondary Education) at the Ghana Education Service for 'to whom it may concern'.


Benefits: Contributing to ICT policy and practice in secondary schools of Ghana. Contributing to the wider debate about the future of use of ICT in education in across the globe but specifically in developing countries. Finally, to add to knowledge.

3. Attachments

Please attach the following items to this form:

- The proposal or project outline for the project
- Approval letter from external Research Ethics Committee, if applicable
- Where available, information sheets and other materials to be used to inform potential participants about the research.

4. Declaration

I confirm that to the best of my knowledge this is a full description of the ethics issues that may arise in the course of this project			
Signed		Date	22/05/11

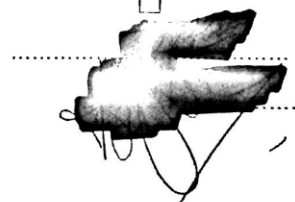
School Use

Date considered:

- Approved and reported to FREC
- Referred back to applicant and supervisor
- Referred on to FREC

Signature of Supervisor:

Signature of Advisory committee member:



FREC use

Date considered:.....

FREC reference:.....

- Approved and filed
- Referred back to applicant
- Referred to RGEC

Signature of Chair of FREC:.....

Dr Liesbeth de Block
Lecturer in Media and Cultural Studies
Lecturer Sociology of Childhood and Children's Rights

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25th May 2011

TO WHOM IT MAY CONCERN

Mr Samuel Awuku is undertaking doctoral research at the institute of Education. His area of interest is the application of and policy in Ghana concerning the introduction of learning technologies into schools and how they are being used by teachers.

At present he is conducting initial interviews as part of an information gathering exercise so that he can focus his research most usefully.

As his study supervisors we would ask that his requests for interviews and visits be treated positively as we anticipate that his research could make a useful contribution to policy and practice in this area.

If you would like to get in touch with any areas of concern please do not hesitate to do so.

A horizontal black bar used to redact the signature of Dr Liesbeth de Block.

Dr Liesbeth de Block

London Knowledge Lab
23-29 Emerald St
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www.lkl.ac.uk

30.3.13

To whom it may concern, regarding Sam Awuku

I am writing this to confirm that Sam Awuku is engaged in doctoral studies at the Institute of Education, London University and that I am his supervisor. I would be grateful if you would provide assistance with the fieldwork for Sam's study which is aimed at improving understanding of the implementation of policies in Ghana for learning with new technologies.

Yours faithfully,



Dr John Potter



An interdisciplinary collaboration between



**Appendix 3: Permission Letter from Ghana Education Service
Directorate to Collect data in Secondary Schools**

GHANA EDUCATION SERVICE

*In case of reply, the number and
date of this letter should be quoted.*

Your Ref

My Ref. No.



Republic of Ghana

HEADQUARTERS
Ministry Branch Post Office
P.O. Box M45
Accra

1st June, 2011

ALL HEADS OF SENIOR HIGH SCHOOLS

LETTER OF INTRODUCTION
MR. SAMUEL AWUKU

Mr. Samuel Awuku is undertaking a doctoral research at the institute of Education. His interest is on application of policy in Ghana concerning the introduction of learning technologies into schools and how they are being used by teachers.

He therefore need your assistance to enable him undertake this exercise. He is initially conducting an interview to gather information for his research.

Please assist him with any relevant information that he may need.

Thank you.



DEPUTY DIRECTOR
SECONDARY EDUCATION DIVISION
For: DIRECTOR-GENERAL

Appendix 4: Map of Ghana showing selected Regional Data Collection sites

Appendix 5: Sample Interview Notes and Transcript - Policy Makers and Policy Implementers

30 /05/2011: Deputy Co-Ordinator ICT E (Ministry of Education)

GES is one of the agencies under the Ministry of Education. It is responsible for Pre-school, Basic education, Senior High School and Technical and Vocational Schools.

ICT implementation structure

The unit ICT E (Information and Communication Technology in Educational) programmes is situated in the Ministry of education building and staffed by employees seconded from the Ghana Education service. The Unit has the overall responsibility for; IT programmes and issues within the ministry, policy formulation issues and ICT E which is an assumed GES core function. This unit has been in existence since 1998 but has been dissolved by the Minister of Education in the month of April 2011. There are no such units at the regional, district or circuit levels.

There are 520 secondary schools, out of which only 20 of them were provided with ICT laboratory by the central government whereas the others with ICT were either provided with the ICT by PTA (Parents' Teachers' Association) and Old students' associations. However, government declined to approve request from parents to levy themselves through payment of school fees for the purpose of furnishing the schools with ICT and ICT related equipment.

ICT is taught as a subject at basic and senior secondary schools. Since its implementation, no secondary school has taken any exam in ICT at SSCE level; however, the first examination at the basic level was sat this year. ICT at basic level is optional to students.

Evidence to support ICT use in subject teaching is highly limited. It was said that the attitude of secondary students to ward ICT subject learning is that of 'I do not care'. The reason given is that it is non-examinable subject.

Meeting with ICT in Education Coordinator (Ministry of Education): 31/5/2011

The first formal attempt to introduce IT into the Ghana's Education system was in 1996 when Science Resource Centre Project (SRCP) was implemented in 110 secondary schools across Ghana. Each school was provided 2 science laboratories which were fitted with 3 computers each. The computers came with basic software for the purpose of research. These computers were used to start teaching students computer literacy. However, the computers were not networked and attempt by some schools to use satellite connectivity could not be sustained due to the cost involved. The SRCP schools receive support from the National Information Technology and

Science group which was based at the headquarters of Ghana Education Service. Each SRCP school was assigned 4 to 5 satellite schools which use the centre 1 day in a week. Due logistic problems such as; transport to cart the students from the satellite schools to the centre, and excessive demand on accommodation at the centres, which necessitated the conversion of some of the centres into classrooms the project could not be sustained.

In 1996 Wordlink for Development programme initiated by the World Bank, which was later set up as a Non-Governmental Organisation (NGO). This organisation rolled out an initiative called SchoolNet across most African countries with which Ghana was one. Ghana did not wholly buy into the project due to unfavourable terms and conditions. One of the conditions was to use government resources like taking teachers from classroom and education officers from their roles to be involved as resources persons but they will remain on government payroll. Students were also levied to contribute to the project. There was objection from the government hence the project stopped. However, the project made some gains in terms developing teacher expertise in Information Technology. Other initiatives that directly link the SchoolNet programme is the Global Teenager Programme, and the Science Technology and Mathematics Education (STME) for girls' programme. These two initiatives are in existence and making impact, however the STME's focus is no longer on only girls but all students. Up till this point there was not policy for ICT.

Policy Development

In 2002 after long wait for Ministry of Education (MoE), the Ghana Education Service (GES) which has statutory duty for implementing educational policies developed by the MoE came up with policy framework for ICT in Education. ICT in Education Unit was set up in 2003 by the MoE to start working on ICT in Education policy. The GES personnel who started the policy framework in 2002 was seconded to the unit. The unit received support from GeSCI (Global e-School Community Initiative) which was set up the United Nations (UN) ICT task force to address challenges in using ICT in education. ICT in education policy was started in 2005 and completed in 2007 but due to changes in Government it was not signed by the minister until 2008.

Steps in developing the policy framework

- Consultants came out with the blue print
- Academia and MoE came out with their guidelines
- Workshop for representatives from all levels of education (primary, secondary and tertiary) to develop a working document
- Workshop for a representative from each region and district to study the working document and to make recommendations
- The document then went to the Academia at tertiary level for study and input
- Consult with business/industry for their input
- The document went back to the MoE for review

- The document finally went to the national stakeholders review meeting; received support from Global Institute for Policy Initiative.

Partnership: Policy Implementation

The sea of ICT is so wide that no single entity can do the fishing; it requires partners to do this successfully and effectively.

Partnership is influenced by:

- Hardware acquisition
- Software acquisition
- Connectivity
- Training
- Maintenance and Technical support
- Monitoring and evaluation

Partner with both global and local companies to help with the above. The companies are Microsoft, Intel, Cisco, Into IT, NIIT and IPMC, which are all private companies. At governmental level, the MoE partner with Ministry of Communications (MoC) through its agencies such Ghana India Kofi Anna's Centre of Excellence in ICT and Ghana Investment Fund for electronic communication. Others are NITA (National Information Technology Agency; an initiative of MoC to help implement ICT 4AD) and GICTED (Ghana Information and Communication Technology Department).

Contributions so far...

Microsoft

Microsoft: initially signed a 5-year agreement; 2005 – 2009 and this reviewed for another 5 years (2009 – 2014). As part of the agreement, Microsoft provides both hardware and software through the Partners in Learning (PiL) programme. Consequently,

- established dot Net (.NET) lab at Kwame Nkrumah University of Science and Technology
- established Microsoft academies at University of Education, Winneba (UEW), University of Cape Coast (UCC) and the University of Development Studies (UDS). These centres are producing graduates with ICT skills and also train trainers.
- providing training for teachers. Initially, there were 500 trainers with representatives from each district to provide training at the district levels.
- provide upgrade to software for \$0.00 at pre-tertiary level as well as tertiary institutions that train teachers for example UCC, UEW, and the 38 Colleges of Education in Ghana.
- provide application software (Microsoft office) for \$2.50
- academic licence for other tertiary institution

- support the Ghana India Kofi Annan Centre for Excellence in Information Technology Communications.
- providing the digital literacy programme through the PiL programme
- instituted the Innovative Education Programme (IEP) aim to encourage teachers' innovative use of ICT in education for teaching and learning and for administration.

Challenge: There are 250000 teachers at the primary school level (Basic level) across the country. Bulk of these teachers did not have any training ICT but from 2004 ICT in education was compulsory at all Colleges of Education. Since 2007, an average of 7500 teachers with ICT literacy has graduated from Colleges of Education. Teachers who are proficient ICT literacy are faced with the pedagogy.

Intel

The focus of the partnership is the provision of content and pedagogical training. Intel developed the www.skool.com.gh in 2005/2006 and in 2007 the CD of the content was distributed to all Senior High Schools. Each district director was given copies of the CD to be given to any Junior High School that makes the request to use it in their school. Each college of education was also given one. Intel is seeking to set up Digital Content Development Centre at Curriculum Research and Development Division (CRDD) of Ghana Education Service. This plan is to be functional in the last quarter of 2011 or first quarter of next year. Personnel will be trained to develop content by themselves. This is to help retain and share good practice. Schools are to trained their teachers in integration skills; 21st skills for teaching and learning. Intel has produced a training manual which can be adapted the need of teachers in Ghana.

Challenge: Some teachers may not be using the contents so developed due to old and obsolete equipment/computers. There are is great excitement about these developments but majority of teachers did not have e-learning laboratory but digital literacy one which is making implementation challenging if not difficult. Students only have 2 periods (80 minutes) of ICT literacy per week

Oracle/Cisco

In 2005/2006 initiated the New Partnership for Africa Development (NEPAD) programme which started in 2007. The aim is to equip students of Africa with requisite skills needed to function effectively in a knowledge economy. Pilot schools were selected for e-school programme; satellite internet connections through which content is made available to pilot schools. The schools were selected from six out ten regions. The schools were:

- Ola Girls Senior High School – Ho/Volta Region
- Akumada Senior High School – Ashanti Region
- Walewale Secondary Technical School – Northern Region

- St. Augustine’s Senior High School – Bogosu/Western Region
- Wa Senior High School – Upper West Region
- Acherensua Senior High School – Brong Ahafo Region

Another initiative by Oracle is ThinkQuest programme aimed at training students in 21st century skills.

IntoIT Ghana Ltd

- Provided ICT logistics aimed at building competency of teachers.
- Provided laptop on hire purchase to teachers for a payment term of 2 -3 years. The agreement was guaranteed the GES.
- The laptop came with some school management software, Microsoft learning suit and self-tutoring Microsoft software.
- 500 pieces of laptops were sold in year.
- Technical Support; set up ICTEST (ICT in Education Support Team). The team provides technical advice to educational managers on appropriate software, AUP (Acceptable User Policy) options.
- The team helps institutions in selecting appropriate software, repairers and certification and licenses.
- Help in monitoring and evaluation of practice. The aim is to have ICTEST in all districts of Ghana Education Service.

Other Government Agencies

Ministry of Communication

Ministry of Communication (MoC) in 2007 provided internet connectivity, projectors and laptops to 37 technical institutions, 38 colleges of education, over 40 Senior High Schools and few Basic schools

National Information Technology Agency

National Information Technology Agency (NITA) is implementing the e-government project.

Impact of ICT use in Schools

- Introduction of ICT provide its own excitement to children; so, they remain in school.
- Children go to school because there is ICT on the timetable. Motivation of students.

- There is a strong political will to see policy implemented and ICT provided in all schools.
- Parental involvement; PTAs providing computers to schools.
- Reports are being generated using school management software
- Improved communication within schools and between schools and stakeholders
- Enhanced research for resources to aid teaching and learning

Challenges of ICT in Schools

- Funds – not sufficient fund: to sustain the initiative, for technical support and provision of equipment.
- Change Management – some teachers are hesitant to buy into the changes that introduction of ICT brings onto their classroom practice. Resistant; due to lack of confidence, not willing to do away or adapt old practices. Fear of being embarrassed. Some teachers consider themselves to be more competent than them.
- Training –teachers are trained but do not have the opportunity to practice due to general lack of equipment.
- Infrastructure; electrification is no longer an issue as it is only 2 SHS that are not yet linked to the National Grid. Problem of infrastructure has more to do with network; issue of connectivity. School along the fibre path has broadband otherwise satellite connectivity in use with attendant problem of high running cost.

Immediate Plans

- July 2011: 250 schools to benefit from fibre broadband connection (USAID, GeSCI and MTN project)
- 1st quarter of 2012: 445 SHS to have class set of computers.
- Also, all SHS to receive 5 laptops and projectors (GES/MoC project)
- Basic schools to benefit from Community Learning Centres within walking distance from schools.

Meeting with Head of Instructional Material Development and ICT in Education: Ghana Education Service (GES) (1/6/2011)

Policy into Practice

ICT as a subject

- The Education Reforms of 2007 introduced ICT as both an elective and core subject.
- Implementation as a core subject has started in every SHS.

- No SHS has written any external exam in ICT yet but the first cohort of students at Basic level have taken their first external exam (Test of Practical) conducted by the West African Examinations council.
- The syllabus for both core and elective is in every school.
- Problem of appropriate hardware and software hinder provision

ICT as a learning tool

- There is massive problem in this area
- Intel has started training teachers in areas of integration
- Had 2 teachers from each school as trainers
- Piloting of ICT use in teaching and learning on-going in selected schools
- Content provided in Maths and Science by Intel throw skool.com.gh to schools with internet and those schools without internet were provided with CDs.
- Appropriate skills is needed for integration in other to decide when, how, why and what technology to use to enhance the teaching and learning.

ICT in Education Policy

- There are 2 pillars: ICT as a subject and ICT as a tool to be used in and for other subjects.
- In terms of implementation, ICT as tool has not gone far.
- Some schools have the facility but how to use the facility is the problem
- Most teachers have acquired their own laptop but they are under utilised
- In some cases, teachers have the skills but do not have the facilities to use their skills
- Schools who have headteachers who understand ICT are up to the job of providing the equipment and helping teachers to use the ICT in their lessons.
- Change is a big problem. Some teachers do not want to change and they resist it. They call themselves BBC (Born Before Computers).
- To encourage and motivate teachers to use ICT in teaching and learning, the Innovative Use of ICT Award was introduced in 2007. Teachers who won this award had ended up winning the overall National Best Teacher award which comes with a 4-bedroom house, a car and home office set up ICT equipment.
- The fact that teachers who use ICT innovatively in the classroom win the best teacher award shows the role of ICT in delivery outstanding and quality lessons to improve the learning experience of students.
- Yes, the word transformation has being used in the policy especially in the National ICT4AD one. Transformation means doing things differently; how students learn and how teachers teach.

Even, in the world of work the requirement has changed. They want people who can help them transform. Employers are no longer interested in just ICT literates rather, they want people who can use ICT to make decision, create knowledge and information. They want graduate who can use ICT innovatively to help transform their organisations.

Intel's focus is to bring about

- student centred learning; want teachers to move away from the lecture method to focus on child centred method. Students are born into technology. As somebody say we are digital immigrants and they are digital natives. Students are more interested in ICT than adults; we have to harness this interest.
- Life-long learning
- Students learning at their own pace
- Students managing own learning
- Learning at anywhere, anytime with any ICT device.

Developing the policy

The policy was discussed with the teachers who were trained as trainers after it was developed. E-version of the policy was given on CDs to each trainer for dissemination in their respective schools. Honestly this did not happen in most schools. Some of the trainers have also either moved school or left teaching altogether. There is scarcity of ICT teachers. Some key teachers were involved at the time. I was involved in the development of the policy; I was a headteacher at the time.

Interview Note: Professor (Author of ICT4AD Policy)– 24th June 2014

1. So, tell me about ICT4AD. Why ICT4AD?

It was initiated by the United Nations Economic Community of Africa. The African Development Forum made the decision to use ICT to support Africa's Development. At the forum in 1996, African Ministers for Science and Technology were all charged to adopt ICT to support the Development of Africa. In Ghana, the process then started in 2000. The objective was to formulate a policy to drive Ghana's Development and ICT must be used to accelerate such a development. Learning from Asia countries especially Malaysia, ICT can be used to accelerate Africa's development. There was a need to rely on ICT but not on it as a commodity.

What do mean by not as a commodity?

We are talking about the application of ICT tools for development and not just procurement of such tools to be lying idle. Not seeing them as an end in themselves. Not just acquiring them whether we have a need for them or not.

Rwanda's ICT policy was the first and Ghana's was the 2nd. I am sure you have seen what Rwanda has achieved to date with the use of ICT. That is what we want across Africa with the ICT4AD policy and the framework.

The target period was 2020, where we want to be a middle-income country. At the moment, Ghana is lower to middle income country. We want to make Ghana a knowledge economy and a knowledge driven economy and not commodity driven economy. Rwanda has 8 pillars, Ghana has 14 pillars; first time a country is having 14 pillars and there is no other country with 14 pillars. There was another document that informed the drafting of the ICT4AD; that is the Framework document; I am sure you have seen it. The framework set out how ICT as a tool can be used to move the development agenda of Ghana forward.

2. Now the objective of the ICT4AD policy as you have mentioned in the document is "to enable graduates from Ghanaian educational institutions - formal and non-formal to confidently and creatively use ICT tools and resources to develop requisite skills and knowledge needed to be active participants in the global knowledge economy by 2015" Would you say this was too ambitious or ambitious?

No; not ambitious at all. At the time there have been some initiatives by the Ministry of Education on ICT in education. So, projects were being implemented; without a clear framework or guidance. Things were being done from here and there. This objective is to set in place and position ICT formally into the school curriculum. Today, everybody is talking about ICT. And when we were formulating the policy we engaged with people from Panga to Accra; and they gave their inputs. Today the word 'ICT' is a household name which was not the case at the time when we were formulating the policy. Let me give you an example: a 'makaranta' in my neighbourhood was recently studying ICT when the teacher was guiding them to be say what the abbreviation ICT stands for; the teacher will say what it is and the students repeat after the teacher as: ICT – Information Communication Technologies. Just a couple of years ago who would have thought children in those schools would have been exposed to ICT. At least they know about what the abbreviation ICT is. The awareness is great and massive. That is what we wanted to achieve at least, and I think we have done our part. What is left is the implementation which all sector ministries are responsible for. People in the rural areas also now know about ICT. Let me give you an example: in Rwanda, the speaker of parliament was finding ways of getting the buy in from his MP from the ambitious implementation of their ICT4AD project and it all happened that the MP was lamenting over not having a floppy disk to save some document on it to take home. He was advised to email the document to himself and pick it up at home. Power of Internet and web became evident.

Also, MP went his constituency a year or two ago; I cannot recall the exact date, to present his plan of providing them with boreholes for water. But to his surprise some

of the parents asked the minister that it was not boreholes that they needed but ICT. This makes me impressed. Impressed that the work we did is bearing good result. The issue is not with the policy; the problem is how ICT is deployed.

Q. How is it deployed?

All sector ministries have their implementation plans, but when it comes to actually doing we are doing less. Ministry of education have various programmes e.g. 1 laptop per child, community computer labs in collaboration with ministry of communications. But I cannot say the policy is being implemented properly and to our expectation.

3. Would you say the implementation issue has to do with ownership?

Ownership is not an issue. The policy is not own by me even though I wrote it. It is a national document, which does not belong to a single 'political party'. You know state commissioned policies normally have the picture of the Head of state but this did not. It was deliberate because we want the ICT4AD to transcend political parties. The policy needs to survive governments. Even during consultation with the interparty committee in parliament, this was something they were so impressed about; recognising the political neutrality of the document. They (opposition at the time) jokingly said the only thing they will change from the document was the forward. They will remove it. So, the document is owned by the nation; and not by a single individual. Every ministry was to develop their own sector policy on how they will implement the ICT4AD. But as I said earlier GES also have policy that predate the ICT4AD. We even consulted their documents when we were writing ICT4AD. GES had initiative such as e-education strategy and e-education plan. So, everyone needs to take ownership. As the author I do not own it. You go around asking them, they will all say they own the ICT4AD. That is good.

Q. Who are the 'they'?

The ministries and the sector leaders. You know the ministries as the policy owners will make sure the policies work in their respective sectors and agencies.

Q. What about ownership by people who are to implement the policy?

You mean teachers for example? (Yes). Oh! so long as the Ministries own the policy, they have to sell the idea to the implementors. But I don't know if this has been done.

Q. So, what is your view on involving the policy implementors from the outset?

That is what we have done. We know it is important. As I have said from Panga to Accra we involved people at the Regional level and sectorial level. The ministries will have to do the same. We consulted.

Q. How much of that involved the practitioners in rural areas?

What we did was to attract stakeholders who were in position to consult others before providing information that we required from them. So, the Regional level stakeholders would have consulted with the Districts and the Districts with the Zones before providing their information to us; so we think that has been done. You see the problem is not with the policy. The implementation is being done anyhow. It is not being coordinated properly.

4. And the implementation is to equip graduates with requisite skills, what are the skills?

These are the 3Rs plus the ICT skills. ICT skills of researching, programming, word processing, data analysis, use of ICT for big data, web designing, networking etc. Those have to start from the school level. Start seriously at the secondary school level, so that by the time they arrived at the universities, they are able to use it. For example, at AIT every student compulsory must have laptop. You know if you read EU-ICT to the school policy, conscious efforts were made in driving this forward so that they could compete with their American counterparts. At AIT we force the students to rely on ICT. We discourage use of paper and pen to take note. They are allowed to record or typeset. The objective is a laudable one. It is a non-partisan document unlike the vision 2020. The vision 2020 was thrown away when a new government came into office, but not the ICT4AD policy. It is government neutral. To me that is what our development policies should be. The skill that the graduates will acquire is what will accelerate the development and not the mere deployment of the ICT tools. ICT is the young people's technology and language, and we need to respect that. They are ahead of us. We need to provide the environment for them to flourish.

Q. You mentioned the implementation as a problem; what in your opinion are the steps for effective implementation?

Oh; I have done some work on this and submitted to the ministry of communication. Contact Mr. Issah Yaya; Director at the ministry, if you are not able to get it, let me know and I will send you the e-version. It is a work done using AIT students. It is not a national document. Based on our findings the current government is calling for revising the policy. So you see the current government is not calling for abolishing of the policy; they are requesting review – that is what happens to national policies not party ones.

5. Do you then agree that policies of this kind should be devoid of 'political identity' and 'political orientation'?

Yes! That is exactly what should be the case.

Q. Is it achievable in our current dispensation?

Yes, it is possible. No, it is not. Look this depends on the ideology of a particular government in office. If it is nationalistic agenda, then it is possible but if not then forget about it. The current government wants to re-launch the ICT4AD document;

why? Because the momentum and zeal when it was first launched has died off. That is why I think the implementation is not integrated and coordinated as it is supposed to be but a pocket of practice from here and there. The current government believe in the policy. You know the policy was launched under President Kuffour of the NPP who was behind the original document. But through our recommendation they accepted to make it a national document so that it pass the test of time. We want to be a middle-income country by 2020 and we are almost there. The policy is doing its job.

Meeting with ICT Coordinator/Instructor and Assistant Headteacher (AGSHS) 2/6/2011

- Number on roll is 1600 (boarding and day facility)
- 2 ICT instructors
- 50 students per class
- 50+ teaching staff (majority young)
- One ICT suit (e-learning centre)
- Average performing schools (Assistant Headteacher)
- Each class has 80 minutes of ICT lesson per week.
- There 10 computers at the centre for students' use with 8 functional and networked.
- There is 1 projector.
- 80% of teaching staff have their own laptops
- The school owns no laptop
- Teachers are keen to learn how to use ICT in their subjects. About 70% of teachers use ICT especially word processing. The young teachers are keen.
- Challenge: Ignorance - the fear of the unknown; not ready leave their comfort zone – not ready to change.
- The coordinator received training in teaching skills and taken through the ICT in education policy (not involved in its development) and was meant to teach others but this has not happened yet.
- ICT coordinator wished if he was involved in the Policy development; as this would have given him a thorough understanding and appreciation of its content.
- It would have been better if teachers were asked for input when the policy was being developed.
- www.skool.com.gh has not been well publicised. Students are not aware of the site.

Folder D: WS650026

Interview Note: [REDACTED]

Assistant HoD/ ICT Teacher, four years in the school as ICT teacher and ICT Administration contact

A. How many students do you have in this school?

I don't really know but it is over 2000.

B. Tell me about ICT in this school.

We currently teach ICT as a core subject but not as elective. We are looking to introduce elective soon. The problem we are having is that ICT lab is not well equipped. We have only 35 computers out 50 functioning. We have MS office application on term.

C. How is teaching allocated?

First year we teach only the theory of ICT so we do it in the classroom. From second year to third year they start with practical so we do it in the lab on a time table allocation of 1.20 minutes per week and the student number per class is between 50 to 65, which is challenging.

D. Challenging in what way?

The computers are few and most of them do not function and do not have time to interact with the students. 1.20 minutes per week is not enough for what we need to teach the students. Some of them have computers at home where they can practice during holidays as most of them who have are not day students but boarding.

E. What is your view on the curriculum regarding theory in first year and practical from second year?

I think the current arrangement is good as the syllabus for the first-year talk about history of ICT and ICT tools. This does not need lab and as we have only few computers I think it is good. I am fine with this arrangement. It is good for the first years to understand those basics so I really think the arrangement is also appropriate to the level of the students.

F. Do you think the ICT teaching in this school is influenced by any policy; national or school?

No. I am not aware of any; I think it is only the syllabus from the GES. Look, even the students do not do any external examination in ICT, we assess them internally. There is no qualification at the end.

G. Shown the two policy documents.

No, I have not heard of them before.

ICT4AD – Oh yes! I have heard of this before but I did not know it is linked to our work.

ICTED, it seems I have heard of it before.

So, looking the objective to be accomplished by 2015; what do you think?

Yes, this is achievable because the government is providing schools with computers, the ICT tools to enhance teaching. Though to use ICT confidently and creatively in this school the students are not very confident (what do you think is the reason for that?) As I said earlier, time allocated; there are clashes even on the timetable for use of the lab, children do not have enough time to practice what is taught them.

And for creativity, this happen only in some subjects for example Visual Arts where they use Adobe Photoshop and Coral Draw software to design products and another artwork.

Aside Visual Art, where else can we see creative use of ICT? None.

What proportion of students are involved in Visual Arts? 15%

What are the ICT requisite skills that you teach to the students?

Spreadsheet processing

Word processing

Research because we do have encounter with research

What about the reference to functioning in global knowledge economy?

I believe it is partial, it is bias. Why? Because ICT is a broad subject; It's applicable to different areas of study, so that statement is not specific.

H. School Policy

As a school, do you have specific policy?

For that I do not know.

Does that mean you have not seen one before? Yes. Besides science using projectors, I have seen any other subjects, so I believe there is no policy.

Do you have a teaching and learning policy for this school?

What is that? Do you mean document?

No, I do not think we have one

What about a handbook for teachers (conduct, health and safety, students' behaviour etc.?)

I guess we have GES handbook for Headteachers, that's I know but I have not seen any for teachers; maybe you could ask the Headteacher when you meet her.

I. ICT Equipment

You have computers in the lab, what other equipment do you have:

Projector

How many? 5

Printer but not in the lab, these are in the school office. How many (I don't really know)

Photocopiers in the school office, I have seen two

Scanner

Camera – the school's own I do not know, but individuals have and we have them on our mobile phones as well

School telephone – but due to incident of cable theft, we are not using it, we are using wireless for the Internet and Mobile phones.

J. ICT use in other subjects

Apart from Visual Arts, in which other subjects do you use ICT?

English language teachers use it for their oral examination but in case of day-to-day teaching, I have not seen any. But I think Science use, because they often come for projectors and laptops from the lab.

All the other subjects use spreadsheet for exam data processing and analyses. In my opinion teachers like to use the projectors for teaching.

What do you think is the reason for ICT not being use in all subjects?

Accessibility to computers

Non-availability of subject software, the right software for all subjects

Knowledge base – not everybody knows how to.

How motivated are your colleagues to use ICT in their subjects?

Very, they are very motivated. They are interested to use the few we have.

You talked about knowledge base, was there any specific training offered by the school to teachers? No. I remember we went for training 2 years ago, organised intel to enable us train others but it did not happen. Why? We presented the report to the former Headteacher but we did not have the opportunity to train others.

Why? Didn't they Headteacher approved of it? Not really. We did not have enough computers.

Would you say the previous Headteacher was ICT use in education friendly? Yes, because he made a lot of purchases for computers.

What is your opinion about this statement? ICT friendly schools' leaders promote ICT use in education. That is right. I think if the Headteacher does not like ICT he or she will not invest any money on it. Even allocating time for it on the time table will suffer because it is internal subject.

Technology as a jet and curriculum as a bus. We are lowering the engine of the jet to fit into the bus. What do you think about this statement?

Yes, it is true. It is true because if you take Ghana for example, most teachers think when they have practical experience with word and excel, they think they can teach ICT but there is more to it than that.

K. Benefits of ICT USE

What then are the benefits of using ICT after lowering the engine?

Pause----delay..... before answering....

Accessibility to timely resources

Improvement in the old ways of doing things, like the manual way of doing things and that will improve.

Access to a lot of information to improve students learning

Students are eager to use the computers but they are not available when they need to use them.

L. Wish list

Now, if ask for your wish list for this school, what will it be?

Spacious lab; computer lab

Access to software, teaching and learning software

Increase in the students' time to practice

Regular in-service training for all teachers

What do you think about clear policy/guidance on ICT use in other subjects? Yes, this is a must; there should be a clear policy.

Who should do the policy?

Teachers of course!

L. Statements: Please indicate whether you agree or disagree with the following statements:

- Teacher training is useful in helping teachers to incorporate ICT in education.

Agree totally and it should be continuous training because ICT is dynamic and information keep changing, so training should be continuous.

- Current skills of teachers are enough to incorporate ICT in education.

Disagree. Why and where are the gaps? Most of them do not have computers and the time to learn. Most of them are willing but lack the time to learn.

- Teachers' involvement in ICTED policy formulation is key in helping teachers to incorporate ICT in education.

Agree.

Besides teaching and learning and data processing what else do you use ICT for in this school?

Production of course materials.

What about your office staff? Data processing and storing of students' information.

M. What do you think should be done now to ensure further development of ICTED policy implementation?

Laughing -----

Teachers with the technical know-how should be involved in the policy formulation, in that way they will better be informed about expectation and implementation. Policy implementation will then succeed.

Folder D: WS650027
Interview with 3 HoDS

A. Background of Interviewees

Head of ICT – 7 years of teaching in the school. Line manages 5 teachers including the ICT Technician. She teaches Introduction to ICT and also offers ICT assistance to the school.

Head of Languages – 9 years of teaching in the school and teaches English and line manages 15 other teachers. The Language department is made of teachers of Twi (one of the national languages), French and English.

Head of Science – 22 years of teaching in the school and teaches General Science. He lines manages 16 other teachers. The department consist of teachers of General Science, Biology, Chemistry, Physics, Agriculture Science, Animal Husbandry and Integrated Science.

B. Tell me about teaching and learning in this school and if there is any policy that informs what you do.

Hummmmm, teaching in this schools is good. I know because our students do well in their exam. We do have any policy I know about but we have the syllabus from the GES which we use. We go by what GES has provided. In the school, we mentor teachers and monitor them as a head of department basically.

We have the syllabus and every term we make schemes of work from it. We do not have any other teaching and learning policy. The schemes of work have been collected by the Assistant Headteacher; otherwise I could have shown you. So, we have syllabus, then termly items to teacher and we then have weekly plan of what to teach.

B2. Do you colleagues enjoy doing that?

Oh yes! They do and we do it collaboratively in that way we share good practice and it is there to guide all of us. We are able to support others who are weak in some aspect of the syllabus. This support is very important and we do it so well.

In science, we have a coordinator for each form who is there as the contact person to be consulted on any aspect of the syllabus pertaining to their form. The coordinator also facilitates the planning sessions. It works well.

You know the way our work is, it is always good to have this kind of support in place as we have to be there for each other.

B3. Does the syllabus refer to where you should use ICT in your respective subjects?

Not really, but in science there are some aspects that is ICT based, that is in Integrated Science which has parts on history of computers. Computing is considered as science so it is covered in the Integrated Science syllabus. In science, as well, we use ICT to draw diagrams in PowerPoint.

For languages, we only use it when we are researching a particular passage and for oral examination. But the syllabus does not specify any specific area to use ICT. There is not even a language software or lab.

B4. Do you have ICT teaching and learning policy?

It is not there to see but it is implied. In use ICT in teaching in some subjects unconsciously. In science for example GES has given us some equipment that we use. 2 teachers from the department have also had some training organised by the GES recently. How recently? Last term. Is that March/April ish? Yes!

Most of our teachers are ICT compliance. What do you mean by that? Most of us have 2 or more ICT tools that we use like Android phones, but the progress is very slow. There is no policy but we just do it. What do they use the ICT tools for? Telephone calls, browsing the internet and for emails.

C. Jet and bus scenario. What is your opinion?

I don't think so, if we look at and listen to the radio or watch television for news you will realise that not long in future invariably we will have every school child in Ghana using ICT tools for learning. The youth are catching up. It will be very fast soon.

I think it has not really to do with the teacher. It takes leaders to bring the change. ICT related leaders make a big difference. For example, when you go to the Arm Forces Secondary school is a different thing. The Headteachers is always checking with the Head of ICT if everything is working and if they need anything new. They are even considering introducing elective ICT course. They will be doing it soon. Now they are only focusing on the core.

I think the introduction of ICT into schools in Ghana is gradual but we will catch up soon. Usually private schools and well-endowed schools are equipped. But the least privileged in the rural areas it is going to be suicidal to say they should use ICT and study it as core. They do not even have classrooms. Where are they going to put the computers? In Ghana, I have come to realise that teachers do not have any role in making policy that affect their work, we do not have a choice, we just implementors. The government does the policy and just give to us to implement. We have no control over it. It is done from the top and we are to implement. Sam, I am not complaining, but that is the way it is done here in Ghana.

D. ICTED and ICT4AD are shown to the interviews and ask what they know about them?

ICTED – we don't have but we have heard of it (ICT HoD). The rest: we have not heard of it.

ICT4AD – we wouldn't have it, we would not get this from the GES. You are lucky to have received them.

I read the objective of the policies to the interviewees and ask them to comment and also talk about how confident they are about the 2015 timeline.

We wouldn't get this document (Language HoD). Looking at the system, how many primary schools have got computer and other ICT tools. Secondary's do not have and you are talking about Primary (Science HoD). It is on paper. It is nice on paper. How many schools have computers in this country? Even in our school which is in urban area, we have only 55 system units and only 25 working properly. What do you mean by system units? Oh, computers.

Does each department have their own computers?

Science has 3, a projector and camera.

In language, we do not have school ones but teachers have their own laptops, tablets and smartphones. I think this is the case in this school.

ICT HoD - How many teachers are ICT compliance nationally, apart from the machines and the gargets how many teachers are compliance, then they are talking about 2015. The should teach the teachers how to teach the students first then they bring the equipment. They bring the equipment to students and not teachers. They should provide the teachers with the equipment as well. They are giving laptop to students in the 1 laptop per child programme what about teachers? Students have laptops from the government but not teachers. They should rather teach we the teachers how to teach using ICT and they should also teach lecturers as well. (laughter Language HoD - I agree with you but you this 1 laptop per child thig, it is just politics. Have you heard of it gain after the election? It is purely politics. I know because, my child receives one, I know what I am talking about)

Cost of acquisition for teachers is a problem.

What about your students, confidently using ICT?

All of them have access to laptop. (Science and Language – no no you can say all of them). Not all of them, some of them. They have weekly lesson –two 40 minutes' lessons. They learn word processing. They use the internet for research.

One the scale of 1 -10(highest) where will place your students on the scale? 6, because they don't have enough computers. We have 60 minimum and 75 maximum students in class. On average 60 students, i.e. about 2 per computer. They use ICT to do research in various subject. They come to the lab with specific research that the use the computer on.

Use creatively - we do this through projects. We should PowerPoint to do presentation. They have topics they research and present.

Are they able to design websites?

Some of them are very good. They are helping us design the school website. In Arts - I mean Visual Arts. The design poster and societal adverts, I mean club adverts. When it comes to Students Representative Council elections as well they use it to design their posters.

So, in your opinion what the requisite skills you are teaching the students? What are they in your subject areas:

Science – designing model of organic compounds, animation of circulation system

Language – we use sounds – leaning how to pronounce words correctly, chat with people with right vocabulary and accents,

ICT – Key boarding skills, mouse control, finding their way around, introduction to Microsoft packages, send mail and receive emails, do PowerPoint, work processing and not to be scare of computers.

Do you think there is enough time of practice?

No, not enough. Double but not enough. Sometimes before they leave their classroom 15 minutes is gone. There are a lot of clashes. Sometimes a class would have forfeit their session because of clashes.

But with the right leadership, we will get there but not 2015.

Challenges

Space for the lab is not enough. The issue is not with computers, but it is with space. I know if there is space they will be filled. They are constructing additional classrooms, as soon they complete we will have space.

There are 10 departments. There should be separate lab for each department. Even for now, there should be more emphasis and teachers should plan and identify where ICT can be used in their various area. Book on laptops, e-book like Macbeth with bee good.

E. Agree/disagree statements

1. Agree

Teachers should be trained before thy finish training and come to the classroom. (In local language – twi – we have to be totally trained together with per diem and other benefits. The pay is so small, so they should be incentivised. They coast is high, so they should be given to us free. Or they give them at discounted rate.

2. Disagree

During our time at training, they were mocking ICT use. There were no computers.

3. What role should teacher play in policy formulation?

There should be a of research, we need to be consulted when formulating policies like this.

I don't know what they have done before. Maybe they might have consulted teachers in Accra, but it should be nationwide to cover rural areas as well. They can also use teacher associations. Teacher involvement is important.

F. What is your wish list – things to be in place?

Enough space

Teacher should be equipped with iPad, computers and modern gargets and they should also be trained so that whenever they find themselves they should be find working Teachers should be provided facilities (loan, hire purchase etc. so that they can afford their own.

G. In your opinion to what extent to do you think the policy has been implemented?

Least! We agree to what you have said, the little that we have we are able to offer something to our students. As ICT madam said, if the children leave this school they are able to use basic ICT packages. So, we are getting there gradually but for 2015 is just nice on paper.

Interview Note: ■■■, HO Folder D: WS650025

I made appointment with the Headmistress with follow-ups, but when I arrived she was not available. The Assistant Headmistress took me to the Science Faculty. The ICT department is part of the Science Faculty. The leadership of the department is under the Head of the Science Faculty. I was accompanied to the school by the Chief of the area where the school is located. I met with three teachers from the start but was joined by the Head of the Faculty.

A. ICT equipment at the school:

1. What are some of the ICT equipment you have in this school?

Projector
Microcomputers
Telephone
Internet
Calculators

2. How many projectors do you have in the computer lab?

We have only one.

3. Can you describe to me how the ICT set up work in this school?

ICT is within the science faculty and the only faculty that have computers.
The science department has its own projector
This is the only organized computer lab in the school in addition;
Biology has got 1 PC
Physic has got 1 PC
Teachers from other departments can bring their students into the lab with they want but they do not; obviously, the computers are not working.

4. How many computers do you have in the lab?

22 computers but only 8 of them are working effectively

5. How are your ICT lessons organized?

First years only do theory and each class has 60 students

Forms 2 to 3 they do practical

All lessons are 1 period of 35 minutes per week

6. Are there any students doing ICT as a core subject?

No, ICT is just an internal subject. There is external examination, so more or less the students are just being introduced to the know-how of ICT. It is very theoretical. May in future, it will become examinable core subject or even elective subject. But that depends on the availability of computers and know-how from the teachers and may be have more teachers who can teach the practical as well as the theory. Yes, I think it can really happen if the government put the plan in place and provide the resources.

B. Integration of ICT into other subjects:

So, are you saying other subjects are not ICT in there lessons?

1. I think they are making the effort. They use to bring them to the lab. Sometimes students are brought from other department, so generally there are intentions to use ICT in other subjects and teachers are making effort for it to happen. Students mostly use the Internet for research when they come to the lab. But now, majority of the computers are broken so it is no more attractive as it used to be. As you can see some individual students still come to do research, mostly on their own. So, for, the interest and motivation are there even with the students. We just have to provide the computers and they will use to learn.

2. In your view, what are the precise benefits of integrating ICT into other subjects?

There are many. For example, teachers can easily do research using the Internet. Students have a long day at school, and ICT will make learning and their day fun. The normal chalk and talk is boring for our students. Students like computers a lot for games and chatting. It makes them learn new skills and like word processing. We are in technological age and students will be abreast with time by using computers to learn. Students are technology crazy.

3. Why do think so?

It is a stage in their life

C. Policy:

1. Here are two documents: ICT4AD Policy and ICTED Policy documents were shown to teachers. How do you know about them?

Where they from? ICT4AD! I don't anything about these documents. Hmmm!

We have not even have seen them before. Did you get them from the Ministry or the GES?

The ICT4AD is actually online. You can get from the Ministry of Communications website and the ICTED from the Ghana Education Service. I am sure soon it will also be online.

I have not seen any of them before and they are news to me. NO! first time seeing them.

2. Do you have an ICT use policy in this school?

NO. We do not have anything like.

I do not know if anything exists like that in the school.

As far as I am concern, I have not seen any and I have not really see any policy of school. I have seen code of conduct for students and house rules.

3. Before you started teaching ICT as a subject has anyone share with you the objective of ICT use in schools or a guide to integrating ICT into subjects?

Not really. The only thing we have is the syllabus.

4. What are the core components of the syllabus?

Word processing

Basic Excel

PowerPoint

Hardware – we look at the components of the computer and how they are assembled

5. How would describe the ICT syllabus?

It is basic enough

Too much concentration on Microsoft

6. If you were to change the syllabus, what would you change?

Nothing really

We have not thought about it

Microsoft has taken over the world, so we think it is appropriate for our students.

7. What about GES claim of providing training to all teachers before the launching of the policy in schools?

2: teachers have been in the school for only a year

1: teacher has been in the school since 2010

They had no training and have not heard of any training

8. GES also claimed that they have provided each school with content on CD-rom has anyone use them?

We have not even seen it before. This is what they also do, they stay in their office and say anything that come into their mind about our job. It will be good if they visit schools and know what is actually happening on the ground.

C. Teachers and attitude to new technology

1. How many teachers do you have in this school? 70+
2. If teachers are provided with the right technology resources, will they use them?
YES

D. Launching of Policies

1. What is your view on ICT use in Education policy dissemination in Ghana?

There should be periodical review with teachers' involvement

I am sure GES has got website, they should put the policies on the site. Printing is not cost effective.

Policy should be put in an abridged form and attached to the syllabus.

It is better to involve teachers with the know-how. Teachers and policy makers should work together on developing ICT policies and policies in general.

E. Challenges

What are the challenges you face in using ICT in this school?

1. The computers are not branded type; they were assembled in Ghana; hence they are not durable. They breakdown frequently.
2. The computer to students' ratio is a challenge. The computers are few and students are many. Sometimes, there are clashes in the timetable.
3. Time allocated for ICT are also small.
4. Integrating ICT in other subjects is a challenge. Teachers themselves are not aware of how they can use IT in themselves.

F. Solutions

1. Need bigger lab to accommodate students. This place we are calling computer lab is actually supposed to be an internet café.
2. The school should employ ICT Technician to be repairing computers
3. General INSET for all teachers on use of simple ICT tools.
4. some teachers do not have interest in using ICT, so they need to be educated on its importance so that they develop the interest.

G. ICT4AD Policy objectives

a. Where is [REDACTED] in implementing this in your opinion?

1. this is the first time we are hearing of it as we have said already
2. we cannot achieve by 2015
3. there should be cautious effort to make it happen. It is only ICT teachers who are using ICT at the moment. Other teachers may use it for only research. I do not think they are making cautious effort to use it for teaching.

b. What is being done to achieve the objective in your opinion?

They should not put pressure on only teachers. As you know in Ghana, parents play a bigger role. Parents should be involved.

c. What kind of skills do you think is being referred to in the objective?

It may relate to choose of career, or may be just word processing.

Teacher: so please I want to know, before you can achieve an aim you have to have steps in place, so what steps has the government in place?

Another teacher: may be the one-laptop-per child programme, training for trainee teachers, I learnt all colleges of education now have ICT use for teaching training programme, I am not sure

Another teacher; looking into the future, I think the government should provide solar computers to schools. GES should also provide internet for schools. The school does not pay but GES should pay

(Interjection by a friend who accompanied me: He is a chartered accountant and Investment Banker whose previous role was with a telecommunication company in Ghana, now self-employed and the paramount chief of the area where the school is located) – I have been involved in discussion with the GES 2 years ago, about purchasing of internet in bandwidth in bulk and distribute to schools. It is cheaper that way. However, they declined to do so.

d. What is your opinion about the timescale and the objective?

1. the journey is just starting
2. I think it will take the next 100 years (laughter)
3. It can be done, but I don't think it is 100 years, I will go for 20 years

(an exchange between the interviewees about the timeline, finally they all seems to agree on the next 20 years with a caveat that government involve teachers and educate and train them. Government should also provide the technology after the training is provided).

H. ICT integration at [REDACTED]

a. What do think is the future of ICT use and integration look in this school?

I am looking at the leadership. Sometimes leadership is not ready to invest. We need leadership to be willing and ready to drive things forward. Some are rigid.

b. Who or what is the leadership you are referring to?

Yeh, leadership here is beyond this school. That is why we are saying it is (achievement of objective) is long way ahead. The leadership involves politicians, Directors of Education, Headteachers etc.

I. [REDACTED] (The Faculty Head, joined in the interview)

a. He has briefed and asked to his opinion on ICT4AD and ICTED.

Yes, I heard of ICT4AD, I saw the ICTED document when I went to workshop in Kumasi last year. The document (ICTED) is good if it can be implemented. The workshop was for Maths, Science and English. I know other trainings are periodically ongoing. I know there was one in Saltpond in which I was involved. It was one-week training, with 2 teachers from each school.

b. Do you think your school has all the structures in place to implement the ICTED policy?

We do not have all the structures in place. We do not have enough computers which functioning well, electricity is intermittent, timetable allocation that is contact hours is limited (35 minutes per week per class) as compare to core maths that has 4 periods and 8 periods for elective maths respectively per week, we do not have ICT for teaching and learning policy in the school.

c. So what do you have in place?

Teachers who are willing to use ICT but lack the equipment and skills. However, most of them are not interested as they are not ICT literate.

d. For ICT to work in this school what would change?

1. Provision of more computers that work
2. Allocate more time to teaching of ICT with clear policy in place
3. Provide INSET to teachers, all teachers on how to integrate ICT into their subjects.

Appendix 6: Questionnaire Instrument

Questionnaire

Please accept my gratitude for accepting to complete this questionnaire. The result from the study will play a significant role in shaping the implementation of Information Communication Technologies for Education (ICTED) and Information Communication Technologies for Accelerated Development (ICT4AD) policies of Ghana and identify the type of support that schools may require for successful implementation.

All information provided will remain strictly confidential except for the purpose of this study and future publications for which anonymity is assured. It is my hope that you will find the questions interesting and answer all of them without leaving any blank. In case you are not certain of response to a particular question, kindly select one that is near your view and position.

Thank you very much for your time.

Samuel Awuku, PhD Candidate, London Knowledge Lab, IoE. University of London.

A. School Profile

1. School classification:

Private secondary

Private Vocational

Government Secondary

Government Vocational

Other ----- (Please state)

2. When was your school established? -----

3. School Size: ----- Number of Students: ----- Number of Teachers: -----

4. Number of years your school has been using ICT: -----

B. ICT Facilities

5. Which ICT facilities do you have in your school? (Please select all that is applicable):

- | | | |
|--|---|---|
| Computers <input type="checkbox"/> How many? | Projectors <input type="checkbox"/> How many? | Photocopier <input type="checkbox"/> How many? |
| Printers <input type="checkbox"/> How many? | Tablet PC <input type="checkbox"/> How many? | Video Camera <input type="checkbox"/> How many? |
| Interactive Whiteboard <input type="checkbox"/> How may? | Scanners <input type="checkbox"/> How many? | Internet <input type="checkbox"/> How many? |
| Laptops <input type="checkbox"/> How many? | Digital Camera <input type="checkbox"/> How many? | Other <input type="checkbox"/> How many? |

If other, please indicate:

5a. Please indicate whether or not your school is networked: Yes/No

If yes, is it LAN or Wireless?

6. Please indicate below your level of agreement or disagreement with the following statements

6.	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
a. The ICT facilities provided at your school is adequate for implementing the objectives of the ICTED and ICT4AD policies					
b. Curriculum resources necessary for integrating ICT into the school including support has been provided					
c. The challenge brought with the introduction of ICT into your school is embraced by key stakeholders in your school					

6a. Please indicate whether you agree or disagree with the following statements:

- i. Teacher training is useful in helping teachers to incorporate ICT in education.
- ii. Current skills of teachers are enough to incorporate ICT in education.
- iii. Teachers' involvement in ICTED policy formulation is key in helping teachers to incorporate ICT in education.

C. Factors affecting the implementation of ICTED and ICT4AD policies in your school:

7. What is the main reason(s) for adopting the use of ICT in your school? (You may select up to 4 responses)

- | | |
|---|---|
| Government directive <input type="checkbox"/> | Old Students Association expectation <input type="checkbox"/> |
| Creative teaching and learning <input type="checkbox"/> | Encouraged by globalisation <input type="checkbox"/> |
| Parents' expectation <input type="checkbox"/> | Attract high performing students <input type="checkbox"/> |
| Improve students' learning <input type="checkbox"/> | Other <input type="checkbox"/> |

If other, please indicate-----

8. What is the main reason(s) for not implementing the ICTED and ICT4AD policies in your school? (You may select up to 4 choices)

- | | |
|---|---|
| Inadequate ICT skilled teachers <input type="checkbox"/> | Time constraints to develop new content <input type="checkbox"/> |
| Inadequate facilities <input type="checkbox"/> | Lack of software/ appropriate content <input type="checkbox"/> |
| Insufficient funding <input type="checkbox"/> | Inadequate instructional time/timetable allocation <input type="checkbox"/> |
| Insufficient/lack of technical support <input type="checkbox"/> | Other <input type="checkbox"/> |

If other, please indicate-----

9. What is the main purpose (objective) for using ICT in your school?

- | | |
|--|--|
| Teaching and learning <input type="checkbox"/> | Information management (data) <input type="checkbox"/> |
| Resources management <input type="checkbox"/> | School curriculum development <input type="checkbox"/> |
| International communication <input type="checkbox"/> | School administration <input type="checkbox"/> |
| External communication <input type="checkbox"/> | Other <input type="checkbox"/> |

If other, please indicate -----

10. Since the introduction of ICT in your school which of these ways of teaching and learning if any, have you noticed?

- | | |
|---|---|
| Student-centred learning <input type="checkbox"/> | Project based learning <input type="checkbox"/> |
| Open knowledge oriented learning <input type="checkbox"/> | Problem solving approach to learning <input type="checkbox"/> |
| Independent learning <input type="checkbox"/> | Other <input type="checkbox"/> |

If other, please indicate -----

11. From your experience are the following aspects of your school improved after introducing ICT into your school?

	Much Improved	Improved	Neither	Deteriorated	Much Deteriorated
a. embedded understanding of teaching and learning materials by students					
b. improved performance of students in external examination					
c. ICT literacy among students					
c. quality of teaching					
d. school-community relationship					
School leadership and management					

12. Kindly indicate your level of support for the following key objectives of the ICTED and ICT4AD policies?

	Strongly Support	Support	Neither	Not Support	Strongly Not Support
a. students have a positive attitude towards ICT and are prepared to use ICT to assist their learning process					
b. students use ICT safely, responsibly and effectively					
c. students perform exercises unassisted in an ICT supported learning environment					
d. Students learn unassisted in an ICT supported learning environment					
e. Students use ICT to give creative expression to their own ideas					
f. Students use ICT to help them seek, process and store digital information intended for them					
g. students use ICT to present information to others					
h. students use ICT to communicate safely, responsibly and effectively					
i. students satisfactorily choose from various ICT applications in light of the goal to be achieved					
j. students are able to adjust their approach after considering how they and others use ICT					

13. Do you agree to the following aspects of implementation process of ICTED policy in your school?

	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
a. You are well informed about the ICTED and ICT4AD policies					
b. Support to implement the policies is adequate					
c. The implementation of ICTED and ICT4AD in my schools was a success					

14. Do you agree with the following claim?

The introduction of ICT into the school curriculum has enabled graduates from Ghanaian educational institutions – formal and non-formal to confidently and creatively use ICT tools and resources to develop requisite skills and knowledge needed to be active participants in the global knowledge economy by 2015.

Agree Disagree Don't know

15. Do you see anything beneficial with the ICTED policy?

16. Is there any aspect of the policy that need improving?

17. What in your opinion should be done to enhance effective use of ICT in Secondary Schools of Ghana?

18. Finally, in the space below, kindly indicate your overall opinion, suggestions and comments about general use of ICT in education?

Thank you again for taking part in the survey. I am able to provide you with the summarised report in future. If you would like to receive one, please indicate by ticking the box below and provide your contact details:

e-mail: school: