



The Deferred Model of Reality for Designing and Evaluating
Organisational Learning Processes: A Critical Ethnographic Case
Study of Komfo Anokye Teaching Hospital, Ghana

A thesis submitted for the degree of Doctor of Philosophy

by

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June 2013

Abstract

The study proposed an evidence-based framework for designing and evaluating organisational learning and knowledge management processes to support continuously improving intentions of organisations such as hospitals. It demarcates the extant approaches to organisational learning including supporting technology into ‘rationalist’ and ‘emergent’ schools which utilise the dichotomy between the traditional healthcare managers’ roles and clinicians’ roles, and maintains that they are exclusively inadequate to accomplish transformative growth intentions, such as continuously improving patient care. The possibility of balancing the two schools for effective organisational learning design is not straightforward, and fails; because the balanced-view school is theoretically orientated and lack practical design to resolve power tensions entrenched in organisational structures.

Prior attempts to address the organisational learning and knowledge management design and evaluation problematics in actuality have situated in the interpretivist traditions, only focusing on explanations of meanings. Critically, this is uncritical of power relations and orthodox practices. The theory of deferred action is applied in the context of critical research methods and methodology to expose the motivations behind the established organisational learning and knowledge management practices of Komfo Anokye Teaching Hospital (KATH) which assumed rationality design conceptions. Ethnographic data was obtained and interpreted with combined critical hermeneutics and narrative analyses to question the extent of healthcare learning and knowledge management systems failures and unveil the unheard voices as force for change.

The study makes many contributions to knowledge but the key ones are: (i) Practically, the participants accepted the study as a catalyst for (re)-designing healthcare learning and knowledge management systems to typify the acceptance of the theory of deferred action in practice; (ii) theoretically, the cohered emergent transformation (**CET**) model was developed from the theory of deferred action and validated with empirical data to explain how to plan strategically to achieve transformative growth objectives; and (iii) methodologically, the sense-making of the ethnographic data was explored with the combined critical hermeneutics and critical narrative analyses, the data interpretation lens from the critical theory and qualitative pluralism positions, to elucidate how the unheard emergent voices could bring change to the existing KATH learning and knowledge management processes for improved patient care.

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List of Abbreviations

BBS	Brunel Business School
CAS	Complex Adaptive System
CEO	Chief Executive Officer
<i>CET</i>	Cohered Emergent Transformation Model
CIPS	Chartered Institute of Purchasing and Supply
CME	Continuing Medical Education
CoPs	Communities of Practice
CPD	Continuing Professional Development
EIS	Executive Information Systems
ESS	Executive Support System
FMEA	Failure Mode Effects Analysis
GIMPA	Ghana Institute of Management Public Administration
HIV	Human Immunodeficiency Virus
ICT	Information and Communication Technology
IT/IS	Information Technology/Information System
KATH	Komfo Anokye Teaching Hospital
KATHPoW	Komfo Anokye Teaching Hospital Programme of Work
KM	Knowledge Management
KM-OL Link	Knowledge Management and Organisational Learning Link
KMS	Knowledge Management Systems
KNUST	Kwame Nkrumah University of Science and Technology
KNUSTSMS	KNUST School of Medical Science
MoH	Ministry of Health
MS-DOS	Microsoft Disk Operating System
NHIS	National Health Insurance Scheme
NHS	National Health Services
OL	Organisational Learning
PAS	Patient Administration System
PDA's	Personal Digital Assistants
PC	Personal Computers
PCR	Polymerase Chain Reaction
SSADM	Structured Systems Analysis and Design Methodology
TCIL	Telecommunications Consultants India Ltd

UPS' United Parcel Services'
UPS Uninterrupted Power Supply Solution
WHO World Health Organization

Acknowledgements

Blessed be to God for guiding me through this achievement. To my dear parents, P.K. & M.C. Nyame, retired educationists, I dedicate this work to you for the good values, support and care you have given me since childhood. The good work submitted today would not have been possible without the support and sacrifices you have made throughout this period, so my sweetheart, Juliet, I am grateful to you. I am thankful to you, Yaw and Awuraa for sacrificing some of your holidays at the expense of your dad's PhD. Emmanuel Asante-Nyame, my brother, and Charles Brobbey, a cousin, you two deserve thanks because I could not come this far without your financial support. Kind support from my sisters and all other family members has also contributed to this achievement so you all deserve gratitude.

My initial expectations of obtaining a PhD underestimate the amount of work, uncountable revisions and amendments, and all the challenges it brings. I sincerely thank you, Dr. Nandish V. Patel, for critically reviewing my work and supervising me, not only to make me think critically as a critical thinker but also to write academically as an academic, which has taken me 4 years to become proficient. So does my profound appreciation go to you, Dr. Fred Mmieh, for acting and reviewing my work as an independent internal reviewer, and Dr. Maged Ali, for supporting me as a second supervisor. To my colleagues in the 'Deferred Research Group', academics and experts who provided feedback on my work in the various doctoral seminars, symposiums and review processes, I say thank you.

To research in healthcare settings is difficult but there was tremendous support from experts of many Research Ethics Committees and individuals who contributed to this achievement. Dr. Tillal Eldabi and his Brunel Business School Research Ethics Committee, Rev. Prof. John Appiah-Poku and his Committee on Human Research Publication and Ethics, the Komfo Anokye Teaching Hospital (KATH) R&D Unit, and all participants from KATH, I owe you a profound gratitude. My special thanks go to Mr Augustine Acheampong, the local facilitator who followed up ethical submissions, led me to key informants, introduced me to data collection points and carried out some post-field work follow ups, as well as Prof. Opare-Sem for helping me to identify appropriate participants.

Finally, my colleagues at Hackney Community College who supported me in various ways, I thank you. Particularly, ex-Heads of Departments, Mr Ray Allaker, for motivating me and Dr. Gebre Baraki, for acting as my pre-fieldwork dummy interviewee and reading through my

work. To Mr Daniel Gyasi and Mr Donato Lunesu, your respective support for my stay in Kuala Lumpur and Maastricht has always been appreciated; without your support, the tide might have turned and the work today would not have been achieved. Space does not permit me to mention names of all friends and teachers, both in Ghana and the UK, who have encouraged and supported me throughout my education but you are always in my thoughts.

“The consequences of good design that appear today may be the result of work done long in the past, and work today may show its benefits far in the future. The hallmark of good design is the absence of crisis – not a good way to get attention in a ‘leaders and heroes’ organisation culture. Those who aspire to lead out of a desire to control, to gain fame, or simply to be as the center of the action will find little to attract them to the quiet design work of leadership” (Senge, 2006: 328). So, Dr. Nandish V Patel, I draw on Senge’s tribute to acknowledge your contribution and selfless commitment to originate the theory of deferred action, the ‘theory for design and action’, upon which this work is based.

Declaration

I certify that the thesis submitted here is, to the best of my knowledge, original and entirely my own work, except as acknowledged, and has not been submitted for a degree at this or any other University. Some ideas and information contained therein, and arising from this research, have been presented in the following publications and manuscripts in progress:

Nyame-Asiamah, F. and Patel, N. V. (2012). 'Designing and Evaluating Technology-Enhanced Transformative Learning Organizations: The Deferred Model of Reality' - *manuscript in progress*

Nyame-Asiamah, F. (2012). 'The Deferred Model of Reality for Re-designing ICT-Enhanced Learning and Knowledge Management Processes at KATH, Ghana (Working Paper)'. *Proceedings of the Brunel Business School Doctoral Symposium, 27-28 March, London, England*

Nyame-Asiamah, F. (2011). 'Evaluating the Role of Knowledge Management Technologies in Learning Organisations: A Study of Komfo Anokye Teaching Hospital, Ghana (Working Paper)'. *Proceedings of the Brunel Business School Doctoral Symposium, 28-29 March, London, England*

Nyame-Asiamah, F. and Patel, N. V. (2010). 'Informing Knowledge Management Systems Design and Evaluation with the Theory of Deferred Action'. *The International Journal of Technology, Knowledge and Society, Volume 6(2): 191-210*

Nyame-Asiamah, F. (2009). 'Exploiting Tacit Knowledge through Knowledge Management Technologies'. *Learning Forum London 2009 Proceedings, European Institute for E-Learning (EIFEL), 22-24 June, City University, London*

Nyame-Asiamah, F. and Patel, N. V. (2009). 'Research Methods and Methodologies for Studying Organisational Learning'. *Proceedings of the European and Mediterranean Conference on Information Systems (EMCIS2009). Crowne Plaza Hotel, Izmir, 13-14 July 2009*

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Date: 19 June 2013

Chapter 1: Introduction

1.1 Organisational Learning: The Transformation Challenge

The aim of this study was to propose an evidence-based framework to design and evaluate organisational learning and knowledge management processes. The study would be of information and technology communication (ICT) which is used by Komfo Anokye Teaching Hospital (KATH) to support the continuously improving patient care aims. Existing models of organisational learning, including supporting technology, have yet to match the implementation intentions and growth strategies of organisations like KATH. Several threads of learning and transformation move in parallel to explain how learning organisations could plan strategically for sustained growth but, in practice, there is a mismatch between design and implementation which prevents organisations from achieving transformative growth.

Planning strategically to enable organisational actors to learn the necessary *emergent organisational knowledge*, the changeable and crucial everyday organisational practices and to achieve growth intentions is problematic. The difficulty is that, planning is a deliberate action designed to achieve desired outcomes, such as organisational performance targets. It makes people behave almost entirely rationally based on options advantageous to them. The merits of planning strategically for organisational improvement are the revenues and budgetary analysis it generates (Whittington, 2003). Yet, planning is criticised for its scholarly orientation towards Cartesian rationalism (Flyvbjerg, 2004), with its use of reason as the only source of knowledge.

Rationalism explains the act of behaving rationally and accepting reason as truth without sufficiently considering the sense of experience; but its traditional influence on planning is challenged as something that we should let go (Flyvbjerg, 2004). Flyvbjerg argues that the rationalist model of planning is neither sensitive to critiquing nor susceptible to shared

experience. It focuses on reasoning only as preferred learning to accomplish expected outcomes. These contentions have not stopped rationalism from being reconstructed into cognitive approaches, which describes human thinking and knowledge management as an information process activity consciously directed towards problem-solving (Marshall, 2009; Stone; 2009).

It can be argued that, in terms of intellectual outcomes of human actions, both planning and cognition suffer the same weakness of intentionality, the deliberate actions to achieve specific results, with their rationalist reasoning character. Limited by cognitive capacity to access all relevant information, especially the unknowable future, planning is exclusively insufficient for achieving the desired organisational objectives. Simon (1996) describes this cognitive limitation as bounded rationality. It defines a situation where people make decisions rationally within constraints, and selectively use reasoning bias to pursue options with predetermined merits (Johnson, 2009).

Reasoning bias in cognition is confirmed in the work of Marshall (2009). Marshall argues that cognitive approaches tend to focus on cause and effect relationships of individual actions rather than seeing them as mutually organised or something that evolves. Applying cognitive approach solely to make sense of what future actions to take, how to go about them and what the expected outcomes should be, is therefore biased towards socially situated objectives (Marshall, 2009). Plans intended to achieve specified outcomes would fail to accommodate collective experiences and shared knowledge, the necessary micro-level practices required for organisational growth. Johnson's (2009) contribution to this is that, interest in individual strategist cognitions should interact collectively and be extended to cover collective experiences in order to make strategies relevant in practice. So, pursuing organisational learning and knowledge management processes, two overlapping actions for organisational

improvement (Kawalek and Wastell, 2005; Bennet and Tomblin, 2006; Irani et al, 2009), with cognitive approaches as consciously planned activities might fail to achieve desired outcomes because they fail to address uncertainties.

Practice-based approaches emphasise the importance of experiences and shared meanings, as alternative to rationalist conceptions, to design organisational learning and knowledge management, and their supporting technologies (Schultze and Orlikowski, 2004; Jameson et al, 2006; Marshall, 2009; Gherardi, 2009; Corradi et al, 2010). Practice-based approaches do not have a definitive meaning but explain the dynamic and ongoing processes of people's everyday activities which form part of shared institutional values (Schultze and Orlikowski, 2004; Gherardi, 2009). They emerge with unplanned consequences of organisational actions to cater for fixed organisational strategies, characterised with plan-based approaches, in the rationalist domain.

However, for fear of turning towards plan-based approaches and logics, Marshall (2009) points out that, practice-based approaches have avoided patterns and frameworks of thinking. It can be argued that, such avoidance could restrict the ability of practice-based approaches to sustain organisational learning and knowledge management processes. Regardless of its creativity, practice-based approach is also accused of not being able to account exclusively for the transformability of social practices it seeks to change (Marshall, 2009). Marshall's research, demonstrating integration between cognitive approaches and practice-based approaches did not, however, rule out the possibility of the two polarised traditions benefiting from each other. His conclusion is that, such integration is by all means not simple, because maintaining the theoretical integrity of each approach could be difficult.

The integration between the rationalist conception of engineering organisational learning and the practical usage of such learning by organisational actors has been attempted by a balanced

view approach, as a way to equalize biases characterised with organisational learning design and use (Huysman, 2000). The 'balanced-view' approach explains how managers could manage individual actors' cognitions to enable the individuals to contribute to the organisational learning processes, such as engaging in open dialogue and actively participating in education and training. Järvinen (2004) criticises the balanced-view approach as lacking a segment of best fit to coordinate the actions of different actors of organisations, such as individuals, groups and organisation itself, for effective organisational transformation.

Emerging contributions exploring organisational learning, knowledge management and ICT deployment for effective organisational transformation draw on complexity-based frameworks (Firestone and McElroy, 2004). Complexity theory explains the use of a bottom-up intuitive process involving knowledge search, creativity and emergence to address unintended consequences inherent in rationalist conceptions (Brodbeck, 2002; Stacey, 2003; van Eijnatten, 2004; Firestone and McElroy, 2004). Because the future is unknowable, Van Eijnatten (2004) contends that, organisations should not plan for surprise but should rather focus on change strategies under emergent influences. Emergence, a self-organising feature of complexity, describes the evolving and spontaneous patterns of interactions between different agents and artefacts in an organisation and how such interactions could trigger innovations (Eijnatten, 2004; Patel, 2006).

Emergence and practice-based approaches can be viewed as interesting subjects with shared elements of inquiry, such as negotiating orders of human actions and seeing knowledge as situated activity (Gherardi, 2009), or a self-organising system, not externally controlled (Stackman et al, 2006). Practice-based approaches lack unified definition but its strength lies in a holistic understanding of learning and knowledge creation as dynamic and emergent social activities organised in context (Marshall, 2009). And, emergence takes the complex

adaptive system (self-organising system) view to learn and deepen collective experience of organisational life (Stackman et al, 2006; Carlisle and McMillan, 2006). Arguably, practice-based approach might not necessarily seek knowledge of emergence but recognising learning as a self-organising activity means it does not refute emergence.

Emergence appears interesting but many previous contributions using emergence and its complexity-based frameworks have situated in the interpretive traditions, in which attention has been paid to interpreting the coordination between the bottom-up intuitive and top-down planning processes (Brodbeck, 2002; Kim and Kaplan, 2006; Matthews and Thomas, 2007). Interpretivism is uncritical from the critical research perspective (Habermas, 1984; Gray, 2004). So the researcher takes concessions in emergence from the critical research perspective, a methodological approach that goes beyond interpreting meanings, to question systemic [healthcare learning] processes and make suggestions for change. Also, only few research contributions have shown how to interrelate emergence with rationalist approaches for transformative growth. An exception is made for the Patelian theory of deferred action (Patel, 2006; 2007), which explains systemic emergence and how to design emergent social systems such as organisations, information technology (IT) and integrated organisations and IT systems.

Interrelating emergence with rationalist conceptions might be difficult, but doing so to transform organisations could be even more challenging because transformative conception is often misunderstood. Transformative conception defines a continuous shift of existing beliefs and assumptions of either individual perspectives (worldviews) or fixed organisational learning practices (Poutiatine, 2009). Theoretical understanding of transformative learning processes is necessary to change individual perspective to accede new ideas to improve organisational effectiveness (Henderson, 2002).

Transformative learning theory, for instance, explains how adult learners could critically challenge and revise perspectives of social settings to change existing practices (Mezirow and Associates, 2000; Sipos et al, 2008). Recent appropriation of transformative learning to study how learners could shift their worldview and personal values beyond their domestic contexts shows that it is difficult to transform perspectives (Bamber and Hankin, 2011). Bamber and Hankin observe that, the over narrowly design of transformative learning to suit only those with intellectual ability to question long-held assumptions might limit its potential to enable people to engage better with their communities.

Transformative sustainability learning, Sipos et al's (2008) derivative of transformative learning, applied a humanist view to develop a pedagogical assessment model for sustainable higher education. Transformative sustainability learning is credited for its inclusivity. But, couched in Bloom's (1965) learning domain with its embedded cognitivism, transformative sustainability learning might suffer from its deliberate design towards only problem solving.

A similar unified stance on organisational sustainability takes continuous and collective learning processes view to transform organisations (van Eijnatten and Putnik, 2004). These observation migrate from the functionalist (cause and effect) system design view to chaotic systems thinking (van Eijnatten and Putnik, 2004), a model which adopts iterative learning and enables actors the freedom to make innovative decisions for organisational design. Transformative processes, therefore, identify with higher-order learning (critical thinking generated through multiple and complex interactions of actors, in a system they form inseparable part, for problem-solving) as a means to transformative growth. This, the researcher defines as: 'Continuously improving innovation achieved with transformative learning processes through inclusivity of organisational members'.

Designing organisational learning to achieve transformative growth is therefore challenging. Transformative learning itself sees the social world as ‘it ought to be’ rather than as ‘it is’ (Bamber and Hankin, 2011). Its intelligential critical thinking and action praxis plays down the primacy of established social norms. The chaordic systems thinking model also leaves future orientations out of transformative change equation (van Eijnatten, 2004). Contributions applying strategically planned and plan-based change models fail to consider adequately the creative ideas in organisational transformation, usually emerging from the less powerful groups in organisations (Cummings and Worley, 2001; Chang and Sun, 2007). Pursuing organisational learning design and evaluation with these setbacks is therefore problematic because, as Patel (2006) argues, the crucial parameters for designing social systems in an emergent context are indeterminate.

1.1.1 Technology Application to Organisational Learning: Power Relations and Design Weaknesses

Application of technology, as a facilitating tool, to enhance organisational learning and knowledge sharing is explained by different models from different fields but the intrinsic weaknesses of technology adoption for learning, such as power relations, design inadequacies and conflict of interest remain apparent (Schultze and Orlikowski, 2004; Chou, 2005; Macpherson and Jones, 2008; Oubenaissa-Giardina, 2009).

Artefact usage in a practice-based learning and knowledge management context is typical of those from management learning literature (Macpherson and Jones, 2008; Macpherson and Clark, 2009; Blackler and Regan, 2009; Macpherson et al, 2010; Corradi et al, 2010). These authors explain the significance of artefacts and objects as a remake of activity theory (Engestrom, 1991), a theory that defines artefacts as mediating tools and concepts for social interactions, and objects as outcomes to be achieved from such human interactions. Scholarship on artefact mediation in organisational learning and knowledge management

recognises the capacity of mediating artefacts to transform organisational performance but sees power relations and political actions as a threat to such transformation (Blackler, 1995; Macpherson and Jones, 2008).

Macpherson and Jones (2008), drawing on activity theory, investigated how accepted artefacts (tools, processes and norms), embedded in social interactions, could help reconstitute the pragmatic engagements between manager group and other actors in a manufacturing firm. They applied object-mediated learning (artefact-mediated learning), the use of mediating artefacts and objects to develop new knowledge across organisational learning boundaries, to find that the integrity of organisational artefacts to transform organisations would require political actions. For instance, the failure mode effects analysis (FMEA) artefact, adopted by the firm for managing the manufacturing conflicts with the production schedules, stock levels and work-in-progress achieved success, but only with political actions.

The direct use of power for implementing the FMEA, as Macpherson and Jones (2008) observed, led to almost inevitable resistance from the workers and, tensions between different actor groups about the speed transformation was achieved, with consequent deteriorating effects on the firm's future activities. Macpherson and Jones recommended the use of mediating artefacts and objects with strategic renewal to unblock change rigidities and allow reconstitution of new organisational practices. A valid argument for confronting change blockages yet lacks consistency with strategic renewal affirmation to address political challenges with artefact-mediated learning (Volberda et al, 2001).

Strategic renewal is a managerial adaptation concept that upholds a holistic view of all managers at different levels, from the very top to the front-line leaders, to change the organisational path dependence (Volberda et al, 2001) but has very little recognition for non-managerial actors. Reality of power also resides with managerial and strategic positions. So,

the practicalities of strategic renewal re-orientating workers group engagements would be inadequate for addressing power relations associated with artefact-mediated learning. It might be even less than simplistic to achieve *real* transformation with ‘accepted norms’, which only seek to preserve traditional practices.

Artefact-mediated learning has been expanded variously to include ICT applications to manage and support learning, encompassing the use of computers, software solutions and web-based applications (Macpherson et al, 2010). These arrangements of learning, describing varied learning experiences moderated through ICT, are presented in pedagogic and information systems literature as technology-mediated learning (Chou, 2003; Oliver and Herrington, 2003; Gupta and Bostrom, 2007) or computer-supported collaborative learning (Salovaara, 2005). In a corporate context, technology-mediated network relationships (Schultze and Orlikowski, 2004) are familiar models to address wider organisational relations. The major weaknesses of applying ICT to learning come from their over-reliance on the rationalist conceptions (planned and top-down) that use planners’ adoption decisions to specify users’ requirements (Littlejohns et al, 2003; Dotsika and Patrick, 2006; Heeks 2006, Dron 2007b).

Inscription of technology-mediated learning model from the instructors’ perspectives is noted in Chou (2005), where the IT implementation and innovation model sought the views of teachers to the exclusion of learners, arguably, the primary actors of technology-mediated learning environments. Chou (2005) studied how instructors’ knowledge of IT, and their ability and intentions to explore technology-mediated learning could facilitate effective implementation of technology-mediated learning. Conducted with 311 usable questionnaire responses, from 59 Taiwanese primary schools teachers, the findings show that technology-

mediated learning innovations would require management support, and instructors' shared knowledge and coordination.

Chou's (2005) study was inclined towards the instructor models of IT implementation, positioning instructors as prime users of technology-mediated learning system. Oubenaissa-Giardina (2009) describes such learning systems as technology-driven models, which assume the cognitive view of information processing as a way of designing learning activities, neglecting actors' interactions as emergent process. Such conceptions situate learners as content receivers who reinforce established norms rather than developing critical thinking required to challenge the status quo (Hardless et al, 2005). These design weaknesses, as Oubenaissa-Giardina (2009) affirms, continue to characterise the e-Learning environment design to reflect the systemic rationality design principles without due considerations for actors' interactivity on learning platforms.

The rationalist conceptions for adopting IT is generally criticised for creating a design-reality gap (Heeks, 2006). This is an IT deployment mismatch between the designers' dominant specifications and the users' actual requirements which fails to meet the changing business processes the technology aims to support. Heeks (2006) cites technical rationality design as an example of design-reality gap. This arises from the external IT professionals' design inscriptions and its overly sanctioned managerialist budgetary allocations, a flaw that leaves internal IT workers out of ICT-supported learning projects (Heeks, 2006).

Hong and Fiona (2009) observed a failed IT outsourcing project in a tertiary institution where significant social tensions existed between the in-house technicians, endowed with the daily intricacies of organisational practices, and outsourcing professionals considered capable of addressing IT challenges. The consequent impact of the identity conflicts identified with Hong and Fiona's (2009) observations was damaged organisational learning and a loss of tacit

knowledge. One of the reasons for the IT project failure, they found, was a neglect of critical challenges required for resolving identity conflicts and embedded power differentials in organisational practices. Failure to address such conflicts of interest has been reported generally as accounting for an estimated 60%-80% failed public IT development projects (Jameson et al, 2006).

A situation where conflict of interest is resolved, such is the case of the practice-based approaches, IT adoption fail to pick up emergent issues that could damage the prospects of implementing IT in the first instance (Schultze and Orlikowski, 2004). Schultze and Orlikowski (2004) applied a practice-based lens to investigate how technology-mediated network relationships influence work practices and interactions of customers and health insurance broker, the service provider. They found that the enactment of self-serve network technology and use by customers had created arm's length relationship, a situation where conflict of interest is avoided between a business and its close business associates. But, this undermined the embedded relationships such as trust and joint problem solving between the customers and the company's sales representative leading to the loss of social capital that existed before introducing the technology. The lesson learnt from this is that whenever companies deploy IT without accounting for microlevel practices and social interactions, there would be challenges and unintended negative outcomes.

Innovative contributions emerge but rarely became actuality design (Patel, 2006), design that requires both the emerging daily practices and cognitive maps of systems users to affirm strategic design. As Patel (2006: 4) asserts, design failure arise because the fundamental understanding of designing for organised social actions is itself misunderstood. It may be argued that, the ripple-effect of failed strategic human actions such as planned change could stagnate transformation processes (Hardless et al, 2005; Jian, 2007). Hence, learning

organisations, such as healthcare providers, continue to search for transformative and emergent learning initiatives to improve service delivery (Davies et al, 2007; Matthews and Thomas, 2007). Evaluation of such learning activities is an open research goal which this study pursued.

1.1.2 Healthcare Learning Differences of Managers and Clinicians

Transformative learning strategies are increasingly gaining recognition in wider clinical research. The World Health Organization's (WHO's) health professional education model, financially supported by the US President's Emergency Plan for Aids Relief (PEPFAR), engages social movements and technical tools simultaneously to raise quality care provision, in a way to make healthcare investment viable (WHO, 2011). This transformative learning intends to upgrade health practitioners' technical competencies to meet the changing clinical practices, upon which such transformative scaling up of clinicians' knowledge is required. Yet, this acknowledgement does not address the existing disagreement between the continuing professional education needs of healthcare workers and the training provisions to meet such needs (Aiga, 2006).

Traditionally, healthcare corporate managers are responsible for financial planning, target setting, progress monitoring and performance improvement while clinicians' roles are gravitated towards patients' well-being and medicine (Plochg and Klazinga, 2005; Edmonstone, 2009). The distinctive roles between corporate managers and clinical professionals are extrapolated into "managers' learning" and "clinicians' learning", but these create a collaboration and knowledge capturing gap between managers and clinicians (Matthews and Thomas, 2007). Matthews and Thomas observed hierarchical lines of communication and dissimilar priorities between corporate managers and clinicians, as obstructing issues compromising the integration between managers' learning and clinicians'

learning in a South Wales' NHS healthcare trust. The mechanistic practices, Matthews and Thomas (2007) noticed, had resulted in a situation where risk managers could not give clinicians feedback on the overwhelming numbers of clinical incident reports they had received to inform quality practice.

Bridging the gap with clinical leadership, a managerial role in taking up strategic responsibilities and retaining some core clinical roles, is neglected (Edmonstone, 2009). Prioritising care delivery resource allocation from a clinical leadership perspective (clinician managers' learning) introduces a conflict of interest between managers and clinicians. Interpreted from Plochg and Klazinga's (2005) proposition, an adequate complement between managers' learning and clinicians' learning requires a cultural shift towards a flourishing environment of clinical excellence. An attempt to achieve clinical excellence, a professional self-regulation standard delivered through face-to-face clinical leadership supervision is, however, restricted to a localised working environment (Edmonstone, 2009).

Narrowly defined clinical leadership supervision is not extended to cover a wider participation of inter-professional debate and a broader knowledge transfer. Evaluation of clinical learning becomes inadequate in management-controlled performance models, lacking enthusiasms for clinical benefits of which quality care is naturally nested (Connell and Young, 2007). These gaps question the effectiveness of healthcare transformative learning initiative that takes health delivery outcomes as measures of health educational processes.

1.1.3 Motivation for the Study: ICT-Supported Organisational Learning Gaps

Any dissimilar or sub-optimising objectives between the clinicians and managers could serve their respective competing interests of traditional roles but it is the patients who might suffer the consequences. Research activities intending to bring co-ordination between clinicians and managers are therefore ethically beneficial for improved patient care delivery (Edmonstone, 2009). So far, the misunderstanding surrounding how learning organisations plan strategically for ICT adoption and use to support transformative growth is exposed (Schultze and Orlikowski, 2004; Chou, 2005; Hong and Fiona, 2009). The contention between the rationalist conceptions and the practice-based approaches to organisational learning and knowledge management including supporting technology is synonymous to the contemporary debate on quality healthcare provision where managers' learning contrasts clinicians' learning.

Investment in ICT for improving healthcare learning processes and quality care fails to match the desired outcomes and continues to remain a global agenda (Murphy et al, 2004; Heeks, 2006; Connell and Young, 2007; Liddell et al, 2008). The NHSmail, the email system of the British National Health Service, for instance, was criticised for achieving only 12% active usage, representing 153,000 of 1.3 million healthcare staff (Liddell et al, 2008). The NHS managers and senior doctors admitted an estimated £12 million NHS IT programme failure in 2007, declared as 'disparate systems' by the House of Commons Public Accounts Committee of the UK (Shamash, 2007). An approximate 75% of large hospitals computerised information systems worldwide have failed to increase health professionals' productivity (Littlejohns et al, 2003).

The failure rates of ICT applications to learning (ICT-supported learning) and change initiatives is depressing to read but provides motivation for the researcher to search for better

models of reality to apply ICT to learning to enable continuously improving patient care delivery. Such models of reality synthesise rationality and emergence as necessary and sufficient requirements to construct rationally designed systems that are applicable to actuality (Patel, 2006). Patel (2006) calls this design model the 'deferred model of reality'. It defines how social actions including ICT systems should be developed to achieve organisational objectives but made sensitive for actors to modify the design to suit the changing organisational needs and processes.

A rigorous evaluation approach for health information systems assessment was advocated by the House of Commons Public Accounts Committee of the UK (Wyatt and Wyatt, 2003). This, however, could not avert the recent poorly performed NHS IT systems because the enactment of ICT, as socially designed systems, as Patel (2006) submits, is misconstrued. This misunderstanding is seen in Heeks' (2006) design-actuality gaps, where the design of healthcare IT systems has adopted rationalist conceptions, with differing rationalities of either IT professionals, managers or even clinicians, dominating the inscription of ICT adoption. These rationalities treat healthcare IT systems as fixed systems, such as enterprise resource planning, which restrain actors from shaping the design to meet changing organisational needs (Patel, 2006). These approaches to healthcare IT design fail to address unpredictable emergence in complex healthcare IT systems.

The differing priorities, characterised with rational IT design, design based on conscious human actions to achieve predefined future outcomes, cause adoption and usage failures (Heeks, 2006; Patel 2006). Heeks (2006) cited failed clinical information system in a hospital where technical IT professional rationalities were applied to implement information systems for clinical practitioners but with little actual use of the systems. The technical rational design failed to match the clinician realities which were unpredictable and changed with dynamic

medical practices. Connell and Young (2007) also note that, face-to-face interpersonal communication, an interactive approach deeply embedded in clinical practice is not well captured in the healthcare IT systems design. Existing IT adoption approaches for the NHS, therefore, continue to have barriers preventing effective technology exploitation for transformative change in the NHS.

Recognition of the multi-stakeholder rationalities for implementing healthcare IT systems goes beyond the differing tensions between technical IT professionals, managers and clinicians to include national power influences. Pointing to the National Institute for Health and Clinical Excellence (NICE) report, Liddell et al (2008) assert that healthcare technology implementation compromises are made at a national level, contributing to several variations of technology recommended for implementation. Arguably, such political actions in IT adoption might neglect the real intentions of user requirements. Perpetuation of such design approaches foretells mounting restrictions on transformative growth intentions for health sectors (McNulty and Ferlie, 2004).

Appreciation of reality IT models for designing healthcare information systems that sanctions IT specifications evolution with organisational systems is receiving an increasing public attention. Swindells (2010), the Group Managing Director for Tribal Health and an NHS IT strategist endorses Patel's (2006) 'deferred design decisions', a design construct that adjuncts strategic thinking with emergence actuality to inform better IT systems design. Such is an invocation of radical academic research to explain how hospitals could develop and implement healthcare ICT-supported learning systems with practical relevance, rather than assuming ICT adoption as a rigid design process disjointed from the very organisational systems it aims to support.

So far, the researcher has identified that designing organisational learning and its supporting technology exclusively with rationalist conceptions or practice-based approaches is problematic. Rationalist conceptions, such as planned actions and cognitivism, use reasoning to achieve predetermined outcomes, and are at odds with practice-based approaches and emergence. Practice-based approaches have eluded patterns of thinking and planned structures. Integrating rationalist conceptions and practice-based approaches for effective organisational design is not straightforward, unless theoretical compromises are made between the two theories. So, the possibility of the balanced-view approaches suffers the absence of emergent reality required to position rational design in actuality. Those who appropriate complexity theory have observed the integrity of emergence to address unintended consequences intrinsic in rationalist conceptions (Brodbeck, 2002; Matthews and Thomas, 2007), yet they approach the problem with interpretive methodology. Critically, this is uncritical of power relations.

The organisational learning design challenges emerge with the healthcare ICT-supported learning processes where conflicting priorities between managers, clinicians and even clinician managers present difficulties for the existing models for adopting healthcare ICT systems. Intentions to achieve transformative growth, as a continuously improving patient care objective, add to the complications; because unlearning to learn new perspectives is difficult, with inadequate design approaches to transformative learning (Bamber and Hankin, 2011). The consequence of all this is the disappointing stories about healthcare IT failures, money losses and poor knowledge sharing between healthcare actors cited earlier.

A keen interest in cutting-edge research applying potential and existing knowledge management practices to the NHS has recently been sought by the National Institute of Health Research (NIHR) Service Delivery and Organisation (NIHR, 2009). Motivated by this

current research debate, the researcher applied the principle of deferred design decisions from the theory of deferred action (Patel, 2006) to propose an evidence-based framework for designing and evaluating organisational learning and knowledge management processes, using the Komfo Anokye Teaching Hospital's (KATH) ICT systems to support continuously improving patient care.

KATH is situated in Ghana, a sub-Saharan African country reported with an inadequate doctor-population ratio of 1:10000 and unsatisfactory 4.8% medical staff representation of the total 43000 public health sector workforce (WHO Regional Office for Africa, 2009). Shortage of health workforce coupled with high attrition rates exerts severe pressures on quality care delivery (Asante and Zwi, 2009). Lack of adequate healthcare information systems, according to the Ghanaian Ministry of Health (2009), has existed as problematic for patient data management and an institutional healthcare capacity development issue for many years. All these leave Ghana healthcare system a much desired ground upon which the proposed evidence-based framework of this research for designing and evaluating organisational learning management processes is suited.

KATH's investment activities have over the years been unable to achieve some key quality care benchmarks, so the hospital's 2010-2014 strategic focus has identified human resource development, staff attitudinal change and quality healthcare delivery as some important indicators for improved performance (KATH Annual Report, 2009). Dzokoto (2007) reported poor patient waiting time, unclear lines of communication, flaws in information systems and inadequate supporting tools for staff training and learning in KATH.

1.2 Research Intention

Achieving high and continuously improving quality care indicators for KATH requires continuous staff learning supported by ICT. Though very little research is found on KATH's ICT-supported learning, the researcher is motivated by the ICT-supported learning design challenges to investigate how to implement ICT to support continuously improving patient care in hospitals.

Firstly, healthcare managers' learning is identified as distinct from clinicians' learning with little positive relations evident between the two. Secondly, integrating them with clinician managers' learning introduces prioritisation tensions and prevents effective collaboration between healthcare managers and clinicians. Thirdly, technology application to support clinical processes fails because models of adoption do not adequately explain how to develop IT systems to address the emergent actuality of users.

An implication of these concerns was a motivation for the researcher, agreeing with the study Supervisor, to use a more robust approach to explain the design and implementation of ICT to support healthcare learning. Adopting a 'critical ethnographic case study' stance, the study gathered and analysed extensive data from KATH. The findings were used to propose an evidence-based framework, based on deferred model of reality, which advances the evidence-base and applicability of the theory of deferred action to practice, and to enable KATH to develop and implement effective ICT-enhanced learning systems to support continuously improving patient care.

1.2.1 Problem Statement

The research question is: 'How can hospitals design effective staff learning processes including supporting ICT systems to enable continuously improving healthcare delivery?'

The researcher attempted to address the following sub-research questions:

- i) What is the nature of technologies for learning in hospitals and how do they support collaboration between managers and clinicians' learning goals?
- ii) What is the role of staff learning in patient care in hospitals?
- iii) What roles do managers and clinicians play in planning for ICT-supported learning in hospitals?
- iv) What are the ICT-supported learning implementation issues of hospitals and how are these tackled?
- v) How is technology-supported learning evaluated in hospitals and how could this be improved?

1.2.2 Research Aim and Objectives

The aim of the study is to apply the theory of deferred action to propose an evidence-based framework for designing and evaluating organisational learning and knowledge management processes using KATH's ICT systems to support continuously improving patient care. Specific objectives overlapping the sub-research questions are:

- i) To analyse how managers and clinicians of KATH use technologies to support collaborative learning
- ii) To identify and analyse the role of KATH staff learning in healthcare delivery service
- iii) To examine the role played by the managers and clinicians of KATH in planning for ICT-supported learning
- iv) To explore how ICT-enhanced learning implementation issues are managed in KATH
- v) To evaluate learning processes including ICT used by the KATH managers and clinicians to improve healthcare delivery

1.3 Justification for the Study

The study is justifiable for attempting to address the identified gaps in the field of learning organisation and its supporting technologies generally, and KATH learning and knowledge management processes particularly. The significance is identified with the following three key areas: Theoretical contribution to transformative learning organisations; application and strengthening the evidence-base of deferred theory to healthcare learning systems; and practical implications of findings for KATH. The researcher defines a transformative learning organisation as a dynamic organisational environment where traditional assumptions are questioned with contextual integration of workers' learning and managers' learning to bring continuous innovation and change.

1.3.1 Theoretical Contribution to Transformative Learning

The study applied the lens of the theory of deferred action (Patel, 2006) to explain the role of technology-supported learning organisation for transformative growth, noting two dichotomous extant schools of thought; a rationalist approach (Flyvbjerg, 2004; Gherardi; 2009; Marshall, 2009; Stone; 2009) and 'emergent' (a complexity-based approach) (Brodbeck, 2002; Stacey, 2003; van Eijnatten, 2004; Firestone and McElroy, 2004; Carlisle and McMillan, 2006) which are exclusively inadequate to accomplish transformative growth because they create power tensions between managers' learning and other employees' learning. Attempts to co-ordinate the two polarised perspectives with the balanced-view approaches fail because they are theoretically orientated and lack practical design to resolve power relations (Huysman, 2000; Järvinen, 2004; Marshall, 2009). The theory of deferred action (Patel, 2006) addresses these gaps, showing how strategically planned organisations could accommodate everyday actuality of workers' job routines or 'organisational life'.

The deferred model of reality (Patel, 2006) stemming from the theory of deferred action is used to develop a conceptual framework for the study. This analyses and prescribes how individuals, teams and groups within an organisation, continuously learn with the support of learning technologies to achieve transformative growth. The framework is the cohered emergent transformation model, a model of learning inclusive of actuality. It assumes that, planned learning processes including supporting technology should be flexibly designed to enable actors to modify design to reflect the actual learning processes required to achieve organisational objectives. The model describes how the intended learning outcome decisions should cohere tightly with emergent actuality decisions to allow all-inclusive transformation.

The novelty of the cohered emergent transformation model lies in its deferred ontology (Patel, 2006). This defines how the highly engineered and predictable social systems should consider reality as emerging and, therefore, requires actors to adjust structured design systems to address emergent actuality. Theoretical integrity of the model, synthesised through the extant knowledge and developed with the theory of deferred action, offers qualitative research promise to demonstrate how actors could question the rationale behind rationalist conceptions characterising organisational learning.

Guided by the cohered emergent transformation framework, based on deferred model of reality, the complete ethnographic data were categorised, and sub-categorised into the key modules of the framework. Ethnographic data are empirical data obtained through researcher's immersion in the field to learn from the people being studied. The findings were further executed and interpreted with critical hermeneutic analysis (questioning and criticising the limits of failures of understanding - McLaren and Mills, 2010; Roberge, 2011) and critical narrative analysis (unveiling salience stories as force for change - Reissman, 1993; Myers, 2009: 214).

1.3.2 Applying Deferred Action to Healthcare Learning Systems

The theory of deferred action is a recognised theory that could address design mismatch problems in healthcare IT systems (Swindells, 2010). The theory is also accepted in information systems (IS) research (Marriott School of Management of Brigham Young University, 2011). A recent empirical confirmation of the deferred model of reality based on the theory of deferred action is demonstrated in the development of the Kadar Matrix, a web-based information systems tool, for analysing internet speed and web-based aesthetics (Ramrattan, 2010). Deferred theory of action was employed to explain how a healthcare organisation, Heatherwood and Wrexham Park Hospital NHS Trust, could make healthcare Commercial Off-The-Shelf design flexible to the context of usage (Patel, 2003).

Application of the theory of deferred action to organisational learning could offer practical solutions to design to cater for inadequacies in healthcare learning systems, explaining how to bridge the learning gaps between managers and clinical professionals in actuality (Nyame-Asiamah, 2012). The contributions made by the theory, as evidenced in section 5.5, inform how research stemming from the theory of deferred action could enable transformability of quality care through effective healthcare learning design.

Outputs of the study were shared with research communities who have healthcare learning and knowledge management systems interest to explain how the theory of deferred action could enhance understanding of healthcare ICT-supported learning adoption and usage. Relevant working papers and contributions relating to the study evidence this implication on the research community (see Appendix 1.1 relating to the PhD).

1.3.3 Implications for KATH - the Case Organisation

A widespread acceptance of the study by the participants, as evidenced in section 5.5, demonstrated potential merits of the findings to change the weaknesses in the existing learning and knowledge management systems of KATH. The participants' contributions, as analysed with verbatim quotations in Chapter 5, suggest how the study would help KATH deploy effective learning and knowledge management systems that could enhance team collaboration between managers and clinicians, and improve work communication.

The analysis of findings, in Chapter 5, provides re-thinking about the policy-driven (management-driven) continuing medical education or continuing professional development in KATH. The clinician criticisms of these learning processes and their willingness to take greater ownership and more responsibilities in designing them, as shown in Chapter 5, indicate the impact of the study in re-designing KATH's staff learning processes. Staff involvement in re-designing ICT-supported learning would potentially lessen the design failure responsibilities on the part of managers. Time- and cost-savings benefits of adopting usable models of reality, such as deferred design decisions (Patel, 2006), for ICT-supported learning uptake would potentially allow KATH to direct its limited resources to effective use. For instance, following the participants' concerns about the technicians' slow response to fix IT problems, the researcher had a discussion with the deputy ITech manager and the IT support officers' job roles were re-assigned to address specific IT repair needs of the departments. This immediate impact on service delivery was realised during the fieldwork. Table 6.1 recommends a 20 points evidence-based implication for re-designing KATH learning and knowledge management systems.

1.4 Scope of Generalisation, Subject Boundaries, and Thesis Outline

In this section, the scope of findings generalisation, the interrelated fields of literature exploration, and the main chapters of the thesis are all clarified to elaborate the coherent thesis structure.

1.4.1 Scope of Generalisation

Generalisability, the degree to which study findings can be generalised from the study sample to the whole population or extended to other settings, is often explained with the theoretical relevance of research in practice or different research methodological orientations (Lee and Baskerville, 2003). Arguments presenting generalisations from theoretical statements, making theory relevant in practice, suggest that generalisations should describe how a theory that has already been verified and confirmed can be verified through an empirical validation in a new setting (Lee and Baskerville, 2003).

The researcher applied the theory of deferred action to develop an evidence-based framework, the cohered emergent transformation model, for designing and evaluating organisational learning and knowledge management processes using KATH's ICT systems to support continuously improving patient care (Chapters 3 & 6). The model is suitable for prescribing and analysing transformative learning organisations, such as hospitals and teaching hospitals. The findings confirm the applicability of the theory of deferred action to design ICT-supported learning organisations, including its generalisability for Ghana healthcare learning systems, where it has, hitherto, not been empirically confirmed. The supporting argument for this is, the recent validation of the theory of deferred action for internet speed and web-based aesthetics in Brunel University (Ramrattan, 2010) that satisfies, what Lee and Baskerville

(2003) contend as, the empirical testing requirements of existing theory for making theoretically generalised statements.

Methodological argument for the study generalisation is made from qualitative traditions, research methods that use explanations and meanings of human understanding to validate (generalise) findings. Qualitative research methods, because of their absence of notions of small sample sizes or single study organisations, are accused of having limited legitimacy for generalisation. Myers (2000) agrees with the small sample sizes or single study organisations methodological argument but refuses the claim that qualitative studies cannot be generalised, because qualitative tradition makes naturalistic generalisation on its own rights. Naturalistic generalisation describes how human experience is used to recognise essential similarities of objects and issues from one study to confirm other cases, in and out of context (Stake, 2000).

Myers (2000) therefore salutes the significance contributions from qualitative research to understanding human experiences, particularly in clinical practice, where intuitions, interpersonal relationships and patient care are some measures of in-depth investigations and generalisability. Buchanan and Bryman (2007) support the naturalistic generalisation position, arguing that, it is rather the question of qualitative researchers having limited interests in statistical generalisability, which is the domain of quantitative researchers. They favour contextual validity of findings based on contextual human experience.

Elucidation of different meanings and forms of generalisability is therefore important for clarifying how research findings might be applied to actual organisations different from those where the initial research took place (Lee and Baskerville, 2003). Macpherson et al (2010) conducted three longitudinal case studies of small firms using the constructs of activity theory to explain the roles of artefact-mediated learning as socially-situated form of organisational learning. They observed that, artefacts could support more effective policy making and act as

facilitating mechanisms for small firms. Macpherson et al (2010) made a case for their findings implications on learning in larger organisations:

“Finally, whilst we recognize that there are differences between small and large organizations, it is not the case that findings from this research are restricted to small firms. It would be a mistake to believe that large organizations as entities are homogeneous; many are constituted as constellations of smaller units, or as networks designed to encourage higher levels of innovation and entrepreneurship”

Generalisability of artefacts significance, underpinned by the activity theory, for learning in larger organisations, as Macpherson et al (2010) argue, could serve to disrupt taken-for-granted practices and enhance learning activities across business units and boundaries. These forms of explanations might offer alternative argument against the view that, qualitative research has limited generalisations. As Lee and Baskerville (2003) contend, accusations that case studies and qualitative studies are not generalisable would mistakenly subordinate the generalisability of empirical explanations to theory.

The research here conducted in KATH, one of the three teaching hospitals in Ghana, findings would be practically relevant to KATH, especially, if we considered illustrations in Lee and Baskerville (2003) from information systems research that small sample size or one organisation investigation has limited or no generalization. However, the fact that, the other two teaching hospitals synthesise their strategic objectives from the Ghanaian Ministry of Health (MoH) policy framework (see Chapter 4), as KATH does, suggests some form of ‘common constellations’ among all three teaching hospitals in Ghana (Ministry of Health, 2007). The Ghana Health Services and Teaching Hospital Act 525 of 1996 gives all the three teaching hospitals, irrespective of their sizes, the same functioning of the care delivery autonomy arrangements and mandates them to provide clinical care, training and research. Also, the Ghanaian MoH requires these hospitals to strengthen health system capacity and create wealth through healthy and productive lives (Ministry of Health, 2007). These patterns

of homogeneous expectations required of the Ghanaian teaching hospitals are analogous with Macpherson et al's (2010) recommendations for larger organisations to benefit from research outcomes conducted in smaller organisations, which demonstrate similar network patterns of such larger organisations.

Drawing on Macpherson et al (2010), it would be mistake to assume, for example, that technology uptake decisions (such as telemedicine implementation in KATH, discussed in Chapters 4 & 5) requiring a shift from the central government to KATH could not benefit other teaching hospitals, to enable users' requirements to shape the central planners' specifications in actuality. Consideration of such implications by the other teaching hospitals would improve the understanding of the theory of deferred action application to ICT-supported learning adoption and usage, as in the Ghanaian teaching hospitals. It brings theoretical generalisation of the theory of deferred action to wed ethnographic understanding of designing healthcare learning processes including supporting technology in emergent actuality. What this means is that, there is positive exchange between theoretical generalisation and naturalistic generalisation from ethnographic studies (Visconti, 2010). Fine et al (2009: 613) make a point that "ethnography typically has more relevance to 'theoretical' generalisation" to suggest innovative explanations of theoretical concepts with ethnographic studies to translate research findings into practice.

1.4.2 Subject Boundaries

The extant knowledge underpinning the research stems from theoretical, conceptual and practical perspectives of the following inter-related subjects: Learning organisation (organisational learning) including transformational changes (Bartunek and Moch, 1987; Huysman, 2000; Burnes et al, 2003; Stacey, 2003; van Eijnatten, 2004; Senge, 2006; Patel, 2006; Jian 2007); knowledge management technologies including eLearning tools (Gash and

Orlikowski, 1991; Blackler, 1995; Bansler et al, 2000; Chen et al, 2003; Vaast, 2004; Patel and Ghoneim, 2011); knowledge management systems design and evaluation (Rackoff et al, 1985, Howcroft and Carroll, 2000; Brodbeck, 2002; Muthusamy et al, 2005; Benbya and McKelvey, 2006; Ramrattan, 2010); and healthcare learning processes including ICT (Beynon-Davies, 1999; Heeks, 2002, 2006; Wyatt and Wyatt, 2003; Patel 2003; Connell and Young, 2007; Lucas, 2008; Kardos et al, 2009). These are depicted as a Venn diagram (Figure 1.1) to provide an illustrative road map for the literature exploration (Ezer, 2005).

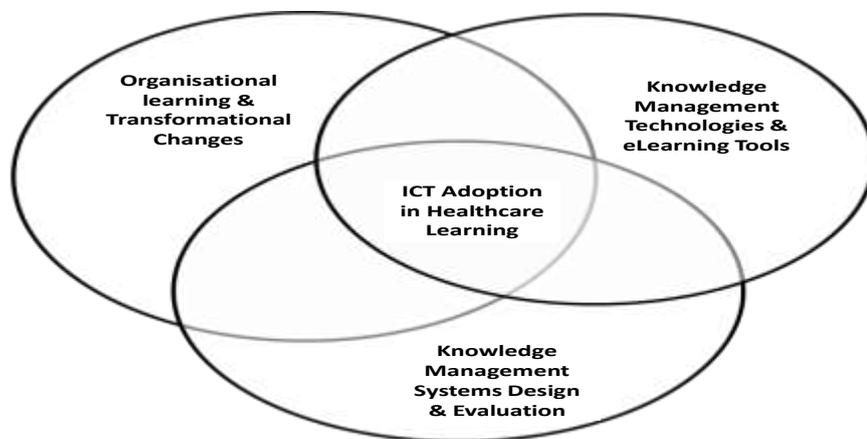


Figure 1.1: Thematic Subjects of Literature Review

The Venn diagram shows how the relevant literature drawn from the fields of learning organisation and transformational change, knowledge management technologies, and knowledge management systems design and evaluation converge into healthcare learning and its supporting technology to form a subject of investigation. The literature review (Chapter 2) exposes the overlaps between the rationalist, the emergence and the balanced-view approaches in each thematic subject area, with the core ICT adoption in healthcare learning theme exhibiting patterns of the other three themes. In what follows, the exploration of these subject areas is outlined.

1.4.3 Thesis Outline

The research issues, intentions, scope and degree of generalisability have been set out in this Chapter. The rest of thesis is presented in the subsequent five chapters as follows:

Chapter 2 presents a detailed analytical review of relevant literature informing organisational attempts to innovate with learning and knowledge management processes. This introduces the relationship between orders of change and learning loops to demonstrate the difficulty involved in achieving higher order learning and change. The relevant organisational learning literature is categorised into two opposing threads: The rationalist school and the emergence school. The balanced-view of learning, the third school, dismissing the polarisation between the rationalist and emergence schools is reviewed with conclusions that the alluded integration of the balanced-view school fails to match emergence actuality.

The ‘individual-organisational’ learning debate versus the ‘team-group’ learning argument is explored. The Chapter further reviews the relationship between organisational learning and knowledge management including the supporting technologies and knowledge management systems for knowledge creation. This shows how the knowledge creation debate has shifted towards finding strategies to extracting tacit knowledge. These arguments mimic the ideation of the three schools of organisational learning. Chapter 2 contextualises the debate in healthcare services, to echo the gaps in organisational learning design and evaluation including ICT.

Chapter 3 begins with a summary of the extant knowledge gaps identified in Chapter 2. It discusses the views that, the positivist, the emergent and the dualist ontological interpretations have exclusively failed to explain adequately how to design and evaluate organisational learning management processes including supporting ICT. Deferred ontology is introduced to explain how it could inform effective organisational learning design, aiming for

transformative growth. Recent application of the theory of deferred action to organisational systems design and evaluation is highlighted. The constructs from the theory are applied to develop a conceptual framework, the cohered emergent transformation model, to analyse and prescribe how to design organisational learning management systems for achieving transformative growth intentions. The specific research questions are contextualised in the main properties of the framework to inform the data collection design.

Chapter 4 contributes to the positivist versus interpretive epistemologies debate to argue that both are not suitable for the study aiming to achieve transformative growth with organisational learning. Instead, critical epistemology is selected and justified as appropriate research methodology for the study aim and objectives. Following this, a critical ethnographic case study is adopted as a preferred research design method. It is not because it is more attuned to the intended aim of the study but provides a reasonable balance between the time spent and a number of participant observations undertaken on the field, on one hand, and the quality of data gathered, on the other hand. Data categorisation was directed by the conceptual model derived from the theory of deferred action; with a detailed justification made for a joint application of critical hermeneutic and critical narrative analyses as appropriate data analysis methods (Myers, 2009:27).

Chapter 5 executes and analyses the categorised data into four thematic modules of the conceptual model, with each theme covering the evaluation of KATH learning processes and aims including supporting technologies, to explain the applicability of the theory of deferred action to practice. Expositions of complex ethnographic data including metaphors and participants' expressions for change, analysed with the application of critical hermeneutic and critical narrative, build on the emergent factors of the conceptual framework to show how the deferred model of reality could enable re-designing of KATH ICT-supported learning

processes for continuously improving patient care. Broader contextual issues such as the ‘Another Certificate in a Wardrobe CPD Courses’ (CPD programmes lacking actual knowledge sharing and value) and ‘White Elephant IT Systems’ (indisposible but valueless IT systems with maintenance costs) are emphasised to elaborate local issues requiring change to the readers, harmonising the critical hermeneutic and critical narrative analyses.

Chapter 6 revisits the intentions of the study, reflecting and highlighting its limitations to clarify the study generalisability. It examines several research implications. It discusses the study benefits for KATH and its potential for other large hospitals in Ghana which exhibit patterns of KATH. It does this, by illustrating how the cohered emergent transformation framework for designing and evaluating organisational learning management processes in KATH is contextualised and operationalised. The theoretical significance for transformative learning organisations and relevance of deferred design decisions for healthcare settings are discussed to justify the novelty of the study. Implications for future studies that seek to transform organisations with learning and knowledge exploitation strategies would find the study an explorable departure to engage.

Chapter 2: Literature Review - Transforming Learning Organisations

2.1 Introduction

Organisational capacity to transform continuously is innovativeness enabled through effective organisational learning processes, collectively designed to account for both strategic priorities and bottom-up initiatives (Senge, 2006). Senge's contribution to transformative learning organisation accentuates the culture of openness, and a fervent distribution of power and authority to make innovation decisions. This assurance of transformative learning is encapsulated in his definition of learning organisation:

“organisations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspirations is set free, and where people are continually learning how to learn together” (Senge, 2006:3).

Senge's definition differs from the rationalist view of collective learning, such as institutional learning (De Geus, 1988), exclusive strategic thinking which takes power regimes and hierarchical controls to induce organisational change. De Geus (1988) used institutional learning to explain how individual organisational managers, with a high level of thinking skills plan, institute rules and manage organisational change directions. De Geus pursued institutional learning as a planning process to change Shell managers' mental models about their company, market and competitors in 1980s. The downside of this is, failing to accommodate fully the ideas of operational workers.

Conceiving institutional learning as planning is, therefore, a preconception that considers organisations as deterministic entities which can be intentionally created with managers' reasoning to initiate transformation (Huysman, 2000). Huysman (2000) argues that institutional learning and its planning preconceptions should be challenged with the evolutionary processes of organisations, which are unplanned or emergent behaviour of

actors, to enable planned learning biases to be balanced with emergent learning. The reason is, engineering organisational future solely with managers' learning is difficult, especially in emergent organisations, where unanticipated internal and external actions constrain managers' abilities alone to transform organisations (Huysman, 2000; Burnes et al, 2003).

Theoretical conception of learning organisation, involving people at all levels of an organisation to learn continually together to bring organisational transformation is a possibility but its practical implementation to achieve such collective change is difficult (Burnes et al, 2003). The problem is that, managers' learning does not fully complement workers' learning, with workers' awareness of organisational learning restricted to reward and dedication indicators, as is the case in the quantitative study identifying patterns of learning in six Estonian companies (Mets and Torokoff, 2007). Kira and Frieling (2007) make further observation that, individual employees' learning does not adequately feed to collective learning of organisations because power relations and bureaucratic organisational boundaries prevent such co-ordination from taking place.

The reasons for the disharmony between managers' learning and workers' learning, or individual learning and collective organisational learning, as cited earlier from Patel (2006) in Chapter 1, hinges on the misconceptions about how to design social actions to account for the emergent actuality of organisational actors. These misunderstandings, together with individuals' unwillingness to change their existing worldviews, have caused poor organisational learning and impeded transformative growth (Hong and Fiona, 2009; Bamber and Hankin, 2011).

In Section 2.2, the researcher explores organisational transformation difficulties from the relationships between three degrees of organisational learning and their corresponding degrees of organisational change to argue that the challenges facing higher-orders of learning and

change (Gash and Orlikowski, 1991) are matters of misconceptions about how to design higher-orders of learning and change for transformative growth. Account is drawn from the theory of deferred action (Patel, 2006) to explain how to design a composite third order phenomenon, a kind of higher-orders of learning and change that interrelates ‘first-order learning and change’ (rationalist processes) and ‘second-order learning and change’ (emergent processes) in actuality.

The literature on organisational learning is therefore categorised into the rationalist school and the emergence school with the contention that, exclusive focus on either rationalist or emergence is insufficient for designing effective transformative/sustainability learning organisations. Neither does the balanced-view school, combining the two opposing strands, resolve the ‘*rationality-emergent*’ gap adequately, because the balanced-view school suffers actuality deficiency. The three threads of organisational learning are extended to explore the individual-organisational learning debate.

Section 2.3 utilises the rationalist, emergence and balanced-view debate in the review of knowledge management and its relationship with organisational learning to show how focus is being shifted towards the *emergent knowledge* acknowledgement in deferred action (Patel, 2006; Patel and Ghoneim, 2011), in which rationalist knowledge is managed and enables local situational responses. Rationalist knowledge is ossified and could be made explicit with reasoning as sole truth; but it is challenged by emergent knowledge which emerges suddenly and unexpectedly to adapt to changing organisational environment (Patel and Ghoneim, 2011). Emergent knowledge is unpredictable, so it cannot be reduced to simple rationalist knowledge. It, thus, differs from tacit (implicit) knowledge which uses values and inherent experience to explain phenomena in social context (Polanyi, 1966).

The invocation of a balanced-view explanation for managing knowledge is situated in the 'duality of knowledge' (Hildreth and Kimble, 2002) which defines the mixture of explicit knowledge, the rationalist knowledge exemplar, with tacit knowledge to explain how knowledge could be created and sustained. The duality of knowledge, however, fails to address how to manage knowledge in actuality; because it does not treat power relations between the rationalists and the emergent organisational actors, a necessity for transformation (Hong and Fiona, 2009).

Exploration of literature applying ICT and eLearning technologies to organisational learning and knowledge management follows the three school ideations. It shows how the conflicting priorities between managers/technical designers and other organisational workers/users cause unwanted variations and failures in technology-supported organisational learning (Dotsika and Patrick, 2006; Heeks, 2006; Hong and Fiona, 2009). Where flexibility is introduced to address rigid technology design such as the social network tools, Dron (2007b) argues that, even, mischievous actors can unreasonably manipulate the behaviour of other users to abuse usage and limit the ability of technology to support creative learning. These emphasise the point that, existing models of technology-supported organisational learning have yet to match the implementation objectives, and better understanding is required. So, it is important to explain technology-supported learning adoption and use with the deferred model of reality (Patel, 2006) because it enunciates how the combined organisations and ICT systems should be designed to achieve organisational objectives, where plans are made flexible to accommodate changing actors' needs and address power differentials.

Review of design and evaluation approaches of knowledge management systems, as would be discussed in Section 2.4, uses the rationalist, the emergence and the balanced-view schools to argue that, neither the plan-based systems approaches, the complexity-based frameworks nor

the combined alternatives are adequate to inform knowledge management systems (KMS) design and evaluation. Section 2.5 situates the argument in healthcare setting, reviewing literature on ICT adoption and evaluation for healthcare learning processes to uncover healthcare professional learning weaknesses including IT adoption for patient care delivery, justifying in broader terms, the choice to undertake the study in a healthcare context.

2.2 Orders of Change and Learning Loops Relationships

Three levels of organisational learning and organisational change ideations have recurred from different perspectives in the literature, but many authors suggest that attaining higher orders of learning and change, particularly the third-orders, is unrealistic (Bartunek and Moch, 1987; Gash and Orlikowski, 1991). Taking a cognitive view, Bartunek and Moch (1987) used schemata, organising frame of mind, to interpret how organisational members understand orders of organisational change from three schematic changes. They describe first-order change as tacit reinforcement of present understanding to trigger minor adjustments. This is linear transformation, achieved with managerial conscious actions and self-fulfilling ambitions.

Critics of first-order change question the ability to shake systemic orthodox practices, dominated by managerial control, with first-order change and its accompanied single-loop learning caveat (Argyris and Schon, 1978; Argyris, 1990). By default, single-loop learning is a carefully planned process directed towards covering up flaws, or at best, correcting errors (Argyris, 1990). Both first-order change and single-loop learning processes are, therefore, exemplars of rationalist conceptions because they are influenced by management actions and planning.

Organisational learning theorists pursuing change from the systems dynamic view shy away from covering up ingrained in single-loop learning. Senge (2006), for example, embraces with shared vision, which involves binding people together around a single sense of identity for the future, as a way forward to unlearn anti-learning behaviour to enable organisational transformation. Such conceptions propagate second-order change, a radical modification of existing assumptions, replacing old schemata with new thinking (Bartunek and Moch, 1987). This change is multidimensional and transformative. Arguably, second-order change empowers the involvement of non-managerial staff to support the shift of organisations from minor error corrections to major alterations in existing schemata (Schulz, 2008). Since these changes dictate adaptability and flexibility, the intractable single-loop learning has no residence in second-order change. Rather, double-loop learning, a participative and inquiry-based process to alter governing values has received attention in literature as corresponding learning that could bring second-order change (Argyris, 1990; Gash and Orlikowski, 1991). This relationship is presented as emergent to explain the continuous experimentation and adaption pursued in unpredictable situations for achieving organisational change (Burnes et al, 2003).

Double-loop learning interventions might serve the interest of non-managerial staff but constrict strategic interest because it gives the former empowerment in decision-making (Argyris and Schon, 1978; Bartunek and Moch, 1987). Bartunek and Moch (1987) posit that, achieving second-order change with increased participation in decision-making processes does not only require change in managers' schemata, but also threatens their prerogatives. Second-order interventions, despite their participative doctrines, disregard managerial controls and conscious planning. Characterised with discontinuous changes, second-order processes are suitable for dynamic situations, but transformational researchers (Poutiatine, 2009) have classified second-order processes as 'risky business' because habituated behaviours are

difficult to change, and irreversible once transformed. The risk, as further argued by Schulz (2008), is the multiple ideas and contradictions obtained from operational staff together with their managers, which lack goal-directed change processes or defined sustainability intentions to guide the pursuits of the emergent ideas.

Third-order change aims to build enabling capacity for regular reflection and questioning of assumptions behind the existing organisational processes and structures to effect transformative growth (Gash and Orlikowski, 1991). This extends Bartunek and Moch's view of relying on consultants to evaluate organisational schemata, make appropriate decisions and implement the best schemas. Third-order change is a product of triple-loop learning. Theoretically, triple-loop learning offers possibility to challenge strongly interpretations of existing knowledge and traditional constructs (Burnes et al, 2003). It uses critical theory explanations to describe how the subverted social world and the hidden structures of power should be challenged to enable organisational transformation (Zanetti, 2004; Messner et al, 2008 – discussed in detail in Section 4.2.2).

Changing individuals' schemata and patterns of thinking is, however, difficult, leading earlier contributions to doubt the realisability of third-order learning and change (Bartunek and Moch, 1987; Gash and Orlikowski, 1991; Visser, 2003; Chen et al, 2003). Third-order change attainment is therefore problematic because reflecting critically on contextual meanings to change existing perspectives for transformative growth is as difficult as achieving transformative learning, as discussed earlier in Section 1.1. This is because, achieving third-order organisational change would arguably require power distribution between managers' learning and other employees' learning (Bartunek and Moch, 1987; Hong and Fiona, 2009). This form of transformative change seeks to use consultants to balance rationalist criticisms, which use institutional learning and fixed bureaucratic practices with practice-based

criticisms, which use changing employees' learning and emergence, to initiate transparency between power regimes and knowledge endowments in organisations (Messner et al, 2008). What Messner et al's (2008) proposal does not show is how to interconnect the rationalist criticisms and the practice-based criticisms in actuality.

Alternative thought provoking views are certainly required to elucidate how to approach third-order change for transformative learning organisations. If we uphold the general view on third-order learning as: (i) consultant-led (Bartunek and Moch, 1987; Messner et al, 2008); and (ii) seeking to challenge orthodox practices with emergence (Stacey 2003; Burnes et al, 2003); then alternative ideas for achieving transformative growth should bring rational thinking to conform humanist views. The rationale for this is that, rational thinking uses managers' cognitions to plan and review organisational processes for transformation while humanist views seek shared experience to question status quo for transformative change but amenable to emergence and uncertainty. Combining these forms of learning is a reflection of actuality, and it is the assumption of achieving third-order change that 'deferred learning', a socially constructed learning process that coheres consciously planned learning with contextual thinking and emergent learning, converges (Patel, 2006).

Deferred learning is a product of deferred action (Patel, 2006), a theory which provides better understanding of organisations as rationally designed but responsive to emergence. Interrelating first-order and second-order processes distinctively to achieve transformative growth can be a plausible feature central to deferred action; because deferred action takes a third-order phenomenon as a composite system that relates known situations, such as predetermined learning outcomes, tightly with emergent learning for sustainability (Patel, 2006). So, combining the first two different but indivisible change-order perspectives for attaining third-order change is not by accident. It is one of the aim of the deferred model of

reality, a rational organisational and ICT systems design that coheres with emergent actuality to achieve transformative growth intentions (Patel, 2006).

Deferred action is therefore a composite function of rational design and emergence, but combines them in actuality. So, it is distinct from the balanced-view school which promises theoretical combinations of the rationalist school and emergence school, without appropriate interaction between the two conceptions, rationalist and emergence, in time and space; or planning as a necessary dimension, and emergence, a sufficient dimension for designing purposeful organisational systems.

2.2.1 The Rationalist School

Rationalism uses planning and cognition as ideal learning methods to achieve expected human outcomes and these have received attention as the leading mainstream knowledge for guiding efficiency, transformation and decision making (De Geus, 1988; Simon, 1996; Dehler, 2009; Stone; 2009; Piotrowski, 2011). Piotrowski (2011) informs us that, even amongst street robbery offenders who have material motive to rob their victims, about 25% of them use rationalist knowledge to plan and execute their clandestine activities. If rationalism is so important for planning criminal endeavours, then its rationalist school benefits to plan and manage legitimate social organisations cannot be overemphasised. So, De Geus (1988) might be right to have engineered Shell organisational learning and planning with overly management decisions, involving managers' with high thinking skills in 1980s.

The rationalist school is a body of literature that relies on rationally designed organisational learning and knowledge systems including supporting technology (Simon, 1996; Patel, 2006; Gherardi, 2009; Marshall, 2009; Stone; 2009). The rational design school is the traditional functionalist orientation of seeing things from cause-effect relationships, a top-management

controlled process involving knowledge utilisation and planning, and focusing on organisational-level learning (Fayol; 1949; Evans, 1992; Flyvbjerg, 2004; Marshall, 2009).

Rationalists argue that the processes of bringing change are rooted in rational thinking and controlled management. They stress the managers' initiative, discharged through goal setting, planning, performance evaluation, variance analysis and deviation corrections for organisational transformation (Fayol, 1949; Evans, 1992). Lewin's (1951) idea, for instance, is set around the forces striving to drive up or restrain the status quo of organisational change. This is the Force-Field Analysis, obligating staff to evaluate an organisation's effectiveness, change working attitudes and institutionalise new ideas for practice. So, learning activities need to be planned and controlled by management with expected results situated in planned change models (Lewin, 1951, Evans, 1992). These are deliberate and conscious plans designed to meet predicted forthcoming input changes (Evans, 1992:220).

The scientific stream of the rationalist school is the organisational development approach (Cummings and Worley, 2001). It advocates a corporate-wide application of behavioural science knowledge. Ideas flowing from organisational development are communication, team functioning, decision making and leadership. This approach focuses on attracting confident people, setting targets, appraising and rewarding performance. Human processes of organisational development are highly specified focusing on reinforcement of organisational set goals (Cummings and Worley, 2001: 2).

Strategic management researchers have welcomed the rationalists' appropriation of planning for crafting organisational value and promoting continuous improvement since strategic managers have responsibilities to protect stakeholders' investments (Whittington, 2003; Augier and Sarasvathy, 2004; Nickerson et al 2007). These perspectives are being re-engineered from the planned organisational change models in Lewin's forms to incorporate unintended

consequences of planned change (Jian, 2007). Jian (2007), observing from a case study in *Midwestern Life*, found that existing planned change organisational models are overly controlled by the senior management cognitions which are in tension with daily working experiences of workers. Jian's resolve is to consider intentional activities of managers and workers as reciprocal, and should be allowed to accommodate unintended results. This is to produce an expected organisational change with a two-way participation process between managers and workers, and address political actions for organisational change (Jian, 2007).

Early psychologists fostering the notion of justice and truth in organisational actions set the tone to challenge organisational learning processes designed to protect the interest of managers. Argyris and Schon (1974), in particular, defy defensive organisational routines crafted to detect and correct errors in organisational learning processes. Rejecting single-loop learning, a type of organisational learning characterised with defensiveness, self-protection and conflict-avoidance, Argyris and Schon advocate double-loop learning, an inquiry and dialogue-based approach to investigate the reasons for errors.

There are several weaknesses of this rationalist school. First, rational design is based on Aristotelian logic with its formal propositions to clarify dependent and independent variables, or to establish the truth or falsity of a proposition (Flyvbjerg, 2004; Hart, 2009). It does not account for informal learning and limits employees' capacity for independent thought (Stacey, 2000). Feldman's (1999) criticism relates to suppressing actors' choice and commitments to organisational knowledge. Approaches like these lack consultative ideas necessary for transformative growth. Taking inspiration from humanitarianism (McGregor, 1960), the researcher argues that change strategies should be sensitive to human processes and changing business environments.

Second, the embedded cognitivism in the rationalist school is criticised, both on its mentalist representations and positivist orientations towards change without displaying the dynamic character of cognition as something that evolves in social context (Marshall, 2009). It explains how people could use their schemas to plan strategically but provides insufficient considerations for organisational dynamics. This is what deferred action (Patel, 2007) addresses with its implications for planned action that assumes organisations as rationally designed systems but sensitive to emergence.

Third, the organisational development approach does not give adequate consideration to knowledge sharing. It is limited by its strict management from the top and has been criticised as a structured social control mechanism designed to eradicate potential conflicts in strategic plans (Stacey, 2000). Stacey, therefore, argues for learning and emergence processes as alternative to planned change models. The question, as reconstructed from March (1991) is: *'Can organisations do exceptionally well without leaving the confines of conservatism?'* The retort is indeed very complex. For emergence researchers, organisational learning should be viewed as an adaptive process (van Eijnatten and Putnik, 2004), or at least combining rigid cultures with loose structures (Huysman, 2000; Carlisle and McMillan, 2006).

2.2.2 The Emergence School

The second school, the emergence school, draws on the general complexity theory (Waldrop, 1992) and draws on the idea of *complex adaptive systems* (Maguire and McKelvey, 1999; van Eijnatten and Putnik, 2004; Carlisle and McMillan, 2006; Shaduri, 2008; Patel et al, 2009). It focuses on multiple interactions of a system's constituents and their spontaneous self-organisations (Fitzgerald and van Eijnatten, 2002; Stacey, 2003; van Eijnatten and Putnik, 2004) and on individual and team learning, a bottom-up intuitive process involving

knowledge search and emergence. The underpinning of complexity varies from random, probabilistic, deterministic and Newtonian complexity (Maguire and McKelvey, 1999).

A complex adaptive system is the multi-level hierarchical organisation with ability to develop subsystems into ranks to form a structure (Kelly and Allison, 1999; Carlisle and McMillan, 2006; Shaduri, 2011). An exemplar complex adaptive system in business is a nested system of teams, groups, clusters, departments, divisions and an organisation in a coherent structure, with each subsystem subordinated to the elements of higher levels of the system hierarchy (Kelly and Allison, 1999; Carlisle and McMillan, 2006). Shaduri (2008, 2011) explains complex adaptive system with the principles of holo-diffraction in biological objects, describing it as a set of permanently interacting mechanism of dynamic entities, unified and controlled through non-local holographic mechanism of communication. Holography is a three-dimensional imaging technique of varying density, intensity and shape which involves interaction (interference) between the body being imaged such as a human body and a non-local object such as a fingertip (Shaduri, 2005). Diffraction defines the various outcomes obtained from the laser encounter with the imaging body. There is, however, no defined explanation for the relationships between the interference and diffraction (Feynman, 1963) due to their unknown emergence characters.

Shaduri (2005; 2008) uses verified cases of holograms of anatomic structures of various shapes and patterns, emitted by human fingertips, to draw relationship between biological objects and complex adaptive system organisations. Shaduri found that biological holograms emitted by multiple minor parts of human body in controlled situations produced harmless imaging of several varying internal disorders. These are emergence features of complex adaptive systems because multiple and evolving patterns of holo-diffractions are obtained through living systems with mutual interdependence. The relationship between the biological

complex adaptive system functions and organisational complex adaptive system is the ability of the two systems to react to changing internal and external environmental factors as self-organising systems (Carlisle and McMillan, 2006; Shaduri, 2008). The organisational complex adaptive system is, however, distinct from other biological complex adaptive systems like holo-diffraction because the former represents a learning system of interdependent people.

Conceptual discussions exploring the boundaries between adaptive systems and organisational learning have recommended full participation and engagements of learning agents in learning activities without fear of reprisal (Firestone and McElroy, 2004). Firestone and McElroy (2004) propose an open enterprise idea, such as double-loop learning, where organisational actors interact and solve problems for sustainable innovation. Though skeptical to include political and decision-making powers in their open enterprise complex adaptive system, the authors stress the adaptive capability of actors to question new knowledge produced by organisations while having their own ideas tested and evaluated in sincerity. Notwithstanding this, their failure to clarify how the adaptive capability of an organisational complex adaptive system could resolve internal politics, something the mainstream double-loop learning authors (Argyris and Schon, 1978) seek to challenge, is an impetus for discussion. This is explored further in Section 3.3.1.

Some authors have observed connection between emergence and double-loop learning as two lateral inseparable features of complex adaptive systems that can be interrelated with bureaucratic structures and strategic decisions for radical innovations (Kim and Kaplan, 2006; Carlisle and McMillan, 2006). Kim and Kaplan (2006) understood from an ethnographic study in an Australian university that, complex adaptive systems could help designers and managers conceptualise the complex interactions and behaviours of information systems

design actors as a complex adaptive system. Support explanation from Carlisle and McMillan (2006) is that, complex adaptive systems have flexible capacity to carry out short term *exploitation* endeavours and capitalise on these for longer term *exploration* investments, as complex adaptive systems do not distinguish between short-term and long-term actions. These authors maintain that complex adaptive systems self-organise as opportunities emerge to enable actors to adapt to change and learn from experience.

By accepting the self-organising and adaptation features, we could arguably be inclined to the assumption that organisational politics and power struggles have no habitations in complex adaptive systems, because actors could take emergence as a leverage to learn, share collective experience and adapt continuously to internal and external environmental changes (Carlisle and McMillan, 2006). *But, do these lead us to believe that people adapt to their environment in real world situations?* For Stacey (2003), the interaction processes between members in organisations involves transfer of one's individual-collective identities, a situation where individual employees communicate with their organisations variously. These interactions have inseparable communicative patterns between individuals, groups and organisations involving aspects of power relations, which may threaten the learning experience (Stacey, 2003). Even, fear of trying something new or getting it wrong causes anxiety in learning processes, which is itself defensive, and can inevitably discourage organisational learning (Coutu, 2002), as a complex adaptive system.

In practice, the application of complex adaptive systems to learning is often limited by rigid institutional structures. A study applying complex adaptive system principles to reconcile learning in the UK National Health Services, highlights a disparate focus between clinical staff and corporate managers, as a hindrance to clinical learning and knowledge capturing (Matthews and Thomas, 2007). The consequence was the risk managers' inability to provide

feedback to clinicians on the overwhelming numbers of incident reports, they had received, to enable quality practice, as discussed in Section 1.1.2 previously.

Citing hierarchical lines of communication, rule-based culture and bureaucratic systems, as some of the concerns constraining learning, Matthews and Thomas (2007) recommended a balance between mechanistic and organic approaches to organisational learning. The authors conducted the study with interpretivism, and failed to address the significance of emergence as causal power to interrelate corporate managers' learning with clinicians' learning in actuality, as deferred model of reality researchers (Patel, 2007; Ramrattan, 2010) would have otherwise proposed for improved healthcare learning. So they failed to question the rule-based culture and bureaucratic systems with critical inquiry methods and methodology, as critical thinkers (Argyris and Schon, 1978; Patel, 2006; van Eijnatten, 2004) would have otherwise suggested for third-order change, or higher-level learning, critical thinking generated through multiple and complex interactions of actors.

The emergence view takes firmer hold when considering higher-level learning, third-order or triple-loop learning which aims to address power issues (Finnegan et al, 2003; van Eijnatten, 2004). Brodbeck (2002) embraces using creativity of higher-level of human consciousness to determine desired outcomes and opposes the application of functionalists' idea of creating order through cause-effect linear behaviour. Higher-order learning has a 'holonic characteristic', a feature of chaos-and-complexity approach demonstrating how people behave closely in a system, of which they are an inseparable part (van Eijnatten, 2004). Applying chaordic system thinking to learning organisation, van Eijnatten makes direct associations between higher-level learning, a sort of triple-loop learning that emerges from actors' critical thinking in complex adaptive systems, and generative learning, systemic structured thinking that creates capacity for competitiveness. van Eijnatten, 2004 emphasises that these types of

learning can produce transformative change. Regardless, triple-loop learning is difficult to attain and has attracted criticisms (Gash and Orlikowski, 1991; Chen et al, 2003).

Literature on generative learning presents willingness to challenge long-held assumptions as an opportunity for competitive advantage (Garavan, 1997; Senge, 2006). But, Garavan (1997) proposition's is that, generative learning and its deeper level of collective learning can only bring competitive advantage when kept open through continuous improvement. So, it is the sustainability of higher-level learning in bureaucratic and power-entrenched structures that is questionable (Chen et al, 2003). Research on bureaucratic boundaries for collective learning, involving chaordic thinking and interviews in two Finnish companies, for instance, concluded that individual employees' learning is not fully fed to collective learning due to power relations (Kira and Frieling, 2007). Conclusion drawn from these is that, designing organisational learning for sustainability/transformative growth is challenging in practice because existing models of design and evaluation have failed to theorise this as emergent actuality. In precise terms of Patel (2006), such models do not recognise systemic emergence is planned social actions.

Visser (2003) has drawn on Bateson's deutero-learning and double-bind learning to argue that, trito-learning (higher-level learning) could be achieved with a deep redefinition of human character. But, Visser (2003) citation of psychotherapy, religious conversions, marriage and courtship as some practical situations of attaining higher-level learning suggests that, triple-loop learning implications for third-order change in organisations is difficult. It is that of challenging patterns of thinking and questioning established organisational operating principles (Chen et al, 2003) and these are issues of power struggles and organisational politics. Nonetheless, understanding of emergence as causal power of rational design is a

prospect for designing organisational learning and knowledge systems for transformative growth (Patel, 2006).

The emergence school is not free from criticisms. The undefined character of complexity upon which emergence and complex adaptive systems are drawn, limits the successful application of these values to the strategic-conscious business world where planning is prioritised over emergence. As Smith and Graetz (2006) observed, applying complexity values to rational thinking is troublesome, with more illustrative prospects than practical application. The emergence school disregards future orientations and management control (Kelly and Allison, 1999; van Eijnatten and Putnik, 2004) because emergence as an unpredictable consequence of actors' complex interactions has no planned framework of thinking and cannot be regulated with conscious management actions.

For those who profess emergence, it is an uncertainty character of complexity relevant for managers' decisions (Brodbeck, 2002; Patel, 2006). It is a variable that should be seen as a natural consequence of organisational structures that is indispensable (van Eijnatten, 2004). But, how this spontaneous emergence coheres with strategic plans as collective intelligence or shared experience is problematic, with many intelligential ideas from the emergence school failing to address emergent actuality (Weetman, 2009).

Rosenhead (1998) argues that emergence ideas should only be accepted in context because emergence is an unpredictable outcome generated through simultaneous interactions between order and disorder. It is a bifocal approach describing how thinking about potential futures informs current choices (Rosenhead, 1998). The limitation of emergence does, therefore, not lie with its appreciation to inform management decisions but how it is settled in rigid organisational structures to confront established practices is what raises questions.

2.2.3 The Balanced-View School

The third school, the balanced-view of learning, merges the other two schools into a learning system for sustained change. It focuses on descriptive understanding of theorising organisational learning processes. This integration provides a standpoint for developing capabilities and capacities for organisational learning and continuing change. The literature ranges over conceptual (Smith and Graetz, 2006), theoretical (March, 1991; Rodan, 2005), and empirical standpoints (Huysman, 2000).

Conceptually, the balanced-view school relates to a dualism between the traditional, rational forms of managing and the new forms of adaptive acts that initiate innovative ideas. This is not different from organising form dualities, documented by Smith and Graetz (2006). Organising form dualities seeks to balance order and chaos, planning and creativity, to produce order-generating rules in organisational design and management interventions. This proposition does not itself predict emergence but anticipates opposing elements of rationality and adaptive responses of actors to produce performance surpassing a medium level of balance. Smith and Graetz's (2006) recognition of emergence as an underpinning assumption of organising form dualities does not instigate managers to plan in emergent actuality to allow unpredictable emergence to address regular modifications required in planned actions.

Explanation of order-generating rules as limits within which the outcomes of the order and chaos interactions occur to stimulate emergence does not consider the causal power of emergence as a character of complex adaptive systems that propagate continuous change. This explanation is evidence in Smith and Graetz's (2006) rejection of the hope of emergence in duality except when sufficient flexibility is present in systems requiring emergence causality. Patel (2006) would argue differently because he sees the significance of emergence as an unknowable character, a causal power of actuality, which shapes predictable

social actions. This is a tenet of deferred model of reality, in which planning and creativity are interrelated in situ to achieve the desired organisational objectives (Patel et al, 2009; Ramrattan, 2010).

Theoretical elaboration of the balanced-view school is the central theme of mutual learning (March, 1991), a trade-off process that exploits what an organisation knows as a routine practice with what individual organisational members explore as an experiment of ‘foolishness’. March (1991) argues from the premise that, understanding and balancing the choices between exploitation and exploration, two distinctive features in the social context, for organisational survival is complicated because their expected outcomes vary with time and distribution within, or even beyond, organisations. The distinction is that, exploitation is associated with the rationalist actions such as selection, refinement, execution and efficiency while exploration is more to do with the emergent learning processes including experimentation, risk-taking, innovation and flexibility (Rodan, 2005; Carlisle and McMillan, 2006).

The complication around balancing exploitation and exploration led to March’s (1991) proposition of the mutual learning model, a learning process that relates individual organisational members’ learning to the organisation itself, and in such a way that individuals become socialised to organisational beliefs. There is, however, a variety of constraints that affect individual workers’ ability to experiment new knowledge without discarding existing organisational procedures and knowledge. Staff working in bureaucratic organisations, for instance, do not usually receive the needed support for trying out ideas of improvement because such organisations are not usually susceptible to change (Burnes et al, 2003). So, maintaining a balance between exploration and exploitation is difficult in situations where

experimentation or risk-taking is constrained or steered in particular strategic directions (Rodan, 2005).

In a simulated-study revisiting March's mutual learning, Rodan (2005) reports that, constrained experimentation, which describes a defined organisational policy that restricts individuals' choices to try new ideas that could modify organisational practices, does not introduce a noticeable effect on learning. His contention is that, experimentation guided by managers or constrained by defensive routines, is by implication, as bad as 'no experimentation'. Rodan's (2005) reception for unconstrained experimentation, a situation where individual organisational members can introduce variations in organisational beliefs and practices for organisational learning benefits is, however, cautious about *excessive* unconstrained experimentation; it does not delineate a line of best fit. The recurring issue in this debate is that, a better understanding of interrelating exploitation, a rationalist character, with exploration, an emergent feature, is plausible because many conceptions have not shown this in actuality.

Empirical relevance to the balanced-view school in organisational learning used observations, interviews and document analysis to question the biases in the discipline from an Information System Design Department of the Netherlands Railways (Huysman, 2000). Huysman (2000) argues that literature on organisational learning is generally represented on one side of the four identified dimensions: an individual bias, an active agency bias, a purposeful learning bias and an improvement bias; neglecting other viewpoints. These biases widen the individual learning and organisational learning tensions, and increase the disagreement between workers' learning and managers' learning. This is, because the literature on organisational learning biases considers organisations as institutions controlled by managers who are empowered by agency to manage and supervise organisational activities, and

individual workers as subordinates who succumb to the institutional powers (Huysman, 2000; Burnes et al, 2003).

Findings from Huysman's (2000) study indicate that learning is not always a planned endeavour but there are also unplanned learning that bring innovation and change to organisations. But, her balanced-view suggestion for developing better organisational learning such as emphasising the importance of mutual learning to counter organisational learning biases was uncritical of power regimes. Huysman's (2000) qualitative methods were though silent about a methodological position, her acknowledgement of not unravelling the inefficiencies in the Netherlands Railways information system design or questioning the management failure to consider the emergent feedback from newcomers and customers for their system improvement is a reason to believe that the study was not situated in critical traditions.

The interesting expositions from the balanced-view school, therefore, have not explained how to account for power relations and emergent actuality. So, balanced view between rational design and emergence does not escape limitations. Strategists (Whittington, 2003), for example, confirm lack of practical insights into actual coordination between strategising and organising processes in organisations. Hence, to argue that the balanced-view school lacks 'actuality design', action-based processes necessary for continuous improvement in organisational systems (Patel, 2007) is not a misrepresentation. It is theoretically pleasing but actuality is lost when it comes to purposeful design, one which coheres rational thinking with natural design, to contextualise the elements of structure, emergence, space and time for organised action design (Patel, 2006: 19). Achieving the ultimate goal of learning organisations with the balanced-view school could suffer practicality setbacks such as

unaddressed organisational politics, and lack of tight interdependence between planning and emergence in organisational learning design.

Beyond the three streams of arguments, there is a wide range of different and insightful perspectives such as the Five Disciplines (Senge, 2006: 3), prescribing how organisations could continually learn, how to learn together to achieve the results they truly desire. But, designing organisational learning to achieve desired organisational outcomes is not simple. Senge's (2006: 305) position on how to design learning communities, networks of relationships involving people with common aims and shared understanding, such as learning organisations is inconclusive. Because the interrelation tensions between planned actions and natural processes, such as the unpredictable emergence, are not clarified in such design situations. Senge (2006) rather elaborated that, learning communities can be consciously designed and maintained or created with a natural process and that, the latter is likely to fail with manipulation attempts. This leaves a wide scope for designing learning organisations, with little practical relations between top-down rationalist and bottom-up emergent commitments to Senge's shared vision discipline, which seeks to bind people's aspirations together for change.

The tensions between top-down and bottom-up initiatives are taken to explain the rift between managers' learning and workers' learning in a review of empirical observations applying the Five Disciplines (Chang and Sun, 2007; Kira and Frieling, 2007; Mets and Torokoff, 2007). Chang and Sun (2007), for instance, found that vision should be spread out along the top-down management structures. This indication of managers' learning, however, differs from Senge's (2006: 198) assumption that, shared vision built from the top-down organisational planning processes should be exchanged for personal visions derived from the bottom-up structures.

Chang and Sun (2007) findings were explored with a close correspondence between Five Disciplines and total quality management, a construct that seeks to improve organisations continuously with total involvement of every process, aspect, level and activity in organisations. But, conducted with the Likert scale questionnaires and a K-means cluster analysis technique, quantitative methods, the study could not explore information relating to intuitions and human experience. Neither could it provide an opportunity to question the rationale behind spreading out organisational vision along the top-down management structures. Notwithstanding this, conclusions from Chang and Sun's (2007) study question the practicability of using the Five Disciplines to foster collective change in real business situations where a bureaucratic boundary exists between managers' learning and workers' learning. How to unravel this disparate learning remains a long-standing debate in the literature; with some commentators arguing in favour of learning processes which are more situated in emergent actuality (Patel et al, 2009; Dron and Anderson, 2009).

2.2.4 'Individual-Organisational Learning' vs. 'Team-Group Learning' Debate

The 'individual-organisational learning' relationship has existed with an agreed consensus amongst many researchers that unless individual learning, the transformation of one's knowledge and experience, is transferred into organisational learning, individual learning becomes irrelevant for organisations (March, 1991; Huysman, 2000; Chen et al, 2003; Rodan, 2005; Met and Torokoff, 2007). This argument, however, tends to relegate the relationship between *team learning and/or group learning*, as two important transmittal processes of organisational learning, enabling the transfer of individual learning into organisational memory because it does not treat learning as a complex adaptive system.

Team learning is validated in a small number of people committed to use their balanced skills and potentials to achieve mutually accountable goals (Katzenbach and Smith, 1993). This

type of learning is usually task-based. It is defined by a team, as a few individuals, who work collaboratively and continuously to solve agreed upon problems using differing abilities and experiences (Zeff and Higby, 2002; Jameson et al, 2006). The significance of team learning, as a consequence of instinctive individual actions, suggests that its omission from learning organisations could ignite reactive tensions to obstruct transformative growth. Hence, it is of the proactive collegiality of teams that bring true commitment and shared unknowable knowledge in a constant cycle of organisational learning (Jameson et al, 2006).

Senge's (2006) explanation of team learning, as one of his Five Disciplines of learning organisation, is to create an open platform of dialogue where organisational members shelve their personal defensiveness and develop cohesiveness for organisational improvement. Senge (2006) addresses an individual-level learning (mental models) and organisational learning (system thinking); but excludes the existence of group learning, which is defined by formal actions of a set of people, as one of the core discipline in the five learning organisation models. Those who propagate the Five Disciplines to investigate learning organisations tend to treat team- and group-learning interchangeably (Giesecke and McNeil, 2004), so the distinctive roles of these two transmittal processes in learning organisations are mixed.

Group learning activities, however, differ from team learning because they are usually determined and defined by prescribed procedures. Group learning assumes a rationalist strand to engage people with common identity in individual work production governed by formal lines of authority (Katzenbach and Smith, 1993; Dron and Anderson, 2009). Dron and Anderson (2009) posit that group could institute levels of controls to constrain participation. So, aspects of power characterised with organisational structures and entrusted in managers could exclude or include those who make individual choices to engage in organisational learning as group members (Stacey, 2003). The consequences of such boundaries are limited

organisational memory and linear transformation, which rarely accept individuals' implicit know-how, gestures and natural responses to migrate into an organisational knowledge base.

Those who attempt to address the team learning or group learning gaps in the individual-organisational learning spectrum cover either one or the other but not the two transmittal processes of organisational learning (Crossan et al, 1999; Stacey 2003; Real et al, 2006). Crossan et al's (1999) dynamic process of organisational learning, demonstrating how people act and think, only accounts for the relationships between individual learning, group learning and organisational learning. It uses feedforward and feedback processes of intuiting, interpreting, integrating, and institutionalising (4I model) to transfer knowledge of individuals through groups to organisations, and vice versa (Castaneda and Rios, 2007). Team-level learning is unfortunately omitted from these carriers of organisational learning. Such omission is still not accounted for in contributions extending the 4I model to include IT as an essential element of organisational learning, which rather situate the argument in the traditions of the three carrier levels (individual, groups and organisation) as recognised for organisational learning (Real et al, 2006).

A belief that an organisation is a complex adaptive system, a multi-level structure of a human system, consisting of individuals, teams, groups and even departments (Kelly and Alison, 1999; Carlisle and McMillan, 2006) draws on a complexity thread to nest individuals, teams and groups into an organisational domain. Such explanation for ranking multi-level elements of an organisation into a hierarchical order of a rational system would be valid but different interpretations could be drawn from the deferred action synthesis (Patel, 2006), in which rationalist actions such as group learning is joined up with emergence processes such as team learning in actuality. The researcher takes the theory of deferred action to explain the multi-level elements of an organisation as complex adaptive systems, in which agents' interactions

could assume a microcosm form of learning, such as teams exhibiting intuitions in emergence conditions, to innovate specified actions of groups in an organisational complex adaptive system.

Complexity perspectives on organisational learning claim intimate communicative patterns between individuals and their organisations (Stacey, 2003) but these allusions fail to treat power gaps in organisational learning design. Though Stacey (2003) recognises the innate power regimes in organisations, he underestimates the distinction between individual learning and organisational learning as something that is not an issue for transformation. He rather predicts individuals' identity transfer to organisations as threatening learning experience that inevitably discourages organisational learning processes, as discussed in Section 2.2.2 earlier. This is because, transforming one's experience into organisational learning could be inhibited by power struggles and political actions (Kira and Frieling, 2007; Hong and Fiona, 2009).

Organisational identity literature dismisses the cautionary criticisms about the 'individual-organisational' identity transfer, arguing that it is the group or organisational identity that underlines the strategic formation of organisation which in turn impacts on individual identity (Ashforth and Mael, 1989; Glynn, 2000; Kjærgaard, 2009). Organisational identity explains how collective representation and shared understanding of organisational members, as a group, endure and influence sense-making of individual members. While this conception might be true, Kjærgaard (2009) observed from a qualitative study involving participant observation, interviews and written materials that, enduring organisational identities could pose a challenge for organisational change; because emotions and feelings are not factored into organisational identities. These are emergent factors inherent in individual organisational members, or emerge from the proactive collegiality of teams (Jameson et al, 2006); but the

limitation is that, the instinctive and unpredictable emergent factors are not addressed in organisational identity literature (Kjærgaard, 2009).

Conclusion drawn from the individual-organisational learning debate or the ‘individual-organisational’ identity transfer is that, they exclude the either team- or group-levels learning, or even both, as important carriers in the organisational learning domain. Where they are accounted for, the issue of power relations and emergence actuality design are taken far too lightly. The concern is the limited knowledge sharing between managers who design organisational learning procedures and other employees (workers) who use such edifices to create new knowledge (Kira and Frieling, 2007; Mets and Torokoff, 2007; Chang and Sun, 2007). Arguably, managers use the organisational learning or, at least, the group learning perspective to formulate strategic objectives while workers apply the individual learning or, at least, the team learning conception to cohere their intrinsic actions with management plans. It is of this understanding that the researcher brings together the literature on the individual-organisational learning debate and the team-group learning discourse to the level of the deferred design synthesis. Hence, the individual- and team-levels learning are categorised under the emergence school while group- and organisational-levels gravitate towards the rationalist school.

The story is far from concluded. There are two important elements of organisational learning which fall in line with the preceding discourse. First, the relationship between knowledge management and organisational learning (Argyris and Schon, 1978; Argyris 1996, Senge, 2006) renews the rationalist, emergence and balanced-view debate. Second, the uptake of ICT to support learning and knowledge creation (Patel, 2006; Dron, 2007b; Dron and Anderson, 2009) brings back the debate on the managers’ learning and workers’ learning divide. These gaps tend to prevent learning organisations from achieving the desired

transformation (Chen et al, 2003; Blackman and Henderson, 2005). These issues are explored in the subsequent sections.

2.3 Knowledge Management and Organisational Learning

Knowledge is potentially valuable to organisations, with a greater proportion residing in minds of individual workers or a group of employees (Brooks, 2000; Turban et al, 2006) or unarticulated (McAdams et al, 2007; Miller, 2008). As an intellectual asset, knowledge is worth preserving. Yet, there are, and could be several problems, with knowledge preservation. Loss of knowledge is not only difficult to replace but it takes longer to develop experience that would increase organisational knowledge (March, 1991; Macintosh, 1999). Identifying existing knowledge from outside an organisation is extremely difficult, let alone the costs of outsourcing it (Macintosh, 1999).

Accumulating or harnessing knowledge within organisations is also a challenge. Turban et al (2006: 373-374) argue that knowledge sharing in organisations is difficult because tight working schedules and lack of reward preclude individuals from doing so. Brooks (2000) finds team members withholding information either temporarily or permanently from their colleagues when there are no consequences for obstructing such information. Early retirements and rising mobility of workforce compound the problem and increase the loss of organisational knowledge. Even worse, death could cause knowledge residing in minds of individuals irretrievable because, as Eberl (2005) contends, death ceases the whole-brain functioning, referring to a situation where vegetative, sensitive and rational capacities of individuals stop and become irreversible. So, how could these problems be solved?

Knowledge management and organisational learning emerged as innovative approaches to solving organisational knowledge problems, especially in complex and fast changing business

environments (Burnes et al, 2003). Eminently, the acquisition and sharing of knowledge are enacted in organisational learning literature, particularly in the area of double-loop learning, and both are conceptually recommended to study together (March, 1991; Firestone and McElroy, 2004; Bennet and Tomblin, 2006). Understanding of knowledge management (KM) and its relationship with organisational learning (OL) is necessary because they are two unified processes which the researcher seeks to design and evaluate in the context of a healthcare setting. Creation and exploitation of knowledge have, however, re-occurred as major concerns for knowledge management writers (Polanyi, 1966; Nonaka, 1991; Hildreth et al, 1999; McAdam et al, 2007).

Central to knowledge management is the debate on knowledge sources, primarily, categorised into tacit and explicit forms (Polanyi, 1966; Nonaka, 1991). Tacit knowledge exists in the form of mental models, beliefs, values, assumptions and other know-how of individuals which are not easily conveyed. Explicit knowledge, in contrast, resides in various forms of artefacts such as procedures, texts, reports, memos and books. Scholarship on knowledge management has continued to build on tacit-explicit taxonomical classification to expound on the *rationality-emergent* divide in the organisational learning debate. Typical nomenclatures include: Softer and harder (Wenger, 1998; Hildreth et al, 1999); informal and formal (Conklin, 1996); unstructured and structured (Hahn and Subramani, 2000) and symbiotic and semiotic (Sharif, 2008); to correspond to the tacit knowledge and explicit knowledge respectively.

The relationships between the tacit-explicit knowledge classifications resurrect with the complementarity views, expressed as inextricably intertwined (McAdam et al, 2007). McAdam et al (2007) maintain that, tacit knowledge can be converted into explicit knowledge, making the former separable and at the same time an embodiment of all

knowledge. Tacit knowledge can therefore be externalised and shared in a social domain. Interdependently, some authors have modelled the relationships between tacit knowledge and explicit knowledge as ‘soft-hard knowledge duality’ (Hildreth et al, 1999; Hildreth and Kimble, 2002) to show commonality in the polarised knowledge types to invoke the balanced-view school.

Hildreth and Kimble (2002) distinguish soft knowledge, which defines the tacitness, less quantifiable and, seldom captured and stored knowledge from hard knowledge, which describes articulated, more quantifiable and stored knowledge. They, however, maintain that such a distinction is only necessary to show that when knowledge is articulated, there is always a part that cannot be externalised, and that, soft and hard knowledge should co-exist for effective knowledge creation and management. They argue for duality of knowledge.

The duality of knowledge argument draws on the balanced-view school to explain the idea that, information contained in artefacts and provided for users consumption, as explicit, is rarely the same as information required for solving problems in an emergent context, as tacit; hence the need to combine the two when designing learning communities (Wenger, 1998; Hildreth et al, 1999; Hildreth and Kimble, 2002). The tacit knowledge, explicit knowledge and duality knowledge conceptions, therefore, concur with the rationalist, emergence and balanced-view schools of organisational learning, discussed in Sections 2.2.1-2.2.3.

2.3.1 KM and OL Links from Rationalist, Emergence & Balanced-View Schools

Rationalist explanation of knowledge draws heavily on cognitive view of information processing (Bloom, 1965) and also on technical processing of existing knowledge (Davenport and Prusak, 1997). Cognitive view of information processing explains how the mind is manipulated to accept knowledge defined with pre-existed rules, particularly, in relation to

codifying, storing and retrieving information (Simon, 1996; Marshall, 2009; Stone; 2009). Rationalist knowledge, therefore, assumes that people process information sequentially and logically with bounded rationality, which influences people to make choices based on known possible outcomes. This view is challenged with tacit knowledge assumptions because people do not only make choices based on reason but also use passion, experience and situational conditions to inform their decisions (Miller, 2008).

Technical processing of existing knowledge applies a mechanistic approach over human judgement to exploit knowledge for organisational activities (Miller, 2008). It defines how organisations make knowledge visible through ‘information ecology’, a knowledge infrastructure mechanically developed to support knowledge intensive culture (Davenport and Prusak, 1997). Technical processing of information, therefore, uses the rationalist school ideas to explain how explicit knowledge is related to organisational learning. This relationship is secured in Turban et al’s (2006:52) description of knowledge:

“data and/or information that have been organised and processed to convey understanding, experience, accumulated learning, and expertise as they apply to a current problem or activity”

The technical and information processing argument play down the exploitation of tacit knowledge because it only focuses on standard operational procedures. For some researchers, the informational relationship between knowledge management and organisational learning situates in the application of management strategies to knowledge exploration (Scarbrough and Swan, 1999; McCampbell et al, 1999). Knowledge strategy, knowledge leadership support and incentive systems are common themes of such strategies (Scarbrough and Swan, 1999; McCampbell et al, 1999). These are strategic models of managing knowledge because they focus more on managers’ learning and fixed reasoning to generate knowledge required for directing organisational change (De Geus, 1988; Rodan, 2005). These views migrate

towards single-loop learning postulates (Argyris, 1990). Patel (2006), however, argues that strategic models for managing organisational knowledge could be significant if they cater for actuality, such as allowing flexibility to extract and use knowledge embedded in individual minds in context.

Actionable knowledge, a double-loop learning process for transforming organisations is suggested as a better approach to developing and testing learning responses upon which organisations adapt (Argyris and Schon, 1978). It enables organisational members to take proper actions to challenge existing knowledge. Such knowledge is valid and serves to change constructively self-fuelling errors to achieve profitable actions (Argyris, 1998). Senge (2006) widened the context of actionable knowledge with system dynamics, a self-organising system seeing causes of a problem and the solutions to it as part of the same system. Self-organising is an element of emergence school because it allows actors' natural response to adapt to unexpected changes in organisational complex adaptive systems (Kim and Kaplan, 2006; Carlisle and McMillan, 2006; Patel and Ghoneim, 2011). Senge articulates such emergent behaviour when suggesting how to create and manage learning communities, as discussed in Section 2.2.3 previously. He states:

“... creation of learning communities is a natural process that does not need to be controlled or manipulated – indeed, attempts to control it can easily backfire” (Senge, 2006:309)

Others have approached the knowledge management and organisational learning link from a knowledge life cycle perspective, with the complexity theory underpinning. Firestone and McElroy (2004) and McElroy (2003) propose the knowledge life cycle, drawing together the natural processes of organisational learning, knowledge management and complex adaptive system to knowledge exploitation. Knowledge life cycle is a tool for evaluating knowledge claims. It is a process of determining the validity, merit and beliefs of knowledge content, to

establish whether causal statements about organisational knowledge, such as organisational policies, are in agreement with experience and observations (McElroy, 2003; Thompson and Cavaleri, 2010; Faber et al, 2010). Knowledge life cycle is, therefore, a representation of an open enterprise with a disseminated knowledge-processing platform, guiding how organisational members could learn and adapt to unambiguous problem-related knowledge (McElroy, 2003).

Knowledge life cycle is significant for its knowledge claims evaluation towards identifying and solving organisational problems yet, its aim to question knowledge validity fails to complement the model's skepticisms about considering the non-managerial staff inclusiveness in political and managerial decision making (Firestone and McElroy, 2004). This circumspection questions the knowledge life cycle embodied criticisms situated in critical rationalist traditions (Faber et al, 2010). Critical rationalists hold scientific view that, knowledge claims can, and should, be rationally criticised, and in the case of empirical content, it should be subjected to validation or refutation (Popper, 2002). Knowledge life cycle, therefore, fails to address political actions and power relations in an organisational complex adaptive system through which it intends to bring inclusiveness and openness across to evaluate knowledge claims without fear of reprisal.

A balanced-view school discussion showing the relationship between organisational learning and knowledge management is found in 'Communities of Practice' (CoPs), a situated learning view in a social realm (Lave and Wenger, 1991). It defines a negotiated process of participation and reification, in which members produce abstractions, tools, symbol, stories and terms, and make conceptions *real* (Wenger, 1998). In CoPs, learning is perceived as everyday life experience gained through group interactions and knowledge sharing pursued with common ideologies. Community members develop new knowledge and spread polarised

ideas, from the community existing members and newcomers, to improve professional practice (Hildreth et al, 1999). CoPs has gained prominence in organisational learning and knowledge management literature but it is a victim of its own broad and ambiguous explanation of what constitute community and how it develops knowledge (Roberts, 2006; Fuller, 2007; Macpherson and Clark, 2009).

Amin and Roberts (2006) discuss a number of limitations with CoPs in '*Communities of Practice? Varieties of Situated Learning*', an extensive review presented to the EU Network of Excellence Dynamics of Institutions and Markets in Europe (DIME). The discussion is long but includes the following paraphrases: Power centres restricting the CoPs ability to challenge orthodox practices; little scope existing between creative CoPs dialogues and organisational alignment; radical innovation strategies incompatible with CoPs; members not always committed to the community ideologies; and novice progression from legitimate peripheral participation (induction process) towards full participation as a representation of a 'master-apprentice' relationship.

Amin and Roberts (2006) acknowledge the conceptual understanding of CoPs as a form of knowledge generation endeavour but there is a misunderstanding about how to design learning and the act of 'knowing' as a situated activity to address conflicting elements in top-down and bottom-up structures that constitute a social organisation. Knowing as an inseparable part of social practice emerges in many forms. So, Patel and Ghoneim (2011) treat knowledge management as an emergently actual activity in which explicit knowledge is represented as rational planning that caters for tacit knowledge in actual situations. This form of knowledge is emergent knowledge, explained by the deferred model of reality (Patel, 2006), and defines how knowledge emerges suddenly and unexpectedly to adapt to changing organisational environment for transformation.

To innovate with knowledge management, credence is also obtained from the dynamic relationships between tacit and explicit knowledge interacted in human activities, and continuously coiled around socialisation, externalisation, combination and internalisation stages (Nonaka, 1991; Nonaka and Takeuchi, 1995). Tacit knowledge and individual experiences are socialised and transferred onto explicit forms with no pre-determined intentions of doing so; but arguably, it is of these implicit forms of knowledge that are required for innovation (Polanyi, 1966; McAdam et al, 2007; Miller, 2008). Combination is used to reorganise existing explicit knowledge into a more structured form while internalisation codifies explicit knowledge back into tacit form. Blackler (1995) acknowledges Nonaka's knowledge creation for extending knowledge and learning. He, however, accuses Nonaka's knowledge creation insistence on knowledge as something localised in individuals' minds, along with its conceptual distinction from material technologies upon which organisations is formed, for taking the knowledge management and organisational learning relationship argument to its frontiers.

The tacitness of knowledge and its exploitation is still relevant in knowledge management literature because knowledge residing in humans is required for organisational transformation (Jameson et al, 2006; Dotsika and Patrick, 2006; McAdams et al, 2007; Wright, 2008; Nyame-Asiamah, 2009; Patel and Ghoneim, 2011). To argue for tacit knowledge exploitation methods is not a misrepresentation because tacit knowledge is significant for designing organisational policies and processes in context. This is confirmed in Patel and Ghoneim's (2011) 'emergent knowledge' contribution to tacit-explicit knowledge classification types, as a third category of organisational knowledge, in a qualitative study conducted in a large UK telecommunication to understand emergence occurrences in virtual teamwork and how they are managed by virtual team leaders.

Patel and Ghoneim (2011) note that tacit knowledge embedded in an individual person and in groups is indicative of emergent knowledge, which is unpredictable but indispensable for designing virtual team workers. Their findings show evidence of stable (rationalist) and emergent characteristics of knowledge but confirm knowledge tacitness and social embeddedness assumptions as important factors of knowledge sharing. Clearly, the exposition of tacit knowledge being an emergent knowledge indicative exemplifies the significance of the emergence school of thought in knowledge management, and why tacit knowledge exploitation is crucial for organisational transformation.

2.3.2 Tacit Knowledge Exploitation Techniques

Storytelling is traditionally used to unveil the unseen tacit knowledge and generate meanings from sentences told messily from narratives to reminiscence (Denning, 2000). People gathered around fire camps swapping stories and extracting individual values and beliefs, in village learning communities. Storytelling is credited with: Connecting knowledge with emerging context; introducing masterly skills; providing meanings for association and structures; creating an environment for dialogue; explaining adaptive changes; revealing the creativity of an individual and reconstructing authenticity (Denning, 2000). Storytelling is, however, situated in ethnographic traditions to understand socially constructed interactions (White et al, 2009). This form of knowledge creation focuses on face-to-face interactions at the expense of what Amin and Roberts (2006) would argue as geographical importance of distance and time upon which organisational networks and processes are structured.

In contemporary practice where organisations are based on network structures, learning activities intended for tacit knowledge exploitation should be designed to address both face-to-face contact for storytelling and ICT-enabled ubiquitous learning, as jointly textured design to engage learners in ‘thinking system’ (Schultze and Orlikowski, 2004; Amin and Roberts,

2006; Kauppila et al, 2011). Contributions that have augmented this view have seen eLearning as an adaptive system connecting learner, tools and environment to allow innovative ideas to thrive (Dron, 2005; Christiansen and Nyvang, 2006). These propositions draw on a socio-technical system to explain co-evolution of actors and embedded technology to self-organise in complex adaptive systems (Kim and Kaplan, 2006; Jacucci et al, 2006; Macpherson and Clark, 2009; Patel and Ghoneim, 2011).

Socio-technical system describes how the psychological and social needs of organisation are interacted with the organisational structures and technological requirements in context (Kim and Kaplan, 2006). Kim and Kaplan (2006) have interpreted socio-technical system as the interdependence of social and technical systems of organisations which integrate rationalist approaches with emergence to engage actors in complex adaptive systems. Patel and Ghoneim (2011) derived the conceptions of socio-technical systems based on the theory of deferred action to understand tacit knowledge, embedded in an individual person and in groups, as indicative of emergent knowledge, as discussed earlier.

Underlying the socio-technical systems is technology for human interaction and it is the ICT enablement for managing individual- and group-learning that has drawn attention to an integrated learning network framework for enhancing knowledge management synergy in a socio-technical context (Bennet and Tomblin, 2006). The integrated learning network framework (Bennet and Tomblin, 2006) explains the ability of various forms of organisational artefacts and modern ICT such as such virtual software applications to support innate abilities of actors' information processing in organisations. Such framework assumes the inseparability of organisational learning, knowledge management and ICT for optimising organisational goals, but fails to address how the knowledge space could harmonise emergent views with power centres characterised with organisations.

Activity theory which explains human interactions as socially situated and complex endeavour, consisting of subject, object and mediating artefact, has been, a precursor to shaping learning processes in knowledge space, but from a leadership perspective (Vygotsky, 1978). Embedded actors in social structures are seen to perpetuate directional change, but not system components (Leont'ev, 1978). The conclusions that Engestrom (1991) takes from the complex-mediated model is that organisational activities are historically specific and culturally embedded. Actors (subjects) work in teams to achieve outcomes (objects) with imposed rules and tools, which could inhibit the former's natural propensity to contribute new knowledge.

Engestrom's (1991) cultural-historical activity theory, which defines the use of artefacts as mediating tools and concepts for social interactions, proposes continuous distribution of tasks and responsibilities in the 'community' to exemplify 'division of labour'. The difficulty with this is that, human actions situated in an activity system, though lot less rational than is normally recognised, are characterised with role and everyday life tensions (Blackler, 1995). These incoherencies, as Blackler argues, are inevitable in a complex activity system but treatable through its socially distributed platforms. The issue is not the denial of artefacts usage in the activity system; rather it is about who has the power legitimacy to control human actions and how this impacts on tacit knowledge exploitation.

The cultural-historical activity theory is deep-seated in the Vygotskian developmental trajectory which distances managers who manage organisational knowledge from workers who use the former local experience to create new knowledge. Vygotsky's (1978) influential 'zone of proximal development' underpinning the *artefact-mediated* activity theory or cultural-historical activity theory is therefore manager-centric. So, ideas emerging from this

can be designed to manipulate workers' creativity, as the traditional rationalist views could arguably have been used to control behaviour.

Organisational learning support systems (OLSS) classification showing how individual knowledge could be transferred into organisational memory at higher levels of learning (double-loop and triple-loop) is adopted to map learning tools against individual, group and organisational learning requirements (Chen et al, 2003). This categorisation orientates towards the individual-organisational learning debate but its significance lies with, at least, the utilisation of tacit knowledge to identify technologies that seek to transform and share individuals and organisational members' personal beliefs. The list is very extensive but includes executive cognitive support, learning laboratory and collective cognitive mapping system.

Executive Cognitive Support

Executive cognitive support system is designed for higher-level strategic learning to identify and externalise executive tacit knowledge into a more visible form (Chen et al, 2003). Often referred to as an executive support system (ESS), it addresses less structured decision making processes through sophisticated, but user-friendly tools, to produce graphics comparisons of business processes data (Laudon and Laudon, 2003: 45). Managers are able to identify problems quicker themselves with executive support systems than relying on subordinates for information but, workers' learning is not readily integrated with managers' learning. A collaborative weakness of bottom-up learning is characterised with ESS.

Learning Laboratory

Learning laboratory is a form of 'virtual world' tool for extracting tacit knowledge at the higher-levels of individual- and group-learning (Chen et al, 2003). It brings individuals'

assumptions and insights into action in a simulated problem solving environment. Such environment is consultative, neutral and non-threatening to allow participants develop deeper understanding of their beliefs and resolve inconsistencies in their mental models, and that of their organisations (Pourdehnad et al, 2002).

Application of learning laboratory is recounted with research conducted in United Parcel Service Inc (UPS), where Integrad Learning Laboratory comprising online learning, three-dimensional models, podcasts, videos, and traditional hands-on and classroom methods were used to exploit new drivers and trainees skills (Ketter, 2008). A focus group involving hundreds of UPS' staff, eight professors and 16 students from Virgin Tech were employed to design the Integrad Learning Laboratory, investigating how trainees could carry packages across a slippery surface without getting hurt. The post-implementation review of the technology concluded that United Parcel Service Inc. rated the safety performance of their drivers as exceeding their expectations. Learning laboratory is, however, limited for its simulation abstractions, an artificial illustration of a real world system, where people may not premeditate carefully over their actions, as they would have done in a real life situation.

Collective Cognitive Mapping System

An archetype system for synthesising and authenticating individuals' tacit knowledge for organisational use assumes a collective cognitive mapping system is inevitable (Lee and O'Keefe 1992; Chen et al, 2003). It adopts four functionalities of human cognitions to discuss how the individuals' internal pictures of realities are translated into actionable organisational memory. These are: An episodic memory representing a container of individual cognitive maps; organisational memory representing a reservoir of collective cognitive maps; a local cognitive map generator translating individual mental models into graphical representations; and a central collective cognitive map generator exploiting cognitive maps of all members and

using them for collective problem solving (Chen et al, 2003). These are prototype capabilities of socialisation and externalisation processes of knowledge creation (Nonaka, 1991).

Collective cognitive mapping systems use an inclusivity model to integrate soft knowledge with existing organisational knowledge but how they are applied in actuality to transform organisations is unexplained (Chen et al, 2003). The system's components assume the balanced-view school but let down by conceptual insights, unaccompanied by actual practicalities.

The story, as unfolded, does not reject ICT and knowledge management systems for knowledge creation. It is how to adjoin in actuality, the actions of those who manage knowledge with those who regularly create new ideas from daily practices, which seems worrying. Power and control entrenched in organisational structures prevent effective design of ICT but artefacts should cater for actual requirements of actors whose tacit knowledge are symptomatic of emergent knowledge (Patel and Ghoneim, 2011). Bansler et al (2000) confirm that managers structure the design and implementation of ICT to protect and reproduce the acceptability of their managerial authority to epitomise power centredness in organisational ICT design and use.

Amongst the learning and knowledge management systems writers, however, there is little doubt that networking and collaborative computing tools are more effective for innovations and emergent change because these tools can capture and codify knowledge reside in individual minds (Chen et al, 2003; Dotsika and Patrick, 2006; Dron and Anderson, 2009; Kauppila et al 2011). Explicit knowledge tools are necessary but their significance is not as important as technologies for unlocking hidden knowledge, the crucial intellectual asset needed for emergent transformation. The returning question is: *'Which learning and*

knowledge management technologies are more suitable for capturing tacit knowledge and how important are these in knowledge creation?

2.3.3 ICT and eLearning Applications to Organisational Learning

The importance of information and communication technology (ICT) for organisational transformation has long been anticipated (March, 1991; Gash and Orlikowski, 1991; Argyris, 1998; Orlikowski and Barley, 2001; Bennet and Tomblin, 2006; Senge, 2006). Research based on how the ideation of the three schools of thought on organisational learning could explain IT support for organisational learning processes has been carried out by Gash and Orlikowski (1991) in relation to the orders of change and learning loops classification. This utilises Zuboff's (1988) initial categorisation of IT into Automate, Informate and Transformate technologies, which are logically applied here to the rationalist, the emergence, and the balanced-view schools.

Automate technologies are transaction processing systems, generally considered for single-loop learning and mapped onto first-order change, aiming to detect and correct mistakes (Gash and Orlikowski, 1991). Informate technologies are management information systems, recommended for double-loop learning and intended to effect second-order change, a radical re-designing of existing organisational practices (Gash and Orlikowski, 1991). This differs from the original usage of informate to convey the unique capacity of technology to translate activities, events and objects (Zuboff, 1988: 10).

Applying informate tools to emergent situations would not only be a mismatch of how such technology could unlock mental models but would also be illogical with emergence responses of actors' collaboration in a learning space. Doing so would only bring reformative change to limit the transformative directions of organisations which emergence views subscribe. So, the

researcher argues for the use of ‘*collaborate*’ (collabrative) technologies, evolutionary learning tools whose usage is effective for collaborative learning to informate tools, for double-loop learning (Dron and Anderson, 2009; Kauppila et al, 2011).

Both automate and informate tools are limited for their rigid design, restricting active collaboration between instructors and learners who rely on steady feedforward and feedback mechanisms in a learning space. The design of these tools are fixed and specified to perpetuate management top-down plans which assume learners as passive content receivers and neglect their interactions as emergent process (Oubenaissa-Giardina, 2009) as discussed in Section 1.1.1 previously. One-way flow Internet pedagogy is an exemplar (Kaul, 2008). Such tools gravitate towards a single-loop rigid approach to problem solving, echoing the general claim that eLearning 1.0 (traditional eLearning systems) have failed to provide emergent learning outcomes (Dron, 2007b; Kaul, 2008). Kaul (2008) argues that eLearning 1.0 does not provide effective feedback functionality for learners and that, it lacks self-organisation capabilities, fails to support motivation in group dynamics, and not adequate for training of soft skills.

Automate and informate technologies, therefore, gear towards the rationalist school, depicting what Patel (2006) refers to as static models, which constrain actors from responding to emergent reality. Their accompanied learning processes are technology-driven, assuming the cognitive view of information processing without considering actors’ interactivity as an emergent process on learning platforms (Oubenaissa-Giardina, 2009). It brings ICT adoption mismatch between those who strategically plan for technology-supported learning and those who apply their intuitions to technology usage. Hong and Fiona (2009) confirmed a failed IT outsourcing project in a tertiary institution where significant social tensions existed between the in-house technicians, endowed with the daily intricacies of organisational practices, and

outsourcing professionals considered capable of addressing IT challenges. The impact of these identity conflicts was a damaged organisational learning and a loss of tacit knowledge (Hong and Fiona, 2009). These setbacks question the integrity of exclusive rational IT design, design based on static models, for organisational learning.

Collaborate and transformate technologies, developed with adequate recognition of users' requirements, are certainly better for actors' engagements. Collaborate technologies therefore correspond to second-order changes while transformate suits third-order changes (Gash and Orlikowski, 1991). Both are concomitant to higher-level learning (double-loop and triple-loop), interaction processes aimed at replacing existing practices or challenging the rationale behind their existence. Collaborative capabilities and interoperability platforms of knowledge portals are valuable second generation web functionalities which emergent organisations, organisations which structures and processes demonstrate emergent property, seek for organisational learning and communication processes.

Enterprise and personal knowledge portals (Campos, 2008) are exemplar collaborative work capabilities that provide information gateways to organisational memory, supporting technology-enhanced organisational learning. Campos' (2008) description of enterprise knowledge portals includes intranets, web-browser interfaces, structured and unstructured content management, and a wide range of integrated enterprise applications and data. Intranets, for example, enable new knowledge to be introduced into previously knowledge claims on enterprise knowledge portals while removing geographical barriers in work place learning (Bansler et al, 2000; Campos, 2008; Kauppila et al, 2011).

Empirical research has revealed the advantages of intranet deployment for transforming business knowledge sharing and socialisation processes from communities of practice to network of practice, a form of communities of practice or organisational structures that

transcend geographical distance to engage other business associates such as customers and suppliers (Vaast, 2004). Vaast (2004) used interviews, focus groups, informal discussions and internal document analysis to conclude that intranet had brought growing interdependencies between and among local business actors and their network associates in her observations from two case studies. Recent contribution using interviews, observations and a survey-based social network analysis to appropriate the capabilities of intranet for virtual team learning in multinational corporations has corroborated the geographically dispersed and knowledge sharing importance of intranet (Kauppila et al, 2011).

The other side of intranet application to the knowledge management debate, as contended by Bansler et al (2000), is that, many research exploring the role of intranet in tacit knowledge exploitation and organisational learning have avoided how to design intranet effectively for organisational use. Bansler et al (2000) studied two contrasting companies which adopted intranet from the top-down planned change and bottom-up emergent change design models respectively to argue that there is no dominant design strategy for intranet implementation. They identified power structures as a challenge facing intranet implementation in the two case companies and recommended a balance between centralisation and decentralisation of power as a way to distribute authority among organisational actors in intranet adoption.

To balance the two contrasting models of planning and emergence has existed, as seen so far in the rationalist and emergence schools, but it is tight interrelation between planning and emergence in reality design that has been misinterpreted. The consequences of the misunderstood models of intranet implementation are information overload and staff time wasting. Knowledge workers get bogged down with 'info-glut', a huge amount of information, with some lacking relevance (Turban et al, 2006). Turban et al (2006:125-156) also make a point that, employees browse on worldwide web-connected intranets for their

own interests in working hours, compelling some organisations to instal software for monitoring employees' time spent on the Internet.

Notwithstanding the limitations of intranet as an organisational platform for knowledge sharing, the digital economy has enabled possibilities to integrate personal information portals, individual-owned web-based technologies, containing knowledge confined to such individuals, with enterprise knowledge portals (Dotsika and Patrick, 2006; Mazmanian et al, 2006). This has received acceptance for transferring tacit knowledge into explicit knowledge among professional bodies and educational institutions (Harris, 2008). The Royal College of Nursing and the Institute of Learning are just a few organisations using integrated personal information portals, such as ePortfolios platforms, to record and share the best practice of their members.

Harris (2008) elicited the views of 200 business managers through personal and focus group interviews, and mail-based questionnaires to find that a web-based portal is potentially an ideal technology for exploiting soft knowledge in the context of continuing professional development delivery. Thus, Harris (2008) confirms the effectiveness of using smart phones, such as Blackberries, to convert Personal Digital Assistant (PDA) platforms into a Collaborative Learning Environment for knowledge sharing. Arani (2008) reported similar findings with the effective use of mobile-based interactive learning tools, such as SMS and PDA, with a study conducted through a literature review and a survey of forty English for Medical Purpose students. Perhaps, worrying is, the high cost of using SMS as a learning tool could make it unaffordable for some to consider its use (Arani, 2008).

Emerging research on organisational learning and knowledge management continues to advocate the use of robust learning technologies, like social network software or groupware, which have rich and innovative features to support business transformation (Chen et al, 2003;

Dotsika and Patrick, 2006; Kauppila et al, 2011). These include emails and eDiscussion boards, with engaging communication functionalities to help employees learn business processes and share them among their colleagues to improve corporate creativity (Mazmanian et al, 2006; Harris, 2008; Dron and Anderson, 2009).

Authenticity of email as a '*collaborate*' learning tool is reported in knowledge and management fields research (Brooks, 2000; Vaast, 2004; Bennet and Tomblin, 2006). A web-based Delphi survey investigation, explored through Nonaka's knowledge creation, gathered data on ten popular knowledge management technologies from 150 knowledge leaders to identify email as a topmost socialisation tool for extracting and sharing unstructured knowledge (Dfouni and Croteau, 2004). The findings show that, email was, overall, ranked third effective knowledge initiative tool and attracted far higher rating for better communication than the eighth-ranked electronic discussion boards, though both were classified as tacit knowledge technologies (Dfouni and Croteau, 2004). Pursued from quantitative traditions, Dfouni and Croteau (2004) could only describe the associations between the various forms of knowledge-based technologies in a ranked order but not their significance for explaining actors' contextual experience or emergent behaviour because that is the work of qualitative researchers who pursue in-depth studies of socially situated phenomena.

The categorisation of email and eDiscussion boards as soft knowledge technologies, however, suggests the ability of virtual application tools to rediscover the participation and reification duality map in CoPs, as Wenger (1988) subscribes. Such learning technology compares well with the primal narratives of storytelling but, as virtual tools for creating knowledge, the boundary between geography and sociological understanding of beliefs and practices are irrelevant (Amin and Roberts, 2006). Dron and Anderson (2009) assert that, real time and

Web2.0 tools are far better than eLearning 1.0 to synchronise learners' presence on learning platforms and support continuous learning processes, especially among groups.

The new generation web learning tools bring with them the benefits of fostering social identity among group members, and promoting equal opportunity and openness in virtual learning environments to reduce status inequality and prejudices in face-to-face interactions (Amichai-Hamburger and McKenna, 2006; Dron and Anderson, 2009). Contact Theory (Allport, 1954), the underlying face-to-face learning hypothesis assumes inter-group preconceptions against minority in face-to-face interactions and that, reduction of such prejudices are pre-requisites for achieving effective learning. Amichai-Hamburger and McKenna (2006) contend that Internet and its new generation learning tools, such as text-based exchange facilities, have capabilities to resolve issues around status inequalities and prejudices in a learning space; because they are transformate and emergent-based and can avoid physical face-to-face interactions.

Arguably, the new generation web learning tools take intrinsic learning behaviour as embedded human actions of minority actors to cohere with planned learning and conscious actions of management, as an emergent organisational learning process (Patel, 2006). Chen et al (2003) cite learning laboratory, collective cognitive mapping system and groupware as technologies with functionalities to modify and share individuals and organisational members' personal convictions.

Transformate technologies enable actors to reflect on technology design and simultaneously reconcile task execution with observed built-in assumptions and use (Gash and Orlikowski, 1991). Learning technology that assumes this line of argument converges in the domains of social networks, allowing users to adapt and intuitions developed through a continuous usage (Dotsika and Patrick, 2006). This typifies an alternative design conception with user-

orientations, drawing on the rigour of rigid design and flexible design approaches in the balanced-view models (Laudon and Laudon, 2003).

Regardless of the collective capabilities of collaborate and transformate technologies, they suffer some limitations. The inherent creativity of social network tools, for example, could create opportunity for abuse. Individuals who make first contributions on the social network sites can disproportionately shape the behaviours of the followers, offering room for a mischievous individual or group to bend the rules of the system in their favour (Dron, 2007b). So, learning to bring transformative growth should not just be technology-driven but rather designed with deferred constructs where wisdom of intuitions support planned learning constructively (Patel, 2006). ELearning tools should therefore be designed in actuality to allow technical professionals' inscriptions to account for local users' emergent learning needs.

Generally, weaknesses in design approaches have caused failures in computer-assisted learning systems (Heeks, 2006; Jameson et al, 2006). Tacit knowledge technologies are designed with the path-dependence assumption, thinking that users would continue to patronise the systems, and perhaps use them correctly, once developed, even if they were not involved in the design process (Dotsika and Patrick, 2006). Assumptions like these are flawed, fail to address changing user cognition and have led to many knowledge management systems failure (Dotsika and Patrick, 2006; Hong and Fiona, 2009). Such is the imbalanced benefits of the poorly-designed Internet-based learning tools, often designed to benefit managers and controllers to the exclusion of learners (Dron (2007a). In these design situations, efforts to extract tacit knowledge become fruitless. Chen et al (2003) consolidate these as:

“The current generation of organisational information systems is not expressly designed to support high-level organisational learning, even though such learning is more important than ever in today’s turbulent business environments”

Other reasons for knowledge management systems failure are: Poor communication; the refusal of best employees to publish their good ideas on knowledge management platforms; lack of staff's interests in knowledge management systems when the technology become fully implemented; lack of correct use of the systems; and lack of incentives for knowledge system users (Barth, 2000; Turban et al, 2006). All these examples support the view that the desperate schools have yet to provide a full understanding of the learning gaps between those who direct organisations and those who realise the strategic plans, which inhibit attempts to achieve transformative change in organisations (Huysman, 2000; Sharma, 2005; Matthews and Thomas, 2007; Marshall, 2009). Design mismatch is the main culprit of the widened gap between the planned technology-supported learning outcomes and the actual learning outcomes that emerge from unpredictable environments and actors' emergent actions (Chen et al, 2003; Patel, 2006).

2.4 Knowledge Management Systems Design and Evaluation

Design is generally based on misunderstood principles, with both theories of knowledge management systems and information systems (IS) lacking direct relevance for design (Patel, 2006). The literature informing knowledge management systems including IS and IT advocate varied and independent design strategies that suit the information needs of specific organisations. The popular argument hinges on the assumption that each design approach has its own shortcomings, so there should be no hard and fast rule for systems analysis and design (Earl, 1989; Beynon-Davies, 1998; Bansler et al, 2000). Yet, many knowledge management and information systems fail because of the fundamental issue of design leading to multimillion-dollar losses (Parth and Gumz, 2003).

Design inadequacy is indeed a major problem. Organisations struggle to develop knowledge management systems (KMS), questioning the effectiveness of existing design and evaluation

approaches for KMS and IT/IS which learning tools are textured (Muthusamy et al, 2005; Heeks, 2006; Benbya and McKelvey, 2006). Such approaches are categorised into strategic/formal IS/IT-led design, complexity-based KMS design and alternative IS methods (Nyame-Asiamah and Patel, 2010) for two reasons.

First, the categorisation of KMS design and evaluation to include threads from IS/IT lies with the view that the definition of KMS is not only wide but difficult to specify, with both IS and IT closely defined in the domain of KMS (Ward and Griffiths, 1996; Laudon and Laudon, 2003). Second, the categorisation follows a logical complement of the three organisational learning school typology: The rationalist school, the emergence school and the balanced-view school.

2.4.1 Formal IS Methodologies

Formal IS design approaches take traditional rationality suppositions to cascade design specifications from the management perspective, gluing to the views of the rationalist school. Goodland (1995) notes the Structured Systems Analysis and Design Methodology (SSADM) as a leading example of a formal IS design methodology. The SSADM was developed by Learmonth & Burchett Management Systems, the United Kingdom government consulting company, in conjunction with Central Computer Telecommunications Agency, and launched in 1981 (Weaver, 1993:5).

The SSADM is a clear-cut, rigorous and comprehensive methodology of series of chronological IS development phases, hence not suitable for emergent organisations where design decisions evolve with changing users' requirements. Formal IS methodologies should be interpreted as rational design which requires actors' flexibility to modify design rigidities in context (Patel and Irani, 1999; Patel et al, 2009). Patel's (2007) conclusions from too

formalised design systems are that, they would be susceptible to failure unless such approaches were situated in emergence actuality. The long acclaimed existence of the SSADM-based IS design is therefore criticised for its authoritarianism and specificity (Benbya and McKelvey, 2006). It fails to account for users changing behaviour.

The SSADM-based IS designs are not sufficient to capture the unstructured components of knowledge management systems which are emergent and socially embedded in humans (Patel, 2006; Patel and Ghoneim, 2011). Users who might not fully understand the techniques of the system stages are pressed to sign off each deliverable phase which has 'no roll back' to the previous phase. So, in a tight time frame, where users are unsure of systems requirements within the formal methodologies, the end products are likely to be fatal.

A comparable formal approach, information engineering, embracing strategic planning phases through to the development stages has been prominent (Finkelstein, 1992). Though data centred, information engineering is a process-sensitive design technique, enabling an organisation-wide scope application rather than focusing on an ad-hoc, project-by-project approach, as envisaged in the SSADM. Information engineering, though requires user involvement, suffers from being too reliant on professional designers who lack sufficient knowledge of users' changing mental models (Beynon-Davies, 1999). Implementation problems associated with information engineering might therefore become apparent at the late stages of the system development life cycle (Avison and Fitzgerald, 1995).

System development life cycle defines a sequence of specified processes or activities which guide information system development; so it uses the rationalist school planning and control conceptions to design and implement information systems. Benbya and McKelvey (2006) describes system development life cycle as an organisational information system design model with three major limitations: (i) intends to support well-defined technical goals; (ii)

assumes actors as independent, rational problem solvers; and (iii) defines objective goals and solution requirements at the early stages of design process. These assumptions are derived from static models and would struggle, when applied exclusively, to address emergent knowledge in knowledge management systems design (Patel, 2006).

Formal methodologies for IS design are therefore prescriptive and typical of system development life cycle. They are just formulations of 'best practice' devised to design requirements elicitation process, in a way to reduce the misunderstanding of the system development life cycle (Laudon and Laudon, 2003). Formal knowledge systems designs are contained in the rationalist school, lacking consistency with emergent behaviour of an emergent organisation and its agents (Patel and Ghoneim, 2011). Patel (2006), therefore, theorises the significance of formal systems design as rational acts that need to accommodate emergence tightly as a deferred model of reality, a design situation in which structures are purposively imposed on reality but flexibility allowed for actors to shape the design to reflect emergence.

2.4.2 Strategic IS/IT-Led KMS Design

Strategic KMS design may complement more formal IS approaches to the rationalist school as the opportunity many IS/IT writers explore. It gears towards key organisational success determinants with future directions. Its extensive acceptance is explained with the growing competitive business environment requiring strategically designed knowledge management systems to reengineer business survival (Muthusamy et al, 2005). Strategic IS/IT models assume knowledge sharing processes are undeniably tied-up with human and technological network capabilities to enable collective expertise to achieve competitive advantage (Turban et al, 2005). This assumption has influenced a plethora of generic IS/IT strategy formulations (Rackoff et al, 1985; Earl, 1989; Ward and Griffiths, 1996; Ward and Peppard, 2002).

Strategic Option Generator, a competitive IS/IT model, matching strategic thrusts with strategic targets of firms, is an example strategic IS/IT thinking (Rackoff et al, 1985). The model identifies differentiation, cost, innovation, growth and alliance as five strategic opportunities. These strategic thrusts are mapped onto the three strategic targets: Suppliers, customers and competitors. Rackoff et al (1985) assert that properly identified targets could drive specific strategic thrust to promote competitive advantage or to minimise threat. Strategic Option Generator is limited for its target specifications and long termism. To be competitive is to be adaptable to changing business environment. But, dynamic task cultures, such as loosely-joined organic networks emphasising self-organising change (Burnes et al 2003) is compromised with strategic IS/IT designs.

Earl (1989) took the strategic IS/IT design forward with a three-pronged IS/IT strategy for organisational knowledge-based on the assumption that no single IS design strategy would work. Earl's IS/IT planning model consists of Top-down, Bottom-Up and Inside-out approaches, corresponding respectively to business goals, current systems and IT opportunities. The bottom-up and inside-out prongs focus on greater involvement of operational staff capabilities and frontier workers but, the top-down prong is based on formal actions. The top-down prong takes strategic level goals and information needs of managers as critical success factors for deciding IT investment. This was adopted to urge Chief Knowledge Officers to lead all knowledge management initiatives, as managers possessing 'technologists and environmentalists' design competencies (Earl and Scott, 1999). Such models have rationalist school management dominance which is exclusively inadequate to implement successful knowledge management systems in emergent organisations.

Earl and Scott's (1999) strategic IT deployment view was challenged with empirical research aimed to investigate the new challenges facing the Chief Knowledge Officers in the Lafarge

Group KMS (Parrin et al, 2004). Parrin et al (2004) concluded that the success of the knowledge management strategies would be achieved if formal Knowledge Managers' approach to design were removed.

Many other researchers have equally challenged strategic IS and KMS design for its inherent flaws. Hildreth et al (1999) attributed the failure of expert system in 1980s to the over-reliance on the harder knowledge requirements, at the expense of softer knowledge making it inadequate for tacit knowledge extraction. The failure of Executive Information Systems (EIS), systems designed to meet the unstructured decisions need of top-level management, for example, was accused of using strategic and formal design approaches (Xianzhong et al, 2002). Xianzhong et al submitted that EIS was too formal to combine with executives' instinctive and informal processing of information gathering in turbulent business environments.

Generally, knowledge management system is classified as a rule-based system, one whose design is specified, rigidly constructed and not organic (Pal and Palmer, 2000). Rule-based systems have planning and strategic formulation characters. Their applications to large-scale projects such as enterprise systems deployment usually fail to achieve success. An European branch of marine insurer company, for instance, failed to achieve the required value addition for their knowledge management systems because of the planned design inherited problems (Patel, 2005). Strategic planned systems are future-oriented, too formally specified and lack actuality requirements (Patel, 2007). They usually lack effective communication and commitments of operational level staff.

Many attempts to transform organisations through plan-based IT implementations fail and over 50% of Enterprise Resource Planning projects failed to achieve their objectives (Ioannou and Papadoyiannis, 2004). Collins (2008) also cited a SAP consulting-based IT

transformation system at Birmingham City Council, the Europe's largest local authority, which left 18000 unpaid invoices after its implementation, as another instance of plan-based IT implementation failure. These major setbacks question the integrity of applying rational design IT systems to organisational learning.

The question that arises is: *'Why would the strategic-based design have been allowed to perpetuate if it had had such known weaknesses?'* Perhaps, one major reason is that many IS designs were initially influenced by a structured and long-term methodology design (Goodland, 1995). For Patel (2006), planned and specified design approaches have some merits but these are limited in emergent conditions where frequently changing business processes require tailorable systems to adapt to such circumstances. Strategic IS/IT-led knowledge management system design is predetermined and characterises with the rational design which is relevant for solving problems that are well-defined. To address knowledge creation strategies in emergent organisations, knowledge management system design should invoke deferred systems design which considers plan actions as rational design but cater for unpredictable and situational changes (Patel, 2006).

2.4.3 Complexity-Based Design

Complexity theory has increasingly been recognised as a unified theme of design in many fields including economics, organisation science, biological science and IS/IT (Anderson et al, 1999; Stacey, 2000; Brodbeck, 2002; van Eijnatten and Putnik, 2004). Its ambiguous acceptance in IS design and contemporary management literature emerges with the growing increase in computer usage and dynamics of organisational structures which complexity seeks to focus (Jacucci et al, 2006). It is of this justification that has influenced Jacucci et al (2006) to campaign for a serious application of complexity to IS design and research. They made this

conclusion from their analysis of five ‘special issue’ publications that explored complexity and IT design and evolution as socio-technical systems from multi-faceted lines of inquiry.

For those who subscribe to the emergence, interconnectivity and adaptability features of complexity, an effective knowledge management systems approach should tightly couple top-down knowledge management structures with bottom-up socialisation capabilities (Benbya, 2005; Kim and Kaplan, 2006). Benbya and McKelvey (2006) conceptualised adaptive-based principles from biological and social science theories, as an effective top-down ‘official’ and bottom-up ‘emergent’ co-evolutionary adaptations of IS design and development. The capability of their model principles, varying with changing user requirements and organisational needs, is a representation of how complexity could address the adaptive centrality flaws with formal IS design.

Designing IS/IT and knowledge management systems to meet user requirements for organisational innovation is a fundamental condition of emergence, which sanctions a flexible new order, an unpredictable and evolving system design user feedback that empowers them to make design choices (Markus et al, 2002; Carlisle and McMillan, 2006). Such flexible new order encapsulates network structures to allow user participation in systems design and implementation, instantiates positive management responses to address changing user requirements, and contextualises training provisions to cater for system users’ skills gap (Bansler et al, 2000; Elliman and Eatock, 2005; Kawalek and Wastell, 2005). These are dynamic factors emerged from users’ beliefs, intuitions and their continuous interactions with the artefacts they use (Al-Natour and Benbasat, 2009; Patel and Hackney, 2010), or bubbled up from existing organisational structures (Kawalek, 2007), to enable users to specify and adapt to design requirements for transformation. So, the way users relate to IT and knowledge-based artefacts affects their requirements and evaluative criteria for IT adoption

and usage (Al-Natour and Benbasat, 2009). This supports the view that organisational IT/IS design is complex and misunderstood (Patel and Hackney, 2010; Patel and Ghoneim, 2011).

Benbya and McKelvey's (2006) argument is that the complexity of IS design projects does not only relate to the complex technological issues but also the organisational aspects which are unpredictable and beyond a project team's control. Reducing these complexities have been a struggle for business and IT professionals leading to design failures; therefore, understanding the IS/IT design as co-evolution of socio-technical systems is what the authors conceptualise as alternative to traditional formal IS/IT design approaches. Benbya and McKelvey (2006) concluded that their co-evolutionary adaptations of IS design and development remains conceptual, hence, its application to address realities of power relations characterised with organisational structures is arguably not apparent. Practical insights of the model are therefore required to validate its applicability.

Empirical study exploring the merits of complexity theory in practice takes organisational procedure design approach to explain the view that, traditional functionalist orientations are rationality-based and not adequate for managing complex business processes and procedures (Brodbeck, 2002). Brodbeck (2002) identified reward and penalty, fairness and consistency as requirements for designing business procedures while communication and staff involvement, performance measures, and authority were seen as business process requirements. Brodbeck's conclusion is that, complexity theory has merit in procedural design, and its self-organising and self-motivating features could be leveraged for improved organisational performance. The study was conducted in a large diversified private multinational organisation using focus group discussions and interview questions administered through the company's intranet technology. Complexity, therefore, favours the

prevalence of agents' natural instincts in systems design and promotes adaptive features of system dynamics to harmonise with the emergence school argument.

Problems, however, emerge when attempts are made to implement complexity theory. As discussed in Section 2.2.2, the interesting insights of complexity are upheld but it is of its practical implementation that has been charged, leading those believing in the tenets to revert to faddism (Rosenhead, 1998; Maguire and McKelvey, 1999). Different approaches to 'pure complexity' have emerged, such as organising form duality theory, proposing order-generating rules to account for both planning and creativity in management systems design (Smith and Graetz, 2006). Smith and Graetz's (2006) acceptance of emergence as an underlying assumption of organising form dualities fails to instigate managers to plan in emergent actuality as explained previously in Section 2.2.3. The duality concept only assumes a dynamic interplay between the rationality and adaptive forms of responses but lacks clearer explanation of how these could be implemented because it rejects emergence as a causal power of actuality (Smith and Graetz, 2006).

The emerging debate throws more support for applying combined approaches of formal and flexible methods to knowledge management systems evaluation, with emergence, self-organising, co-evolution and adaptation taking the centre stage. More importantly, the debate points to empirical research using central features of complexity theory to solve real problems, either qualitatively or quantitatively (Maguire and McKelvey, 1999; Brodbeck, 2002). Exemplar qualitative research situated in complexity constructs are evidenced in many empirical studies (Brodbeck, 2002; Kim and Kaplan, 2006; Matthews and Thomas, 2007; Kira and Frieling, 2007). This study seeks to approach the complexity of socio-technical issues from qualitative traditions, adopting an emergence-embedding theory, the theory of deferred

action to develop a framework for evaluating healthcare evidence-based learning and knowledge management systems.

2.4.4 Alternative IS Methodologies

The application of alternative IS design and evaluation approaches has become popular in some information system publications (Howcroft and Carroll, 2000; Laudon and Laudon, 2003). These are user-oriented and include: Joint application development, rapid application development and the dynamic systems development methodology. Alternative IS design combines the rigour of structured techniques with flexible approach in IS development (Laudon and Laudon, 2003). This is a different way of saying that it echoes with the balanced-view school because it combines some dimensions of formal IS/strategic KMS design and complexity-based design models. Rapid application development, which involves designers building several small ‘throwaway’ working versions into a system, for users to test and discard such working versions, until the right software components are sanctioned, is a typical model that balances technical rationality design with user requirements (Howcroft and Carroll, 2000).

Alternative IS design, therefore, introduces prototypes, working versions of systems such as interactive screen layout applications into systems for users’ appraisal. It is characterised with advantages such as: Early identification of errors, modification of processes in line with end users changing needs, iteration of systems development, and user-experienced and -visible models (Laudon and Laudon, 2003). Active user involvement, co-ownership and total quality management techniques are, therefore, important central properties of alternative IS design. Yet, user-oriented methods are only suitable for small projects with short term benefits (Avison and Fitzgerald, 1995). As Howcroft and Carroll (2000) indicate, the constant state of prototyping would be designed for a particular group at a time but problems may arise when

defining a different set of users to evaluate the prototype for a large project on a long term basis. For Ramrattan (2010), alternative IS design such as rapid application development is unsuitable for a big organisation's Web development.

Applying alternative IS design to organisational learning and knowledge management systems development will be flawed because the scope of learning and knowledge systems is very wide with a range of IT system collections (Offsey, 1997; McCampbell et al, 1999; Laudon and Laudon, 2003; Muthusamy et al, 2005). Knowledge management system ranges from IT for supporting knowledge extraction, storage, transfer and distribution among workers to include enterprise knowledge portals which can be customable, open and distributed (Offsey, 1997; Campos, 2008). Designing and evaluating such complex IT systems require a better understanding of socio-technical systems design derived from the principles of the theory of deferred action (Patel and Ghoneim, 2011). The theory's implication for IT and knowledge management systems design is to acknowledge emergent knowledge as an unpredictable organisational knowledge that should be catered for in the formal and strategic-led KMS designs.

Technological changes in software supply introduce yet another potential problem with alternative IS systems deployment, involving meeting radical changes in user requirements which has time-constraint. Responding to these changes is theoretically as difficult as applying formal IS methodologies to IS/IT design and evaluation. Howcroft and Carroll (2000), however, argue that rapid application development methodology could apply incremental approach, which explains how to avoid delays between IS specification and delivery, and to accommodate changing requirements of software development. What Howcroft and Carroll (2000) fail to acknowledge is that, economically, iteration of systems

development could provide a reason to believe that projects developed with alternative IS design approaches could also be expensive.

The researcher, therefore, argues that, the debate is not just about shaping the radical modification of user requirements, but also empowering the users to shape the rigid IS/IT planning processes, which might otherwise jeopardise the success of systems implementation. This is the theory of deferred action argument, explaining how to bring better understanding of cohering creativity with planning in actuality (Patel, 2006). Patel's (2006) position is that, complex IT and knowledge management systems design should be amenable to systemic emergence to allow actors to modify the systems to achieve changing organisational objectives or 'organisational life'. Such design is applicable to knowledge management systems of larger organisations and explorable at a macro level (Ramrattan, 2010; Patel and Ghoneim, 2011).

2.5 ICT-Supported Learning Debate in Healthcare

There is increasing use of technology to support healthcare learning and working practices but differing priorities between healthcare managers and clinicians, including power relations (Plochg and Klazinga, 2005; Edmonstone, 2009), have led to ICT adoption and usage failures (Beynon-Davies, 1999; Heeks, 2006; Liddell et al, 2008), as discussed earlier in Section 1.1.3. Indeed, application of ICT to healthcare is beneficial, both for its (in)direct relevance for patients in relation to appointments management and its significance for clinicians as a mediating learning tool or a practising device (Liddell et al, 2008; Carroll et al, 2009). Touch-screen kiosk technology, an enabling interactive platform for providing medical information and explaining specialty treatments protocols has received credence for improving clinician-patient relationships (Boudioni, 2003). Informing treatment options with online clinical research findings has also become a modern practice for enhancing patient care experience.

Yet, many research endeavours have shown that investment in ICT to improve healthcare learning processes and quality care fails to achieve the desired outcomes (Beynon-Davies, 1999; Murphy et al, 2004; Heeks, 2006; Connell and Young, 2007; Liddell et al, 2008). The reasons for such failures are insurmountable. These are discussed in the following sections (2.5.1 – 2.5.2) to improve the understanding that, the design and evaluation of ICT-supported learning are misconstrued because the existing models of healthcare IT adoption are yet to reflect the actuality of clinicians and other healthcare actors' daily practices.

2.5.1 ICT Adoption and Evaluation for Healthcare Learning Processes

Recent critiques on health information systems suggest serious failures with adoption strategies and usage (Beynon-Davies, 1995; Heeks, 2006). 'Design-reality', 'design-actuality' and 'conception-reality' gaps have become common phrases for explaining IS/IT deployment mismatch between the designers' dominant specifications and the users' actual requirements (Heeks, 2006; Connell and Young, 2007; Guah, 2008). Heeks (2006) argues that, the design of healthcare IT systems have taken rationalist models to instantiate technical IT professional rationalities for planning and implementing information systems for clinicians but with little actual use of the systems. Such strategic-driven tendencies have brought subjective acceptance of technical staff's decisions in health IT systems uptake to supersede clinicians' fear for mechanising critical human practices in IT usage (Heeks, 2006; Connell and Young, 2007).

One of the most conspicuous examples of a potentially fatal health IT system is the failed London ambulance service computer-aided despatch (LASCAD) project. This project, as reported by Beynon-Davies (1999) was rolled out too aggressively with severe design weaknesses, including inadequate and incomplete user training, unstable software and untested backup systems. The knock on effect was an estimated financial loss of £1.1 - £1.5

million and 20-30 deaths on the fatal LASCAD day (Beynon-Davies, 1999). Rationalist inscriptions, as we have come to know, were given too much attention to the detriment of changing organisational dynamics which are unpredictable and emergent.

Technology application to learning in health setting is also minimal. The uptake of the NHSmail for healthcare staff communication and knowledge exchange is low with 12% active users (Liddell et al, 2008). This correlates with Nicholas et al's (2003) report on a low patronage of one-way video-conferencing information use in healthcare delivery as compared to traditional methods such as physical face-to-face learning. But, this is not simply about choosing between one-way pedagogy and a face-to-face learning approach in health setting because both have their design and evaluation limitations which could, arguably, minimise effective healthcare learning.

Of course, a simulated web-based community learning platform, Wessex Bay, for inter-professional learning is charged for lacking actors' interactivity feature and limited for its uni-dimensional delivery (Pulman et al, 2009). Yet, face-to-face interpersonal communication, an interactive approach underlying clinical practice is also not effectively captured in the healthcare IT systems design and evaluation (Connell and Young, 2007). Findings from Murphy et al (2004), obtained through a national survey of educational providers, and interviews, observations and document analysis conducted in three case studies of acute hospital trusts, suggest that methods of communicating the available continuing professional training programmes are not well co-ordinated to junior clinicians in some hospitals.

Conner and Finnemore's (2003) recommendation for a virtual collaborative TeamRoom, technology for improved team learning in the NHS, cautions the ability of users to cope with such collaborative IT system and accept it as a new way of working. This is an exemplar of a conception-reality gap (Connell and Young, 2007), which explains a disparity between an IT

application and daily work practices. Patel (2003) shares similar concerns about the NHS' reliance on Commercial Off-the-Shelf software for evidence based practice. His antidote for IT deployment 'lack of fit' uses deferred design decision models to tailor Commercial Off-the-Shelf software to user requirements, as a way of getting the technology right. Deferred design decisions allow systems' users to make design choices rather than relying on system developers who are not familiar with the local practices of users. This conclusion was made in a study conducted in Heatherwood and Wrexham Park Hospital Trusts (Patel, 2003).

Others have recommended creative web-based learning tools such as the application of ePortfolios to enhance healthcare learning and self-reflective practice (Kardos et al, 2009). EPortfolios are used to record, store and publish evidence of continuing professional competences to improve quality care but they are seen as healthcare regulatory requirements rather than self-reflection. Regulatory requirements, such as clinical governance, a framework defining how to build coherent quality improvement in the NHS, insists that healthcare professionals and managers improve performance through continuing professional development programmes and share good practice (Hurst, 2003).

It is, therefore, the evidence of continuing professional development learning activities, which include staff participation in a clinical or organisational audit, regular self-appraisals, reviewing relevant literature and pursuance of traditional educational courses that ought to be managed electronically and shared with colleagues (Kardos et al, 2009). The contention is, publicising healthcare staff's ePortfolios might cause confidentiality issues, exemplifying what Connell and Young (2007) note as a clinical-control tension, favouring managers who can bring clinicians' performance data into a local discussion. These are issues of power and control characterised in healthcare ICT and artefacts design to inhibit effective learning and transformation (Heeks, 2006; Davies et al, 2007). Hence, the design of ePortfolios, just like

many ICT-supported learning systems, has been overly influenced by top-down implementers' inscriptions and not democratised to privilege users' requirements for effective learning (Ayala, 2006).

Kardos et al's (2009) experience of developing ePortfolio architecture to support dental undergraduate students and academic practitioners' commitments to the Dental Council of New Zealand suggests that, user participants who populated content into the ePortfolio considered the sections relating to self-reflection to be a regulatory requirement. The implications of this is that, neither students nor the academic staff trialling that ePortfolio found the regulatory sections relevant for recoding reflections as a way of improving their practice though the deployment of the technology was accepted. Kardos et al (2009), however, anticipated that the co-designing of the ePortfolio with the users could bring constructive responses through continued evaluations and refinements for future improvement.

Health informatics problems have continued to occur because some structured information systems evaluation lack contextual adequacies to address the design-actuality gap, where managers' decisions dominate the changing organisational needs including clinicians' cognitive maps (Beynon-Davies, 1999; Heeks, 2006; Connell and Young, 2007). Different, and some subjective evaluation factors, including costs, technical requirements and organisational issues, are mostly based on planned and market-analysis methods (Connell and Young, 2007). Clinical governance evaluation tools, such as professional self-regulation and clinical supervision, also restrict clinical freedom and hamper local practice (Hurst, 2003; Davies et al, 2007). Because, such tools use baseline procedures to bring transformation akin to first-order change (Gash and Orlikowski, 1991). Gash and Orlikowski (1991) argue, for instance, that, first-order technological change applies relatively straightforward before-after

measures to evaluate productivity but cannot discern unintended triggers such assumptions behind why the change took place.

Wyatt and Wyatt (2003) distinguish between the before-after evaluation and randomised trial evaluation approaches to assess clinical ICT performance. Evaluation approaches that take baseline measurements to specify clinical ICT requirements and rigidly compare performance outcomes against the initial benchmarks assume the before-after evaluation orientations (either simple or even controlled) method (Wyatt and Wyatt, 2003). Wyatt and Wyatt (2003) cite an example that, before-after evaluation could be used to investigate the number of clinical laboratory tests ordered prior- and post-ICT system installation. But, they argue that, even if the number ordered after ICT installation is genuinely less than the number before, the improvement cannot be completely attributable to ICT deployment because other factors like increasing staff awareness and training could also contribute to such improvement.

Conclusion drawn from Wyatt and Wyatt's (2003) example is that, the before-after evaluation has design bias and its reliability could be misleading because plausible explanations for 'after' results are not accounted for. Before-after evaluation measures are therefore weak for their superficiality, aiming to achieve consciously planned results of strategists and disregarding local initiatives that are not deliberately specified as evaluation factors. Such approaches follow rationalist traditions and excludes emergence. It is only quantitative outcomes that are usually projected.

Randomised trial evaluation, on the other hand, addresses result biases with the before-after evaluations, taking a wider view of clinical ICT system evaluation to measure many individual clinical information systems to normalise individual variances (Wyatt and Wyatt, 2003). This way, it does not attribute improvements or defects of ICT to cause-effect relationships but, could arguably, consider design of clinical ICT processes as a product of the

emergence school. The creativity of randomised trial evaluation, however, fails to show how the design-reality incongruity between managers' evaluation decisions and clinicians' evaluation decisions could be addressed.

Design-reality ICT failure is not different, if not worse in Africa, where there is tension between ICT deployment, and acceptance of the technology to reform rigid organisational cultures (Berman and Tettey, 2001). Though there is not enough evidence to conclude the extent of ICT failure in Africa, Heeks (2002) notes disuse and rejection of touch-screen kiosks in South Africa, resistance and non-use among older workers in the Accounts and Personnel Computerisation Project of Ghana Volta River Authority and rich packages designed for Americans implemented poorly in an Ugandan community. His estimation is that, failure rates in developing countries should be any lower than those in Western countries where a total failure rate of 20-25 percent or partial failure of one-third to three-fifths are estimated (Heeks, 2002; 2006).

Heeks (2002) identified the domination of Western countries' design inscriptions within developing countries, which assume local user actuality incorrectly, as one of the major causes of design-reality gaps and technology adoption failures. For Heeks (2002), there should be improvisation of ICT design, implementation and management in the developing countries to address the specific contextual issues of local interests. This is to bring local actuality of end-users closer to design and implementation through their involvement in design decisions. Such involvement should narrow IT design perceptions between rationalist inscriptions, such as healthcare IT professionals, and clinicians' actuality (Connell and Young, 2007; Kardos et al, 2009).

Speculating promises of ICT for future health systems in developing countries offer a contradictory view to contributions urging healthcare planners and managers to accept

evidence-based planning and priority setting (Lucas, 2008). Lucas' contention originates from the belief that scarce resource endowments in the developing world could only beg for competing ICT funding from governments, private sectors and other agencies; so the comforting assumption underlying such evidence-based ICT deployment could be untenable. This belief might have some merits, but it challenges the scope for ICT radicalisation, a shift in technology adoption for improved working practice, in the developing world health systems, the very vision it seeks to support. Convictions like these lean towards rationality design tendencies, giving decision-makers more power to determine the directions of ICT usage to the exclusion of local users who appropriate the technology to enhance patient care delivery.

Search for a more robust evaluation approach to assess the effectiveness of healthcare staff learning processes including ICT continues, with the Ghanaian Ministry of Health (2009), for instance urging contributors to support care delivery in the country.

2.6 Conclusion

The exploration of the literature has revealed many efforts to transform organisations continuously through varied learning and knowledge management approaches but with failed outcomes, in many cases. The reason is that, the conceptions of organisational learning and knowledge management including supporting learning technologies have yet to match their implementation aims and growth strategies of organisations. Expositions from the literature delineate models of technology-supported organisational learning into 'rationalist' and 'emergent' which are exclusively inadequate to achieve transformative growth because they create power tensions between managers' learning and other employees' learning.

Rationalist school has assumed the use of reasoning only as source of knowledge to achieve predetermined outcomes. It is discharged through cognitivism, planning and planned actions to design and manage organisational processes and procedures but exclusively it fails to address inherent experience of organisational actors and emergence which are necessary for organisational growth. Others have appropriated and/or expressed rationalism through top-down strategic priorities, institutional learning, first-order change, single-loop learning, explicit knowledge, organisational- and group-level learning, and long-term exploitations but with acknowledgement that these models should consider socially embedded systems or emergence.

So, the researcher argues that, rationalist models are elements of positivist orientations whose formal propositions gear towards achieving cause-effect linear outcomes without addressing the sensitivity of human processes and changing organisational environments adequately. Rationalism is important for guiding goal setting, performance evaluation, financial planning, budgeting, variance analysis and deviation corrections but it is at odds with emergence school; and experience and shared meanings which avoid patterns of thinking and planned structures.

Researchers who commit to emergence school appropriate 'complexity-based' approaches and have observed the integrity of emergence and complex adaptive systems to address unplanned consequences intrinsic in rationalist conceptions. Emergence school recognises bottom-up initiatives, exploration and creativity, higher-order learning and self-organising, double-loop learning and second-order change, individual- and team-level learning, tacit knowledge and emergent knowledge. The difficulty, however, is that, the spontaneity of emergence school and its elusion of future orientations and management control are misunderstood, making it problematic to apply emergence to bureaucratic structures for transformative change (Weetman, 2009). So, the existing knowledge has rather appropriated the emergence school

with interpretive methodology, only focusing on explanation of meanings (Brodbeck, 2002; Kim and Kaplan, 2006; Matthews and Thomas, 2007). Critically, the researcher argues that, this is uncritical of power relations and orthodox practices.

To confront established practices and achieve emergent change, the researcher argues that the emergence school prospects should be explored from critical research perspective (discussed in detail in Sections 4.2.2, 4.3.2 and 4.6.2). Achieving this would require the understanding of what Patel (2006) posits as 'planning social actions for emergent actuality of organisational actors as a composite third order phenomenon'. This is where the deferred model of reality is invoked to explain how to plan organisational systems strategically but allow unpredictable emergence to address regular modifications, required for planned actions, to achieve desired objectives (Patel, 2006).

It is, therefore, the misconception of planning strategically in emergent situations that has left the '*rationality-emergent*' gap in organisational learning and knowledge management processes design. Others, though, have attempted to close the gap with balanced-view school; they fail to address emergent actuality or avoided managerial authority and distribution of power in planning innovative actions for organisational growth (Huysman, 2000; Rodan, 2005).

Balancing rationalist conceptions and emergence for effective organisational design is, therefore, not straightforward, unless theoretical concessions are made between the two theories (Marshall, 2009). So, the possibility of the balanced-view approaches fails because they are theoretically orientated and lack practical design to resolve power relations entrenched in organisational structures. These conceptual challenges and actuality design misconceptions have led many scholars to postpone the attainment of third-order change, which defines reflecting critically on contextual meanings to change existing perspectives for

transformative growth, or write off the possibility of achieving it (Bartunek and Moch, 1987; Gash and Orlikowski, 1991; Chen et al, 2003).

Exploration of literature applying ICT and eLearning technologies to organisational learning and knowledge management has followed the three school ideations to expose that, the conflicting priorities between managers/technical designers and other organisational workers/users cause unwanted variations and failures in technology-supported organisational learning (Dotsika and Patrick, 2006; Heeks, 2006; Hong and Fiona, 2009). These reiterate the point that, existing models of technology-supported organisational learning have yet to match the implementation objectives, and better understanding is required. So, the researcher argues for the deferred model of reality (Patel, 2006) for explaining technology-supported learning adoption and use because, it articulates how the combined organisations and ICT systems should be designed to achieve organisational objectives, where rational plans are made flexible to accommodate changing actors' needs and address power relations.

The ideation of the three schools of thought, the rationalist, the emergence and the balanced-view, took a centre stage to inform the relevant literature on knowledge management systems design and evaluation but conclusion drawn from these is that, independently they are insufficient to show how to design and evaluate knowledge management systems successfully (Nyame-Asiamah and Patel, 2010). Rationalist models such as formal information systems methodologies fail to account adequately for emergent organisations while complexity theory based frameworks package planned and rationally-based systems as future-oriented models which have no habitation in unpredictable socio-technical system design and evaluation. Practical implementation of complexity theory in fixed bureaucratic structures have been criticised, leading researchers believing in the complexity doctrines to revert to faddism (Rosenhead, 1998; Maguire and McKelvey, 1999).

Similarly, strategic approaches focus on the long term while not adequately accounting for the short term or local issues (Rackoff et al, 1985). The alternative information systems methodologies, which draw on the balanced-view school, have centred on the short-run benefits and could not sufficiently apply to wide-scope projects like KMS because their scope is very wide with a diverse IT system collection (Offsey, 1997; Laudon and Laudon, 2003; Muthusamy et al, 2005). The alternative information systems methodologies are also limited for empowering users to shape the rigid IS/IT planning processes in a tight time frame within which the radical modification of user requirements are required for successful systems implementation. The theory of deferred action promises explanations to address these issues because it theorises how to cohere creativity with planning in actuality, and design complex IT and knowledge management systems rationally for systemic emergent responses (Patel, 2006; Ramrattan, 2010; Patel and Ghoneim, 2011).

The organisational learning design challenges resurrect with healthcare ICT-supported learning processes where differing priorities between managers, clinicians and even clinician managers present difficulties for adopting the existing models for the healthcare ICT systems design. First, healthcare managers' learning is distinct from clinicians' learning with little positive relations between the two (Plochg and Klazinga, 2005; Edmonstone, 2009). Second, mixing them with clinician managers' learning introduces prioritisation tensions and prevents effective collaboration between healthcare managers and clinicians (Connell and Young, 2007; Edmonstone, 2009). Third, technology application to support clinical processes fails because models of adoption do not adequately explain how to develop IT systems to address the emergent actuality of users (Beynon-Davies, 1999; Heeks, 2006). Fourth, the intentions to achieve transformative growth, as a continuously improving patient care objective, complicates the problem because unlearning to learn new perspectives is difficult, with

inadequate design approaches to transformative learning processes (Hong and Fiona, 2009; Bamber and Hankin, 2011).

The consequences of all these are healthcare IT failures, money losses and poor knowledge sharing between healthcare actors which would have implications for quality patient care. The review has shown how the theory of deferred action (Patel, 2006) could address the gaps, so the researcher takes concession in the theory to propose an evidence-based framework for designing and evaluating organisational learning management processes using the KATH's ICT systems to support continuously improving patient care. Theoretical argument informing how the theory of deferred action helps the researcher to approach the problem is discussed in Chapter 3.

Chapter 3: Theoretical Frameworks

3.1 Introduction

The theory of deferred action has informed the design and evaluation problematics of organisational learning, ICT and knowledge management processes. It maintains that design mismatch between rationalist and emergence schools could be resolved in actuality to address power relations. The theory draws on socio-technical system conceptions to understand how organisations and social systems could address design and evaluation gaps in social actions, and to achieve transformative growth (Patel, 2006; Patel and Ghoneim 2011). First, the theory of deferred action argues that planned actions should be designed to cater for emergent actuality to allow actors the flexibility to modify organised actions, such as specified continuing professional development courses, to reflect changing needs and daily practices of practitioners.

Second, by interrelating elements of rationalist and emergent conceptions in actuality, it is argued in Section 2.2 that, the theory of deferred action demonstrates a composite function of first-order change and second-order change to produce a third-order change (Patel, 2006). First-order change is a rationalist conception that uses tacit reinforcement of existing understanding to achieve minor adjustments while second-order change is an ‘emergent’ conception that uses increasing participation, adaptation and creativity to propagate a radical modification of existing schemata (Bartunek and Mock, 1987; Gash and Orlikowski, 1991). Third-order change is a kind of transformative growth achieved by changing patterns of thinking and challenging strongly, interpretations of existing knowledge and practices but earlier contributions have doubted its realisability (Bartunek and Mock, 1987; Gash and Orlikowski, 1991).

Third, by demonstrating how to achieve a third-order phenomenon (Patel, 2006: 6), such as third-order change in actuality, the theory of deferred action unveils the causal power of emergence to address a dual issue of power structures and design inadequacies characterised with organised social actions. The researcher therefore seizes the prospects of the theory of deferred action to propose an evidence-based framework, based on the deferred model of reality, to design and evaluate organisational learning and knowledge management processes which inform how organisations could achieve transformative growth intentions.

From these propositions, the researcher argues that, the existing ontological assumptions, the beliefs about the nature of being—the positivist, the emergent and the dualism ontologies—, have exclusively failed to inform how to design and evaluate organisational learning and knowledge management systems to achieve transformative growth in emergent organisations. The extant approaches for designing and evaluating organisational learning including supporting ICT assume social systems are predictable and can be highly engineered (De Geus, 1988; Beynon-Davies, 1999; Flyvbjerg, 2004; Muthusamy et al, 2005). These assumptions use positivist ontology to explain the view that, *reality*, the state of being, is objectified and based on fixed structures, minimising the importance of actors whose changing behaviour influences the reality (Patel, 2006).

The positivist ontology is therefore questioned by an emerging school of thought, which assumes that social systems are emergent and framed in the emergence school and complexity-based frameworks. This view is situated in an interpretive ontology (Brodbeck, 2002; Matthews and Thomas, 2007), seeing reality as socially constructed. Though those who unpack the adaptive character of complexity to explain the subjective meaning of actors' behaviour do not traditionally subordinate to interpretivism, they do not completely dissociate from it either (Kim and Kaplan, 2006). By situating in interpretivism, the emergent ontology

has avoided criticisms of power relations and critically, it is uncritical for achieving transformative growth.

A third school of thought emerges to combine, even mix, positivist and interpretive ontological interpretations. This ontological dualism on transformative learning organisation connotes power sharing and emancipation, gravitating towards the Foucauldian perspective of critical realism (Messner et al, 2008). It defends ontology of stratification and emergence as two independent *realities* which can be conceptually integrated, describing the former as a mechanical composition of multiple strata consisting of rational being, living being and material being (Collier, 1994; Willmott, 2005; Al-Almoudi, 2007).

The Foucauldian School argument holds social systems as mediating network of positions and practices to reproduce and transform such systems continuously (Al-Almoudi, 2007). Yet, it breaks away from actuality design, design that is rationally based but sensitive to emergence; an interrelated phenomena of strategic obligations and ‘emergent causal powers’ in realism (Patel, 2006: 17). Critical realist ontology is, even, challenged by the postmodernist critique, reproving it as crude dualism for presenting confused explanation of *reality*, as fallacious ontological commitments with ontological oscillations which suffers from inconsistent belief of *what* exist or does not exist (Weick, 1995; Mutch, 2005).

To be *real*, critical and plan social systems contextually for achieving transformative/sustainability intentions, the study finds voice in deferred ontology, defined as socially constructed reality compatible with this line of enquiry, validating both positivist and emerging ontological interpretations in interrelated actuality. The subsequent sections detail the deferred ontology and its theory of deferred action application to develop an evidence-based framework for designing and evaluating organisational learning and knowledge management processes that could inform how organisations, such as hospitals, could achieve

transformative growth intentions (Sections 3.2-3.3). The evidence-based framework would subsequently inform the data collection design in Sub-section 3.5.

3.2 Deferred Ontology

Deferred ontology draws on the theory of deferred action, which is a ‘theory for action and design’, to relate rational design with natural design processes to achieve purposeful aims of emergent organisations (Patel, 2006; 2007). It takes this unified perspective to observe realism ontology based on emergent actuality (Patel, 2006: 15). Deferred ontology brings contextual transformation relevance to address the problem facing the reality of actuality design, design that takes intrinsic understanding of changing business processes to work with rationally planned systems. The researcher, therefore, garners the Patelian deferred action thesis to inform how to design evidence-based organisational learning and knowledge management processes using KATH ICT to enable quality patient care.

Patelian theory of deferred action exploits the Simonian rational design of means-ends analysis in ‘science of artificial’ (Simon, 1996) to address design for actuality. It benefits the call to integrate the Simonian evolution, cognition and design for planning purposeful human actions, with subsequent implications for both strategic and evolving organisations scholarship (Augier and Sarasvathy, 2004). Deferred theory explains systemic emergence for designing complex adaptive systems (Patel et al, 2009). It is a generic artefact design proposition for designing organised social actions influenced by emergence or emergent organisations, organisations whose structure, processes and design decisions evolve with changing users’ requirements. The theory presents three system design dimensions: planned action, emergence and deferred action.

3.2.1 Deferred Theory Dimensions

Planned action is fixed and strategically programmed to achieve specified outcomes. It is rational design and does not contextualise changing human behaviour. Planned actions are significant for their revenue generation and budgetary allocation roles in organisations (Whittington, 2003). They introduce stability, performance evaluations and variance analysis in management practices. But, because planned actions are future-oriented, their attainments are subject to emergent influences. So the primacy of planned actions is constrained by time and space, and lacks sustainability. Planned actions are therefore reflective of knowable and strategic choices, which can only be specified as design objects independent of emergence. Executing planned actions needs both reflective designers, who structure design objects to conform to what they *expect to know* as design parameters; and action designers, who *come to know* the actual and ultimate design factors in space and time (Patel, 2006: 210). Though reflective designers are required, the sufficiency of their scope specifications is limited by future uncertainties, so rational planning is necessary in the context of emergence.

Emergence arises through the interaction of agents, interactions between agents and learning technologies, and agents' spontaneous reactions to their environments (Patel, 2006). It is situational, unknowable and unpredictable. Emergence is self-regulatory outcome obtained through agents' attractions and repulsions in adaptive systems. It is not specifiable because it is out of bounds of rational analysis (Patel, 2007). Such indeterminate constraints are 'off-design' (Patel, 2006: 116) in the sense that they are intrinsic to natural processes of human interactions and actions. Yet, emergence is capable of challenging issues characterised with specified actions, such as planning failures, allowing action designers to resolve crisis in actuality (Patel, 2006: 61). So, emergence is an evolvable variable whose recognition expands the limits of rational design to allow intellectual products to interrelate with actuality.

Elliman and Eatock (2005) draw on deferred constructs to observe from the E-Arbitration project, an online support system for managing court cases that, the systems design decisions should be left open to allow users to specify their requirements for usage, to reflect emergence, while system developers defer their design decisions to cater for actuality.

Deferred action is a synthetic outcome of relating planned actions and emergence for designing purposeful emergent organisations or organisational complex adaptive systems (Patel et al, 2009). It assumes that rational design is necessary but not sufficient for knowledge systems design in emergent conditions. Deferred action takes emergence as the causal power to interrelate actuality with formal design. So, it is a model of reality, or the deferred model of reality, which imposes purposive design on reality but enable agents to shape the reality in actual and emergent context and situations (Patel, 2006; 2007). In doing this, the model of reality possesses one-to-one correspondence between the model and the socio-technical systems that it models (Patel and Ghoneim, 2011). Deferred action positions knowledge and learning management system designers as action designers who operationalise system functionalities as embodied patterns in the field of action (Patel, 2006). It interconnects rationality, emergence, space and time to develop ‘living systems’, making it a source of success and sustainability for knowledge management systems design and evaluation (Patel, 1997; 2005; 2006).

3.2.2 Deferred Theory Applicability

At macro levels, deferred theory explains how to design and implement contextual, sustainable and comprehensible learning and knowledge management systems. The theory has contributed to interdisciplinary research and practice, and informs the practice of organisation design, KMS/IT/IS design, and combined organisation and IT systems design in emergent organisations (Patel and Irani, 1999; Patel, 2006; Patel and Ghoneim, 2011). It is

recognised in IS research, as purposeful design theory to facilitate the design of IT artefacts for sustainable use by organisations (Marriott School of Management of Brigham Young University, 2011).

To the degree that the theory of deferred action is appropriated and consumed, it has been invoked to address systems design problems in many cases. Ramrattan (2010) applied the theory to develop the Kadar Matrix, a web-based information systems tool, for analysing internet speed and web-based aesthetics in Brunel University. Elliman and Eatock (2005) applied it to develop online E-Arbitration systems to manage open and evolving systems requirements of legal cases. Design of the COllaborative Filters in N Dimensions (COFIND) and Dwelling, e-Learning systems based on evolvability and self-organising principles, also has the theory of deferred action underpinning (Dron, 2005; 2007a).

Applying the theory to organisational learning means learning activities can be planned to exploit procedural knowledge in situ. This explains how management-controlled learning could account for informal learning processes by enabling people to question and reflect critically on customary management practices required emergent responses for transformative growth. The theory of deferred action application to organisational learning extends Argyris' single- and double-loop learning concepts (Argyris, 1990) to a new learning perspective that could bring the triple-loop learning abstractions to reality if we considered the theory of deferred action as a thesis that seeks to explain a third order phenomenon in actuality. This is 'deferred learning' (Patel, 2006), a mutual learning process contextualising prescriptive learning in emergent organisations to clarify how to achieve transformative outcomes of learning in actuality. Deferred action is time related and upholds a holistic view of organisational learning as a process whose actors are inseparable parts of organisations.

Deferred postulates provide a convincing justification for conceptualising a cohered emergent transformation model, an evidence-based framework for designing and evaluating organisational learning and knowledge management processes to support transformative growth intentions of organisations. Cohered emergent transformation is learning inclusive of actuality which assumes that, planned learning processes including supporting technology should be flexibly designed to enable actors to modify design to reflect the actual learning processes required to achieve organisational transformative objectives. Cohered emergent transformation draws on the deferred model of reality, and draws on the principles of socio-technical systems, to combine ICT systems with learning organisation to achieve transformative growth. With its central self-organising and adaptive features, deferred action can be deconstructed and reconstructed to model agents' interactions in a complete system or partial situation, where some emergence conditions are known while others are unknown (Patel et al, 2009). So, it provides better cues for designing organisational learning systems tailorable to organisational dynamics.

3.3 Cohered Emergent Transformation (*CET*) Model

Application of deferred theory offers practical solutions to organisational learning processes (Patel, 2006: 220). Sustainable organisations necessitate designing a 'learning organisation' with deferred design decisions, which allow actors to make design choices rather than relying on technical designers who lack knowledge of local practices, for individual and collective learning (Patel, 2006: 41). But how does this help bridge the divide between managers' learning and workers' learning, a long standing problem preventing transformative growth in organisations (Matthews and Thomas, 2007; Mets and Torokoff, 2007)? By applying the theory of deferred action to the principles of learning organisation, researcher argues that, the proposed cohered emergent transformation (*CET*) model, takes the 'emergent causal power'

to achieve all-inclusive growth because it exhibits patterns of a Complex Adaptive System (CAS).

CET is therefore based on the deferred model of reality, stemming from the theory of deferred action, which maintains that a rational organisational and ICT systems design should cohere with emergent actuality to achieve transformative growth or sustainability intentions (Patel, 2006; Ramrattan, 2010). Deferred model of reality informs strategists and system designers to impose purposive plans and structures on reality but should allow flexibility for actors to shape the design in emergent situations (Patel, 2007). It articulates how rational planning should be made amenable to accommodate changing actors' needs and address power differentials characterised social organisations. Deferred model of reality represents explicit knowledge as rational planning that caters for tacit knowledge as an emergently actual activity. Deferred model of reality uses systemic emergence to explain CASs formulation (Patel, 2006; Patel et al, 2009).

The literature informing the development of a CAS recommends formulation of practical assumptions relevant to solving problems facing organisations (March, 1991; Patel et al, 2009; Shaduri, 2011). Assumptions underlying the construction of adaptive systems should account for environment and reality, agents of socialisation, rules, and times of emergent changes (Pepinsky, 2005; Wu and Sun, 2005). The researcher summarises the following as reasonable assumptions underpinning the *CET* model from the literature:

- i. Organisations successfully innovate and transform themselves through organisational learning, involving multiple interactions of their members who trust each other and empowered to make change contributions (Stacey, 2003; van Eijnatten, 2004).
- ii. Based on internal arrangements, organisations are normally made up of individuals, teams and groups at different levels of organisational structure, and they are called the

agents of learning or actors (Chen et al, 2003; Carlisle and McMillan, 2006; Patel, 2006).

- iii. The three main categories of people stated in point (ii) above continuously learn as a CAS to develop new ideas and achieve emergent outcomes at higher levels of learning (van Eijnatten, 2004; Carlisle and McMillan, 2006).
- iv. Organisational agents learn through the use of two categories of technologies: Individual learning technologies and team/group learning technologies (Chen et al, 2003; Dron and Anderson, 2009).
- v. The internal structures of organisations create plans for learning and setting of planned goals, usually initiated by strategists (Burnes et al, 2003; Jian, 2007).
- vi. Cohered transformation would be achieved when planned action and creativity are tightly coupled through actual organised learning of organisational members (Patel, 2006)
- vii. Cohered transformation would be sustained if actual organised action is instantaneously fed back to the CAS to rejuvenate the process in a continuous cycle (van Eijnatten, 2004; Nyame-Asiamah and Patel, 2010).

The **CET** model analyses and prescribes how individuals, teams and groups within organisations, such as hospitals, continuously learn with the support of learning technologies to achieve transformative growth. The process involves diverse actors using individual- and/or team/group-oriented learning tools to collaborate, and make deferred design and evaluation decisions. Cohered emergent transformation is based on dynamic consultation such as regular meetings, discussions and collective reviews, and is achieved in actuality.

The model is to design and evaluate organisational learning systems and their supporting technologies using four modules: Input-Output Designer-Evaluators' Funnel, Prescriptive Learning and Specified Tools Implementer, Reality Learning Tools Requirements Regulator, and Deferred Action Learning Synergistic Lens. Research designing CASs gleans on the principles of modular design as a way of improving flexibility and clarity of interdependencies between components of complex systems (Benbya and McKelvey, 2006). The modules are demonstrated in Figure 3.1, described in Table 3.1, and followed by a detailed discussion of the model's processes and dynamics.

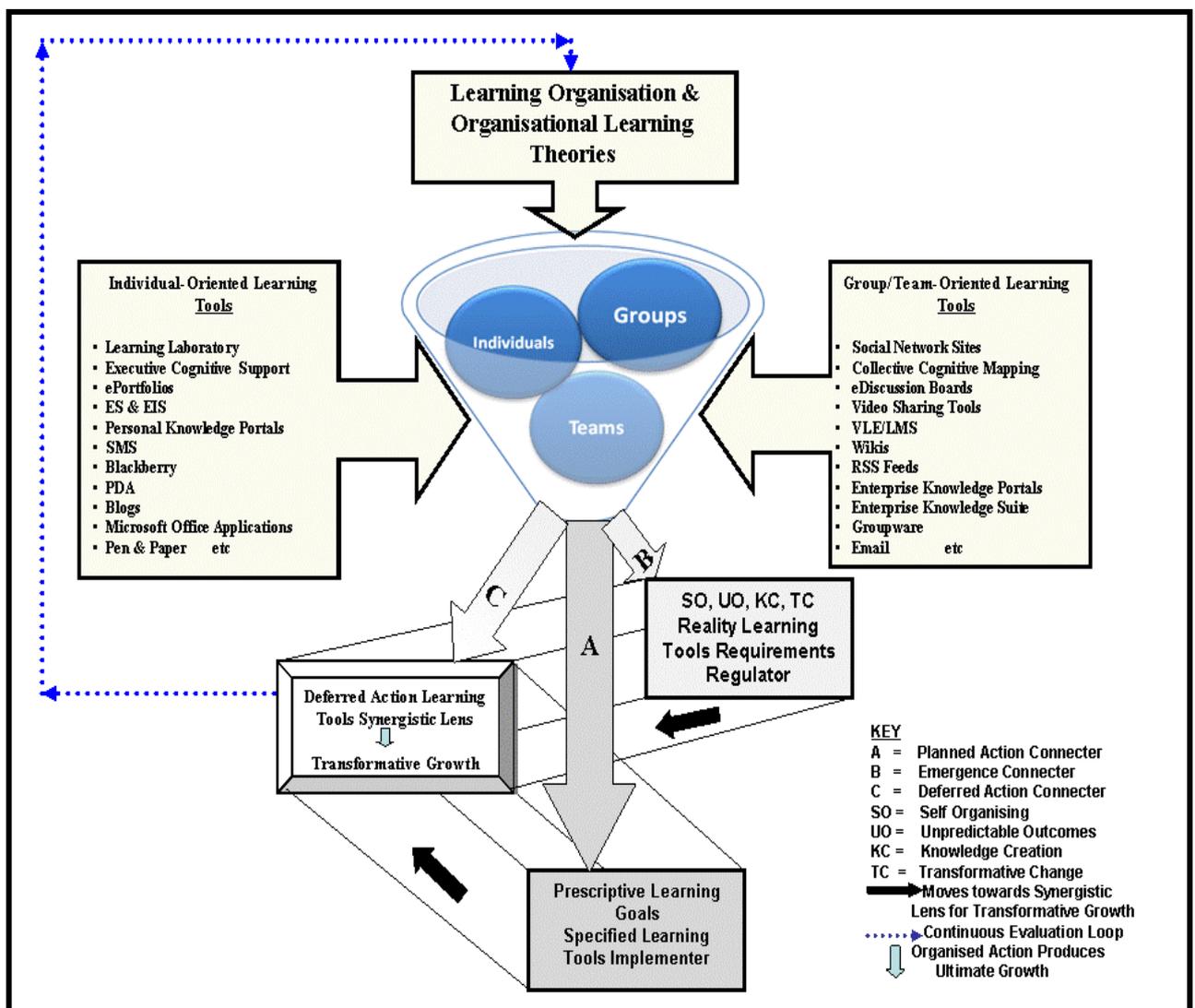


Figure 3.1: Cohered Emergent Transformation (CET) in Learning Organisations

Modules	Descriptors
1. Input-Output Designer-Evaluators' Funnel	<ul style="list-style-type: none"> ➤ Rationally designed CAS consisting of individuals, teams and groups (Patel and Ghoneim, 2011) ➤ Agents use diverse technologies for learning within an organisation ➤ Agents learning range from 1st loop to 3rd loop
2. Prescriptive Learning and Specified Learning Tools Implementer	<ul style="list-style-type: none"> ➤ Planned designed learning systems implemented through partial involvement decisions of agents within the rationally designed CAS ➤ Learning goals and ICT systems decisions are taken by strategists
3. Reality Learning Tools Requirements Regulator	<ul style="list-style-type: none"> ➤ Emergent outcomes of almost all learning agents originate from the CAS Funnel and mitigate against the goals of Prescriptive Learning Tools Implementer ➤ Complex interactions produce disagreements at the edge of chaos and the natural evaluation process emerges
4. Deferred Action Learning Tools and Synergistic Lens	<ul style="list-style-type: none"> ➤ Evaluation decisions based on actual organised learning and synergistic lens provide learning tools that meet organisational changeability and user tailorability ➤ Deferred Action Learning Tools continuously combine the planned decisions of the Prescriptive Learning and Specified Learning Tools Implementer and the Reality Learning Tools Requirements Regulator

Table 3.1: Four Key Modules of Cohered Emergent Transformation (*CET*)

3.3.1 Input-Output Designer-Evaluators' Funnel

The Input-Output Designer-Evaluators' Funnel is a learning platform of inclusivity allowing actors to employ a number of learning technologies, broadly, classified as individually oriented and team/group oriented to support organisational learning. The fluidity of learning processes transacted between the management and worker groups in the funnel (learning platform) renders it a powerful distributed knowledge-processing platform. Potentially, the input-output designer-evaluators' funnel is accessible by all members of an organisation. The researcher cites corporate discussion forums, workshops and continuing professional development (CPD) training, meetings and informal chats, and the use of enterprise knowledge portals as exemplars. Enterprise knowledge portals including emails, ePortfolios,

and Virtual Learning Environments (VLE) are typical gateway technologies to explore organisational memory, allowing knowledge exploitation, sharing and transfer.

For example, the integrated personal information portals of ePortfolios, the creative internet-based learning platforms for recording, storing and sharing the best practice of organisational members, can be exploited for members' critical self-reflections to show how knowledge is generated, shared and reused for organisational transformation. Inclusion of emails, digital messages exchange applications in the module, demonstrates quick and responsive communication between organisational actors to enhance learning inclusive of actuality.

Depending on the focus of actors' engagements, their interactions could assume either 'planned-specified' actions, emergent outcomes or even both to represent deferred action outcomes. The researcher draws on the rationality dimensions of the theory of deferred action to describe 'planned-specified' as elements of rationalist school that sees *planning* as a predetermined action and *specified* action as taken-for-granted established and fixed organisational practices. The planned-specified, emergent and deferred action outcomes filter through the externalisation connecters **A**, **B** or **C** respectively in Figure 3.1 to symbolise management actions, workers' vision or a tight combination of the two in actuality.

The effectiveness of actors' learning processes and outcomes can therefore be evaluated at three different levels of learning—single-loop, double-loop, and deferred learning, which is reconceptualised from triple-loop learning. The properties of designer-evaluators' funnel module, an organisational CAS, define how the different organisational actors, with planned-specified and emergent perspectives learn to expose tensions and apply deferred model of reality to resolve them. Deferred model of reality acknowledges the co-existence of managers' learning and workers' learning in real-time, seeing the former as a strategic action that should cater for operational activities in time and space. It does not discriminate between

planned action and emergence but rather explains, in actuality, the necessary and sufficient interrelated patterns between management actions and other employees' responses.

Thus, the model explains how to achieve all-inclusive transformation, using its three prongs described in the subsequent sub-sections and derived from the Patelian planned action, emergence and deferred action typologies (Patel, 2006) to resolve transformative learning issues. Such as organisational routine defences described by Argyris (1990) as 'undiscussability of discussable' and 'blaming others'. The designer-evaluators' funnel instantiates emergent actions of workers requiring immediate attention of managers' learning, such as informal customer complaints received by frontline workers for improving service quality, as an actuality-based strategy for managing organisational growth barriers.

Following the three dimensional constructs of the theory of deferred action, the researcher argues that, the merits for evaluating the *CET* model, should lie in the evaluation decisions relating to the learning processes & aims, technology for learning, and intended order of change factors as applied to the *CET* modules, showing their one-to-one correspondences between the planned-specified, emergent and deferred evaluations. The reason is, *CET* aims to achieve transformation with all-inclusive learning supported by technology because it draws on socio-technical principles.

3.3.2 Prescriptive Learning and Specified Learning Tools Implementer

Prescriptive and Specified Learning Tools Implementer assumes that learning activities could be consciously planned and evaluated. Conscious planning is future-oriented and usually driven by strategic goals with little operational level contribution, as functionalist proponents might suggest (Evans, 1992). Management actions and learning processes undertaken in the prescriptive implementer module are indispensable but not sufficient to support cohered

transformative culture (Patel, 2006). Management actions are primary because managers are entrusted with budgetary allocations and charged with greater responsibilities for organisational success. Yet, in emergent situations, plans fail because future is indeterminate. So, bottom up ideas unforeseen at the planning stages are sufficient conditions for organisational growth because such knowledge informs management to modify plans to reflect actuality.

Strategically planned learning activities are, however, meant to appease 'tick boxes' (Argyris, 1990). Instructional information and learning materials are usually designed with the strategist view and delivered to their destinations with no adequate collaborative channels for user review. User feedback and critique are therefore constrained. Planned learning objectives, specified learning tools and their evaluation factors conform to strategist thinking but inconsistent with realities (Hong and Fiona, 2009; Heeks, 2002). Such strategies are discrete and too formalised to enable creative thinking.

Evaluation decisions based on the principles of the Prescriptive Learning and Specified Learning Tools Implementer module lack unified resolutions of all learning agents and are planned-specified. In reality, this is partial organisational learning favouring the interests of senior managers. In Argyris' (1990) terms, it is single-loop learning and could be intended to hide any defects of the learning technologies or shortfalls of prescriptive learning strategies. Planned assessment processes and decisions, therefore, reflect the outcomes of single-loop learning along with its associated supporting technologies, such as eLearning 1.0, and first-order changes.

3.3.3 Reality Learning Tools Requirements Regulator

The Reality Learning Tools Requirements Regulator module is a representation of an emergent condition, seeking to contextualise learning actions. Dialogues and multilogues between individuals, teams and groups create new knowledge to modify rule-based systemic practices, such as the use of power and control to specify staff training needs that lack local relevance (Nyame-Asiamah, 2011). Non-strategic affiliates, such as ranks and files, for instance, use evaluative training feedback responses and regular department team meetings to suggest modifications for such planned-specified training provisions. These ideas are usually spontaneous and developed from the differing views of workers, as emerged from daily working practices, to influence transformative change.

Unlike the limited user feedback opportunities characterised with the Prescriptive Learning and Specified Learning Tools Implementer module, the Reality Learning Tools Requirements Regulator module assumes a humanist character to allow participative engagements. It enables feedforward and feedback interactions to permit natural instincts of local actors to arise without retribution (Jameson et al, 2005). The outcomes of such learning processes are unpredictable but situated in people's daily practices to create capacity for innovation. The Reality Learning Tools Requirements Regulator module represents a platform for critical reflections of existing practices. This is self-organising learning, insisting on individuals to recognise their knowledge and skills gaps, and explore ways of filling such missing capabilities. The module demonstrates a character of an open-ended adaptive system with opportunity to acquire new skills, develop existing ones and distribute them for transformative change. The processes of the module flow through the connector **B** in Figure 3.1.

The Reality Learning Tools Requirements Regulator contributes to the deployment of knowledge management technologies for learning with emergent responses. The module

invokes users' specifications to modify specified strategic design, allowing deployment of tailorable learning tools flexible for managing business processes requiring emergent transformation. Actors' behaviour within the module assumes double-loop learning, with striving tendencies towards higher order interactions where workers are given choices to make suggestions for organisational transformation.

Typical learning processes pursued to regulate strategic orientations, as characterised with the Reality Learning Tools Requirements Regulator, are informal learning and bottom-up initiatives generated through emails, virtual environments, small teams' meetings, and short break chats in organisations. Emails, for instance, are seen as emergent-based learning tool exemplar, with engaging communication functionalities to help employees learn business processes and share them among their colleagues to increase corporate creativity and flow of information (Brooks, 2000; Mazmanian et al, 2006).

The intended transformation, the second-order change, obtained through double-loop learning and its collaborative supporting tools associated with the module are factors of emergent evaluations. However, second-order change is a discontinuous shift (Gash and Orlikowski, 1991; Henderson, 2002). This transformation outcome, as Gash and Orlikowski (1991) argue, goes beyond error corrections to include replacing methods of operations but does not seek to improve the system continuously. Poutiatine (2009) treats second-order change as an irreversible shift, with individuals and organisations adopting such change unable to go back to behaviours habituated prior to the change. It is classified as 'risky business' and 'discontinuous' (Poutiatine, 2009), conceptions concealed in the uncertainty and ambiguity characters of complexity theory. Continuous improvement is, however, achievable when social actions that threaten sustainability are enabled as deferred action (Patel, 2006: 193).

Patel (2006) argues that, the relationship between emergent actions, the antecedent of second-order change, and sustainability lies with contextualising rational acts in actual situations.

3.3.4 Deferred Action Learning Synergistic Lens

The Deferred Action Learning Tools and Synergistic Lens, the fourth module, provides a practical explanation for evaluating technology-supported learning. It assumes that, the competence of the Reality Learning Tools Requirements Regulator should not entirely disregard the processes of the Prescriptive Learning and Specified Learning Tools Implementer, as the planned-specified systems symbolise the initial evaluation benchmark. The deferred action learning module combines actual and organised system evaluation to signify a practical synergy between specified evaluation and emergent appraisal procedures such as inquiry-based findings. Graphical demonstration of this synergy is shown by the two arrows drifted towards the Deferred Action Learning Tools module in Figure 3.1 above.

However, we have noted that strategic directions are valuable but not ‘value-free’ in emergent conditions. Planned-specified outcomes such as prescriptive learning goals could effectively be achievable when embedded in the changing actors’ knowledge as deferred design decisions. In emergent actuality, managerial dominance is deferred to allow emergent knowledge shape and sustain strategic actions for desired outcomes. Transformative growth, the ultimate aim of learning organisations, is therefore a realisable product of deferred decisions, as depicted by the downward arrow in the Deferred Action Learning Tools module in Figure 3.1. This is because, transformative growth is subjected to deferred learning (Patel, 2006), as a composite function of first-order change and second-order change to produce a third-order change, as noted earlier.

To achieve transformative growth with deferred action is to say that the Deferred Action Learning Tools and Synergistic Lens module demonstrates features of both triple-loop learning and deferred systems which considers plan actions as rational design but cater for unpredictable and situational changes (Patel, 2006). Transformate tools, such as social software, are tailorable technologies that support actors' intuitions (Dotsika and Patrick, 2006) are considered exemplar deferred systems immutable with deferred learning—triple-loop learning in the module. This reiterates the claim that social software is an exemplar deferred system, one whose true form evolves after it is designed through the actual actions of its users (Dron and Anderson, 2009). It is tantamount to saying, third-order change is achievable with the Deferred Action Learning Tools and Synergistic Lens module, a representation of cohered transformative growth with technology-enhanced learning.

The evaluation factors of the Deferred Action Learning Tools and Synergistic Lens are indicative for re-designing planned-specified learning processes in emergent situations because they cohere planned-specified evaluation factors with emergent evaluation factors in actuality for transformative growth. The continuous evaluation loop, supporting the system rejuvenation, sustains the cohered emergent transformation through complete and constant interactions of all members in an organisation. The deferred evaluation factors of complete interactions and higher-order learning flow directly through the connector C. Cohered emergent transformation, therefore, continuously evolves through planned-specified and emergent learning processes, and transforms organisations within the Deferred Action Learning Tools and Synergistic Lens module.

3.3.5 *CET* Relationship with Research Issues and Data Collection

Deferred decisions bring actors to engage with rational design artefacts in actuality. This way, deferred model of reality practically steer organisations towards achieving transformative growth rather than representing a conceptual formulation that distances users from planned-specified systems. The model is useful for all knowledge-based organisations (Calabrese, 2006) aspiring to achieve continuous innovations and applicable to teaching hospitals (Nyame-Asiamah, 2011, 2012). The model is promising for practitioners and researchers investigating the effectiveness of technology-supported learning organisations to contextualise their design and evaluation questions within the properties of *CET*. Such questions, should therefore, converge the four main thematic modules of the model: Input-Output Designer-Evaluators' Funnel, Prescriptive Learning and Specified Tools Implementer, Reality Learning Tools Requirements Regulator, and Deferred Action Learning Synergistic Lens; as summarised from the literature to contextualise the problem in the healthcare ICT-supported learning in Table 3. 2 below:

CET Modules and ICT-Supported Learning Issues in Hospitals	Literature
MODULE 1a: Learning Technology and Team Collaboration (Research Issue i)	
i) To analyse how managers and clinicians of KATH use technologies to support collaborative learning	
1.1 Relevance of the internet-based learning technology to the clinician and manager teams' collaboration	Kardos et al, 2009; Carroll et al, 2009
1.2 Effectiveness of using learning technology for extracting and sharing hospitals' staff knowledge	Nicholas et al 2003; Kardos et al, 2009; Pulman et al, 2009
1.3 Comparing and identifying effective ICT systems to support communication between clinicians and managers in hospitals	Liddell et al, 2008
MODULE 1b: Staff Learning and Patient Care (Research Issue ii)	
ii) To identify and analyse the role of KATH staff learning in healthcare delivery service	
1.4 Healthcare quality plans availability and issues of hospitals	Hurst, 2003; MoH, 2009
1.5 Relevance of staff learning for quality care delivery	Davies et al, 2007
1.6 Hospitals' commitments to providing training courses for clinicians	Hurst, 2003
1.7 Healthcare staff motivation for taking up CPD/CME courses	Aiga, 2006
1.8 Effectiveness of the CPD/CME delivery in healthcare settings	Hurst, 2003; Kardos et al, 2009
1.9 Learning tools used by managers for managing National Standards of healthcare learning	Hurst, 2003; Davies et al, 2007
MODULE 2: ICT-Supported Learning Planning (Research Issue iii)	
iii) To examine the role played by the managers and clinicians of KATH in planning for ICT-supported learning	
2.1 Clinicians' contributions in setting ICT-supported learning goals in hospitals	Connell and Young 2007
2.2 Distinct clinical professionals and non-clinical managers' roles and their impact on technology uptake for hospitals	Patel, 2003; Heeks, 2006; Edmonstone, 2009
2.3 Relevance of ICT-supported learning planning to improved healthcare quality provision in hospitals	Patel 2003; MoH, 2009
2.4 Technology adoption for clinician learning processes including their implementation factors	Liddell et al, 2008; Nicholas et al, 2003
MODULE 3: ICT-Supported Learning Issues and Solutions (Research Issue iv)	
iv) To explore how ICT-enhanced learning implementation issues are managed in KATH	
3.1 Staff issues with technology adoption for learning in hospitals and how are effective they are resolved	Nicholas et al 2003; Heeks, 2006; Pulman et al, 2009
3.2 Confidentiality issues associated with the hospitals' learning technologies and how effective they are tackled	Connell and Young, 2007; Kardos et al, 2009
3.3 Effects of unforeseen or overlooked factors in hospitals' ICT-supported learning planning	Heeks, 2006; Patel, 2003; Swindells, 2010
MODULE 4: ICT-Supported Learning Evaluation Approaches (Research Issue v)	
v) To evaluate learning processes including ICT used by the KATH managers and clinicians to improve healthcare delivery	
4.1 Evaluating the benefits of ICT-supported learning for hospitals' quality healthcare provision	Boudioni, 2003; Carroll et al, 2009
4.2 Sustainability of hospitals' ICT-supported learning processes and their impact on varied healthcare needs	Murphy et al, 2004
4.3 Effectiveness of widening participation in planning and evaluating ICT-supported learning systems for effective learning in hospitals	Connell and Young, 2007; Liddell et al, 2008; MoH, 2009
4.4 Issues with the application of professional self-regulating standards for evaluating clinicians' learning in hospitals	Hurst, 2003; Davies et al 2007; Connell and Young, 2007; Kardos et al, 2009
Foundation: Deferred Model of Reality	Patel, 2006, 2007; Ramrattan, 2010
Table 3.2: CET Informed Research Issues and Interview Questions for Hospitals' ICT-Supported Learning	

The issue is, the distinctive task roles and dissimilar objectives between clinicians and healthcare managers (McNulty and Ferlie, 2004; Plochg and Klazinga, 2005; Edmonstone, 2009) are utilised to explain the healthcare learning and IT systems mismatch problems where managers and technical IT professional rationalities have been applied to implement health information systems for clinicians but with little actual use of the systems (Heeks, 2006; Davies et al, 2007; Liddell et al, 2008). These have caused disappointing IT failures in health sectors with investment and life losses (Beynon-Davies, 1999; Littlejohns et al, 2003; Heeks, 2006; Liddell et al, 2008). So, both researchers and policy makers argue for better models of realities to evaluate healthcare learning and IT systems to enhance improved quality care (Wyatt and Wyatt, 2003; Connell and Young, 2007; Kardos et al, 2009; Swindells, 2010), and to address the policy-driven and manager-centric models that fail.

In broader hospital settings, the *CET* model informs how to obtain reliable data to serve the research phenomena, enabling effective design and evaluation of healthcare ICT-supported learning for continuously improving care provision. Thus, it presents theoretical flow between the knowledge gaps in hospitals' ICT-supported learning, research objectives, detailed research issues and their traceability to the literature, as shown in Table 3.2. The general relationships between the paraphrased research questions (research issues), research objectives and the underpinning modules of *CET* would justify the rationale for interview and focus group questions design, as would be explained in the context of KATH in Section 4.4.3 and shown in Appendices 4.9a, 4.9b and 4.10.

Theoretical integrity of the *CET* model, synthesised through the extant knowledge and draws the lens of deferred action, enables actors to question the rationale behind existing management assumptions and practices to achieve all-inclusive growth in actuality. This justification explicates the model's complementarity with critical qualitative traditions, such

as critical ethnography or critical case study where more nuanced questions are used to investigate organisational dynamics.

From a transformative perspective, the researcher classifies cohered emergent transformation as '*real*' critical epistemology, a postmodernism philosophical research position with transformative redefinition intent to challenge and change established social systems in actuality (Cecez-Kecmanovic, 2007; 2011). In Patelian's model of reality (Patel, 2006), this is 'deferred epistemology', a critical knowledge and methodology required for interrelating rationality and emergence as causal power of actuality to resolve design mismatch problematic and its entrenched power differentials. **CET** model is a suitable thematic formula for categorising huge data for critical hermeneutics and narrative analyses in ethnographic traditions, with transformability intentions. These discussions are elaborated in Chapter 4.

3.4 Conclusion

Chapter 3 has revisited ICT-supported learning and knowledge management design gaps in learning organisations, turning on healthcare learning including supporting ICT processes to summarise technology uptake mismatch between healthcare managers and clinicians. These gaps raise questions about the effectiveness of technology-supported learning in hospitals, leading to the key recurring research problem: 'How can hospitals design effective staff learning processes including supporting ICT systems to enable continuously improving healthcare delivery?'

The recurring question reaffirms the fact that, the extant approaches to ICT-supported learning adopt 'rationalist' and 'complexity-based' ontologies, which utilise the dichotomy between the traditional healthcare managers' roles and clinicians' roles. Such approaches are exclusively inadequate to support transformative growth or improved patient care.

Ontological dualism takes critical realism perspectives to combine these differences but fails because it lacks design actuality to resolve power relations. It is criticised for presenting confused explanation of *reality* (Mutch, 2005).

Deferred ontology is invoked because it submits a realistic and operationalisable synthesis of the role of planning and emergence in designing learning organisations. The theory of deferred action is therefore applied to develop the **CET** model for designing and evaluating organisational learning and knowledge management processes for transformative learning organisations. It is a well-suited evidence-based framework for designing and evaluating healthcare ICT-supported learning processes in general, and applicable to KATH ICT-supported learning and knowledge management processes. As an actuality-based transformative growth framework, **CET** is '*real*' critical epistemology that challenges established social systems in actuality and proffers inclusive change.

Chapter 4: Research Methodology

4.1 Introduction

The previous chapter has demonstrated the relevance of the theory of deferred action for developing *CET*, discussing how it could help address healthcare learning gaps. Empirically, validating this theoretical contribution involves using appropriate methodologies to collect relevant data from healthcare managers, clinicians and clinician managers. The phenomenon under investigation therefore requires data on: (i) KATH learning processes including supporting ICT used to promote transformative change intentions such as continuously improving patient care; (ii) planning of KATH staff learning processes in patient care including supporting ICT; (iii) KATH CPD and ICT-supported learning implementation issues such as unintended factors of planning and how they are managed; and (iv) how to evaluate KATH learning processes including ICT and address issues associated with KATH ICT-supported learning for improved healthcare delivery.

However, categorisation of research methodologies into qualitative and quantitative by the purists (Howe, 1988), or even mixed by the pragmatists (Onwuegbuzie and Leech, 2005), has created a huge divide amongst researchers. This becomes much more complex when the methodological choice is directed towards theoretical or ontological validation which is consumed or contested by diverse research community who contribute to systems rethinking or changing social-cultural practices (Buchanan and Bryman, 2007; Cunliffe, 2011).

The purist view is based on the premise that research questions are usually oriented towards quantitative or qualitative directions, justifying the dichotomy between the qualitative and quantitative methodologies (Smith and Heshusius, 1986; Howe, 1988). Qualitative research takes an in-depth approach to studying socio-cultural phenomena, focusing on text to

elucidate meaning in context. It uses human experience and understanding to validate research findings. Researchers in this orientation use action research, case study, ethnography, grounded research, semiotics, discourse analysis, hermeneutics and narrative; as typical methodical examples (Myers, 2009: 8). Ramrattan's (2010) study on a web-based information systems tool for analysing internet speed and web-based aesthetics in Brunel University applied action research. Jian (2007) illustrated an example of unpacking unintended consequences in planned organisational change models with a two-way participation process between managers and workers, from a case study in Midwestern Life. Further examples of qualitative applications are provided in sections 4.3 and 4.6

Quantitative research investigates general trends across the study population using number-focused methods such as Likert scale survey questionnaires to explore correspondence between Five Disciplines and total quality management (Chang and Sun, 2007), or mathematical analysis like structural equation modelling and factor analysis to calculate the correlation between multivariate variables and group them into matrix. Mets and Torokoff (2007), for example, used factor analysis to investigate patterns of learning organisations and state of organisational learning in six Estonian companies to conclude that managers' learning is not fully in agreement with workers' learning. Rodan (2005) has used simulations involving real world organisational features of multiple individual- and organisational-level processes to predict that, constrained experimentation arising from defined organisational beliefs has no noticeable effect on organisational learning. Quantitative orientations therefore use numerical values to generalise theoretical constructs from sample results (Myers, 2009: 8).

The pragmatic researchers engage in arguments that reveal similarities between the qualitative and quantitative mix to corroborate findings from dissimilar methods used for investigating

the same phenomenon (Molina-Azorin, 2010). The pragmatists' celebration of mixed method research receiving more citation than mono-method studies, and their criticisms against the latter of risking social science findings with singular methods (Onwuegbuzie and Leech, 2005; Molina-Azorin, 2010), fail to dispute that fact that the choice of research methods must also reflect the research questions being addressed.

Sharma (2005) provides an empirical example where mixed methods of interviews, surveys, descriptive statistics, correlation analysis and factor analysis were used to reflect research questions that assessed management practices/cultural attributes and their relationships with organisational performance, as both quantitative and qualitative focused. Sharma (2005) used survey to seek the perceptions of employees, management/organisational attributes and performance, and validated the results through interviews which brought the intuitions of participants to bear. So, in this case, it is the question of what Sharma intended to achieve that drove the application of mixed methods but not its citation popularity.

Regardless of the purists and pragmatist differences, they settle on philosophical assumptions, the fundamental beliefs of research, as a common agreement influencing methodological selection (Onwuegbuzie and Leech, 2005; Myers, 2009). In what follows, the researcher discusses the philosophical assumptions (see section 4.2) and how his chosen research philosophy (*critical* research) informed his decision to assume *critical* qualitative traditions (section 4.3). Implications of these for selecting the unit of study (section 4.4), data collection design (section 4.5), and methods of data analysis (section 4.6) are discussed in turns to justify the methodological choices.

4.2 Philosophical Assumptions of the Research

Research methods, scope and validity are underpinned by philosophical assumptions. These suppositions, combined with actual methods are often referred to as epistemology, are about knowledge and how it is acquired (Hirschheim et al, 1995). Applying different epistemological positions to the same or similar scientific phenomenon could lead to different research conclusions, unless there is a concrete intellectual logic to argue otherwise (Hart, 2009). Stated differently, the outcomes of scientific inquiry could well be ‘suspect’. So, holding one particular view, rather than another, could only make sense with solid ontological premises.

A protracted debate on, at least, the two leading philosophical schools of knowledge, positivist, reality is objectively presented, versus interpretive, reality is socially constructed, has, apparently, minimised the significance of epistemological selection argument for research inquiries (Morgan and Smircich, 1980). But, because scientific rigour endeavours require priori knowledge for validating findings, the revival of the epistemological debate here is needed to justify the researcher’s choice of an emerging epistemology, critical research (critiquing socially constructed reality), as the most consistent option for the aim of this study.

Also, the three epistemological traditions—positivists, interpretive and critical—have a qualitative research hallmark in management, organisational and information systems investigations (Chua, 1986; Orlikowski and Baroudi, 1991; Myers, 2009). Though these typologies are illustrative rather than exhaustive, once again, their discussions expose avenues for the researcher to explain the rationale for selecting critical research methodologies as opposed to the positivist and interpretive epistemologies.

4.2.1 Positivist and Interpretive Debate

Positivist traditions objectify reality as something that can only be legitimately studied with ‘logical empiricism’, detaching the observer from the observed (Lee, 1991). It takes quantitative methodologies and natural science models to test theories and predict an understanding of a phenomenon. Positivism lends itself to the rationalist school, which could only aid construction of formal propositions, clarifying dependent and independent variables, and showing their associations.

Positivism, however, cannot explicate the instinctive responses to learning processes in a social context, as this study professes, where actors’ interactions are repeated in irregular patterns. Neither, could it provide sufficient reflective knowledge required from emergent actors for developing an evidence-based framework to support all-inclusive healthcare learning organisations with a continuing quality care orientation.

The positivist argument for separating an observer from the *subject* matter being investigated in social settings gives the interpretivists a reason to gain wider acceptance because, in a social world, researchers are inseparable from the subjects being studied. They are themselves social facts. Indeed, it is of this argument that makes the positivist epistemology inadequate for proposing a cohered emergent transformation framework, the deferred model of reality, which requires the researcher to obtain emergent knowledge embedded in the research participants that could inform and modify their planned systems. Emergent knowledge is unpredictable and relates to emotions, experience and intuitions, so it could be largely obtained through observations, interviews, focus group and document analysis to inform planned actions of healthcare managers. The researcher could not, in this case, separate himself from data collection relating to planning and daily clinical practices.

Those favouring the intimacy between observers and social objects in research might rather embrace interpretive epistemology (Schultze and Orlikowski, 2004; Kim and Kaplan, 2006; Visconti, 2010). Interpretivism seeks to develop intrinsic knowledge of individual experiences in a social context, finding meanings of beliefs, norms, motives and desires that persuade individuals to behave the way they do (Weber (1965[1930])). Interpretive researchers are integral parts of cultures they study, and are seen as ‘insiders’ rather than ‘outsiders’ who interpret and reconstruct social reality under investigation (Myers 2009: 38). They are therefore distinct from the positivist researchers, who make a law-bound generalisation irrespective of context.

The interpretivism recognition of decoding human behaviour, including people’s daily experiences and non-verbal expressions, to gain in-depth understanding of phenomena demonstrates its philosophical superiority over positivism as a socially inherited methodology (Lee, 1991). However, such recognition does not challenge the rationale behind social actions which the interpretivists seek to explain. It is limited to providing meanings to social reality.

A mere interpretation of social behaviour is important for providing a general meaning to the way local people behave but trivial for the researcher’s intention of proposing a coherent emergent framework, the *CET* model, to support continuously improving patient care. Such an evidence-based framework initiates actuality-based knowledge that relates rational thinking with emergent knowledge to evaluate healthcare learning systems and prescribe how such evaluative knowledge could bring transformative outcomes. Interpretivism falls short of this because it is uncritical of power regimes and political structures. So, data relating to system failures and criticisms of fixed management practices could not be adequately captured with interpretivism.

Meanings existing in the interpretive cultures are, therefore, criticised for lacking evaluative perspectives (Orlikowski and Baroudi, 1991). This is because interpretivism is subject to multiple clarifications from different viewpoints (Lee, 1991). Onwuegbuzie and Leech (2005) sum up these criticisms as follows:

“Interpretivists also are not safe from criticism. In particular, their claim that multiple, contradictory, but valid accounts of the same phenomenon always exist is extremely misleading, inasmuch as it leads many qualitative researchers to adopt an ‘anything goes’ relativist attitude, thereby not paying due attention to providing an adequate rationale for interpretations of their data”

If positivism were charged for lacking the contextual creativity to underpin knowledge required for testing the *CET* framework, then interpretivism would be equally accomplice for lacking transformative intentions to achieve improved patient care. Positivist would approach the problem from cause-effect relationship to perpetuate established practices while interpretivists would only explain meanings and uncritical of assumptions behind established practices. So, both do not delve deep to challenge the basis of customary routines and practices in organisational settings. The researcher avoids an exclusive application of either positivist or interpretive, as they are not germane to this study.

4.2.2 Critical Epistemology and Justification

Critical research, rooted in critical theory, points back to Marxist tradition (Crotty, 1998), and offers epistemological promise to inform how empirical knowledge could be obtained and analysed for the study. Traditional perspectives on critical theory assume that social structures have been historically ossified with unwarranted assumptions and are, erroneously, perpetuated as *‘real’* (Zanetti, 2004). Critical theorists take emancipation perspective to reform such restrictive social structures and set marginalised actors, such as those with less voice in social and political systems decision-making, free (Crotty, 1998). So, they go beyond the interpretivist idea of describing current situations and knowledge to question what, or

who, has created such ossified structures and why and how these have been continued (Klecun-Dabrowska, 2002; Zanetti, 2004).

The researcher takes the ‘critical’ drive of critical theory over interpretivism to argue that application of interpretive epistemology could only produce counterfactual data against critically dialectic knowledge required from the research participants, particularly the clinician group, for developing the evidence-based *CET* to enable continuously improving patient care. Gray (2004), for example, favours the critical research relative superiority over interpretive epistemology, criticising the latter as somewhat far too indiscriminating:

“Those adhering to critical inquiry perspective accuse interpretivists of adopting an uncritical stance towards the culture they are exploring, whereas the task of researchers is to call for structures and values of society into question” Gray (2004:24)

Articulation of critical inquiry that questions habitual assumptions of rigid institutional structures to engineer positive organisational outcomes and socially responsible practices has dominated contemporary management and information system inquiries (Zanetti, 2004; Cecez-Kecmanovic, 2007, 2010; Caza and Caza, 2008; Messner et al, 2008). But, taking a far too extreme stance of critical theory, such as the naive past of Marxism, at least for this study, could be dangerous. This is because Marxist philosophy argues for subversive justice to transform marginalised social world, subverted by the hidden structures of capitalism and power. It arguably uses unethical approach to address power relations. Zanetti’s (2004) interpretation of Marx’s position on power regimes and ethics is summarised as:

“In the Communist Manifesto, for example, Marx writes that the task of the communist revolution is to do away with both bourgeois property and bourgeois morality. “Orthodox” Marxists have been openly hostile to the idea of ethics, considering any ethic to be the ideology-laden product of the bourgeoisie and therefore deserving of suspicion and contempt”

The socialist (communist) aggression towards capitalist supremacy (bourgeois property) is paradoxically amoral. The traditional critical theory commitment to organisational change is theoretically important, but Zanetti's (2004) take on this is that, the ossified social world conceptions, in its overtly Marxist forms, have been confrontational towards ethics and emancipation. Seemingly, such an austere approach towards reforming social systems, such as public services, carries epistemological bias, and should require rethinking.

The Frankfurt School's communicative rationality domain of critical theory, credited to Habermas (1984), might instead, promise a more sensible argument for encouraging emancipation and less quarrelsome instigation of Marxist public anger. Communicative rationality describes how speech, an inherent critical inquiry tool of modernity, could provide people the autonomy and moral critiquing rights to question and analyse background assumptions with mutual understanding (Zanetti, 2004).

However, if Marxist critical theory were draconian (austere) scholarship for cohered emergent transformation which uses creativity of emergent knowledge of actors to instigate change; then the Frankfurt School's derivative would be similarly deficient for its Habermasian proceduralism akin to rationalism. Sinnerbrink (2011) describes Habermasian proceduralism as an increasing formalist communicative reason or rationality to renewing social sufferings. The contemporary appropriation of critical theory for organised change should, therefore, neither privilege pure Marxism nor exclusive retrieval of aesthetic critique in Habermas forms. This is because, draconianism and exclusive proceduralism cannot thrive where all-inclusive learning and emergent-actuality are tightly coupled for cohered transformation.

Evidence of proceduralism is confirmed in Brodbeck (2002) where the author observed that the rationalist procedures for charging interest on working capital to subsidiary divisions by the central finance division of a multinational company was not appropriate for practices

demonstrating emergent characters of complexity constructs. Brodbeck's (2002) findings suggest elimination of traditional bureaucratic management culture characterised with proceduralism and advocate the merits of self-organising and self-motivating elements of complexity theory for procedural design. For procedures to be fair, the research participants recommended that management decisions should allow greater staff involvement in control and review of assets management. This is to promote free flow of communication, trust and openness in procedural design without fear of retribution.

The future of critical theory, as Kompridis (2004) suggests, should therefore lie in the 'world-disclosing' critique. This describes the instinctive expositions of alternative pluralist thoughts and actions to identify hidden assumptions while accounting for the communicative rationality (Sinnerbrink, 2011). This inscription motivates the researcher to marry the time-responsive character of the 'world-disclosing' critique, and its recognition of communicative rationality (Sinnerbrink, 2011) with the deferred model of reality. Such consistency is a justificatory argument for using critical epistemology to inform empirical knowledge required for testing the elements of all-inclusive learning, planning, emergence and deferred synergy within the *CET* model (discussed in section 3.3).

A contemporary annexation of critical theory in management inquiry also instantiates how actors could bring organisational change with varied forms of criticisms. Messner et al's (2008) broad critical perspectives on learning and change is another interesting argument for the researcher's choice for critical epistemology. They draw on practice theory, institutional theory, and Foucault's analytics of power/knowledge regimes to differentiate types of criticisms that give meaning to organisational practices, their rationalities, and power relations.

Criticisms that emerge from actors' responsive relations to one another – idiosyncratic actions–, and are devoid of specific established routines, connive practice theory characteristics (Messner et al, 2008). Employees, for instance, can use this practice-based criticism in the emergence school domain to question unwarranted practices, but clash with institutional powers. Criticisms premised on institutional theory define organisational rationalities, enacted in fixed bureaucratic practices, to perpetuate status quo (Messner et al, 2008). The critical actors in this territory exercise rationalist criticisms of impunity to foster change akin to organisational strategic agenda. This might be a more thinkable critique for those who uphold managerialist view but a less imaginable option for those who might attach Marxist hostility to challenge taken for granted suppositions.

Criticisms that franchise the Foucauldian power/knowledge relations to criticise organisational practices instigates transparency between power structures and knowledge endowments to legitimate change. Messner et al (2008) argue that both the critics and the actors being criticised can differ from time to time with their criticisms arising promptly to disrupt established routines. Yet, these characteristics of the Foucauldian 'balanced-view' show no demarcations between such things as true/false or legitimate/abusive in systems that require actuality change; such as, clarifying the distinctive roles between managers and clinicians in healthcare learning and their interactions in designing emergent actuality systems. Neither does it pledge how to obtain knowledge sufficient for developing the cohered emergent transformation model.

In fact, postmodernists have argued that power/knowledge criticism is one-sidedly explained from organisational control to politicise such criticisms, stifle individual choices and destroy moral commitments required for change (Feldman, 1999). Messner et al's (2008) criticism typologies are, however, significant for their congruence with this study's premeditated

ontologies—the rationalist, the emergence and the balanced-view schools. But, to claim that knowledge gleaned on Foucault’s analytics of power/knowledge regime is equivalent to knowledge required from the deferred model of reality actants for emergent transformation is problematic for its ambiguities. Rather, Cecez-Kecmanovic (2011) advocates critical research use of ethical and values postulates as catalysts for transformative change.

To obtain data for proposing an evidence-based framework to evaluate transformative healthcare learning systems, the researcher does not deny seeking critical knowledge of reality from different actors. What is important, however, is to obtain critical knowledge that shows the interrelations between planning as specified action and emergence as causal power of actuality, in a ‘deferred epistemology’ context (Patel, 2006) for continuously improving patient care. This opposes the Foucauldian ambiguity of inconclusive true or false knowledge (Mutch, 2005). The researcher argues further for the following *truth* as reasons for choosing critical epistemology:

The first truth, as we have come to know, is, a significant proportion of literature on organisational learning and management practices argue that many organisations are still trapped in rigid institutional structures and actors have to unlearn to liberate such entities (Argyris, 1990; Coopey, 1996; Burnes et al, 2003; Senge, 2006; Hong and Fiona, 2009). In doing this, organisational learning should promote justice, challenge traditional management practices and question hidden assumptions (Argyris, 1990; Burgoyne, 1995).

So, a complementarity exists between critical epistemology and Senge’s (2006) ‘learning to liberate an entity’, a critical supposition underpinning learning organisation. Learning to transform organisational procedures is a reflective and critiquing process (Mezirow, 2007). Conceptions of triple-loop learning (Gash and Orlikowski, 1991; Burnes et al, 2003), the ultimate goal of learning organisations, which challenges strongly interpretations of existing

knowledge and traditional constructs, would therefore be deeply understood if subsumed under critical research.

The second truth is, essential technologies for learning are designed with strategic decisions and planners' specifications without enough consideration of users, a greater proportion of organisational workforce, who apply intuition to learning technologies (Chen et al, 2003; Heeks, 2006; Patel, 2006; Hong and Fiona, 2009). The irony is, failure to include users' involvement is a denial of equal acceptance of emergence interpretations in social circumstances. The researcher intended to question why users have been deprived of their everyday technology usage requirements in adoption decisions, with optimism to bring change to such management design practices in KATH where the study was conducted.

The third truth is, researchers who seek to improve healthcare delivery with ICT have turned to critical research traditions, arguing that to deploy effective health information systems one must also critique the hidden assumptions underlying the ICT uptake (Myers and Young, 1997; Klecun-Dabrowska, 2002). Therefore, applying critical research to the proposed *CET* for designing and evaluating healthcare ICT-supported learning and knowledge management processes affirms a methodological rigour of research heritage.

The fourth truth is, it is in the interest of enhancing quality patient care that the study embraces critical epistemology. This seeks to question the systemic clinical knowledge creation systems including the supporting technology. The fundamental beliefs, underlying the provision of continuing professional development training, at least in a Ghanaian healthcare delivery system (Aiga, 2006), are mostly driven by the rationalist school. Policy guidelines and institutional procedures prime administrative staff as CPE targets, discouraging other staff, such as clinicians, from considering it more seriously (Aiga, 2006). Application of critical research would allow suggestions for questioning and improving the status quo,

thereby taking a step ahead of the traditional interpretive dogma (Klecun-Dabrowska, 2002), in terms of learning to transform.

It is significant to note that, the three-fold epistemological distinction (positivist, interpretive and critical) is a simple ideation guiding how the different philosophical principles could be applied to a particular line of inquiry. In practice, the classification is rarely clear (Myers, 2009).

4.3 Research Design

Critical epistemology is identified but does not itself solve the problem of research design. In emergent organisations, the design and choice of appropriate method(s) are difficult (Onwuegbuzie and Leech, 2005). As design researchers acknowledge:

“There is lack of design research in systems generally and lack of design research on organisation and systems as a composite third order of phenomenon” (Patel, 2006: 6)

The symbolism of design research that might satisfy the intentions of a third order phenomenon, such as third order change or transformative growth, should focus on rich actions for a successful outcome. For Patel (2006), the approach should include clear purpose, intention and meaning, social interaction and support, and ways for finding certainty and catering for unplanned change or uncertainty. Qualitative research lends itself to these research design strategies where new ways of studying organisations privilege a ‘rigorous-crafted’ research fit (balancing science and beauty of research), with researchers being responsive to the opportunities of experience, people, thoughts, materials and processes (Cunliffe, 2011).

The basis of ‘crafted and scientific research’ lies in providing a convincing relationship between theories, conceptual frameworks, philosophical positions, methods, and their

practical consequences (Cunliffe, 2011). This conception does not deviate from the relationship between the proposed evidence-based framework to support coherent emergent transformation in healthcare learning, with the theory of deferred action, and adoption of critical research that gravitates towards deferred epistemology (Patel, 2006). This is where planned research activities of practical significance are made sensitive to emergence without compromising thoroughness.

Endorsing a rigorous-crafted research allows a better understanding of organisational complexities to motivate a conflation of different design approaches of qualitative research relevance to addressing research problems (Morgan and Smircich, 1980; Cunliffe, 2011). Contemporary researchers who embrace these ‘pragmatic’ design methods have committed to ethnographic case study (a combination of ethnography and case study) as prospects for applying theories in practice (White et al, 2009; Visconti, 2010).

The researcher sees ethnographic case study as an emerging research technique with competences to balance a short time fieldwork activity with quality data gathering in which the theory of deferred action is unveiled in a healthcare setting. The justification for this is discussed in section 4.3.1, comparing and contrasting ethnography with case study, and in section 4.3.2, elaborating the *raison d’être* for the *critical* ethnographic case study approach.

4.3.1 Ethnography versus Case Study

Ethnography reveals the worldview of people and demonstrates their daily cultural meanings. Its origin can be traced to numerous research traditions. Particularly, in anthropology, Geertz (1973) adopted the term ‘thick description’ to explicate how anthropologists could explore and analyse their subjects without sympathising with the people. Understanding cultural

meanings is required for analysing social artefacts, such as words, images, behaviours and organisations (Geertz, 1973).

Symbolic artefacts therefore need contextual explanation for them to make sense to 'outsiders'. Doing this, involves ethnographers immersing themselves in the life of the cultural phenomena they study. Malinowski's pioneering work (Soyini Madison, 2005), intensively conducted through participant observation among the Trobriand Islanders is a classic example of ethnography. Following Malinowski, researchers began to understand why the previous collection of voluminous material, obtained out of cultural context, from non-Western societies could only make little sense to Western observers (Harvey and Myers, 1995).

The researcher inducted himself into the working culture of KATH interacting with diverse working groups (healthcare managers, clinicians and other employees) to learn how the ICT-supported learning and knowledge management processes impacted on quality patient care. This brought about a living conversation between the participants and the researcher, translating the participants' hunches and pre-conceived knowledge into data required for developing an evidence-based framework for evaluating healthcare learning systems. After the actual fieldwork presence, the researcher continued to engage with the participants to gather data, over a period of ten months, to bring tacit knowledge of participants to shape meanings required for ICT-supported learning re-designing. This distinguishes ethnography from other qualitative methods in the sense that it allows collection of vital information over a longer period of time to challenge conventional practices (Soyini Madison, 2005; Myers, 2009; van Maanen, 2010).

In contrast, a case study approach uses multiple sources of evidence to investigate a contemporary phenomenon, within its real-life context, particularly when the confines

between phenomenon and context are not clearly apparent (Yin, 2003). It is more outward looking. Drawing on Yin, Visconti (2010) interprets case study as one appropriate method for theory building including theory generation, extension and contestation.

The researcher applies the theory of deferred action to develop the cohered emergent transformation model, and relates the framework to a real world situation. So, in terms of theoretical and conceptual contributions, one could not be faulted for considering a case study approach, at least, when time and resource constraints could not permit a longitudinal investigation (observations of the same research unit over years).

Case study inquiry has been used in many organisational learning studies with different epistemological and methodological orientations (Huysman, 2000; Allan and Lewis, 2006; Kira and Frieling, 2007). The same degree of case study adoption can be said of knowledge management systems and healthcare studies fields (Muthusamy et al, 2005; Matthews and Thomas, 2007). In some instances, a case study method is classified under qualitative (Myers, 2009) and combined with participatory study (Pahl-Wostle and Hare, 2004). Others have even taken a quantitative case study approach to investigate the patterns of learning organisations (Mets and Torokoff, 2007).

Where to place a case study in a qualitative-quantitative continuum has become a long standing debate. However, Neuman's (1997) submission could be taken as a guide for embracing elements of case study in this research. He argues that a case study could be used in either qualitative or quantitative studies in as much as it is *epistemologically unbiased*.

Ethnography is different from case study in some respects. Myers (2009) summarises this as: The length of time spent doing the field investigation; the researcher orientation; and the type of data collected. Ethnography usually takes a long-term participant observation while case

study is generally conducted through in-depth interviews within a shorter period of time (Yin, 2003). Suggested time frame for field work is at least six months for ethnography and only a few weeks or months for case study (Myers, 2009: 95). Ethnographic data is more enriched by active participant observation, in which an ethnographer learns from people who are the subject.

However, the distinctions are challenged with a number of ethnographic research publications which neither satisfy the physical participant observation rule nor meet the longevity requirement. Kim and Kaplan (2006) combined ethnographic methods with semi-structure interviews to develop an understanding of IS engagement co-evolution in an Australian university. Kim and Kaplan observed only, and taped 38 meetings. Ethnography, in this respect, did not involve active participant observations.

In recent times, computer-mediated communication methods have been adopted to appreciate the culture of research subjects. Kozinets (1998; 2009), for instance, recommends a netnographic orientation, which describes the use of internet to study culture and communities, as an appropriate method for investigating consumer behaviour in marketing. Similarly, Yildiz (2009) used a virtual ethnographic approach to evaluate the knowledge transfer processes in mass team collaboration among IT professionals in geographically dispersed areas. The study identified trust, security and expertise as the most crucial factors for knowledge transfer activities in mass collaboration. Yildiz concluded that the interactive and dynamic features of social networking merit their acceptance for ethnographic studies. Online community interaction is beginning to provide, at least, a substitute for doing long-time field participant observations.

A further discussion on an ethnographer's non-appearance on the field is detailed in Wilson (2002). Wilson adopted a document-based ethnographic method to execute a doctoral thesis

on 'crime specific opportunity structure in Barings Bank'. His motivation for document-based ethnography lies in the historical description and analysis of events, and how they are adapted for present situations. Selecting the method as a matter of convenience, Wilson argues that, a contextual understanding of the past could be deduced from monographic material. So long as these artefacts are adequately available for detailed analysis, researchers would not necessarily need to be in the field to make ethnographic conclusions.

Wilson (2002) found that the initial lapses in the formation and development of the bank including its supervisory flaws led to its collapse. His document-based ethnographic study highlighted failures in the financial, management and operating controls as some specific examples that caused the fall of the bank.

Over-generalisation of the dichotomy between ethnography and case study, based on a short period spent doing observations, without a considerable recognition of the actual field knowledge obtained, is as serious as false dichotomy. Internet- and document-based ethnographic strategies, in contemporary studies, provide grounds to refute the long-time fieldwork criterion used for classifying a qualitative study as ethnographic or non-ethnographic.

The researcher's aim of developing an evidence-based framework, the *CET*, necessitated his physical presence in the field to gain a first-hand experience from KATH's social actants. This experiential learning, involving the researcher gaining direct knowledge from the participants was a definite requirement to ascertain the intricacies of healthcare learning. But, so long as enough face-to-face familiarisation had been made with the healthcare managers, clinicians and clinician managers, the key data collection participants, the continued stay in the field by the researcher was therefore not a major requirement to obtaining detailed and accurate data.

An exclusive adoption of either ‘pure’ ethnography or case study is therefore rejected. Instead, we accept White et al (2009) proposal for ethnographic case study, a more pragmatic balance between the limited time used for participant observations and the substantial anthropological records gathered for making valid conclusions. However, the reason is not to pursue the two methods with equal emphasis, but to demystify any doubts that might preclude ethnographic study from being classified as such.

4.3.2 Critical Ethnographic Case Study

Critical ethnographic case study was adopted as a suitable research method that married the rigour of a long-time data collection period with the limited time spent in the field by the researcher. *Critical* is juxtaposed on the ethnographic case study to describe its attuned epistemological assumptions, enabling the researcher to question the motivation behind the established KATH learning practices that assumed rationalist conceptions. It is significant to note that, both ethnography and case study are philosophically neutral; they can be approached from either positivist, interpretive, or critical traditions (Myers, 2009).

An ethnographic case study, of itself, is an emerging qualitative design strategy (Visconti, 2010). So far, there has been little discussion about its application to research, or at least, it lacks a definitive meaning. Many research publications using ‘ethnographic case study’ in their titles have either failed to discuss the term or to provide an operational definition (Mosley-Howard and Evans, 2000; Eckman and Lindlof, 2001; Smith, 2002; Krauss, 2010; Ager, 2011). Surprisingly, these publications rarely used ethnographic case study in the main text apart from the study titles.

Eckman and Lindlof’s (2001) ethnographic case study, for instance, reporting on a newspaper organisation’s effort to re-design its news and ‘advertorial’ (advertising) content, wholly

treated the research design as a case study. Given that Eckman had worked in a full-time position for this newspaper organisation for two years and collected data over several months using interviews, focus group and participant observation, one would have categorised their research as ethnographic. However, their methodological design provided an exclusive argument for a case study without mentioning ethnography or ethnographic case study yet, the title of the study grips on ethnographic case study. This shows how the ethnographic case study method could be misunderstood, misused and mistakenly applied.

An awkward definition of ethnographic case study is attempted by Fairhurst and Good (1991).

They state:

“The ethnographic case study is one method of providing an experiential approach to solving problems or understanding jug company corporate culture”

This definition emphasises the importance of direct experience to understand research actants in organisations but does not show an explicit mix of different ethnographic and case study features. A recent definition draws on philosophical assumptions to provide a better perspective of the term to show strong commitment towards case study and ethnographic research (Visconti, 2010). Visconti states:

“I define ethnographic case study research as the application of the ontological, epistemological and methodological features of ethnography to a theoretically selected set of business cases”.

Though conducted in the field of marketing research, Visconti’s ethnographic case study viewpoint is selectively applicable to this study. At least, the data collection and reporting process of Visconti’s conception have some resemblance with this study. As Visconti suggested, an ethnographic case study predicts participant sampling criteria that could draw most knowledgeable agents to increase the likelihood of researcher obtaining valuable and rare information. Similarly, the researcher sampled the 20 participants from the corporate

healthcare manager group and the clinician (including the clinician manager) group, in a ratio of 1:3, to enable the generation of varied and contrasted responses towards designing the evidence-based *CET* model.

As Visconti did, the researcher immersed himself into the field (KATH) to observe, record, interview and analyse data, with the emerging actors' responses reported back to KATH for possible action. The contrast, however, is that, Visconti pursues ethnographic case study from the interpretive perspective; lacking evaluative meaning necessary for improving healthcare learning. The researcher rather sought critical epistemology, a much stronger approach to pursuing change with the proposed evidence-based framework informed by the theory of deferred action. This is to say, no two research studies are exactly the same, even when they apply the same the methodological and axiomatic approaches.

So, why do we combine the two field work methods that we could not achieve adopting exclusively? First, inferring the link between theory and practice is one explicit objective upheld by an ethnographic case study method (Visconti, 2010). Researchers develop deep knowledge of the people they study and make inferences from what they say, what they do, how they do it and why they do it. In this regard, the difference between ethnography and case study is therefore not stark. For those who advocate mixing the two methods, theories could be related to daily activities and vice versa (White et al, 2009).

Second, conflating the two methods clarifies, not only the short time spent in the field but, the reasons for employing varied techniques for gaining insights into the case. The dichotomy between the time spent and a number of participant observations undertaken should not be considered as important as the contextual knowledge empirically gained from the hospital and the subjects investigated. Ethnographic case study brings out the key similarities of ethnography and case study to provoke an insightful qualitative perspective, whose discussion

is, otherwise, silenced in intellectual debates. Thus, it eliminates methodological dilemmas that influence inconsistent tagging of research titles with ethnographic case study or restrain researchers from categorising their investigations as such.

Third, and more importantly, it is rather the key intentions of the research that drive the methodological selection. Obviously, proposing an evidence-based framework for designing and evaluating organisational learning management system for KATH required some amount of field presence. However, adequate planning and preparation, and trust building were essential factors needed for obtaining enough and quality field data, upon which credible conclusions could be made (see section 4.5.2). These were more vital in the study than the actual time spent in the field.

Fourth, KATH is a busy working environment. Though a research centre, scarce resource allocations could not allow allocation of an office space for the researcher to work as a long-term honorary staff observing the participants' day-to-day activities in an office situation. What was possible is, getting a facilitator who could introduce the researcher to specific data collection points in the field. It was reasonable, in such circumstances, to do essential data collection exercise on site while at the same time establishing rapport for further investigations. The application of ethnographic case study is more convenient in this case, allowing the researcher to spend quality short time on the field and gather subsequent data through emails and telephone exchanges with the research subjects. As Beaulieu et al (2007) would argue, if technology could contribute to research/project activities in an ethnographic case study context, it should be allowed to smooth over such activities to shift the amount of time spent on tasks.

Fifth, critical ethnographic case study binds a researcher as a mediator between the subjects and findings. Critical ethnographers perceive social reality as historically represented and

perpetuated. Conscious efforts to change formalised procedures and processes are constrained by socio-cultural and economic powers. On the epistemological stance, a critical case study research advocates the same principles as critical ethnography. Myers (2009) provides almost one and the same explanation for the two. In the former, he states

“Critical case study involves critical reflection on current practices, questions taken-for-granted assumptions, and critiques the status quo based on the theories of one or more critical theorists” (2009: 78).

In the latter he reiterates:

“Critical ethnography sees ethnographic research as an emergent process, in which there is a dialogue between the ethnographer and the people in the research setting. Ethnographers tend to ‘open to scrutiny otherwise hidden agendas, power centres, and assumptions that inhibit, repress, and constrain’ (2009: 98).

The dividing line between critical reflection and critiquing hidden assumptions is very thin, suggesting some avenues for proposing a rapprochement between *critical ethnography* and *critical case study* for designing and evaluating organisational learning and knowledge management processes to support continuously improving patient care using the ICT of KATH.

The critical ethnographic case study expectations influenced the critical researcher to question why the design of KATH learning processes including continuing medical education, appraisals, intranet deployment, telemedicine technology and ePatient systems have failed to achieve the desired care delivery results (see section 5.4). The researcher applied critical questioning techniques to develop deeper knowledge of the failed manager-centric ICT-supported learning systems of KATH from the participants who sought emergent knowledge as opportunity to bring change. Such forms of critical interactions led to the call for re-designing the existing systemic methods of learning in the hospital from many clinician interviewees who subordinated to managers' decisions.

4.4 Ethnographic Case Study Background and Ethical Process

The study was conducted in Komfo Anokye Teaching Hospital (KATH), Kumasi, but the case background could not be fully understood without discussing the Ghana health policy, the domain of the case organisation. Section 4.4.1 echoes how the ICT-supported learning issues are identified with the Ghanaian Ministry of Health, with section 4.4.2 explaining why KATH, one of the leading teaching hospitals in Ghana, was worth investigating. Section 4.4.3 provides an account of ethical processes and challenges, leading the researcher to gaining access to KATH.

4.4.1 Ghana Health Policy, Clinical Workforce and ICT Concerns

The Ghanaian Ministry of Health (MoH) is envisioned to create wealth through healthy and productive lives. This is to ensure that the Ghanaian population reproduces itself safely. By this, the Health Sector contributes to the country's vision of achieving middle-income status, with US\$1000 per capita by 2015. The MoH's development ambition is expressed in the following statement:

“The mission is to contribute to socio-economic development and wealth creation by promoting health and vitality, ensuring access to quality health, population and nutrition services for all people living in Ghana and promoting the development of a local health industry.” (Ministry of Health, 2007).

The strategic policy of the MoH carries three interrelated objectives, intended to promote the sector's healthy vision. These are geared towards: Promoting productive lives without increasing risk of injury or death; minimising the risk of morbidity, mortality and disability among vulnerable groups; and lessening inequalities in healthcare accessibility (Ministry of Health, 2007). The objectives are health-related Millennium Development goals for Ghana.

Achieving the health policy objectives require a mixture of various intervention inputs from multiple health service providers, categorised into: the Ghana Health Service (GHS); the Teaching Hospitals; other Agencies; Development Partners; and the Private sector. However, healthcare provision in Ghana has, over the years, suffered from human capacity development to promote quality service delivery (Asante and Zwi, 2009). Only three hospitals fall under the Teaching Hospitals group, limiting the number of service providers contributing to the training of clinicians. The three teaching hospitals are spread across the southern, central and northern geographical strands of the country but still inadequate to meet the rising patient demand for clinical services.

An unsatisfactory doctor-population ratio of 1:10000 reported on Ghana in 2007, by the World Health Organisation (WHO) Regional Office for Africa (2009) exists. According to the report, medical officers represented 4.8% of the total 43000 public health sector workforce. Attrition of medical professionals in the sector increased progressively from 52 in 2000 to 120 in 2004, exerting serious pressures on quality care delivery (World Health Organisation, 2005). Even worse, the WHO warned an estimated quarter of doctors leaving Africa for better paid jobs abroad (brain drain). Apparently, the dearth of health workforce is a biggest risk to an effective health system in Ghana (Asante and Zwi, 2009).

Human resource development measures are being taken to create, expand and upgrade human capabilities to fill health service delivery gaps (WHO Regional Office for Africa, 2009). Aiga (2006) confirms the existence of the Continuing Professional Education (CPE) policy in the Ghanaian MoH, requiring the healthcare workers to complete at least one CPE training opportunity in every three years. But, he does not spare the MoH of the CPE opportunity gap between the prime administrative staff and the clinicians (Aiga, 2006).

Equally important policy measures for human capacity development include encouraging people, whose actions influence health development positively, either directly or indirectly, and from both Ghana and overseas to support care delivery (Ministry of Health, 2009). Also, strengthening accountability and appraisal is considered a responsive human resource management strategy. Motivation strategies, such as compensation and incentives systems, are not eliminated from the human capacity building equation. These strategies, harmonised with the Global Health Agenda Initiative, aimed at addressing health-related strategic gaps (WHO Regional Office for Africa, 2009).

However, weaknesses in information flow and ICT usage pose some major concerns in the MoH policy (Ministry of Health, 2009). Lack of adequate health information systems has existed, as a key problem facing patient data management, and institutional capacity development in Ghanaian health settings for many years. Compared with other international best practices, the ICT usage in Ghana is far too low, ranked 99th out the 138 economies presented in the Global Information Technology Report 2010-2011 (World Economic Forum, 2011).

The disappointing findings raise questions about Ghana's networked readiness for effective healthcare transformation, which has continued to suffer untimely reporting and weaknesses in decision making. The critical researcher agrees with the MoH's (Ministry of Health, 2009) policy commitments that improved and appropriate ICT implementation could advance clinical planning and medical practices for quality patient care.

Previous policy measures have considered a multi-sectoral approach to guide the development of health information systems (Ministry of Health, 2007), but until now, there is very little evidence of a comprehensive health ICT system to support effective care delivery in Ghana. In January 2006, the Ghanaian Ministry of Communications and Telecommunications

Consultants India Limited (TCIL) signed a memorandum of understanding to implement a Pan-African e-Network Project in Ghana (Ghana News Agency, 2006). The Tele-Medicine modular of the project was intended to enhance clinical practice through knowledge sharing and continuing medical education.

Yet, the agreement required TCIL to design and manage the operations of the project for the first five-year period before passing the responsibilities on to an African team. Clearly, this set the tone for a designer-based continuing medical education eLearning system. TCIL was also responsible for providing the Tele-Medicine equipment, including installation and maintenance of a Very Small Aperture Terminal (VSAT) based network. This is another example of planner-influenced deployment of ICT.

4.4.2 Background of KATH

KATH draws its strategic objectives from the Ghana MoH policy framework and is therefore required to meet the quality care needs of Ghanaian MoH. But, as highlighted in section 4.4.1, Ghana healthcare system has mounting problems relating to medical staff shortages and high attrition rates, mismatch continuing health professional education needs and training provisions, long patient waiting time, and inadequate health information systems to support care delivery. These issues, among others, are cascaded into the healthcare providers such as KATH, which have statutory obligation to improve quality care. Investigating these issues in KATH and addressing them by proposing an evidence-based framework for designing and evaluating organisational learning and knowledge management processes to support continuously improving patient care is a worthwhile study.

KATH, situated in Kumasi, the second largest city of Ghana, was initially established in 1955 and became a teaching hospital in 1975. The importance of the hospital can be measured by

its catchment population of approximately 10 million people, stretching beyond Ashanti region, where it is located, to cover 6 out of 10 regions of Ghana. These include Brong Ahafo, the three Northern Regions, and to some parts of the Central and Western regions. Figure 4.1 below shows the map of Ghana and the location of KATH.



Figure 4.1: Location of KATH: Map of Ghana

Stretching its resources over a vast catchment population, it could obviously be argued that KATH's care delivery responsibilities are disproportionately high. Asante and Zwi (2009) make the point that, the Ashanti region, the core catchment area of KATH, is the most heavily populated in Ghana, with over 3.6 million inhabitants. KATH has therefore struggled over the years to achieve its care provision objectives (KATH Annual Report, 2009).

Mandated by the Ghana Health Services and Teaching Hospitals Act 525 of 1996, KATH provides advanced clinical care, training and research. The Act gives teaching hospitals in Ghana functioning autonomy but this privilege is circumscribed by the financial dependence of the MoH resources, though the hospitals draw their key strategic objectives from the Health Ministry policy framework.

Being one of the three teaching hospitals in Ghana, KATH facilitates the training of medical professionals including pharmacy students at Kwame Nkrumah University of Science and Technology (KNUST), Kumasi. It serves as a training centre for Ghana Post Graduate College of Physicians and Surgeons and the West African Colleges of Physicians and Surgeons as well as providing a hub for training nurses and midwives in Kumasi metropolis.

The hospital's obligations to their diverse clients are summarised in the following mission statement:

“The mission of the Hospital is to provide quality services to meet the needs and expectations of all its clients. This will be achieved through well-motivated and committed staff applying best practices and innovations”.

But over the years, the hospital's investment activities had been unable to realise some key performance targets such as eliminating the perceived poor staff attitude and rising maternal mortality. Attempts to improve client services had directed the hospital's 2010-2014 strategic focus on human resource development, staff attitudinal change and quality healthcare delivery; as some important indicators for improved performance. Achieving the strategic targets requires the staff's commitment to the hospital's core values which include continuous quality improvement, continuous working in teams, staff empowerment through continuous personal development and recognising hard work and innovation. It is on the basis of these values, and their performance criteria, that this study intended to address because they relate to the **CET** model that prescribes how organisational actors could continuously learn to achieve transformative growth.

As a large teaching hospital, KATH's broad services were decentralised into ten specialist clinical directorates: Accident and Emergency; Anaesthesia and Intensive Care; Dental, Eye, Ear, Nose and Throat (DEENT); Child Health; Diagnostics; Medicine; Obstetrics and Gynaecology; Oncology; Polyclinic; and Surgery. Two non-clinical directorates also

provided domestic and technical services respectively for the hospital. Each directorate was managed by a management team and headed by a clinician manager, in the case of specialist clinical directorates. The directorate level operations were supported by 14 decentralised Units: Biostatistics; Finance; General Administration; Health Insurance; Human Resource; ICT; Internal Audit; Pharmacy; Planning Monitoring and Evaluation; Quality Assurance; Research and Development; Supply Chain Management; Transfusion Medicine; and Security. Similar to the directorate-level management, the unit areas are headed by managers who are mostly non-clinical managers but could also come from clinical background, as was the case of the Transfusion Medicine. Noting the department anonymity requirements, as stated in the research protocol and the Participant Information Leaflet, the names of the *relevant* directorates and units are anonymised in the subsequent discussions, particularly in Chapter 5.

Poor communication between various units and directorates has hampered effective service delivery. Dzokoto's (2007) report on the technical and organisational capacity assessment of KATH identified unclear lines of communication, weaknesses in information systems and poor supporting tools for staff training and learning in KATH as some key issues affecting quality care provision.

Procurement for equipment had received recent media criticism for not involving local technicians and experts who would use such tools, with technical support for managing modern machines and equipment lacking. Press reports cited the Asantehene (the Paramount Chief of Ashanti) expressing concerns about the breakdown of installed modern machines and equipment at KATH with the supplying contractors refusing to train local technicians on how to repair such equipment (Ghanaweb, 2010). The consequences of not involving the local technicians in machines and equipment adoption the reports feared, could lead to revenue loss for the country with patients deprived of technology benefits (Ghanaweb, 2010).

Central to planning and decision making was a management team, comprising of the executive board and the department heads, who provide administrative support for the various directorates and units. Governed by 6 executive members, 4 non-executive government appointees and the Dean of the School of Medical Sciences (SMS), KNUST, the hospital has, seemingly, a strong management team. The Chief Executive Officer (CEO), a renowned medical scientist and academic is responsible for the overall management of the hospital and supervises the departmental level (directorates and units) managers. Yet, staff training, development and monitoring were some areas requiring improvement, with Dzokoto (2007) recommending the need for internal quality standards for monitoring and evaluating capacity growth of KATH.

Given a poor doctor-population ratio of 1:10000 in Ghana (WHO Regional Office for Africa, 2009) and a 16% medical staff representation of KATH health labour force, the doctors experience a huge turnout of patients leading to a long waiting time (KATH Annual Report, 2009). The number of the hospital-wide employees stood at 2774 in 2009 with the decomposition of the workforce into various specialty areas is illustrated in Table 4.1 below:

Staff Strength Analysis		
Staff Category	Number of Workforce	Percentage of Workforce
Doctors	444	16%
General Support	444	16%
Administrative Support	250	9%
Clinical Support	721	26%
Pharmacy Staff	111	4%
Nurses	804	29%

Table 4.1: Staff Strength Analysis in KATH (Adapted from KATH Annual Report, 2009)

Certainly, the 2774 employees struggle to cater for the potential 3.6 million population of the Ashanti region alone, without considering the entire catchment area of the hospital.

4.4.3 Ethical Approval and Challenges

Healthcare services were identified in the current debate of technology adoption and its related organisational learning gaps (section 2.5), providing impetus for conducting the study in a healthcare setting. Gaining access to study the clinical setting was difficult because healthcare providers have well-regulated ethical clearance procedures. It was, therefore, prudent to have a backup plan to fall back on, as it actually turned out to be the case in this study.

Two thoughts came to mind when selecting a healthcare organisation. An NHS teaching hospital in London, the UK (Plan A) was a first preference for the reasons of proximity and cost-saving; and a teaching hospital in Ghana (Plan B) considered as a fall back strategy because the researcher originated from Ghana and understood the local culture. These factors were *prima facie* for considering the Plan A over the Plan B on a scale of preference.

Obtaining access to undertake research in the national health services, whether in the UK or Ghana, involved a lengthy and rigorous process, and required tenacity of the researcher. The Plan A had to be eventually abandoned because of lack of progress by the NHS, but it would be unjust if we failed to, at least, give a brief account of the time and resource used towards trying to gain approval for this option, which provided significant insights for the Plan B.

First, the researcher contacted the Research & Development (R & D) office of Whipps Cross University Hospital on phone to enquire about the possibility of conducting the study in the Trust. This discussion was formally followed up with a brief proposal of the study requesting permission to undertake the research in the Trust (Appendix 4.1). The initial proposal attracted a positive response from the R & D office, giving birth to the processing of the NHS Research Ethics Committee (REC) application for a clearance.

After a series of formal consultations, the research proposal passed the rigorous reviews of the Brunel Business School (BBS) Research Ethics Committee (Appendix 4. 2), and received a conditional approval of the Whipps Cross University Hospital Research Ethics Committee, pending the outcome of the NHS REC's decision. But, the Outer North East London NHS REC, the highest governing body supervising research activities in the local NHS establishments recommended amendments to the protocol for resubmission. This was followed on from the researcher's physical attendance at the NHS REC formal meeting. Particular areas for amendments suggested by the REC were: To clarify the methodology and the interview questions; to restrict the scope to a small pilot study; to clarify the objectives; and to indicate how participants would be invited to take part in the study.

The rejection of the protocol was disappointing but the disappointments were taken as a learning curve to guide further efforts to gaining access to the organisation. However, one question which still remains unclear is: How could *a small pilot study* satisfy the requirements of a doctoral thesis? If the qualitative research promise of emphasising *depth* were accepted, then the suggestion for *a small pilot study* would be an overly narrow design, believing to compromise the sufficiency of evidence required for the thesis. This concern is shed by Myers (2009: 31):

“There is nothing worse for a young researcher than having a proposal shot down by academics [experts] who do not properly understand the method or the planned approach”

Yet, on a more positive note, Myers (2009: 251) suggests that:

“If your paper ends up being rejected, remember to refine, revise and resubmit once again”.

The motivation from Myers neutralised the researcher's own predisposition of over-optimism towards getting it right for the first time. The protocol was re-drafted to address the issues

identified and taken to the Chair of the REC, who volunteered to support in the preparation of the amended resubmission, for further discussions. In this meeting, the Chair of the REC and another panel member of the previous REC meeting, suggested that the researcher should contact a senior person in the Post Graduate Centre of the Whipps Cross University Hospital Trust, to discuss how to identify and specify the study objectives in the domain of a particular department in the Trust. The meeting was concluded with an agreement that the researcher would contact the REC's Chair with a re-drafted proposal after he (researcher) had discussed the research with someone in the Post Graduate Centre of the Trust.

However, further attempts to arrange appointments to discuss the recommendations with the R & D Quality Manager of the Trust were unsuccessful. Indeed, space could not allow a detailed account of the challenges faced trying to gain access under the Plan A but, Figure 4.2 demonstrates why the efforts expended towards attempting to gain the Plan A ethical clearance should be appreciated.

Plan A - Ethical Process & Key Collaborators

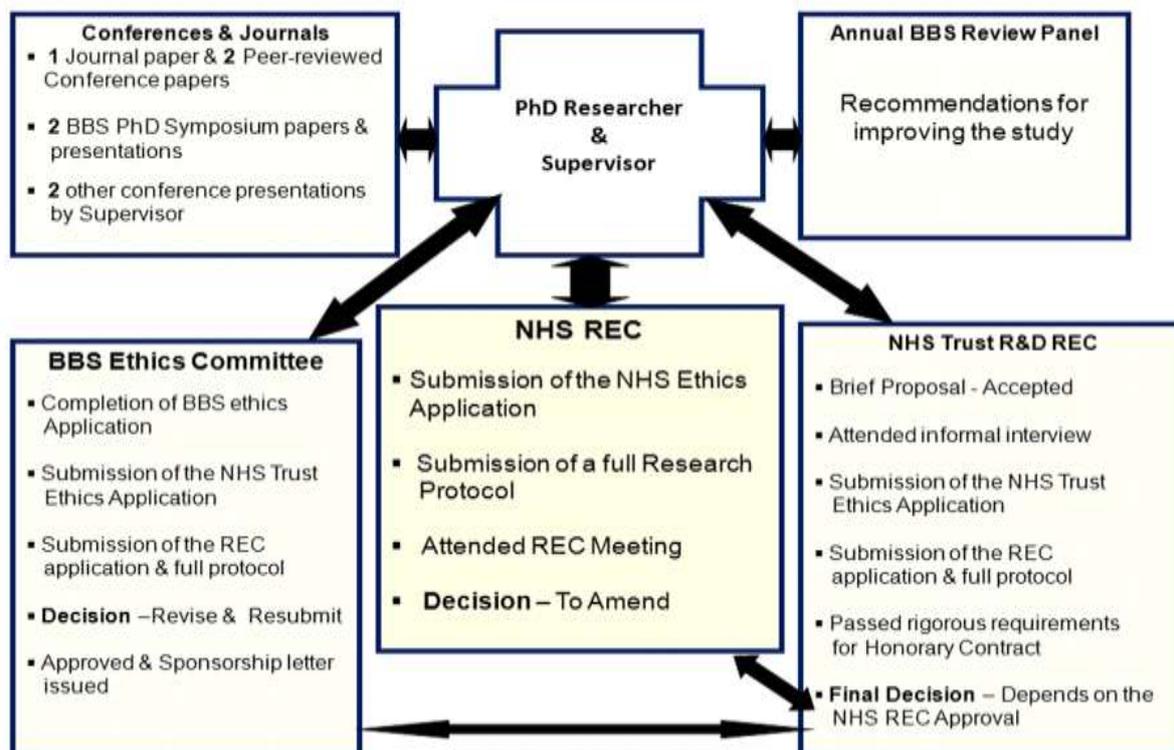


Figure 4.2: Plan A Ethical Approval Process and Research Collaborators

Working with the three independent research ethics committees, for a period of four-and-half months, trying to gain access for data collection was not only challenging but frustrating. In most cases, the requirements of one committee depended on the approval of others, and the existed ‘conditional relationships’ between the three committees made the task even more difficult. The process involved regular redefinition of the research aims and methods. At the time, the process was seen as time consuming, though that conception dissipated as experience grew and the research took better shape.

The fall back plan, the choice of KATH, was pursued. The ethical clearance process was more or less similar to that involved with the Plan A except that, the researcher was not required to attend the Committee on Human Research Publications Ethics (CHRPE) meeting.

The initial consultations with the KATH's IT Unit suggested that the hospital was undertaking ICT changes to support staff training and learning. However, their IT uptake strategies were based on planned models, methodologies considered in the literature as inadequate to address technology adoption mismatch between planners' decisions and users' requirements (Dotsika and Patrick, 2006; Heeks, 2006; Patel, 2006).

Experience gained from the Plan A engagements was leveraged to register the research with KATH (Appendix 4.3), as a first step to seeking clearance from the CHRPE. Because the principal investigator (the researcher) lived in the UK, the R & D department of KATH advised that the researcher should find a local co-investigator (a facilitator), a KATH staff who could support the project administration in Ghana. The researcher used his contacts with former university colleagues working in academic and healthcare institutions in Ghana to identify the facilitator, and developed further rapport with him via telephone calls and emails.

It is significant to state that the facilitator's role was delineated to cover activities such as: following up ethical submissions; helping to identify some key informants and participants; introducing the researcher to the data collection points; reminding participants of the interview schedules and doing some post-field work follow ups.

The core data collection exercise, interviews, focus group discussions, observations and major secondary source evidence, was exclusively conducted by the researcher. The role demarcations were drawn to address ethical dilemmas (Payne and Payne, 2004), such as maintaining the participants' confidentiality, removing conflict of interest, and properly satisfying the requirements of the doctoral thesis, as the researcher's own work.

A complete version of a protocol, different from the one submitted earlier on to the NHS REC, was prepared and together with the required documents (Figure 4.3) submitted to the

BBS Research Ethics Committee and the CHRPE. Subsequently, approvals (Appendix 4.4 & 4.5) were obtained after going through, almost, another period of four-and-half months, and satisfying the latter’s minor review suggestions (Appendix 4.6). The academic supervisor’s approval (Appendix 4.7) was also a condition for the CHRPE’s clearance.

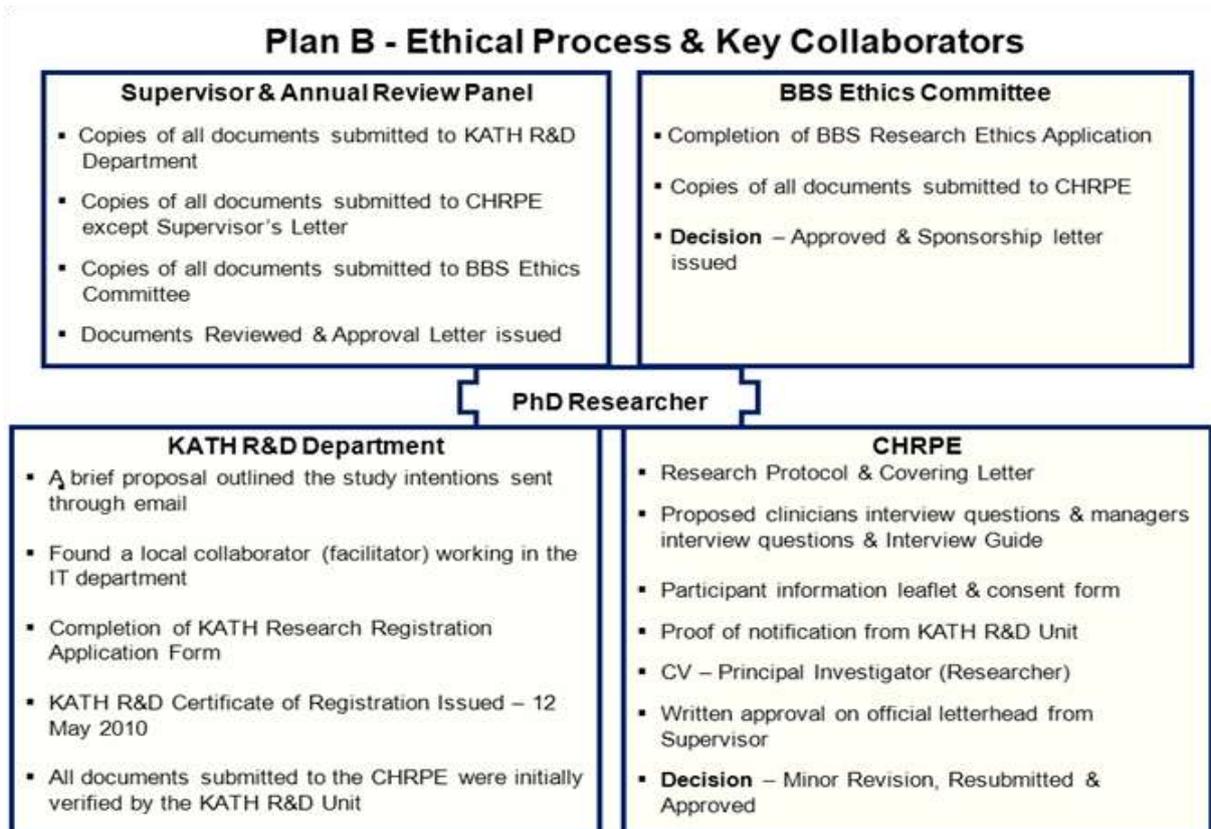


Figure 4.3: Plan B Ethical Approval Process and Research Collaborators

After almost half a year (November 2009 and April 2010) delay of progress, frantically going through a lengthy and painstaking process of the NHS REC, the clearance from the CHRPE brought results over frustrations to set the research back on track. Yet, conducting the research in Ghana introduced a different challenge. As a self-funding project, the economic cost was huge but getting it right was motivating and satisfying.

It is worth stating that the R & D Quality Manager of the Plan A hospital finally broke the six months communication silence with a brief email asking about the progress of the project:

*“Dear Frank,
Has anything happened with your study??
Kind regards”.*

This occurred after the researcher had returned from a field trip to Ghana. The message was appreciated but came too late to make any impact on the study as the progress decisions could not be made retrospectively.

4.5 Data Collection Instruments

A multi-method approach involving document analysis, in-depth interviews, focus group discussions and observations (see sections 4.5.3 – 4.5.6) was employed to achieve more credible results in an ethnographic case study context. Data collection design was driven by the study intentions, the underpinning theory of deferred action and the proposed evidence-based conceptual framework, the *CET*.

Execution of data collection is one of the most critical aspects of qualitative research. The tasks required careful participant selection and planning. The researcher conducted these meticulously, with regular reviews of planned activities with the research supervisor to satisfy the academic rigour and get the subsequent stages of the study right. Reflecting on the unpleasant experience obtained from the NHS REC ethical processes, the researcher could be forgiven for being over-cautious.

4.5.1 Participant Sampling and Selection Criteria

Sampling in qualitative studies uses natural judgements and theory-driven factors to select the numbers of participants and participants’ suitability to serve data collection purpose

(Marshall, 1996). This is because qualitative research focuses more on human intuitions and experiences to examine phenomena and interpret theories of social actions, such as the theory of deferred action, in practice. Matthews and Thomas (2007), for instance, used judgement (purposeful) sampling to select seven healthcare practitioners and two managers, in a qualitative study applying complexity theory, to conclude that learning gaps exist between the two groups of staff.

Similarly, the researcher selected 20 participants from five healthcare managers and 15 clinicians including five clinician managers, randomly drawn from seven diverse directorates and five units of the hospital, to share their views and experiences of the KATH learning processes. The sample ratio of 1:3 between manager and clinician participants was a rational judgement based on four reasons:

- (i) The literature generally reports that the clinician groups are meant to use health information systems to support patient care (Liddell et al, 2008);
- (ii) The general management operational system in the healthcare services suggests that the clinical domain is subordinate to the managerial domain (Connell and Young, 2007); and
- (iii) The managers set corporate objectives and the clinical professionals have little contribution to decision making (Myers and Young, 1997).
- (iv) With the research intention to design evidence-based framework to support continuously improving patient care, 75% participant allocation for clinicians was considered reasonable for obtaining emergent knowledge required for informing corporate managers' planned actions.

The higher sample proportion made in favour of clinicians was therefore meant to provide opportunity for more clinicians to make suggestions for improving ICT-supported learning processes in their field of practice. As general criteria for selecting the participants, managers and clinicians who used various forms of ICT for learning or decision making were the preferred group. These criteria were widened to include those involved in designing and/or accessing CPD related courses and able to provide consent for participation. Patients and service users, staff who could not give consent and clinical trainees who were on placement for less than six months were all excluded.

Potential participants falling under the inclusion criteria were captured with snowball sampling. This describes the extension of the primary participants' (key informants') networks to contact other suitable participants for the study (Denscombe, 2003). Because snowballing was applied to the inclusion criteria, it did not deviate from the judgement sampling intentions which applied defined characteristics of the potential 20 participants.

4.5.2 Preparation for Fieldwork and Time Spent

Effective planning was designed to build trust with the potential participants and KATH itself, in a way to collect relevant and usable amount of data. Prior to the field visit, the key informants, including relevant departmental heads and high profile figures in the hospital, were identified using the general participant selection criteria stated in section 4.5.1. The key informants were contacted via telephone calls for brief discussions about the study, followed by emails (Appendix 4.8). The facilitator made follow up contacts with some potential participants to consolidate the researcher's initial contacts about the study.

In the email, the researcher introduced himself and his work and study affiliations, outlined the study aim and the intended date to start data collection, and assured the participants that

clearance had been approved by the CHRPE. A copy of the clearance letter was attached in the email together with the Participant Information Leaflet and Consent Form, also stating the intentions and processes of the study. He requested the support of the departmental heads to inform their colleagues who would be willing to participate in the study. Contact details of the researcher and the local facilitator were also provided for those who might have queries about the study.

The selection of the departmental heads and the high profile members as key informants was based on the 'insider' advice that they had power and knowledge to support the study if they were informed appropriately. Second, the research protocol feedback suggested that contacting the relevant departmental heads could prove useful for accessing internal documents. Payne and Payne (2004) opine, on the basis of their social positions, key informants are endowed with specialist knowledge, something which ordinary people are deprived of.

The researcher's initial interactions with the key informants attracted receptive responses from the latter; giving the former confidence to complete the fieldwork successfully. But, creating first impression was not as hard as sustaining the confidence instilled in minds of KATH's elites to produce positive research outcomes. Adequate resources were therefore planned, reviewed and assembled to provide sustainable logistics for the field trip (Table 4.2)

Roughly one month preparation for the journey from London to Kumasi, Ghana was used to organise inputs ranging from an interview voice recorder and notebook computer to interview guides and participant information sheets. Table 4.2 summarises the input requirements for the key field activities and the rationale for their selection.

Input Requirements for Field Activities	Rationale for Selecting Inputs
Brief Presentation/Invitation to the Study	
1. Room or initial contact points	To invite participants to the study
2. Computer & projector (where necessary)	To give initial Powerpoint invitation presentation
3. Participant information sheets & consent forms	To inform participants about the study & their rights
4. PowerPoint slides & presentation copies	To introduce participants to the study
5. Field notebook	To record daily observations and take notes
One-to-one Interviews	
1. Interview room/quiet working area	To conduct one-to-one interviews
2. Interview questions & guide	To guide the flow of interview questions
3. Interview record sheets & pens	To record salient points of interviews
4. Clipboard	To hold interview papers and support notes taking
5. Sony IC Recorder ICD-SX750	To record one-to-one interviews
Focus group discussion	
1. Discussion room (for 1 hour)	To organise focus group discussions
2. Discussion questions & guide	To guide the flow of focus group questions
3. Flipchart sheets/sugar papers & blu tack	To collect group suggestions and stick them on walls
4. Flipchart pens	To jot down group discussions
5. Sony IC Recorder ICD-SX750	To record focus group discussions
Basic Inputs	
1. Field notebook	To record daily observations and take notes
2. Participant information sheets & consent forms	To inform participants about the study & their rights
3. Notebook computer	To play interview transcripts and summarise evidence
4. Field handbag	To carry field inputs
5. Working area	To collate and analyse field data
6. Internet access	To communicate with participants via email
7. Telephone access	To communicate with participants
8. Intranet access	To obtain and review internal documents
9. Vouchers	To compensate participants for their time
Note: Bold written items were expected from KATH	

Table 4.2: Input Requirements and Rationale for Selection

Ethnographers aim to build strong relationship with research participants. So, setting out clear boundaries of the study by organising copies of the participant information sheets, consent forms and interview guides for potential participants were necessary for trust building. These enabled the participants to be well informed of their rights and responsibilities relating to the study. The selection of flipchart sheets and pens was to enable the focus group responses be jotted down from the café style setting. The significance of this was, to connect both participants and the researcher intimately, and to enable participants to share their innate knowledge of KATH learning processes. The reason for the data recording and processing equipment was to capture daily episodes of observations and participant interactions for further analysis.

An hour trial of the interviewing process and the digital recording equipment was conducted with a colleague professional, a qualified PhD and a Head of IT department in Hackney Community College. The interview questions were simulated in a Further Education College setting to allow responses in context, but constructive feedback was received for improving pace and clarity of questioning. These were done to sharpen the researcher's skills for the equipment usage and fluidity for conducting interviews in the field without fumbling.

Provision of other inputs such as rooms for interviews, projector for presentations, intranet access for reviewing internal documents, and working area for data collation could all have been preferred to qualify the researcher as an ethnographer inducted into the culture of KATH. But, as these were beyond the control of the researcher, he liaised with the local facilitator to secure the provision of such resources. For the reason of resource constraints, formal provision of some of the required facilities, such as an allocated working space, was not possible.

Alternative arrangements were, however, made with the individual participants to conduct the interviews in their offices or libraries, with the Telemedicine Centre made available for conducting a couple of interviews and one focus group. So after all, the request for the interviewing room was not necessary and lack of inputs beyond the researcher's control did not impact on the data collection quality generally. Hard copies of relevant documents that could have been obtained via the intranet were provided by the relevant heads of departments.

Two weeks field presence was planned, as economically feasible for the researcher's budget. Ten full days were spent in the hospital, working between 8.30 am and 6.30pm each day and engaging in a combination of data collection activities. The observation and field diary details in section 4.5.6 and the Interviewees Background & Scheduler (Appendix 4.12) account for most of these activities. On average, a minimum of 90 hours were spent over the period.

4.5.3 Document Analysis

Documents analysis is a standard research method, which provides objective measures for investigating a socio-cultural phenomenon to enrich understanding (Dew, 2005). Documents interrogation provides researchers with prior field visit knowledge to inform the category of people to interview (Ezer, 2005). It is often criticised for lacking representativeness, being incomparable and displaying personal biases, but Sarantakos (2005) contests these claim, maintaining that the ability of document analysis to provide insights into important social issues, supports its added dimensions to other primary source material. The fact that document analysis is a retrospective and non-reactive method, makes its application appropriate for narrating organisational past events without necessarily distorting outcomes of the results (Sarantakos, 2005).

The researcher gathered and analysed a range of internal and external documents relevant to the study objectives such as to identify the existing KATH learning processes to understand how emergent knowledge could improve these. He studied public domain documents such as annual reports, website content, WHO reports on Ghana, the Ghanaian MoH policies, and the Ghana Medical and Dental Council CPD policy before going to the field. Analysis of these documents provided the researcher with background knowledge of KATH and better understanding of the research problems in context. This contributed to refining the semi-structured interview questions, helping to provoke thoughtful issues relating to, for example, the design of the CPD/CME courses and KATH's ICT adoption matters (see findings in Tables 4.6a and 4.6b), which were relevant for the proposed evidence-based framework for designing and evaluating KATH learning and knowledge management processes.

Relevant internal documents were also analysed. The programme of work reports for 2010 and 2011, minutes of meetings, consultation review documents, database of KATH research

activities, and corporate newsletters and artefacts were typical examples. The two programme of work reports, consisting of about 500 pages, in particular, provided enormous data for analysis. The reason for choosing these is that, the documents contained knowledge of KATH's past actions, achieved results, some identified problems and planned future actions, which were reviewed to develop knowledge of the aims, outcomes and issues of the hospital's learning processes. As consolidated reports of the hospital's departmental key programmes and activities, the documents provided highlights of the departmental priority activities, expected key results, performance measures and verification methods, person responsible for monitoring plan actions, and timescale.

Analysis of the programme of work reports were to seek evidence of the planned action dimension of the theory of deferred action, signifying the fact that the priority activities are strategically planned to achieve specified outcomes. The reports did not demonstrate how the planned activities would accommodate uncertainties that might affect the achievement of the desired key results. The researcher could only treat programme of work documents as plan-based strategies for pursuing quality care provision.

Selected items from the 2011 Programme of Work for five clinical directorates and three units are presented in Table 4.3 to show evidence of how some learning, training and professional development activities were summarised in the report. Relevant elements of the documents for the development of the evidence-based framework are categorised with data from other sources in section 4.6.1 and fully analysed in Chapter 5.

Sample Programme of Work 2011 - Selected Items for Selected Departments								
Objective	Priority Area	Activities	Outputs	Key results	Performance Indicator	Means of Checking	Person(s) Responsible	Timeline
TestCARE To provide specialist healthcare services	Human resource development and welfare	Attend specific numbers of workshops/ training/course/ seminar	About 17 staff benefitted from various training/ course	Improved service delivery generally	No. of staff benefitted	Report	Technical Heads / BM/ Management Team	Jan – Dec
FemaleCARE To conduct research	Maternal mortality	Conduct research into maternal mortality & women's health	Research conducted	Reduced Maternal Mortality in the hospital/ Build capacity in research	% reduction in mortality Improvement in women's health	Research results	Management Team	July 2011
MedCARE To support training of under- and postgraduate professionals	Support fellowship training	Sponsor 35 residents for update courses with WACPS & GCPS	35 Doctors sponsored for WACPS & GCPS	Knowledge of doctors improved	Percentage of doctors sponsored	Training Reports	HOD, Lead Clinician & Chief Residents	Annually
ManyCARE To provide specialized health care	Quality Health Care delivery	Train staff in client relations	145 staff trained	No. of patient complaints and confrontation with staff reduced, Satisfaction rating of service improved	No. of staff trained, No. of patient complaints and confrontation with staff	Training report Complaints report from QA, Complaints booked	Unit Heads	1 st quarter
CanCARE To provide specialist healthcare services	Improve Staff Attitude	Train staff in customer care	More specialists caring for patients	Patient satisfaction	Patient's positive response to treatment	Interviews /questionnaires	Directorate Management	Jan- Dec 2011
ITech Strengthen health system capacity(Objective 3 of ministry of health)	Human resource development and welfare	Coordinate Telemedicine CME sessions	50 staff trained	Upgrade of staff knowledge in modern trends in healthcare delivery	No. of staff that attend CME Sessions	Reports from log book/ software	KATH Pan African e-learning coordinator and Assistant	Jan- Dec
PeoManage To provide specialist healthcare services	Human resource development and welfare	Train & Develop staff	Planned training done (CPD, General/ Specialised training)	Capacity of staff built	% of Staff who transfer skills to work % of staff sent on general/specialized training	Performance Reports	Training & Development /Directorate Training Coordinators	All year round
CareQual To provide specialist healthcare services	Improving Quality Of Care	Sensitization of 70% of clinical staff on IPC principles	70% of clinical staff sensitized	Clinical staff sensitized &	% of clinical staff persons trained	Training report	IPC nurse QA Coordinator	Nov 2011

(Note: Directorates and Units' names are anonymised)

Table 4.3: Selected KATH Programme of Work – Excerpts from KATH 2011 Logframe Matrix

Interrogation of the programme of work documents contributed towards asking participants relevant questions that could fill the emergent actuality gaps undisclosed by the documents. These include changing medical practices requiring CME of local relevance, and lack of clinician involvements in designing KATH intranet and telemedicine eLearning application. How to address these issues were essential for developing the cohered emergent transformation framework.

Annual reports, minutes of meetings and corporate newsletters were equally important, but exclusively, as Ezer (2005) claims, individual documents are insufficient to inform the phenomenon under consideration; they better serve the purpose when analysed together with other data collection methods.

4.5.4 Interviews – Content & Procedure

The researcher's aim to propose an evidence-based framework for designing and evaluating organisational learning and knowledge management processes to support continuously improving patient care, necessitated the use of semi-structure interviews to obtain rich data. The semi-structure interviews instrument obligated participants to interact with the researcher, with flexibility to narrate their experiences and views on the use of KATH learning and knowledge management processes in detail, without adhering strictly to the pre-defined questions.

Participants' expressions in semi-structure interviews convey their emotions about topics being discussed. So, the use of semi-structure interviews could, arguably, bring innate expositions of human actions in emergent situations where learning could occur in context. The plausibility of using interviews to explore knowledge capturing including ICT-supported

learning in clinical settings is observed in previous qualitative research (Nicholas et al, 2003; Matthews and Thomas, 2007).

In a critical ethnographic context, interviews are recommended as effective instruments for suggesting solutions to health research problems (Cook, 2005). Cook submits that, interviews can be used to democratise research process, not only for instigating participants to provide answers to probe status quo but also giving them a voice to suggest strategies for addressing health inequalities. The researcher designed two sets of semi-structured interview questions to reflect the key participant groups, managers and clinicians including clinician managers (Appendix 4.9 a & b) and, captured the diverse views of KATH actors on the hospitals' learning processes. The responses were used to propose an evidence-based framework for improving KATH learning processes including supporting ICT (chapter 6).

The interview questions were symmetrical to the ICT-supported learning problem statements (issues) outlined in Figure 3.3 but fine-tuned to contextualise KATH as a unit of study. The design of the interview questions, therefore, exposed the interrelations between the knowledge gaps in literature, the underlying theory of deferred action, the research aim and *CET*, the conceptual framework. The interview themes were therefore guided by the five specific research objectives explored through the literature and summarised in Table 3.2 with references, as follows:

- i. Learning Technology and Team Collaboration
- ii. Staff Learning and Patient Care
- iii. ICT-Supported Learning Planning
- iv. ICT-Supported Learning Issues and Solutions
- v. ICT-Supported Learning Evaluation Approaches

The researcher sought to gather interviews data to address five key research issues. First, to analyse collaborative learning between managers and clinicians with supporting technologies for learning, the formulated interview questions covered the following issues: The importance of the internet-based learning technology to the clinician and manager teams' collaboration; the effectiveness of using learning technology for extracting and sharing KATH' staff knowledge; and comparing different ICT systems to identify the most effective ones to support communication between clinicians and managers in KATH (Nicholas et al, 2003; Liddell et al, 2008; Kardos et al, 2009; Carroll et al, 2009; Pulman et al, 2009).

Second, to identify and analyse the role of KATH staff learning in patient care, the researcher designed questions to gather data on the following areas: The existing healthcare quality plans of the hospital; the importance of staff learning for quality care delivery; specific training courses provided for the clinicians by the hospital; the staff motivation for taking up CPD/CME courses; the effectiveness the CPD/CME delivery; and the specific learning tools used by the managers for managing the National Standards of the Ghana Teaching Hospital learning (Hurst, 2003; Aiga, 2006; Davies et al, 2007; Kardos et al 2009; MoH, 2009).

Third, to examine the role of managers and clinicians in KATH ICT-supported learning planning, the interview questions focused on: The specific clinicians' contributions towards setting the hospital's ICT-supported learning goals; the role differentials between the clinical professionals and non-clinical managers in the technology uptake for the hospital; the importance of planning for ICT-supported learning to the hospital's aim of achieving improved healthcare provision; and specific technology adopted to support clinician learning processes including their implementation factors (Patel 2003; Nicholas et al 2003; Heeks, 2006; Connell and Young 2007; Liddell et al, 2008; Edmonstone, 2009; MoH, 2009).

Fourth, to explore the ICT-enhanced learning implementations issues and how they are tackled, the relevant interview questions were posed to address the following issues: The main staff issues with technology adoption for learning in KATH and they could have been resolved; the potential confidentiality issues associated with the hospital's learning technologies and they were being tackled; and the important factors unforeseen or overlooked when planning for the hospital's ICT-supported learning (Littlejohns et al 2003; Patel, 2003; Connell and Young 2007; Kardos et al 2009; Heeks, 2006; Swindells, 2010).

Fifth, to evaluate learning processes including ICT used by the KATH managers and clinicians to improve healthcare delivery, questions were designed to cover the following areas: The specific benefits of ICT-supported learning for the hospital in relation to quality healthcare provision; the sustainability of the hospital's ICT-supported learning processes and how these could support varied healthcare needs; the benefits of widening participation in planning and evaluating KATH's ICT-supported learning systems for effective learning; and the main issues of with the application of professional self-regulating standards for evaluating clinicians' learning in Ghana (Boudioni, 2003; Hurst, 2003; Murphy et al, 2004; Davies et al, 2007; Liddell et al, 2008; Connell and Young 2007; Kardos et al, 2009; MoH, 2009).

As required by the terms of ethical clearance, each participant was issued consent forms and information sheets (Appendix 4.11) in advance before the interviews, detailing: The purpose of the research and its benefits for KATH; interview procedures; confidentiality and risk issues; voluntariness and withdrawal and consequences; compensation and contact details for further information. The issues therein were fully discussed and participants' queries about anonymity and actual implications of the study on KATH were all clarified. Informed consent was obtained from each participant, as a requirement, for participation (Appendix 4.9a & b).

An average period of 45 minutes, one-to-one in-depth tape-recorded interviews, was conducted with 18 out of 20 participants; with the additional two only participated in the focus group interviews. Each of the 18 participants contributed about 1 hour 45 minutes towards the interview processes over the period. This was sequentially spread over the initial discussion introducing the participants into the project, obtaining an informed consent and engaging in one-to-one interviews. For more than half of the interviewees who were involved in the post field work discussions, they contributed over 2 hours while those who also partook in an approximate 60 minutes focus group discussion, had more than 3 hours contribution time in aggregation.

Though, the researcher had gained some knowledge about KATH through reading annual reports, website content and asking the initial informants' questions about their working practices, he developed better understanding of the people and the organisation after immersing himself in the field. The researcher's limited knowledge of KATH prior to the visit began to show on arrival to the hospital, when the planned compensatory package (lunch and/or refreshment vouchers) for the participants turned out to be inappropriate. USB pen drives were indeed appropriate complimentary tokens for their time and inconvenience. This slight modification to the content of the participants' information sheet was explained to the acceptance of the participants. The comparable souvenirs were considered more decent for the high level professionals who participated in the study than the originally planned lunch and/or refreshment vouchers.

The enthusiasm for the research, expressed via many participants' responses, and trust obtained from them paved way for continued informal discussions and follow ups. The fact that, the participants would take 'co-production ownership' of their suggestions, for proposing an evidence-based framework for designing and evaluating learning and knowledge

management processes using KATH ICT to support continuously improving patient care, was mutually beneficial. The potential merits of the study were accepted. Many of these expressions of acceptance are quoted in section 5.5. Many participants were eager to read the findings and how it could be taken up to improve technology uptake in KATH. It is pertinent to note that, the overwhelming participant responses from the interviews are categorised in section 4.6.1 and are fully analysed and interpreted in Chapter 5.

Of course, as busy as KATH was, tight time schedules, personal commitments and urgent demand for emergency care delivery could not allow some potential participants the chance to contribute to the study. For instance, more than five attempts to interview one of the executive officers, on agreed times, proved no avail. Pressure on the executive officer's time was, truly witnessed by the researcher, so his inability to contribute formally was understood. The consequence is that, the researcher missed opportunity to obtain detailed information relating to the failed Medical Pro Systems, and the executive commitment to KATH ICT-supported learning generally, from the executive officer. Follow-up interviews generated data to fill the failed Medical Pro data gaps while the managers' responses were generally taken to compensate data which the executive officer might have provided.

In another example, a gynaecologist who promised to grant the researcher interview could not make it after a series of appointment cancellations, mostly due to emergency calls to attend to patients in the theatre. Even, an agreed weekend appointment for the interview failed with the same reason of tight time. However, with the progression of interviews, some participants' responses became repetitive for many questions and, therefore, the researcher considered the inability of the gynaecologist to participate less significant. Similar reasons of tight time were assigned for the participants who withdrew from the focus group discussions just before commencement.

4.5.5 Focus Group - Content & Procedure

Focus group is effective for investigating collective learning in a non-threatening atmosphere where active participant interactions allow researchers to elicit opinions, mental models and attitudes held by the participants to propose emergent change strategies (Brodbeck, 2002; Pahl-Wostle and Hare, 2004; Ketter, 2008).

Applying complexity theory to investigate the procedure used by the central finance division of a multinational company to charge working capital interest to other three subsidiary divisions, Brodbeck (2002) used focus group to analyse data assembled from the company's intranet to make recommendations. The focus group members suggested reward and penalty, consistent target measuring standards, fairness in business procedures, performance measurements, communication and staff involvement, and authority, as six main forms of conduct for designing organisation procedures. Conclusions from Brodbeck's (2002) study show that complexity theory has merit in procedural design with a focus group being instrumental towards recommending the application of complexity theory to business process designs.

Pahl-Wostle and Hare (2004) also used focus group as one of the qualitative methods to identify a long standing excess water supply capacity problem, resulting from overestimated demand, in Swiss urban water management project, the HarmoniCop project. With group meetings, brainstorming and focus group, Pahl-Wostle and Hare (2004) noticed differing suggestions from the different actor groups contributing to find solutions for the excess water supply problem. They concluded that issues of human dimensions are complex and required negotiation processes such as continuing learning and consultations to consolidate actors' recommendations. The researcher saw merits in focus group as a method that could contribute

to gathering varied ideas from managers and clinicians for developing the evidence-based *CET* framework.

The focus group questions were developed from the responses of the one-to-one in-depth interviews to encapsulate emerging ideas that drew on planning and emergence as intrinsically interdependent factors required to inform sustainable learning processes including supporting ICT in KATH. The theoretical underpinning for designing the focus group questions did not deviate from using the theory of deferred action to inform the one-to-one interviews design, for both instruments sought to draw on participants' experiences about the ICT use for learning, and learning processes generally, in KATH.

The key themes of the questions were mirror images of the five specific research problems outlined in Figure 3.3, discussed in section 3.3.5, and revisited in 4.5.4 (Interviews – Content & Procedure). The researcher asked specific questions about: How the hospital planned its learning systems for quality healthcare provisions; the group of staff involved in the planning, implementation and evaluation stages of the ICT-supported learning systems and specific roles they played; and the extent if clinicians' involvement in planning and evaluation of ICT-supported learning systems. Focus group questions are included as Appendix 4.10.

Questions relating to emergence and uncertainties associated with planning were asked to find out specific unpredictable factors such as the changing patient needs, daily medical practices and any unforeseen factors might affect planning and implementation of ICT-supported learning systems. Questions seeking data on how and when to plan KATH learning systems in actuality to account for the identified emergence issues were asked. For continuously improving patient care, the researcher asked questions about how the hospital could empower clinicians to be more involved in making ICT deployment decisions for continuous staff learning processes.

Two separate focus group discussions, lasting over 50 and 35 minutes respectively were carried out. The first discussion was held after conducting the seventeenth one-to-one interviews and the issues surrounding KATH learning processes including the supporting ICT were well understood in context. This sequence was significant to enable further exploration of emerging issues raised in the one-to-one interviews, such as why the clinician involvement in KATH ICT planning and implementation would be crucial for better patient care.

As explained in section 4.5.4, all participants were issued consent forms and information sheets and they were fully informed of the benefits of the study and their rights to, or withdrawal from, participation. The focus group was organised in a café-style arrangement (sitting round a table), enabling the participants the opportunity to jot down their creative answers on flip chart sheets (sugar papers) for further discussion (Figure 4.4). After having a voice-recorded discussion in the first focus group discussion, the participants took 10 minutes to write down any issues about, or suggestions for, the KATH learning systems planning and evaluation, that were not covered by the tape-recorded discussion.



Figure 4.4: Focus Group Seating Arrangement and Group Notes

Participants of the second focus group discussion objected recording the proceedings, so it was accordingly not tape-recorded. The researcher took notes of the discussion to supplement the participants own jotted responses for further analysis. Like the interviews data, the focus group participant responses are categorised in section 4.6.1 and are fully analysed and interpreted in chapter 5.

Two clinicians sent their apologies just at the beginning of the first focus group discussion, leaving three participants for the discussion while one clinician left just before the start of the second focus group discussion, leaving two participants to continue with the discussion. Emergency call to attend to patients was the assigned reason. However, in aggregation, the five participants for the two focus group sessions met the minimum number for the one focus group session planned before the trip. Two of the three clinicians who could not join the session had already contributed to the one-to-one interviews, and one of them further assisted in the follow up data collection. With these reasons, the researcher does not believe that, their withdrawal from the focus group could undermine the quality and totality of data required in any slightest degree.

4.5.6 Informal Discussions and Observations

The trust and concerns shown through informal chats, by the people including those who cancelled series of arranged appointments, signified their high level of interest in the study. The researcher took the slightest of opportunity to engage people with the conversations relating to the research intentions and had these recorded in the field notebook. Qualitative researchers regard regular recording of ethnographic data such as impressions, hunches, feelings, chats and questions, a good technique to enrich interviews, focus group and document analysis (Spradley, 1980; Huysman, 2000; Schultze and Orlikowski, 2004; Myers, 2009).

Huysman (2000) saw gossips and informal chats in lunches useful for building participant relationships and presenting the researcher as a confidante. She applied observations with informal discussions as part of the data collection methods used in a qualitative case study conducted in the Netherlands Railways. Her study, proposing several ways to counter biases presented in organisation learning (discussed in section 2.2.3) concluded with a balanced-view argument between planning and emergence as a better analytical model for developing organisational learning.

An ethnographic study aiming to understand the role and influences of internet-based self-serve technology on the practices of a bricks-and-clicks broker operating in the health insurance group industry, added a day observation of a small brokerage office as part of the qualitative data collection methods (Schultze and Orlikowski, 2004). Schultze's fieldnotes obtained from observing the company's strategy meeting showed contrasting views between the prospects of using self-service technology to attract customers globally and the tendency to use local knowledge to build service relationships with customers (Schultze and Orlikowski, 2004). This tension, observed at the initial stages of the data collection, and existed respectively, between the vice president of marketing and three regional vice presidents of sales, contributed to Schultze and Orlikowski focusing on IT mediation as a key theme of their study.

Much of the fieldwork interactions took place in the canteen, corridors, libraries and offices. Though the exact times were not recorded for these engagements, the discussions so far suggest that, a substantial amount of time was devoted for informal conversations with diverse professional groups of KATH before, during and after the field work. Of course, the limited time spent did not allow the researcher opportunity to attend a clinical briefing and a departmental meeting arranged with two different directorates. The times conflicted with the

one-to-one interview sessions which, with very short notices, were often rescheduled by the participants. The researcher compromised the meeting observations with the interviews.

However, the researcher could not see any significant data gaps for not attending the meetings, though attending could have built much wider relationships with many more staff. The interview and focus group questions were made open to gain participants views on their usual agendas for meetings and briefings, with further knowledge obtained from minutes of meetings to enhance the quality of data gathered. He was convinced that, the data obtained was sufficient and complete to support the development of the evidence-based framework.

A reasonable amount of interesting data including photographs were obtained from other observational activities and aggregated with other material in the analysis sections (Chapter 5). As Myers (2009: 156) suggests:

“If you are writing a case study or ethnography of an organisation, a few photographs or even a video can bring your story to life”

Inclusion of such artefacts could bring meaning to the reader and connect the story to organisational actants for internal consumption. The field notebook had relevant entries of observations which are analysed together with other sources in Chapter 5. Evidence of these is added as Appendix 4.13.

4.6 Data Analysis and Interpretation Strategy

Ethnographic studies are characterised with constant writing and a regular analysis of data as fieldwork progresses (Schultze and Orlikowski, 2004). The data analysis continued with a critical interpretation of the interviews, documents and observation notes, giving cues on emerging issues necessary to cover in the subsequent data collection processes. The complete

ethnographic data were categorised into the four key modules of *CET*, based on the deferred model of reality, for further analysis and interpretation.

But, choosing specific methods of analysis that could help elucidate the textual meanings of the field data for the readers (including the participants) was not an easy task. The difficulty is, the methods should be rigorous to meet the requirements of a PhD scholarship and, at the same time, elaborate enough to make sense to the KATH clinicians and managers who wished to see the impact of the study on the KATH learning and knowledge management systems.

As a general rule, Myers (2009) suggests that a choice of particular methods of analysis should tie up with research aims and objectives, research questions, philosophical assumptions and theoretical underpinnings. As the researcher aimed to develop the evidence-based framework for designing and evaluating organisational learning and knowledge management processes to support continuously improving patient care, he considered critical analytical methods that could bring textuality of diverse data to enable desired healthcare improvement.

Of course, critical hermeneutic lends itself to critical ethnographic studies, proving acceptance among some researchers, as one of the popular qualitative analysis methods (Myers and Young, 1997), which the researcher applied. Roberge (2011) describes critical hermeneutic as ‘analytical method for questioning and criticising the limits of failures of understanding’. Critical hermeneutic was augmented with critical narrative to enable the expositions of figurative expressions embedded in the participant stories and to privilege the voices of clinicians that had been silenced in the adoption of KATH learning and knowledge management systems. Myers (2009: 214) describes critical narrative as a genre that can serve as a force for change or an elicitation of previously silenced narratives.

Section 4.6.1 discusses the processes of data transcribing and categorisation, justifying the thematic application of the *CET* model as a codification framework. Section 4.6.2 explains why the codified ethnographic data are analysed with combined critical hermeneutics and critical narrative for further execution and interpretation in Chapter 5.

4.6.1 Transcribing and Data Categorisation with *CET* Model

All interview conversations, including the focus group discussions captured on the digital voice recorder, were uploaded onto computer and *manually* transcribed. Confidentiality requirements imposed on data collection by the CHRPE, restricted the transcribing of interviews data including the tape-recorded focus group discussion to the responsibility of the researcher. If gaining access for data collection was difficult, then the transcribing was equally time-consuming to slow the pace of the project.

Sony digital editor 3, the application software used for capturing the interview proceedings could only allow playback of the speech and did nothing more to quicken speech conversion. Software packages for automatic conversion of speech into text transcripts, such as Dragon Naturally Speaking, could have sped up the transcribing but these voice recognition technologies lack functionality to understand accurately the multiple voices of exotic accent.

It took about four months to complete the transcribing of all interviews. Each transcript was played at least twice, not only to grasp the full story but also to note down subthemes for categorisation. As Matthews and Thomas (2007) adopted, thematic categorisation of interview transcripts helps to re-focus on issues identified in the literature.

As noted in Chapter 3, this study proceeded with a theoretical assumption that the theory of deferred action sanctions emergence in planned actions (Patel, 2006). This perspective was taken a step further to develop the *CET* model, an adaptive system informing how diverse

actors in organisations, such as hospitals use individual- and/or team/group-oriented learning tools to collaborate, and make deferred design and evaluation decisions. The model contributes to analyse and prescribe how the clinicians, managers, clinician managers in various departments of KATH could continuously learn with the support of learning technologies to achieve transformative growth.

The interconnection between how healthcare managers and clinicians could transform patient care with deferred learning processes was identified at the initial stages of data collection, inclining to the thematic codification of the ethnographic material into the key modules of *CET*. A new perspective to investigating a phenomenon may seem strange, but as Hart (2009: 66) rightly puts it, antecedent ideas help our understanding of methodological reasoning behind what other scholars have done. Applying theoretical perspectives on holistic data unfold a comprehensive understanding of theory applicability (Visconti, 2010). Not only this, but narrative analysis requires a plot, usually ordered in themes.

Informing data codification, and even analysis, with conceptual models has no allegiance to particular methodological traditions (Mets and Torokoff 2007; Schultze and Orlikowski, 2004). Kim and Kaplan (2006) categorised and analysed interviews and observed meetings data within their study frameworks of Complex Adaptive System (CAS) and Actor-Network Theory. Their findings demonstrated how CAS could help designers and managers of IS engagements to conceptualise complexities in IS implementation. Extending the 4I model (intuiting, interpreting, integrating and institutionalising) of organisational learning (Crossan et al, 1999), Real et al (2006) developed an organisational learning and knowledge creation model to assess the role of IT in organisational learning. They followed quantitative traditions to analyse their survey data on the five key modular hypotheses to confirm that IT enables organisational learning processes for improved business performance.

The interview transcripts were decomposed under the five main thematic problem statement (research question) areas shown in Figure 3.3: Learning Technology and Team Collaboration; Staff Learning and Patient Care; ICT-Supported Learning Planning; ICT-Supported Learning Issues and Solutions; and ICT-Supported Learning Evaluation Approaches. The themes were informed by the *CET* model, the conceptual framework derived from the theory of deferred action. The first two themes were, however, combined to enable the categories transposed into the four key modules of *CET* for the analysis of the modular subthemes as outlined shortly in Tables 4.4 - 4.7.

It is worth reiterating the fact that, the thematic problem statements and data collection techniques were coherently structured to allow mapping onto the *CET*, in a way to facilitate complete analysis of ethnographic case study material, one that could not be easily automated by qualitative data analysis (QDA) software. This is not to argue that QDA packages are irrelevant in an ethnographic study, but the danger of being bogged down in details without seeing the true picture of what the research seeks to achieve, would be as useless as using software for analysis without explicating the contextual meaning. Myers (2009: 178) makes the point that:

“If you are using a research method and a QDA approach that is more holistic, such as hermeneutics and narrative analysis, then you may prefer not to use QDA software. This is because a software package cannot mechanise the kind of analysis that characterises these approaches. Qualitative researchers using such approaches rely mostly on their own judgement and intuition when they are analysing their data”

Quality of the analysis was rather improved with hermeneutic circle, – holistic analysis of texts forth and back, and from the whole to the part and vice versa –, examining crucially the reasons behind impressions, opinions, exaggerations and gossips, in the data sources. Structuring all important details into coherent whole brought consistency to meaning and eliminated absurdities in the findings.

Coded with the principles of the *CET* modules, the interview scripts of the participants in the same interviewee groupings, such as manager interviewees, were first vouched against evidence of each other to categorise the data. Categorisation was critically done to establish similarities and differences in responses, and compared with the collated evidence from the other interviewee groups. Interviews and focus group data were augmented with document analysis and observations, and classified under the modules of the *CET* framework to allow sub-categorisation and further interpretation with critical hermeneutic and narrative analyses.

With each of the four modules of data categorisation, the critical ethnographic researcher chose to report the findings with specific themes to coincide with the identified research objectives, specific module factors, interview/focus group data collection questions and sub-data categorisation themes. The reason is to present the ethnographic story in a consistent manner that characterises the holistic feature of hermeneutic circle and the narrative plot analysis, as discussed in section 4.6.2. The summary of the categorisation is demonstrated in Tables 4.4 - 4.7 below.

Thematic Problem Statements: (1a) Learning Technology and Team Collaboration (1b) Staff Learning and Patient Care			
Story Title: KATH as a Learning Organisation			
Thematic Factors	Findings	Evidence Source	Story Themes
KATH learning aims and processes	<ul style="list-style-type: none"> ➤ To reduce patient waiting time, get treatment options right, improve patient satisfaction and create positive patient experience ➤ To improve staff training and attitude towards care delivery ➤ To improve communication, and overall care management and quality 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group ➤ Documents- PoW, annual reports, consultation report 	KATH as a Learning Organisation
	<ul style="list-style-type: none"> ➤ Workshops, appraisals, CPD/CME, annual reviews, self-enhancing postgraduate course, clinical databases, attachments 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group ➤ Documents- PoW, annual reports, appraisal, consultation report 	KATH learning processes
	<ul style="list-style-type: none"> ➤ Clinical meetings, clinical conferences, clinical reviews, ward rounds, peer reviews, research 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group ➤ Documents- PoW, annual reports, research database ➤ Informal discussions 	
Learning technology	<ul style="list-style-type: none"> ➤ KATH Intranet, internet-based workshops, emails, telemedicine system, doctor-to-doctor talk lines, social network tools, memos, personal phones & PDAs 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group ➤ Documents- PoW, annual reports, research database, photos ➤ Observations & informal discussions 	ICT Application to KATH Staff Learning
KATH actors	<ul style="list-style-type: none"> ➤ Clinicians, clinician managers, corporate managers, other healthcare & non-healthcare staff, units, directorates, teams, groups and external partners 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group ➤ Documents- PoW, annual reports, research database, newsletters, website 	
Existing evaluation methods	<ul style="list-style-type: none"> ➤ Appraisal ➤ Annual & Interim reviews ➤ Clinical review consultations 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group ➤ Documents- annual reports, clinical review documentation, ➤ informal discussions 	Staff Learning Evaluation Approach
Recommended evaluation methods	<ul style="list-style-type: none"> ➤ Open-ended questioning evaluation ➤ Peer reviewing and refinement of ideas ➤ Virtual learning tools such as Moodle 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group 	

Table 4.4: Input-Output Designer-Evaluators' Funnel Data Categorisation

Table 4.4 uses the Input-Output Designer-Evaluators' Funnel of *CET* model to typify KATH as a learning organisation, with a learning platform of inclusivity allowing managers, clinicians, clinician managers and other actors to use a number of learning technologies for a wide range of learning processes and activities. The evidence from interviews, focus group,

document analysis and, observations and informal discussions were espoused on the Input-Output Designer-Evaluators' Funnel, the cornerstone of the *CET* model, to show how learning processes and aims are pursued. The categorisation also outlines existing and recommended methods for evaluating learning including supporting ICT. The key themes of the story are: KATH as a learning organisation; KATH learning processes; ICT application to KATH staff learning; and staff learning evaluation approach. The evidence is fully analysed and interpreted in Section 5.2.

Thematic Problem Statements: (2) ICT-Supported Learning Planning			
Story Title: Planning Role			
Thematic Factors	Thematic Findings	Evidence Source	Story Theme
Managers' learning	<ul style="list-style-type: none"> ➤ Planning as a manager learning process ➤ Consultants and managers responsible for impacting knowledge onto to subordinates ➤ Top-down learning processes including CME, staff training and appraisal systems ➤ Training and sponsorship courses offered in line with the Ghana MoH policy directions ➤ Undifferentiated staff training programmes planned from appraisal documentation 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group ➤ Documents - PoW, annual reports 	Staff Learning Planning
Existing evaluation methods	<ul style="list-style-type: none"> ➤ Use of patient satisfaction surveys to analyse patients concerns for quality checks ➤ Compliant-based (e.g. appraisal) and certification quality measures used ➤ WHO hygiene observational assessment model unable to change staff attitude ➤ Quality evaluation models failed to impact positively on patient care 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group ➤ Documents - PoW, annual reports, appraisal ➤ Informal discussions 	
ICT planning for learning	<ul style="list-style-type: none"> ➤ Non-clinical managers and IT professionals planned ICT adoption for clinician use ➤ Budget-driven ICT adoption and ICT planning inadequacies ➤ Lack of clinician involvement in the various ICT planning ➤ Effective ICT planning requirement for improvement quality care ➤ Planned ePatient system failed to achieve implementation aims 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group ➤ Documents - PoW, annual reports, observations 	Managers-plan-Clinicians-use Systemic ICT Systems
Existing evaluation methods	<ul style="list-style-type: none"> ➤ Virtual learning applications and enterprise systems planning for future KATH learning ➤ Narrow internet bandwidth concerns for future VLE and ICT planning 	<ul style="list-style-type: none"> ➤ Interviews ➤ Observation 	Virtual Learning Environment - Future ICT Planning

Table 4.5: Prescriptive Learning and Specified Learning Tools Implementer Data Categorisation

Table 4.5 uses the factors of the Prescriptive Learning and Specified Learning Tools Implementer module which describe planning as a management activity, driven by strategic objectives, to categorise planning related data. Exposition of data in this module outlines managers' learning as an inevitable planning process. It presents KATH learning processes and supporting ICT as something that could be consciously planned and evaluated. Some of the evidence also present planning as insufficient to transform patient care without considering clinicians' learning. The consequences of not involving clinicians in the planning process are that the plan-based evaluation methods failing to achieve the desired results. Failures of budget-driven ICT adoption, planned ePatient system and undifferentiated staff training programmes are typical examples. The evidence is fully analysed in section 5.3 with the following themes: Planning role; staff learning planning; managers-plan-clinicians-use systemic ICT systems and virtual learning environment - future ICT planning.

Table 4.6a and 4.6b utilise the principles of the Reality Learning Tools Requirements Regulator module, a representation of clinicians' learning that uses local knowledge and emergence to situate learning in context. The module serves as a critical reflection process for creating new knowledge to improve system design. It assumes a platform of humanistic character to recognise skills gaps and develop strategies to fill such deficiencies. Data classified under the Reality Learning Tools Requirements Regulator module show that planning was not working because bottom-up initiatives and the clinicians' learning processes had been disregarded, either intentionally or unintentionally. However, it suggests that clinician group could offer recommendations to tailor the planned CPD/CME programmes and ICT-supported learning systems to suit the actual requirements of the daily clinical practices.

Detailed analysis of findings shown by the Reality Learning Tools Requirements Regulator module is covered in Section 5.4. The Section details the significance of emergence as an interesting concept to inform the re-design of KATH knowledge management systems.

Thematic Problem Statements: (3) ICT-Supported Learning Issues and Solutions			
Story Title: Emergent Forgotten Systems: Unheard Voices			
Thematic Factors	Findings	Evidence Source	Story Themes
CPD/CME Courses – Design & Delivery	<ul style="list-style-type: none"> ➤ Overseas experts designed CME ➤ Handed-down from the top CPD ➤ Low CPD impact on practice ➤ Certification CPD/CME courses ➤ Content repeated CPD/CME courses ➤ Targeting specific groups with tailorable topics to address learning needs ➤ Online-based CPD & ePortfolios identified as solution 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group ➤ Documents- PoW, annual reports, 	'Another Certificate in a Wardrobe' CPD Courses
CPD/CME Courses – Evaluation & Suggestions	<ul style="list-style-type: none"> ➤ Lack of methodical appraisal system for CPD/CME ➤ Annual Performance Review Inadequacies ➤ Inaccurate CPD/CME feedback ➤ Uncoordinated research activities ➤ Honest qualitative feedback required for measuring CPD/CME design and evaluation 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group ➤ Documents - PoW, annual reports, research database 	
Telemedicine	<ul style="list-style-type: none"> ➤ Lack of clinician involvement if adoption ➤ Planner specification ➤ Poor staff patronage ➤ Insufficient time to attend sessions ➤ Location problem & lack of motivation ➤ Replication of eLearning system required in postgraduate libraries ➤ Telemedicine lectures required tailoring to suit local clinicians' learning needs 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group ➤ Observations & Informal discussions 	'White Elephant IT Systems'
Internet, Email and Intranet Systems Frustrations	<ul style="list-style-type: none"> ➤ Slow internet access & time wasting ➤ Different ISPs for different departments ➤ Poor communication & email usage ➤ Lack of ICT vision ➤ Fast internet connect required for improved communication 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group ➤ Documents- PoW, annual reports, ➤ Observations & Informal discussions 	
Medical Pro Software	<ul style="list-style-type: none"> ➤ Predetermined decisions by non-clinical managers ➤ Lack of user consultation ➤ Poor Integration with other IT systems ➤ Poorly executed Oracle software 	<ul style="list-style-type: none"> ➤ Interviews ➤ Informal discussions 	
PCs & ePatient System	<ul style="list-style-type: none"> ➤ Insufficient PCs ➤ Consultation rooms lacking PCs/ePatient system ➤ Lack of shared-ePatient data ➤ Poor documentation ➤ Simple clinical questions unanswerable in consulting rooms ➤ Prioritisation was an excuse ➤ ePatient-laboratory systems link required to improve quality care 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group ➤ Documents- PoW, annual reports, stakeholders consultation ➤ Observations & Informal discussions 	Inadequate Computers versus e-Patient System

Table 4.6a: Reality Learning Tools Requirements Regulator Data Categorisation (continued on 4.10b)

Thematic Problem Statement: (3) ICT-Supported Learning Issues and Solutions			
Story Title: Emergent Forgotten Systems: Unheard Voices			
Thematic Factors	Findings	Evidence Source	Story Theme
In-house ICT training & support – issues & solutions	<ul style="list-style-type: none"> ➤ Crowded ITech suite ➤ 10 old computers woefully inadequate ➤ Clinicians' rejection for In-house IT training ➤ MS-DOS training mismatch clinician IT needs ➤ Slow internet ➤ Slow response to fix technical IT problems ➤ IT support helpline/hotline required ➤ Re-assigning IT support role to meet departments' immediate queries ➤ Support for installations & upgrading ➤ Provision of upgrade support for clinicians' personal notebooks appreciated ➤ Advanced medicine ICT vision required 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group ➤ Documents- PoW, annual reports ➤ Observations & Informal discussions 	In-house ICT Training and Technical Support
General communication problems	<ul style="list-style-type: none"> ➤ Poor manager-clinician communication ➤ Traditional memo usage criticised ➤ Doctor-to-doctor talkline helpful but implementation was poor ➤ Communication problem between IT & other departments ➤ Better implementation and use of email, VLE and intranet could improve knowledge share 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group ➤ Documents- PoW ➤ Observations & Informal discussions 	Information Hold up and Poor Communication
Threats and data security issues	<ul style="list-style-type: none"> ➤ Lack of password customisation could have auditing implications on stores computers ➤ Lack of external hosts to back up virtual data ➤ Hacking, spam and unsolicited messages were potential threats ➤ Perception that paper-based records were better than electronic 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group ➤ Documents- minutes of meetings ➤ Informal discussions 	System Confidentiality Issues
Managing IT change	<ul style="list-style-type: none"> ➤ Fear of touching operating hardware components ➤ Difficult to unlearn traditional paper-based systems and learn IT-based systems ➤ Lack of ICT skills among staff and inadequate software applications ➤ Reliable energy supply for ICT systems required for sustainability ➤ Designing IT training to meet staff needs 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group 	Change Management Issues
<p>NOTE:</p> <p>(i) Evidence of findings listed under the 'Emergent Forgotten Systems: Unheard Voices' storylines were unanticipated factors of planning and planned actions that caused problems for effective implementation of KATH ICT-supported learning systems and CPD courses generally. Because these factors were not accounted for in planning, planned systems failed. These are interpreted in Chapter 5 to bring meaning.</p> <p>(ii) Emergence is unintended consequences of planned actions. It is unknown aspects of socio-technical systems and arises through interactions of agents, interactions between agents and ICT systems, and agents' unpredictable responses to their environments (Patel, 2006). Emergence has capabilities to challenge issues marred with specified actions such as planning failures and can help action designers to resolve crisis in actuality (Patel, 2006: 61).</p>			
<p>Table 4.6b: Reality Learning Tools Requirements Regulator Data Categorisation (continued from 4.6a)</p>			

The storylines cover the following themes: ‘Another certificate in a wardrobe’ CPD courses; ‘White elephant IT systems’; inadequate computers versus e-Patient system; in-house ICT training and technical support; information hold up and poor communication; system confidentiality issues; and change management issues.

Thematic Problem Statement: (4) ICT-Supported Learning Evaluation Approaches			
Story Title: Deferred Synergy			
Thematic Factors	Findings	Evidence Source	Story Theme
Re-designing systemic learning processes	<ul style="list-style-type: none"> ➤ Actuality-based learning methods preference (e.g. regular meetings and clinical conferences) to address emerging clinical needs ➤ Coordinated individual-, team-, group- and organisational learning (inclusivity) to meet changing practices ➤ Closing clinician-manager learning gap for improved quality care ➤ Involving many healthcare staff in theatre procedures other than surgeon and assistant ➤ Acknowledging clinician work appropriately to encourage knowledge creation ➤ Inviting managers to CPD training intended to bring change in clinical practices 	<ul style="list-style-type: none"> ➤ Interviews ➤ Informal discussions 	Turning ‘Wardrobe Certificates’ into Explorable Organisational Memory
Emergence informed ICT adoption	<ul style="list-style-type: none"> ➤ Co-involving clinicians and managers in holistic ICT planning and implementation ➤ Proposal for IT improvement recognised and started to receiving budget allocations ➤ Useable IT/KMS adoption to address staff training & clinical needs ➤ Efficient health information system for prescription management 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group 	From the ‘White Elephant IT Systems’ to ‘Usable Healthcare IT Systems’
All-inclusive ICT design and evaluation (deferred design processes)	<ul style="list-style-type: none"> ➤ Integrating strategic commitment and bottom-up ideas for inclusive ICT-support learning sustainability ➤ Manager initiated and budgeted ICT plans should invite clinician consultations ➤ Regularly cohering ICT adoption plans with dynamic clinical needs ➤ Participation for sustainable ICT is potential to retain technology inclined clinicians ➤ Generating emerging and diverse ideas from potential ICT users to inform IT planning and implementation ➤ All-inclusive evidence-based framework for designing and evaluating KATH learning and knowledge management systems broadly accepted ➤ Continuously improving manager-clinician collaboration to enhance quality care of patients 	<ul style="list-style-type: none"> ➤ Interviews ➤ Focus group 	Consultation and Widening Participation for Sustainable ICT Systems

Table 4.7: Deferred Action Learning Synergistic Lens Data Categorisation

Table 4.7 applies the Deferred Action Learning Tools and Synergistic Lens of the model to classify data showing how the deferred design processes could be invoked to design and evaluate healthcare learning to enable improved patient care. Categorisation covers evidence describing how to balance planning for KATH learning including supporting ICT with emergent actuality to inform continuously improving healthcare delivery services. Data falling under how KATH managers could achieve ICT-supported learning implementation success with clinicians' learning are also categorised in the Deferred Action Learning Tools and Synergistic Lens module. For instance, some managers' suggestion for co-evolution of clinicians and managers in holistic ICT planning and implementation to address clinicians concerns is an indicator of one-to-one correspondence between emergence and deferred action to achieve emergent actuality design.

Identified data validating the promise of Deferred Action Learning Tools and Synergistic Lens are interpreted under deferred synergy in Section 5.5. The module tags data relating to the participants' call to re-design the existing systemic methods of learning in the hospital, and advocating inclusive actuality, consultation and widening participation for sustainable care provision. The key themes for writing the story are: Turning 'wardrobe certificates' into explorable organisational memory; from the 'white elephant IT systems' to 'usable healthcare IT systems'; and consultation and widening participation for sustainable ICT systems.

Findings classified into the modules of the *CET* model are detailed in Chapter 5, with critical hermeneutics and critical narrative analyses and, with a series of interwoven verbatim quotations to bring a coherent story to the study readership. Outcomes were evaluated against the key research issues to establish conclusions, comparing them against the literature review and the underpinning theory, the theory of deferred action, to confirm, challenge and extend previous evidence, in a way to develop a new line of inquiry (Yin, 2003).

4.6.2 Critical Hermeneutics and Critical Narrative

Hermeneutic approaches seek to provide implicit meanings to text, conversations, images and artefacts while elucidating contextual understanding of a culture. It is commonly couched in the interpretivism view of social reality but it is of its application as a critical qualitative research analysis method we invoke. It is worth noting that, amongst hermeneutic researchers, different types of hermeneutics are identified for research analysis. Myers (2009) categorised these into: pure hermeneutic, double hermeneutic, post-modern hermeneutic and critical hermeneutic.

Those who advocate pure hermeneutics draw on Dilthey's (1976) compassionate understanding of human action, seeing text or object being investigated as distant from the observer. This view assumes objectivist problematic which focuses on 'what' knowledge is, to explain reality as a concrete given with observable patterns, that can be seen from subject-objective relationships whereas reality is socially constructed and observers are intimate parts of objects being investigated (Cunliffe, 2011). Pure hermeneutics is criticised as uncritical and only takes a superficial value of statements and ideas (Habermas, 1984). Bleicher's (1982) criticism of pure hermeneutics is that, it fails to account for double hermeneutics.

Double hermeneutic (Giddens, 1976) defines social researchers as observers who see themselves as part of the subjects being studied, interpreting social situations from the subject-subject viewpoint, rather than looking them 'from outside'. This view, therefore, consider observers as both constitute and are constituted by their surroundings (Cunliffe, 2011) but, understanding social meaning is different from questioning why people behave the way they do in actuality. Kims (2004) criticises Giddens' conception of double hermeneutic as biased towards interpreting social actions as socially (re)constituted, which embody observers as constitutive of social agents, because interpretations introduced into social

meanings from observers fail to acknowledge social structures adequately. Kims (2004) argument is that, observers' interpretations of social meanings are knowledge 'from without'; whereas social actions should be interpreted and shaped by emergent knowledge which is tacit and socially situated.

Post-modern hermeneutic assumes subjectivist problematic which focuses on contextual and constructed meanings which are subjectively experienced in time and space (Cunliffe, 2011), and so, analyses text from a more *subject* argument, dismissing the objective meaning of a text, the pure hermeneutic view. The post-modernist hermeneutic acceptance of equally valid interpretations, insisting that every reader has a different meaning for a text that goes beyond the author's interpretation (Myers, 2009), makes it less evaluative. This is the *raison d'être* for Cunliffe (2011) to argue that those researching and analysing texts from subjective perspectives have to justify their methodology to conform to the 'acceptable' qualitative work.

Critical hermeneutics recognise double hermeneutics interpretive act but upholds reflective critique of social constructs. Critical hermeneutic rejects the equally acceptable stance of data interpretation, as proposed by the post-modernist hermeneutic school. For Habermas (1984), critical hermeneutic relates to the emancipatory interest in power of reflection that brings continuous clarification to set individuals free from social domination. This view is contested by Gadamer (1976), positing that the acceptance of critical hermeneutics as methodology would compromise the fundamental tenet of hermeneutic circle. This is a process of driving textual understanding constantly forth and back, and from the whole to the part and vice versa.

Habermas-Gadamer debate has resurrected in Roberge's (2011) *'What is critical hermeneutics?'* publication, in which he argues that critical hermeneutic is a complementary pair of critical theory when applied to address a particular social problem. Roberge's position on this debate is that, hermeneutics and critical theory are both ideologies which should be

seen as ‘function of integration’, something to be understood in a cultural context. These ideologies could be text which, he contends, should be left for a particular social group to discover the boundaries of textual meaning.

Though Roberge’s stance on Habermas-Gadamer debate might be inconclusive, the researcher takes concession in the ‘function of integration’ concept to analyse the data with critical hermeneutics that might complement critical theory. Having been exposed to KATH as an ethnographer, the researcher developed deep knowledge of KATH learning systems. He understood, for instance, the reasons for ICT adoption failure and clinicians refusing to attend Telemedicine sessions, and their call to re-design knowledge management systems in KATH. With this experience, the researcher could analyse the data to include relevant opinions and suggestions of the participants to bring about what Roberge (2011) calls ‘the textuality of social inclusion and exclusion of actants to enable desire change’.

The choice of critical hermeneutic could be substantiated by the fact that, the followers of Gadamer’s holistic analysis of text do not preclude the critical perspective of seeking change with multiple interpretation. They see the hermeuneutic circle as identical and parallel interpretation of text, an anti-authoritarian view regularly used in biblical texts interpretation (Simsa 2002; Szucs, 2002). But, advocating social equality is similar to being aware of hidden presumptions which might lead to emancipation. As Simsa (2002: 62) notes:

“Gadamer’s hermeneutical circles moves between prejudice and understanding: Understanding involves being open to a tradition that includes all of the existing interpretations of classical work”

As applied in biblical interpretation, hermeuneutic circle refers to the existing interactions between text, preacher, congregation and situation to resolve a wide variety of contextual issues that the Scripture seeks to address (Szucs, 2002). Lategan (2002) cites a good example of how Paul’s rhetorical skills of writing came under theological scrutiny in the book of

Galatians, in the Bible, leading him [Paul] to defend himself against misconceptions regarding his mission and standing as apostle.

“Some of his [Paul] distractors doubt his credentials, seeing him as a late-comer and not on the same level as the inner circle of the first disciples. Others accuse him of deviating from the true gospel, being too lenient with gentile converts, not insisting on their adoption of Jewish customs like circumcision and the upholding of the law. Paul himself has to find a theological defensible position regarding the place and status of non-Jewish in the church – a problem made all the acute by the (rather unexpected) success of his preaching to the Gentiles. In defence, ... Paul makes specific and very effective use of historical consciousness, where specifically the sequential nature of history play crucial role” (Lategan, 2002: 213).

Lategan explains how Paul used historicity, the fundamental hermeneutic application of how people’s past describes who they are, to recount his apostleship, explaining high incidence of chronological indicators and precise time descriptions in the text. Lategan (2002) also used hermeneutic analysis to explain the belief that Paul’s calling preceded that of the original disciples and his mission was ordained by God.

Hermeneutic takes a retrospective view of events but presents prospects for actors to understand current situation as well as being aware of emerging happenings. Such context-bound interpretations emerge from actors’ intuitions to explain existing practices can be argued as an illustration of emergence features. Because, intuitions are sudden and spontaneous responses of human actions used to understand or question established rituals in the context of changing social practices. Stackman et al (2000) point out that, both rational and intuitive means are evidence of order and chaos that bring people together, in stories, to reflect how emergence and connectedness lead people to adapt to their environment. Participants’ feelings, intuitions and impulses relating to the KATH learning processes and ICT adoption discussions were relevant critical hermeneutic data requiring critical interpretation as part of the holistic data. These are necessary elements of the theory of

deferred action that could inform the effective design of the *CET* framework to support the continuously improving patient care.

Applicability of critical hermeneutics has gained merits in contemporary research that seeks to question established orders and dominant assumptions for the purposes of pursuing new level of awareness to achieve transformative practices (Klecun-Dabrowska, 2002; McLaren and Mills, 2010). McLaren and Mills used critical hermeneutic analysis to investigate social and political issues associated with textbook management over a six-decade period to find how power and unquestioned acceptance of corporate discourse (language and texts construction in corporate communications) have influenced textbook management for business schools and business curriculum provisions.

McLaren and Mills' (2010) analysis of selected textbooks from over 500 management field collections concluded that texts and context of textbooks do change to reflect the social and political milieus, to appease those who question the discourse but the underlying issues of power structures still remain. They argued that such changes favour: (i) patriarchal nature of corporate discourse where male voice dominates the text and discriminates against the inclusion of female voice (feminism); and (ii) colonialist discourse which remained dominant text over the privileges of ethnic minority groups, who constitute civil rights movements.

Findings from McLaren and Mills suggest that critical hermeneutics analysis provide opportunity to question long and commonly held assumptions and practices in social settings. Though data were explored with critical hermeneutics and content analysis, pursuing the study with secondary methods offered very little opportunity for the authors to address power dominance in textbook management in emergent actuality because, secondary methods elude situational occurrence for actors to explore power sharing engagements, which are in the milieu of in-depth interviews or focus group discussions.

Interest in a critical hermeneutics methodological analysis was also drawn on the work of Myers (2009), paying attention to two empirical research publications adopting critical hermeneutic analysis from ethnographic and case study standpoints. First, Myers and Young (1997) extended Habermas' model of societal development with the critical ethnography and critical hermeneutic analysis to investigate how the hidden agendas, power centres and other taken for granted assumptions of realism could be embedded in Sky City Health IS development. They concluded that, the IS development project had hidden agendas of management, in particular of the New Zealand Government, opening up a potential debate on how 'user involvement' and 'user participation' could have been addressed in the project execution.

Second, adopting a factor research framework, Bussen and Myers (1997) investigated the causes of executive information system (EIS) failure in GARDENCO. Applying a case study and critical hermeneutic analysis methods, Bussen and Myers ascribed the failure of the company's EIS to broader contextual issues such as social, cultural, political and economic factors. These issues, some involving power relations, were found not to be directly controlled by the EIS project team. In a political context, the company secretary, for example, was accused of gaining the most benefit from the system, over and above other executives while the Australian parent company of GARDENCO restricted financial commitments to the project.

With the application of critical hermeneutics, sense was made of conflicting interpretations underlying the causes of the EIS, but Bussen and Myers were unable to identify one single issue as the dominant reason for the project failure. As doing so would be subjective from the field data gathered, Bussen and Myers recommended application of broader approaches,

including critical hermeneutics to investigate EIS implementation success factors in future, suggesting a call to support critical hermeneutics with other methods of analysis.

In cases where one single method is not sufficient to analyse complex field data to address the intended aims of research, researchers resort to use complementary methods, such as discourse and narrative analyses (Ezer, 2005) and critical hermeneutics and content analysis (McLaren and Mills, 2010). Clearly, some common sense assumptions were exposed to question why user involvement was not obtained to legitimise the IS development in Sky City Health, but there was no evidence to suggest that Myers and Young's (1997) critical hermeneutic analysis intended to foster change. Neither did Bussen and Myers's (1997) use of critical hermeneutics was meant to transform EIS implementation as discussed.

The researcher's preference for critical hermeneutic analysis differs from Myers and Young's approach, in that he sought to propose a framework for designing and evaluating effective organisational learning and knowledge management processes that could support continuous quality patient care in KATH. If critical hermeneutic analysis is the only method applied; as Myers and Young (1997), and Bussen and Myers (1997) did with their respective studies, then we would tend to miss an opportunity to communicate appropriately the first-hand textual material that could change previously accepted management presuppositions (see findings listed in Tables 4.6a and 4.6b).

Critical narrative is selected to complement critical hermeneutics. Narrative analysis traditions see narratives as social actions that are produced by people in specific social, historical and cultural context (Czarniawska, 2004; Soin and Scheytt, 2006; Frost et al, 2010). It is a compilation of archival data, interviews and other field data telling when and how events happened. These forms of data provided narratives of KATH intranet and email adoption, continuing medical education and telemedicine learning system and so on, in which

participants' narratives corroborated with archival data in many cases (see Chapter 5 for detailed analysis).

A very recent validation of empirical work applying a contribution of hermeneutics and narrative analyses have situated in Lejano and Leong (2012), in which the authors analysed aggregated text of 54 pieces of content of which 42 are newspaper articles, on the Los Angeles water reuse project. Lejano and Leong (2012) used hermeneutics to analyse textual evidence of interviews, archival information and others and derived narrative interpretations to reflect multiple and complex meanings particular to water policy situations. The authors, however, explored hermeneutics and narrative analyses from interpretive turn and with secondary data collection methods to differ from this study where the critical ethnographic researcher applies critical methodology and methods and takes ethnographic turn.

Pluralism in qualitative research involving the use of more than one qualitative approach to investigate research phenomenon has authenticated the application of narrative analysis in combination with other methods such as Foucauldian discourse analysis to capture meanings from single semi-structured interview transcript (Frost et al, 2010). Frost et al conclude that pluralism in qualitative research could enhance the applicability and transparency of qualitative research tradition. Though their study did not allow for a dialectic relationship between researcher and interviewee, it is their recommendation for this consideration that the critical ethnographic researcher developed for its critical narrative and critical hermeneutic data analyses that progressed from living conversations between the researcher and the participants.

The researcher approached the interviews and focus group discussions with open-ended questions to allow participants free rein to express their views on the KATH learning processes and ICT adoption. Because narrators tell stories impulsively, narrative accounts

are believed to be so natural and apparently universal (Riessman, 1993). A story told messily could distort listeners' (readers') understanding. So, a good story is one that is coherently structured in a plot and meaningful (Czarniawska, 2004). The ethnographic researcher designed his research and field data collection within the **CET** model, based on the deferred model of reality, to allow actors' interactions and findings presented as a plot. This is to interpret the data to demonstrate patterns of all-inclusive learning to reflect KATH as a learning organisation, planning, emergence and deferred action, to typify the four modules of the **CET** model. Research adopting four plots of narrative analysis has recently been used in knowledge management to argue how one story can be told from multiple perspectives to give broader understanding (Corbett-Etchevers and Mounoud, 2011).

Records of narrative should be distinctively significant to a narrator. This is to say, making ethnographic data sensible to an individual being studied in a novel style. Meaning is not embedded in raw data but emerges from the interpretation of the data (Onwuegbuzie and Leech, 2005). Myers (2009) points out that narrative analysis should present data collation as writing a narrative. A story becomes more elaborated and gives prominence to the reader's engagement when it is interwoven with metaphorical analysis (Schmitt, 2005), a process of clarifying a systematic use of metaphors in texts.

It is through metaphors that the reader could be attached to the meaning and credibility of the story. Participants' responses entrenched with series of jargons and idiomatic expressions, to demonstrate a call for change in the hospital's ICT-supported learning systems, could not be fully understood without applying critical narrative analysis (see Sections 5.4-5.5). Narrative analysis allows room for tension reduction and problem solving, complementing the application of the theory of deferred action to solve the ICT-supported learning problems in

practice, where clinicians and managers in a focus group discussion bounced off ideas to agree on clinicians' involvement in planning KATH ICT-supported learning for actuality.

Similarities existing between hermeneutic and narrative analysis bring to the fore a combination of the two approaches. Hermeneutic interpretation is a narrative process of giving meaning to an *entity*, as previously discussed. Narrative accounts are presented to connote lives in the past, present and foreseeable future (McKenna, 2007). These resemblances validate a joint application of hermeneutic and narrative analyses if they emanate from the same epistemological perspective. Myers (2009: 27) suggests:

“A critical ethnography might use interviews, fieldwork, and documents. The data analysis approach might be a combination of narrative analysis and hermeneutics”.

Critical narrative analysis is adopted not only because of its close relations with critical research philosophy, but the way it reveals itself as a genre that exposes previously silenced narratives and promotes a force for change (Reissman, 1993). Participants' call for change in web-based learning tools such as re-designing telemedicine adoption, and medical learning processes, obtained through interviews and focus group discussions (see Tables 4.6a and 4.6b) makes a case to tell the story with critical narrative.

Dzokoto (2007) had reported weaknesses in information systems and poor supporting technology for staff training and learning, and recommended the need for internal quality standards for evaluating human capacity development in KATH. But, never before had such an extensive research, investigating staff learning and knowledge management systems, and proposing an evidence-based framework for evaluating these systems and processes been conducted in KATH.

If the description of [critical] narrative resembles a description of [critical] hermeneutic, the similarity is no accident. Both methods are akin to interpreting and writing up the study in a

novel fashion. They fall under the same epistemological cluster of critical theory. Combining the critical hermeneutic with critical narrative brings with it, not only the rigour of uncovering the critical reflection processes, but the benefits of making credible suggestions that would bring the desired change.

A distinction between critical hermeneutics analysis and critical narrative analysis could be made from the way hermeneutic circle and narrative emplotment differentiate themselves as two separate qualitative analytical methods. While hermeneutic circle analyses texts holistically from the part to the whole to provide multiple interpretations of similar meaning (Gadamer, 1976); narrative emplotment presents itself as a sequential order in which the varied rational aspects of organisations such as events, feelings and sentiments of actors are coherently constructed (Czarniawska, 2004). Yet, recent insights from Soin and Scheytt (2006) suggest that not all narratives have incidents of chronological connections, and the emplotment distinction is therefore less significant in ethnographic studies where researchers are seen as part of narratives being told. What could be an important difference is how critical narrative analysis would involve actors as active consumers of research of practical implications in which they could make suggestions to instigate change.

4.7 Conclusion

This chapter began with the assumption that different methodological and philosophical traditions make a selection of appropriate research method(s) for studying a particular line of inquiry difficult. Positivism, for example, uses the rationalist school to study the cause and effect relationships of a phenomenon and make statistical generalisations. It is insufficient to generate reflective knowledge required from the KATH actors to develop an evidence-based framework to support inclusive actuality healthcare learning of a continuing quality care orientation. Interpretivism recognises human experience. It sees society as socially

constructed and reconstituted but lacks evaluative understanding of status quo. The critical ethnographic researcher refuses interpretive methods because it could not enable him to question the reasons for systemic healthcare learning in KATH, something required for *re-designing* learning systems with continuously improving patient care objective.

The researcher endorses the contemporary version of critical epistemology that takes time-responsive character of the ‘world-disclosing’ critique to marry communicative rationality (Sinnerbrink, 2011). This informs empirical knowledge required for validating the elements of all-inclusive learning, planning, emergence and deferred synergy within the *CET* model. It promises critical knowledge of reality from different actors. In the context of Patelian (2006) deferred epistemology, this critical knowledge is knowledge that shows the interrelations between planning as specified action and emergence as causal power of actuality.

Contemporary critical research rejects Marxist draconian scholarship. Its application to the proposed *CET* model complements the transformative intentions of learning organisations. That is, aiming to question hidden assumptions with emergent actuality for transformative growth. Applying critical research to the proposed *CET*, the deferred model of reality, for designing and evaluating healthcare ICT-supported learning and knowledge management processes confirms academic rigour research, showing coherence between theoretical underpinning (deferred action) and methodological approaches (‘contemporary’ critical research).

Methodological difficulties extend to design research problematics where decisions to treat qualitative research design as ethnographic, case study or even ethnographic case study to meet academic rigour have resulted misapplications (Eckman and Lindlof, 2001). Anecdotal studies fail to use long-time fieldwork and quality field data criteria as important decisive factors for classifying a qualitative study as ethnographic or non-ethnographic. Those who

use ethnographic case study fail to justify their choice as conflating quality data gathering over a long-time period with a limited time spent in the field or, to describe what ethnographic case study means (Mosley-Howard and Evans, 2000; Eckman and Lindlof, 2001; Smith, 2002; Krauss, 2010). The researcher opted for critical ethnographic case study as a rigorous-crafted research fit that balances a short time fieldwork activity with quality data gathering, in which the deferred model of reality was unveiled for supporting continuously improving patient care intentions. The design research strategy is consistent with the Patelian deferred action proposition to achieve a composite third order phenomenon, a purposeful design that caters for uncertainties in fixed design processes.

The critical ethnographic case study used document analysis, in-depth interviews, focus group discussions and observations to gather quality data, questioning weaknesses in the systemic healthcare learning and ICT adoption processes in KATH. Existing healthcare learning and healthcare ICT adoption gaps are identified with healthcare managers, clinicians and clinician managers whose job roles are to some extent unrelated. Participants were drawn from these identified groups because developing an evidence-based framework for designing and evaluating healthcare learning and knowledge management processes to support continuously improving patient care, instantiates the contributions of healthcare managers, clinicians and clinician managers.

Ethnographic data were categorised with the *CET* model which was informed by the theory of deferred action but selection of analytical method(s) to inform the reporting of evidence was not straightforward. The difficulty arises because the researcher face the dilemma of choosing rigorous methods of analysis and interpretation to satisfy the thesis requirements and presenting the story to KATH participants who wanted to consume the research findings for healthcare learning system re-design. The critical ethnographer found the combined critical

hermeneutics analysis and critical narrative analysis appropriate to communicate the findings in a critical research domain to show how the proposed *CET* model could enable hospital actors learn effectively to improve patient care. Execution of the data is presented in Chapter 5.

Chapter 5: Interpretation and Discussion

5.1 Introduction

The research aimed to propose an evidence-based framework for designing and evaluating organisational learning and knowledge management processes using ICT of KATH to enable continuously improving patient care. The theory of deferred action was invoked as an underlying theory to develop the *CET* model, based on the deferred model of reality, to explain how to develop socio-technical systems in actuality to address rational planning uncertainties. As a framework of learning inclusive of actuality, the model analyses and prescribes how organisational actors could continuously learn with the support of learning technologies to achieve transformative growth in emergent contexts where uncertainty precludes complete rational planning.

The data is explored with critical hermeneutic and narrative themes to correspond with the four main modules of the *CET* model used for categorising the ethnographic data in Section 4.6.1. This is, because, making sense of the data requires questioning the rationale behind KATH's conventional learning processes and their underlying power relations for transformative growth. Critical hermeneutic analysis offers the tool to question and criticise the limits of KATH learning systems and ICT failures holistically, while critical narrative analysis lends itself to disclosing salience stories required for re-designing the systems. As explained in Section 4.6.2, the combined application of these critical tools of analysis brings meaning to the empirical data necessary for developing the *CET* framework, the deferred model reality, in the context of KATH.

The critical ethnographic researcher interpreted the data to address the five specific research objectives which form the domain of the study aim. The first two research objectives were: (i)

To analyse how managers and clinicians of KATH use technologies to support collaborative learning and; (ii) to identify and analyse the role of KATH staff learning for patient care. Empirical evidence addressing these objectives is analysed under ‘KATH as a Learning Organisation’ in this Chapter, Section 5.2, reflecting how the Input-Output Designer-Evaluators module of *CET* could typify KATH as a complex adaptive system. This module has three interrelated modules which provide one-to-one correspondence with the planned action, emergence and deferred action dimensions of the theory of deferred action (Section 3.2.1).

Section 5.3 covers the role of planning as a dimension of organisational learning design and implementation, as explained with the theory of deferred action in Section 3.2.1. Evidence obtained is interpreted to examine the role of managers and clinicians in KATH ICT-supported learning planning along with staff learning planning in general. It shows that organisational learning processes including supporting ICT, could be advertently planned and evaluated. As outlined in Section 4.6.1, healthcare learning planning and its supporting technology gear towards the Prescriptive Learning and Specified Learning Tools Implementer module of *CET*, with its planned-specified evaluation decisions.

Emergence, the sufficient dimension of the theory of deferred action, as discussed in Section 3.2.1, was invoked to make sense of the data in Section 5.4 to explore the continuing professional development (CPD) and ICT-supported learning implementation issues in KATH and how they are tackled. The ‘emergent forgotten systems – unheard voices’ storylines are used to understand how KATH failed to allow the emergent evaluation decisions shape the various CPD/CME and ICT adoption plans in actuality. The ‘emergent forgotten systems’ are unanticipated factors of planning and planned actions that caused problems for effective implementation of KATH ICT-supported learning systems and CPD courses generally. As

the evidence suggests in Section 5.4, the emergent elements do not sanction the abandonment of KATH learning systems; it is an indicator of people's issues of socio-technical systems for re-designing the failed learning and ICT systems to meet the changing patient care needs which the hospital desires to achieve. The Reality Learning Tools Requirements Regulator module of the *CET* model, the emergence ontology of the theory of deferred action, was used to draw the emergence evidence together to provide full meaning of ethnographic data.

Finally, in Section 5.5, the critical ethnographic researcher interpreted the data to evaluate learning processes including ICT used by the KATH managers and clinicians to improve healthcare delivery. The interpretation of data applied the deferred evaluation decisions to demonstrate how the rationalist school and the emergence school could tightly benefit from each other in actuality. Using the Deferred Action Learning Tools and Synergistic Lens of the *CET* model, the evaluative analysis of the data shows that healthcare managers' strategies could not be effectively achieved without embedding such plans in the changing clinical practices. The critical analysis demonstrates how the deferred model of reality could help KATH design and evaluate their learning processes for improved patient care.

5.2 KATH as a Learning Organisation

The interpretation of the data shows the participants' acknowledgement of staff learning as a critical factor for quality care delivery in the hospital. The hospital recognised that patients had become more conversant with their rights in recent times, raising the issue of quality care provision. In a stakeholders meeting with the clinicians, the CEO warned of potential consequences of poor care giving, such as legal suits, if the hospital does not improve on client service provision. He suggested the need to improve quality patient care and maintain accurate patients' records. Yet, the high doctor-patient ratio continued to place constraints on

the patient waiting time. Finding practical approaches to handling the long patient waiting time was one key concern of many participants.

Performance improvement indicators of the hospital revolved around reducing patient waiting time and achieving positive patient experience (KATHPoW, 2010; 2011). Amongst the three main participant groups (the clinicians, the managers and the clinician managers), quality care is not only about giving substantive treatment but it also involved customer care services such as shortening patient time spent in the hospital. A common agreement was that, learning took a central role towards achieving the hospital's quality care goals. The objectives of staff learning, particularly the clinicians' learning, geared towards patients' satisfaction and therapeutic care. This was, indeed, a general theme of all the hospital's strategic training and staff development plans.

A substantial proportion of the KATH budget was argued to be expended on staff training. The Manager Interviewee 9, for example, said that:

“There are always continuing medical education (CMEs) and research activities going on to bring patient care in tune with current happenings. Even a chunk of the KATH budget goes into training of the clinicians including other care professionals”

The data supports the generalisation that, KATH has transformative growth intentions for improved quality care and patients' satisfaction but achieving this all-inclusive goal is a challenge.

5.2.1 KATH Learning Processes

The interpretation of empirical data shows that the hospital had a number of traditional non ICT-based learning processes intended for knowledge updates and innovative practice, to support the claim that, scarce resource endowments in the developing world could only beg for competing ICT funding from stakeholders and limits the scope for ICT deployment (Lucas, 2008). Examples include clinical meetings and conferences, internal consult, clinical reviews, peer reviews, ward rounds, workshops, appraisals, interim and annual reviews, research, self-enhancing postgraduate courses, and training provisions relating to computerised accounting, ICT, tender processing and general management. There were also specific continuing medical education (CME) and other continuous training courses, some sponsored by the hospital, and undertaken in either local or international educational institutions. A range of staff development activities undertaken in KATH between 2006 and 2009 is demonstrated in Figure 3 below:

STAFF DEVELOPMENT ACTIVITIES in KATH 2006-2009							
Year	Total Study Leave/Part Time	Study Leave (Fresh)	Orientation	In-Service Training	Computer Literacy	Examination Support	MOH Fellowship
2006	71	21	125	1196	41	21	21
2007	95	33	220	1706	136	20	11
2008	97	53	330	2075	97	2	10
2009	110	51	430	1216	85	4	5

KATH Annual Report 2009, page 8

Table 5.1: KATH Staff Development 2006-2009 (Copied from 2009 Annual Report)

The Manager Interviewee 9 confirmed that, on a yearly basis, the medical professionals run a series of courses tagged to their continuing development and sharing of good practices. Clinicians were required by the Ghana Medical and Dental Council (GMDC) to complete a

minimum 30 credits CPD/CME, for over a three year period, before having their practising certificates renewed (GMDC, 2010). For all the clinician participants including the clinician managers, continuing medical learning kept them in tune with the current trends of providing substantive medical care for patients. Being able to give better care for patients was a number one motivation for many.

“An excitement for getting it right for the patients is one of the clinicians' motivations for learning. Getting the treatment options wrong can cost life. Clinicians want to see the best available treatment options, what others do to improve patient care, the resource they use and how all these can translate into quality care of patients” (Clinician Interviewee 5)

Conceivably, continuing medical learning could unveil the best available treatment options, the means to quality patient care. Equally important for the clinicians was to develop self-confidence, gain steady career develop and potentially increase their earnings (Clinician Interviewees 15). Beyond these, continued learning would save the clinicians, who teach various medical students, the humiliation of not being able to address students' questions intellectually (Clinician Interviewees 10 and 14).

“Personally, I work in a teaching hospital and it's such that you meet students and you are forced to teach them. If you don't upgrade yourself, you won't know what the students you are teaching even know if you don't read. You will even be teaching something and they start to question you, and you will feel embarrassed” (Clinician Interviewee 14)

While not compromising the importance of updating one's own knowledge for face-saving gimmicks, its overemphasis could drift attention from organisational learning to individual learning. In learning organisations, the desire for updating individual competence could become beneficial for organisational growth and development if such knowledge were continuously shared and committed to the organisational goals. Particularly, in a fast changing clinical practice, learning processes deemed important for quality patient care, as

generally agreed by all the participants, were exchanging research findings and sharing good practices.

“Some practices we used to do are changing all the time. For instance, in the past, they used to say that when managing a patient blood sugar; wait till the sugar to goes up before giving insulin but that has changed. It is now give the insulin so that you prevent the sugar from going up. So, the recent trends are coming up. For instance, they used to tell us that get the patient who is diabetic a Hemoglobin A1C, which is a measure of glycemic control, 7% or below. But the recent meta-analysis published in the Lancet has shown that if you get it below 6%, there is a high risk of mortality because of the complications. So, things are always changing and if do not get a hand on recent publications, you may be practising something which is actually harmful to your patient. So, getting new knowledge helps you to improve your patient care and that is, the heart of what I do” (Clinician Interviewee 10)

The data demonstrates that new trials and cutting edge research are indispensable in medical practice. The Research and Developing Unit organised seminars on varied clinical research and evidence-based medicine topics for the clinicians’ knowledge updates. Regular reading of relevant research publications was one of the most significant learning processes widely identified between the manager groups and the clinician groups for updates on corporate management and clinical respectively.

At the management level, learning provisions for the core management group were distinguished from the clinicians’ learning because of the defined roles of the respective staff categories. For the managers with corporate management, systems development, procurement and human resource background, learning bordered on corporate strategies aimed to achieve specific targets.

“All managers have duty to impact knowledge to others [subordinates] but these may be classified as a top-down approach of impacting knowledge ... There are also common in-service training programmes. Many also attend courses in GIMPA (Ghana Institute of Management Public Administration) to learn computerised accounting systems and specialist training based on the needs of the individual units” (Manager Interviewee 1).

“I am a subscriber of CIPS magazines and every month they send me highlights of their magazine and I log on to their system and study. Whenever I find something relevant, I make copies for my staff to study as well” (Manager Interviewee 7).

These texts substantiate the argument that, healthcare corporate managers’ learning is traditionally learned towards financial and management controls and are influenced by power and control of managers who plan and organise organisational processes. Evidence of power embeddedness in managers’ learning is demonstrated in the following text in which a manager uttered subordination of responsibilities to exercise his authority to co-ordinate management processes; but differentiates this from clinicians’ roles (Edmonton, 2006).

“For instance, we do not expect a doctor to go to Accra to arrange for his salary but we subordinate those responsibilities to a payroll person while a doctor does other important businesses” (Manager Interviewee 17).

The question, however, is how could the managers collaborate with clinician groups to ensure effective learning? From the clinician group viewpoint, poor communication between managers and clinicians groups could impede quality care intentions. Maintaining the required collaboration between the two groups was naturally difficult, with majority of learning decisions prescribed by the management team (sections 5.3 and 5.4).

Intra-knowledge sharing (within the same directorate) among clinicians was a common practice but the same could not be claimed, with absolute certainty, for inter-knowledge sharing (across directorates). The clinicians in Medicine directorate, for example, researched on specific topics and, on weekly basis, presented their findings in clinical meetings. Specific training programmes, such as HIV training, were designed through clinical consultations, and presented twice a year in a PowerPoint delivery fashion. New doctors, who might not have had the opportunity to receive HIV patient management skills in the medical school, could develop their competencies through the intra-knowledge sharing discussions.

Similar collaborative learning processes were practised in FemaleCARE, InfantCare, TestCARE, CanCARE and other clinical directorates. Regular reviews of clinicians' written work and presentations were done by senior colleagues for quality check and knowledge validation.

“There is a lot of peer review. Peer reviews because, for instance, you are given something to do, then you come to present to your peers, then after the presentation, then people tell you what you have done, where you have done well, where you have gone wrong, what you should have done that you did not do; your commissions and omissions. So, more like peer reviews. You do something; you give it to your colleague. Like you are writing your research, you write your proposals and your seniors go through for you” (Clinician Interviewee 6)

CPD courses were sometimes spread out to cover the knowledge gaps of nurses and other healthcare professionals with some clinicians suggesting provisions of specific in-house training for nurses and healthcare assistants. The Clinician Interviewee 12

“There are lot of workshops for healthcare assistants and nurses. In our directorate for instance, we have new set of nurses and we organised series of workshops with PowerPoint presentations getting people with expertise coming to educate them on some of the situations they may find themselves in the nursing aspects of clinical care” (Clinician Interviewee 12)

The responses of the participants, together with the analysis of the hospital's strategic documents confirm the incongruence between the managers' learning and clinicians' learning processes, as identified in the literature on health services (Edmonton, 2006). In between the two, is the clinician managers' learning covering annual reviews, clinical reviews, internal consult and the CME knowledge creation processes in KATH. Nomothetically, the three learning typologies: Managers' learning, clinicians' learning and clinician managers' learning correspond to the ideation of the rationalist, the emergence and the balanced-view schools of thought identified in the literature review earlier.

The interpretation of the data has shown that there is plethora of different learning activities undertaken in the hospital, enabling us to classify KATH as a learning organisation but there

is a divide between clinicians' learning and managers' learning. As will be told in Section 5.4.1, the divide between clinicians' learning and managers' learning coupled with lack of a co-ordinated learning systems design and implementation approaches was largely blamed for the hospital's inability to achieve the desired outcomes. Management-controlled CPD courses, for example, disregarded the clinicians' full inputs, hampering effective organisational learning (Clinician Interviewees 2, 3, 5, 6, 10 and 12).

5.2.2 ICT Application for KATH Staff Learning

Data interpretation reveals that, some learning processes of the hospital were enhanced by technologies to support team collaboration and knowledge sharing. The interview and focus group transcripts exposed emails, intranet, telemedicine system, doctor-to-doctor call lines, clinical databases, personal phones, PDAs and internet-based workshops, as actual and potential tools used by the staff. Social network tools were casually used, in some instances, for knowledge sharing.

Using ICT to enhance learning was increasingly becoming a practice rather than a choice in the hospital. In the MaterialSup Unit, for instance, it was a policy for everybody to be literate in basic computing. The unit provided IT training opportunities, on a yearly basis, for staff lacking fundamental computing knowledge to learn internet and email functionalities, and applied them to job routines (Manager Interviewee 7).

Some clinicians felt that the application of ICT to learning could enhance knowledge creation, team collaboration and improved management of cases. Especially, in the context of clinical practice in Ghana, where the availability of specialist clinicians is limited, eLearning tools could bring inputs of medical experts from overseas to augment complex medical treatment decisions (Clinicians in Focus Group 19 and 20).

Realising the significance of using ICT to enhance clinical practice and improved client expectations, the hospital commissioned the ITech Unit in 2003 charged with the responsibilities of using IT to support KATH's corporate goals. The Unit's main aim, as stated in the hospital's 2009 annual report was:

“To use technology to achieve institutional missions such as measuring patient outcomes, operating efficiently, cutting costs, educating students, and supporting research” (KATH Annual Report, 2009:90)

As the need for ICT in medical practices grew, the hospital recognised the prospects of harnessing internet for improved patient care and staff learning. It also acknowledged the need for using internet to communicate its significance as caregiving institution to the general public, leading to the ITech Unit using its in-house expertise to design a new website in 2009, with the URL address: www.kathhsp.org.

Depending on the core responsibilities of the departments, the staff used internet for: Ordering transactions; querying the MoH's questions and answers helpline facility; accessing research databases for knowledge updates; downloading images for PowerPoint presentations; browsing for information relating to practice; communicating with colleagues online; and publishing KATH's events and news. Amongst the participants, the application of ICT to medicine was undeniably productive, with an example quoted below:

“If you lose out on ICT, you really cannot get the latest information, you need the latest information to guide your practice basically” (Clinician Interviewee 10)

Though their system was not yet advanced like Microsoft Outlook, the Clinician Manager Interviewee 4 said that they scheduled their meetings on calendar facility and electronically shared for members' notices. Extending this facility, with adequate implementation of ePatient systems, to other departments would be an effective way to quicken treatment decisions for patient satisfaction. As contributed by the Clinician Manager Interviewee 16,

ePatient system could enable the multidisciplinary clinical teams' access to information on clinical cases prior to scheduled clinical conferences.

“For instance, if the histopathology report is inconclusive, then the pathologist could look at that before meeting. If the final decision will be based on CT Scan or any form of imaging that is yet not available, the radiologist makes sure, may be, he prepares to bring such a thing to the meeting before so that we could make a treatment decision at the end of such meetings” (Clinician Manager Interviewee 16)

However, the Internet usage for collaboration and knowledge sharing, especially between the manager and clinician groups was very little in KATH, as we shall see in sections 5.3.2 and 5.4.2.

Traditionally, the hospital had been using memos as an official method of internal communication. Thus, they circulated pieces of paper-based official information between and among departments. Seeing the importance of email as quick and user-friendly for communication; the hospital implemented KATHmail systems for all staff in 2010, giving each staff an individual KATH email address with access codes (Manager Interviewees 9 and 17). Email was envisaged as a better alternative to reducing the amount of paper used for circulating memos forth and back. The Manager Interviewee 9 commented on the obvious benefits of an email as:

“Email is cheap and easy way of communicating with each other. Over here we use memos for passing on just little pieces of information as means of communication but if we can make use of emails that can actually cut down the costs of paper and circulate information quicker”

The KATHmail system and internet were potentially critical for the hospital's eLearning, aiming to promote knowledge sharing and research engagements for both clinicians and managers.

Besides using email for internal collaboration, it was identified as an effective communication tool between the hospital and external agencies including the MoH departments. The NHIS

Unit used email to send processed health insurance information to the head office (Manager Interviewees 17). A similar usage of email for report submissions to the MoH was identified with the IntCompliance Unit.

“In terms of MoH, currently we can scan the signature portion of the quarterly report, attach the whole report in the email and forward the entire report to the MoH internal audit unit. It makes it easier to monitor the progress of the report. There is also a web-based helpline facility for us to ask questions and get quick responses on complex audit issues. It is just like a resource centre to ask for information when the need arises” (Manager Interviewees 1).

However, the general appreciation of email as an effective collaborative tool for knowledge sharing and communication could not match the reality of usage. The efficacy of the hospital’s email system was limited by the slow information flow, mainly, caused by the narrowness of the existing in-house server.

“I think the hospital is trying to give everyone an e-mail address, but since it is almost always down it is not always effective. When you go outside, to some places, it is very effective. So, you are working, you can keep checking your mails to see whether there is any information for you. If you want to find out anything from any other doctor concerning a patient you can go about e-mail. But, here e-mail is not really high on the agenda; rather, we use phone calls if you really need to communicate with someone concerning a patient or for that matter” (Clinician Manager Interviewee 18).

Compounding the issue of poor KATHmail system was lack of sufficient intranet platform to host the system. A shift from traditional dissemination of information to better sharing of knowledge could only be achieved, according to the Clinician Interviewee 11, with properly implemented intranet supported with improved internet access. He explained that:

“We have never had proper intranet because of the internet access. Now I have got a wireless here, it is only a recent thing that the department has done, which the department is paying from its own resources. The hospital internet has been down for some time, so the use of such material [knowledge sharing information] is limited by the availability of internet access”

Alternative internet provisions, such as Zain and KNUST internet services, acquired independently by the various departments, with individual users mostly owning their laptops,

appeared to ease the problem of poor internet speed to some degree. But, as the Clinician Interviewee 11 indicated, the financial burden of subscribing to private internet access fell on the individuals concerned rather than the hospital.

The KATH internet access remained a problem at the time of closing the data collection exercise, with the Clinician Interviewee 12 rating the KATH email system (intranet) as collapsed while the internet was considered virtually not working. Further details on internet, intranet and email challenges are discussed in Section 5.4.2, where the weaknesses and failures of the KATH ICT systems are fully explored.

The provision of CME was supposedly supported by the telemedicine application, a Pan-African e-Network Project brought to KATH by TCIL to help doctors upgrade their knowledge on new medical findings and share these with peers in other countries. Between 1st and 31st March 2011, for instance, 72 different topics of clinical orientations were scheduled for the CME Sessions, expected to be broadcast from Super Specialty Hospitals in India.

The telemedicine was an internet-based learning tool offering clinicians the opportunity to watch surgical operations being done globally via synchronised satellite connections. Feedback and interactive functionalities such as an email facility of the telemedicine system allowed real time collaboration and instant responses to questions.

Participation in telemedicine sessions would update clinicians, to some extent, with knowledge of different clinical practices without necessarily travelling abroad (Manager Interviewee 7). Potentially, accessing telemedicine sessions might, as argued by the Manager Interviewee 1, save KATH money on fellowship allocations often spent on some specialist overseas courses attended by the clinicians.

From the managers' perspective, the informal feedback received from participants who attended some telemedicine sessions signified the effectiveness of the technology as a useful eLearning application including its paramedic learning packages. The Manager Interviewee 1 reported that, during the 2010 mid-year performance review of the hospital, staff testified on the new knowledge he had acquired through attending the telemedicine sessions in KATH.

The story was, however, different from the clinicians' perspective, seeing the tool as though potentially useful, its top-down implementation approach had accounted for the poor clinician patronage, as detailed in Section 5.4.2. For the clinicians who partook in the study, the telemedicine had brought very little to knowledge sharing, if any at all. Ten months into the data collection, the responses obtained from the clinicians to the follow up questions, verifying the state of clinicians' attendance on the telemedicine sessions suggested a complete failure of the eLearning tool. The Clinician Interviewee 12 email, for instance, reads as follows:

“The telemedicine is equally at its worst form. The last time I checked, nobody had even attended a single session. The place is even now being used for other things most times as it has recorded zero attendance for most time. No category of staff is showing interest any longer”

The reasons for this disappointing comment, as will be explained in Section 5.4 Other technology useful for knowledge sharing was doctor-to-doctor talklines provided by Vodafone, enabling the clinicians collaborate with peers on medical cases and make validated treatment decisions without paying service charges. Equally useful tools for clinical knowledge sharing were the use of internal telephones and SMS text messages, with others engaging in social network applications such as Facebook and Skype for informal learning (Clinician Interviewees 3, 6 and 12).

Though asynchronous and effective for self-organising learning, the Clinician Interviewee 15 saw Skype as a tool commonly used for making free calls rather than for learning while Facebook usage by the staff was drifted towards non-clinical discussions. His preferred technology for knowledge sharing would be Moodle and other tailor-made virtual learning tools that could transform the learning processes in KATH. He contributed as follows:

“Facebook is fine but learning from Facebook is probably what most people would not do. Skype is fine as I told you most people who would prefer to use Skype for their free call rather than learn... Moodle is also used very much for learning and there are some other applications ... to me, are much more elaborate and they are more collaborative. They help people to focus on the learning rather than just chats from one person to the other because there, you get to paste your lecture notes, paste your assignments, you go there to discuss your problems for people to answer, then you are able to contribute to other people's difficulties as well. So, to me, I think that is, the most important, not the Skype and the Google, are not most important”

Even amongst the collaborative learning tools, the Clinician Interviewee 15's preference for Moodle as an engaging platform for learning, suggests how Moodle application to contextual learning could represent the adoption of deferred model of reality for collective knowledge validation. It supports a deferred learning process, where the prescriptive learning provisions are enabled in the local context of actors' cognitions to achieve the real results organisations aspire to (Patel, 2006).

5.2.3 Staff Learning Evaluation Approach

How could KATH evaluate the effectiveness of the learning process including the supporting tools to ensure that quality care was achieved? As we will see in the subsequent sections of this chapter, approaching quality care evaluation solely from the top-down management learning processes such as the use of appraisals would only achieve information acquisition and not knowledge sharing experiences that could promote patient satisfaction.

Appraisals are intended to correct errors and not for taking actions that could replace existing methods of operation. CPD courses were similarly systemic and geared towards certification

without having knowledge sharing inclination. But, the Manager Interviewee 13 argued that certification-driven learning could improve quality care of patients.

“Depending on where you find yourself. In healthcare setting, if people are seeking certificates then they will be forced to read. If it is not driven by certification, people will read at their own leisure time and not be pushed to learn. This will retard quality services but if it is certificated, then it will improve quality services. The more you read the more you upgrade yourself, and once the knowledge is acquired from this process, it will transform into patient care” (Manager Interviewee 13).

The manager was inferring that acquisitions of certificates by healthcare staff could improve patient care but, this is a rationalist conception to assess how learning could translate into quality care because, passing a theoretical test for certification is different from acquiring know-how for caregiving. So, clinicians held a contrasting view of the certification-driven learning, arguing that certification could not be equivalent to learning and skills acquisition (Clinician Interviewee 5).

“A person might take exams and pass but it does not necessarily mean he has learnt so there is a limit to how these things can be stretched” (Clinician Manager Interviewee 8).

Encouraging knowledge sharing through clinician consultations and ward rounds was preferred as a way forward to improve quality care of patients (Interviewees 10 and 14). The Clinician Interviewee 14’s suggestions on the key learning processes for quality care followed the emergence school, emphasising on knowledge searching to address changing clinical needs.

“We live in the world that things are not static, they are dynamic. When it comes to medicine, if you sit down for week too without reading, one day you realise that what you knew two weeks ago is now obsolete because new things come up day by day. It is necessary that if you really want to catch up with the rest of the world, then you need to review articles day by day to enhance your knowledge. In that case, there is a need, if something new to share with colleagues, we used to think this way but new research has proved that this is now how we do it”

Attaining quality care with the reality view was accepted by the Manager Interviewee 1, stating that peer reviewing and refinement of ideas would be the most important learning process that might increase knowledge capital of the hospital. However, acceptance of the emergence argument, the clinicians' learning, would not be complete for evaluating KATH learning processes unless it is cohered tightly with the managers' learning processes. This is to say that, the evaluation decisions should be based on the deferred model of reality, as informed by the theory of deferred action (Patel, 2006) and covered in Section 5.5. This view extends the balanced-view school, the clinician managers' learning processes, to the deferred evaluation decisions which are actuality-based.

The Clinician Manager 16 recommended a lengthy questioning-style prescription for quality care which could exemplify deferred evaluation decisions if it were responded affirmatively.

“If you are looking at quality care, you are looking at the outcomes/results of the treatment you give to your patients. But in between, how do you give it, how do you select your patients, what do you need to give that particular care? In giving that care, are your patients happy with the way you interact with them and the way they receive the care? Did they receive all their medicines? Did they have to wait for a long time before getting their medicines? Do you talk to them nicely? All these come to offering the quality care. Otherwise, I could just drag the patient there and give him the radiation and at the end of the day, yes, the cancer has been treated. But, was the patient happy about the way you went about it? Did you explain to her what kind of treatment you were going to give her and what she should expect? So, all these should come in and give the quality that we talk about. At the end of the day, we need to compare with what is happening elsewhere in giving the same kind of treatment. Are you getting the same outcome? Is your outcome better or worse? From time to time, you need to sit down with the treatment providers and assess the results of your treatment. Is there anything that could be improved? Is there something that was done wrongly? What were the reasons why these things were not done properly? Even as you go along, there should be checks and balances. You write a treatment and somebody is supposed to administer it and before he administering it, is there anybody checking to see that the right set up has been done, particularly in case of directorate? This should be done on long coming forth; it should be done at regular intervals such as on weekly basis” (Clinician Manager Interviewee 16)

The data suggests how to plan and deliver quality care in time and space, catering for patients' treatment options and care needs in context, to reflect changing local and global standards of

clinical practice. This is typical clinical evaluation decisions of deferred model of reality for achieving continuously improving patient care. It shows learning inclusive of actuality where planned-specified evaluation decisions and the emergent evaluation decision could cohere in situ to produce the deferred evaluation decisions for transformative growth intentions. These are evidenced systematically in Sections 5.3, 5.4 and 5.5.

5.3 Planning Role

The interpretation of the data shows that, existing situations of KATH were used as bases for designing strategies to meet the hospital's future challenges. The manager participants viewed planning as preparedness against taking too spontaneous reactions to emerging clinical problems. At the departmental levels, planning was done by the management teams with varied professional background of members across the directorate and unit groups. The head of departments, clinical or non-clinical, managed and supervised the respective departmental activities governed by the Ghanaian MoH framework of practice.

Planning at the management levels was a learning activity. De Geus (1988) refers to this as institutional learning controlled by managers with intellectual skills. This type of learning, expressed here as managers' learning, is important for achieving specific management goals but insufficient for addressing dynamics in clinical practice, ones captured by clinicians' learning. It is an exemplar element of the *CET* Prescriptive Learning Tools Implementer (discussed in Chapter 3).

Managers' learning in KATH was more directed towards budgeting, supervisions and performance improvement indicators such as developing knowledge of the annual performance framework and monitoring progress (KATH PoW, 2011). These management actions are advantages of planning because they shape future directions of organisations.

Clinician Manager Interviewee 16 said that, clinicians were involved in designing and updating treatment protocols for case management but these, in some cases, lacked tight coordination with managers' learning; indicating what can be interpreted from Patel (2006) as 'planning insufficiency'. That is, a planning process devoid of adequate actors' specifications and everyday human actions usually essential for operationalising management decisions in businesses.

A typical case of the manager-clinician planning differences was identified with syringes procurement. As an essential medical tool, consistency in the managers' decision and the clinicians' requirements for the right syringe sizes was expected. Apparently, the managers' dominance took priority over the clinicians' expectations, with reasons not clearly explained. But from what was gathered, the clinicians' decisions rarely went hand-in-hand with the strategic plans:

“For instance, if you want certain [we need] syringes of different sizes to work with and at one time, to your surprise, we only have just one type of syringes. So, it is like you have no choice. You just use it. In that case, we don't decide. It is the managers who sat down and decided. For whatever reasons just to bring in more of those 'one type syringe' not to take into consideration that at any given time there would be the need for other sizes. In that case it is not hand in hand” (Clinician Interviewee 14).

So, the decision-making powers resided with the managers. Another example was cited with the chemotherapy treatment protocol for breast cancers (Clinician Manager Interviewee 16). Enforcing the observable treatment protocols required policy backing. However, it was inferred that, the apparent divide between managers' learning and clinicians' learning had not eagerly made the chemotherapy treatment protocol enforceable.

In principle, the clinician managers understood the essence of managers acknowledging the clinicians' decisions but managers could not commit funds to the clinicians' requirements,

especially with the ICT requisitions (Clinician Manager Interviewee 8). The importance of planning as a transformative learning organisation factor was, however, upheld.

5.3.1 Staff Learning Planning

Through continuous learning, training, and cutting-edge research activities, the hospital empowered their staff and aspired to become a centre of excellence in healthcare delivery service. This placed a huge responsibility on the consultants and managers to impact knowledge onto subordinates and colleagues (KATH PoW, 2011). Creating knowledge from a top-down approach typifies the informational processing argument of managing knowledge (Davenport and Prusak, 1997), signifying the views of the rationalist school.

A typical example of a top-down approach to knowledge creation, as the Manager Interviewee 17 suggested, was the managers identifying performance gaps from the staff appraisal documentations, and planning learning programmes to address the knowledge gaps:

“Sometimes, staff request for IT training in appraisals and these show there is lack of adequate IT skills. We organise IT training for them for basic knowledge of ICT and skills upgrade” (Manager Interviewee 17).

The training needs were, however, not personalised to suit specific staff skill weaknesses as per appraisal records. The topics were rather differentiated broadly into particular classes of staff, as a way of reducing costs.

“We group staff learning needs into specific categories based on identified performance gaps and provide specific training to meet the weaknesses identified. The design processes are also driven by the objectives/targets that staff are not necessarily aware of but only known at the management level and the managers whip up people's interest in those areas” (Manager Interviewee 1).

While the managerialist worries of cost-effectiveness training are noted, two issues emerged. First, an individual's specific learning needs could be omitted from a given group training

needs. Second, the changing staff training needs would be missed out in the yearly appraisal review system, leading to their exclusion in the current learning packages.

The situation was slightly different from the sponsorship attachment programmes where the clinicians had some freedom to search for their own training programmes of interests. Yet, the choice of selecting a course relating to one's specialty was often limited by the hospital's strategic training directives, adopted from the MoH policy framework, and the strict selection process.

“Once they find possible attachment as specified by the hospital, they bring their application to the HR for processing and submission to a committee that checks that the intended course/attachment is relevant to the hospital. Sometimes too, the hospital management look for these courses and based on staff performances as per the appraisal documents, we are able to select those we believe could go for further studies/attachments outside the country and use their knowledge to help the hospital” (Manager Interviewee 17).

A common sense argument for getting selected on the attachment programme was conformity to specific training directives of the hospital. This strict sponsorship culture overshadowed the potential clinicians' decisions to take up self-enhancing courses. For some, the chances were even slimmer, as the management often specified the subject areas based on staff appraisal performances and recommended who should go for attachments outside Ghana.

The strict sponsorship culture for selecting staff for attachment and overseas training was sometimes predetermined and seemingly favoured management working associates. Interpreted from Myers and Young's (1997) concept of hidden agenda in health information systems development, the rationale behind distributing sponsorship courses exposed some management predispositions. When asked further questions on the openness of the design and selection of sponsorship courses, a manager said:

“We are not only here to do ‘clinical-clinical business’ but to support and train technical staff who successfully provide regular support for the clinicians to achieve

the health care delivery goals. So invariably, we all support clinicians to deliver quality services for our clients” (Manager Interviewee 17).

The Manager Interviewee 17’s discussion clearly avoided the question of the sponsorship courses transparency but one clinician registered his disillusion at the process of sponsoring a few staff on some important training courses, labelling it as unfair (Clinician Interviewee 2). However, the costs of sponsoring everybody longing to attend specific training were generally recognised as unaffordable. Overall, what was clear is that, the planning and selection of fellowship programmes demonstrated elements of the planned-specified decisions of the **CET** model. Planning was necessary but largely based on central management decisions.

Staff learning was planned, in some departments, to meet the future job descriptions of potential internal candidates who would be due for promotions.

“For instance, our aim here is to design programmes for the staff in such a way that before one should be promoted to the next grade she/he should know how to conduct tender, do sample product testing, and so on. I also have to state these activity-based, processed in the staff appraisal documents. Our planning therefore covers some of these learning processes” (Manager Interviewee 7).

Learning how to negotiate contract awards exemplified activity-based processes specified to meet an individual career orientation. This is a co-ordinated rationalist approach to harness employees’ promotion through on-the-job training. Yet, exclusive rational planning to meet careerism opposes critical knowledge in deferred ontology forms (Cecez-Kecmanovic, 2007; Patel and Ghoneim, 2011), which would arguably use ethics and impartiality to achieve professionalism rather than using planned learning and orchestrated staff promotion activities. Careerist orientations therefore lack adequate opportunities to promote knowledge sharing and bottom up initiatives.

Managers’ responses to the question of KATH’s healthcare quality plan directed the responsibility of promoting patient satisfaction to the CareQual Unit. Placing patients at the

centre of KATH learning activities, the quality assurance management team regularly researched into patient satisfaction indicators and analysed survey responses to identify patient problems. A department identified with patient care issues was usually selected for quality check.

The hospital's healthcare quality plans invoked specified compliance responsibilities on other departments, such as the Pharmacy and MaterialSup units, to procure the best medicines and consumables required for clinical care. Staff learning was seen as a key element of quality care delivery and continuously improving standards:

“The key aim in healthcare is to upgrade our standards continuously. Healthcare is not static so everyday learning is very important in healthcare. New technology and new concepts are all important. If you want to improve care delivery then upward revision of our standards is number one. If we want to review our standards then we have to disseminate our standards by getting people to learn to improve quality” (Manager Interviewee 13)

The Manager Interviewee 13's quality model focused on compliant and certificated learning processes. These are illustrations of management-designed learning processes, single-loop learning exemplars. As Senge (2006: 205) argues, compliance attitudes are specified and lack true organisational vision embedded in genuine commitment. Also, certification learning only improves information acquisition for individual staff and not knowledge sharing amongst groups and teams in the hospital (see Section 5.4.1).

The existing quality models had, therefore, not reduced patient waiting time and overcrowding, and patient satisfaction was consequently not achieved (Clinician Interviewees 12 and 15). Before and after evaluation measures such as using WHO observational forms for assessing hygiene practices had not significantly changed staff attitude (Clinician Interviewees 2). Evaluating service quality remained a problem, with staff failing to

document [clinical practices] appropriately (KATH PoW, 2010: 48). These are further discussed in Sections 5.4.1 and 5.4.3 to show their impact in quality care.

5.3.2 ‘Managers-plan-Clinicians-use’ Systemic ICT Systems

The critical analysis of the data reveals that all participant managers recognised planning as a critical aspect of ICT-supported learning processes. But, this acknowledgement did not spare the difficulty involved in considering, comprehensively, the stakeholders’ views in planning. A manager cited the clinicians’ disinterests in the ICT planning involvement as a problem (Manager Interviewee 17). Yet, the clinicians’ role in ICT-supported learning planning, as discussed in Section 5.4, was far more important than the managers’ commitment. Clinicians’ contribution on the tablet technology usability requirements, for instance, helped the managers to abandon the idea of deploying tablets, as an unsuitable technology, in the early stages (Manager Interviewee 9). Cost-saving was therefore beneficial.

Medicine and clinical practices being the core of the hospital activities, some managers would have preferred the clinicians to suggest their specific requirements for ICT-supported learning as a way of promoting quality care. A widening participation approach was conceived by the Manager Interviewee 9:

“If we get them in making decisions, I am sure that there will be no project that will fail because once everybody has a buying in to the project everybody will do his part. If a clinician suggests that it should be done this way and it is done, nothing prevents him/her from using it. If a technical person suggests that let us buy this equipment and it is bought, it is like the clinician will be more dedicated to the maintenance of systems. If we (technicians) are planning it for them (clinicians), we need their inputs as to what is expected of them so that we will be careful of specification choices. Even with the evaluation, the clinicians have to be more involved in providing feedback on the systems so that we can know the usability requirements from the end-users, and we can come out with a better system”

The widening participation approach, however, contradicted the existing model adopted for the hospital ICT implementation. The claim by all the clinicians interviewed, except one with very minimal involvement in the ICT adoption (Clinician Interviewee 12), was that, they were side-lined in the various ICT planning. Below is some indicators to support this:

“We are not invited to participate, and we don’t know if it goes through our head clinicians as it is not communicated to us. I have never been involved in any ICT based programme or learning in the hospital” (Clinician Interviewee 3).

“I have not been involved in that, I have not seen any of my colleagues taking part ... I personally have not had any interaction with any manager about ICT. We have interactions about other things” (Clinician Interviewee 5).

“I am yet to hear of any clinician involvement in that. That is the sad aspect. I am yet to hear of any clinician involvement in that, for instance the e-mail address in 2000 generated, we were there and they brought it in. So, I don’t know of any clinician involvement in those” (Clinician Interviewee 6).

The above quotations evidenced what the researcher describes as the ‘Managers-plan-Clinicians-use’ systemic ICT systems in KATH. Yet, central to the ICT usage in patient care should be clinicians’ active involvement in deployment decisions. Clinicians could better examine the gaps in the existing or potential systems and come up with better alternative solutions. Having many of them exposed to overseas educational institutions, the clinicians might like to contextualise some good ICT-supported learning processes experienced elsewhere in KATH.

“I think it is a bit rudimentary at this stage and need to improve. Because until we improve the general intranet platform, I don’t think they can go further steps in expanding... Because I have worked in foreign institutions before in the UK and I know how the ICT system works. I think we need to do a lot to try to approach their standard, but we have some obvious limitations” (Clinician Interviewee 11).

The significance of the clinicians’ involvement would be very useful if they provided constructive critique on management decisions relating to planned ICT systems. It stands to reason that, clinicians could tell the systems developers their [clinicians] own specifications.

All-inclusive planning symbolises the beginning of a successful ICT and knowledge management system deployment. The future is fundamentally inconceivable and planning should not be seen as surprise but rather something that should be contextualised in actuality. As Patel (2006) recommends, the designers should plan for knowledge management systems but enable users to shape emergent issues affecting the systems implementation and actual usage.

One single fact, acknowledged by the Manager Interviewee 9, is the difficulty involved in achieving everything that was planned for. It is because of this reason, that the clinicians strongly criticised managers for not fully involving them in the evidence-based clinical systems decisions. Below are a couple of such criticisms:

“Since we are on the ground looking after the patients, if we were involved in planning it, we will be able to make inputs that may help us to acquire the relevant knowledge that the hospital management may want us to acquire to help care for the patients. We will then be able to help design programmes based on local cases that we see. So it is not that somebody has shot a film in overseas, a Caucasian patient is being used and then they come and give it to you to use. We could use local cases to develop our own local training softwares and use them” (Clinician Interviewee 10).

“All clinicians should right from the beginning be involved in the setting up of these systems and structures so that the interest starts right from the beginning rather than the try your luck things that they have been doing. They go and bring something and at the end of the day it doesn't work” (Clinician Interviewee 12).

Acknowledgement of ICT planning was felt to be too systemic in favour of managers, falling short of the changing clinical needs. The emerging evidence corresponds with the claim that, in rapidly changing organisational settings, a few managers could no longer identify what is required for a change (Huysman, 2000; Burnes et al, 2003). Single-loop learning and its rationalist conceptions struggle to thrive in such organisations. So, the clinician participation in ICT planning and implementation is vital.

The Clinician Manager Interviewee 8, however, held an extreme view on the clinician involvement in ICT planning. For him, clinical learning activities were designed by the physicians and ICT would just provide a backbone for the clinicians' learning. Therefore, he doubted if the ITech technicians would need the clinician input in technology design and planning. This is an extract from his argument:

“They will structure something but I don't think the clinicians need input in this at all. If they decide that patient information should be accessible at all points in the hospital, they can do that without even consulting the clinicians” (Clinician Manager Interviewee 8).

The Clinician Manager Interviewee 8's argument stemmed from the fact that, the required data existed for the ITech technicians to disseminate on ICT platforms. The discourse carried with it a misconception of seeing patient data as discrete phenomena. The complexity of medical cases, investigated in even a large teaching hospital, required a broader view of ICT system implementation.

The Clinician Manager Interviewee 8 extended the discussion further to explain that, the ITech technicians might conduct a survey to see what data should go where but not necessarily engaging the clinicians in discussions about it. He appeared to be well informed of the issue but might have found it difficult to retain his clinical allegiance, while defending his managerial position (Edmonstone, 2009). Subsequently, planning in actuality (Patel, 2006) could suffer. This confirms the researcher's position that a balanced-view argument has not yet fulfilled the lapses in learning organisations.

Naturally, budget and cashflow were cited as dependent variables of ICT systems provision.

“Managers see the need but cannot commit funds for it but we clinicians want the best of it” (Clinician Manager Interviewee 4).

Planning for the hospital's ICT-supported learning was important but constrained by resource limitations and the National Healthcare policy guidelines of Ghana. Operating from the Ghanaian MoH's framework of health, the managers argued that the clinicians' requirements for the ICT systems would be only affordable if they were prioritised within the policy framework of the Health Ministry.

Relating to the financial budgets, the managers redefined their roles as orientated towards couching and tailoring the Ghanaian MoH objectives to suit the hospital's strategic thinking (Manager Interviewees 1, 7, 9, 17). What their argument failed to address is the fact that, the hospital itself was functioning autonomously under the Act 525 of 1996. Therefore, so far as it would not contravene quality care provision, KATH could plan adequately for ICT-supported learning systems to account for the clinicians specifications. After all, the MoH endorsed effective use of health information systems to promote quality care delivery (Ministry of Health, 2009).

A sense of urgency appeared to prevail amongst the manager participants for implementing ePatient information across the directorates. The Manager Interviewee 7 insisted that properly installed ICT systems would enable easier and quicker retrieval of key patient information at the Out-Patient Department (OPD). Effective ICT planning was deemed essential for clinicians, and staff at the triage to deliver quality care giving services (Manager Interviewee 9). Billing of patients' medical transactions and writing of medical reports were also highlighted as some of the benefits of ICT planning. Not all the areas, for which the ePatient system was planned, were however, using the system. The reasons for this and other planning inadequacies are discussed in section 5.4.

Generally, all the ICT-supported learning systems deployment was spearheaded by the manager-centric planning approaches. This means, handing the operational activities down

from the top. The hospital's email system, Internet, Intranet, telemedicine and Medical Pro Resolve were deployed with managers' decisions, with very little or no clinicians' decisions, as shown in Section 5.4.

5.3.3 Virtual Learning Environment - Future ICT Planning

It was reported that, the hospital was negotiating with some research centres to deploy virtual learning systems to support knowledge sharing. This would involve integrating the external organisations' research databases with the KATH's intranet system to enable staff to access recent clinical findings anytime and anywhere (Manager Interviewee 9).

The Manager Interviewee 9 explained that, the virtual learning systems plan, if implemented, could connect KATH staff virtually to other researchers for knowledge sharing. However, with the current narrow internet bandwidth, the creative idea might remain a dream, unless there was a substantial budget allocation and staff commitment for a robust intranet deployment. This concern was raised by the Clinician Interviewee 12:

“The systems that we have here, we buy a small volume of server with small bandwidth and slow. Some of us have put forward a proposal to acquire better servers but the hospital thinks it is too expensive” (Clinician Interviewee 12)

The solution should go beyond just correcting errors, to replacing the existing systemic ICT-supported learning processes, in way to achieve continuously improving patient satisfaction. Section 5.4 discusses why the rationalist school, such as planning, is not sufficient to achieve the expected benefits of enhancing quality care with ICT-supported learning in KATH.

5.4 Emergent Forgotten Systems: Unheard Voices

The interpretation of the data demonstrates that planned CPD/CME courses and KMS/IT systems in the hospital failed to achieve the expected outcomes, as would be explained in this

Section. Because, they were influenced by rational planning and decision-making powers of managers without catering adequately for the intricacies of clinicians' daily working requirements and people's issues as emergent factors of socio-technical systems. Such factors, as would be elaborated in this Section, were listed in Table 4.6a and 4.6b under the storylines: 'Emergent Forgotten Systems: Unheard Voices', to show the merits of the Reality Learning Tools Requirements Regulator module of the *CET* model, and its ability to respond to rational planning in context.

The critical analysis and interpretation of ethnographic data reveal the unheard voices of clinicians, expressing feelings of resentments about their disregard, either intentionally or unintentionally, in the ICT-supported learning systems deployment leading to poor ICT project deliverables in KATH (Clinician Interviewees 2, 3, 5, 6, 10, 12 and 15). Clinicians' natural reactions to the planned CPD/CME courses and IT systems were not timely picked up to build capacity for improvement. But, the forgotten emergent factors, such as unanticipated factors of planning and planned actions that caused problems for effective implementation of KATH ICT-supported learning systems, exposed with critical hermeneutics and narrative analyses, provide potential opportunity to inform practice, in a way to make appropriate change (Interviewees 3, 6, 8 and 18).

5.4.1 Another Certificate in a Wardrobe CPD Courses

Exploration of what uses the CPD/CME attendees put their learning outcomes, led to an intriguing phrase: 'Another Certificate in a Wardrobe'. This was used to describe the weaknesses with the signed off manager-centric and policy-driven CPD and CME programmes, lacking everyday clinical practice requirements, knowledge sharing opportunities and an unsatisfactory 10-20% estimated impact on practice (*Clinician Interviewees 2 and 15*).

Provision of the CME/CPD courses attracted simultaneous acceptance and rejection amongst the clinician group for many reasons. On an individual level, it was for knowledge updates on clinical practice and self-enhancement. It also served to allow the medical practitioners the chance to meet a minimum of 30 credits CME/CPD course requirement, over a three year period, before being re-certified by the Ghana Medical and Dental Council. The Clinician Manager Interviewee 16 expressed his acceptance for the CME/CPD courses as follows:

“Medicine is very dynamic and new modes of treatments come up every now and then. You need to update yourself in line with new methods otherwise you continue to treat with outmoded methods which don't give optimum results because there is research going on every time. And people are coming up with new modes of treatments and new medications, and one needs to update himself. Besides that, the Ghana Medical and Dental Council require you to update yourself in order to retain your registration as a qualified doctor permitted to practice in the country. So we need to attend such meetings for certain number of hours in order to retain your registration. Besides, it is about getting to treat your patients and giving them better treatment outcomes. You also have to maintain your membership with the governing body of the Ghana Medical and Dental Council”.

The Clinician Manager Interviewee 16 was passionate about knowledge search, professional standards, ethics and quality patient care as motivation for undertaking CPD/CME courses.

Amongst all the clinician groups, failure to engage in CME/CPD programmes could be synonymous to being out-dated practitioners, whose knowledge gained in medical school many years ago, having become archaic. However, many clinicians doubted the effectiveness of the CME/CPD courses because of the design and delivery weaknesses in the provision, and advocated for change (Clinicians Interviewees 5, 6 and 12). The following concern is clear example:

“It is just for certification. If CME is going on in Golden Tulip and I think I don't have time to go and sit there, I will just go there in the morning to write my name and pay to get my certificate. We thought it was not serving the purpose it was supposed and we were able to speak against it” (Clinician Interviewee 12).

The interpretation of the text is that, certification, in this instance, was not equivalent to learning. Attendance to the CME courses would therefore have less impact on practice.

Design and Delivery of CPD/CME Courses – Impact on Practice

Taking the antagonist view of the CME/CPD courses, the clinician group saw these courses as handed-down from the top training. This, they found wrong. The CME courses were, especially, designed and executed by overseas experts who lacked knowledge of the Ghanaian culture, and peculiar problems facing the Ghanaian healthcare sector. The clinicians' disapproval of these demonstrates power struggles in the design of the CPD/CME courses.

The Clinician Interviewee 10 argued:

“CMEs are organised and delivered by people from outside the country and they are not always abreast with the peculiar problems we have in our setting. For instance, they may give recommendations for what works elsewhere but what works in the USA may not work in Ghana because the cultures are different, the resources are different and technologies are different”.

For the hospital-organised CPD seminars, the topics were selected for the clinicians at the expense of their [clinicians] cognitive significance. When asked about the processes and initiators of the yearly CPD programmes organised for the staff, the Clinician Interviewee 6's answer was:

It is basically the managers, for me it is very wrong. You don't have an idea what the person does then you say you are organising a programme, then you organise for everybody.

The deficiencies of the manager-designed CPD courses were therefore explained by their failure to address the clinicians' daily learning needs. But, for the only reason of renewing practising licenses, the clinicians attended the courses. The monitoring of compulsory attendance was upheld. But, this was achieved to the exclusion of intrinsic knowledge acquisition by practitioners, practically, required for improved patient care. For the Clinician Interviewee 3, the hospital's lack of essential technology needed to support clinicians to

translate knowledge, acquired from the CPD training, into practice was a contributing factor hindering knowledge creation. His response on the effectiveness of the CPD courses was:

“In terms of knowledge acquisition, it is important. But, in terms of what we have learnt from these CPDs, in practical terms sometimes there is a bit of a bridge. One, either some people attend for the attendance sake to improve themselves, or two, sometimes you learn some new things and you come back the things to help you, sort of, get the basic way translate those ideas are not in existence. So it is kept with you and dies with time because sometimes they are not translated very much to practice” (Clinician Interviewee 3).

Not much knowledge creation importance was, therefore, attached to the CPD courses by the clinicians and these have contributed little to quality care. The Clinician Interviewee 15 had some reservations about how the CPD programmes had impacted on quality care. His reservations did not prevent him from describing the weaknesses of CPD courses as, ‘one other certificate in a wardrobe’, a certificate without value:

“Eeeeeem, I mean we try to deliver them but in my opinion, people go, as I told you and come and sit on whatever information they gathered over there, and often it becomes just one other thing in their wardrobes, one other certificate on their CVs or something. Eeeem, I doubt if it really translates into practice. I think about 20% of them is translated into practice but the vast majority of them do not translate it into practice, they just do it and that is the end” (Clinician Interviewee 15).

Unless individual learning is fully translated into organisational knowledge, it is irrelevant, especially a clinical setting (Senge, 2006). Lack of attitudinal transformation, the staff unwillingness to change habit, emerged as a serious problem obstructing the planned CPD training for improved quality care. Recounting the review of the hospital-wide training on hygiene and infection control conducted in 2010, with the hospital’s healthcare workers including nurses, doctors and paramedical staff, the Clinician Interviewee 2 was convinced that only about 10% success safety impact had been observed in practice. He stated:

“We provided a hospital wide training and disseminated information and a few weeks later, we conducted a survey to see how that has impacted on practice. We established about only 10% put the training into practice and that habits have to be changed. It

takes a long time to change someone and it is difficult to assess how learning is achieved. However, a few people would apply this but I believe in leadership by example where a team leader has to practise, go round to wash hands, for others to follow. [CareQual] Unit did something on quality of patient documentation but during the last evaluation [2010 Annual Review], I don't think they have achieved much because documentation is still poor”.

Essentially, skills gained through the CPD/CME courses were sufficiently proved by a certificate of attendance (Clinician Interviewees 5 and 18). Attendees at the CME just entered the sessions to complete the register and leave. This unusual experience was a shared view among all the clinician interviewees. Some expressed feelings of unequivocal displeasure for the CPD/CME courses as demonstrated in the following quote:

“I have to be honest with you; most of us were there just because we wanted to earn points. So, some will come and write their names and leave, and only to be present during the end, so that, they can earn the certificates. Because, the things there would not be applicable in any way to their practice, so, what is the point?” (Clinician Interviewee 14)

The design of the CPD workshops was heavily criticised for targeting wrong healthcare staff to the exclusion of the doctors. For instance, the Clinician Interviewee 15 argued that the updates on management of cardiovascular diseases training targeted nurses, eliminating some doctors who would actually need that knowledge. For the Clinician Interviewee 12, the staff-CPD package mismatch had gone on for about seven years and needed a change.

“If you look at the last year's medical education that was recently organised, I, for instance, think that a lot of work needs to be done so far as that CME is concerned. If you are doing an advanced in medicine, and in the main plenary session you have a forum of nurses, healthcare workers, doctors of various specialties meant to discuss the same issue, I wonder how effective this training would be. For instance, they try to meet the needs of most doctors and in doing so they present something that is abstract. Looking at the levels of the nurses and other healthcare workers, such training may be so high that they might wonder if they were not wasting their time there and this has gone on for so many years that I don't know how long it will further go” (Clinician Interviewee 12)

The sense-making of this quotation is that, there is a target audience mismatch in the design and implementation of CPD training in which some courses fell outside the core clinician

groups. The Clinician Interviewee 12 suggested that targeting the identifiable groups of doctors, nurses, pharmacists, healthcare assistants and other paramedics with tailorable topics; at least in the plenary sessions, would help address their specific learning needs.

CPD training adopted didactic workshops delivery approaches (Clinician Interview 10). But, uni-directional learning pedagogy could only support informational acquisition. Any form of collaboration or knowledge sharing would, in these instances, be endangered. The Clinician Interview 10 explained why the didactic workshops had to give way for a more active participatory training.

“They are training and didactic workshops. Basically for the didactic workshops you just go and sit there for somebody to give information, some may stick and others may not stick. In some cases, the attendees may not even have copies of whatever was said in the workshops. In this case, you only take away with you what was said. The training workshops are hands on and you are more involved in what is being done. For instance, if you go for ultrasound training, you handle the prop of ultrasound and that is something you will not forget. This is better than sitting down for somebody to tell you how the ultrasound works because that won't be translated effectively into practice” (Clinician Interviewee 10)

Guided by the advanced countries' CMEs, such as Medscape, a leading USA medical website for clinician knowledge updates; adoption of electronic-based CPD courses by KATH and GMDC would not only enhance clinician collaboration, but also, eliminate the issue of just attending a CPD session for certification (Interviewees 5, 6, 15 and 16). Attendance would be geographically irrelevant when CPD courses are made available electronically. Cost and time savings are potential benefits with electronic-based CPD courses, enabling clinicians with tight schedules to develop their competencies online. This was explained by the Clinician Manager Interviewee 16 as:

“The workloads do not permit such people to travel out of their places to attend in the cities and sometimes, they are the only medical staff in their clinics. I think that you either take it to them there; or is there any site where they could access and just go through as a module? They go through it [some questionnaire] and having gone through it they will be awarded some points, and they can print out certificates for

themselves. When you go to Medscape, you can do that and you earn some points. May be there is a new treatment of something and you go there and log on with your special code and go through. When you finish, you are given a certificate. I think such system should be done for people in those areas so that they don't necessarily have to be in the cities as it is currently being done now” (Clinician Interviewee 16).

With the electronic-based CPD courses, online questions on clinical competencies development could be completed and kept in a personalised ePortfolio account (Clinician Interviewee 11). Accumulated experiences could be shared amongst practitioners for improved clinical care. The Clinician Interviewee 11 believed that an online-based CPD could allow regular use of quizzes to check knowledge and understanding of emerging local practices.

For the Clinician Interviewee 2, virtual classroom CPD training could relieve the hospital from struggling to sponsor many staff to attend the existing physical environment training. A virtual learning platform brings with it the advantages of promoting real-time engagements and collaboration.

CME design has content repetition and attendance fee. Conspicuously, the CME was poorly rated for lacking creativity and new knowledge (Clinician Interviewees 3, 14 and 18). The Clinician Interviewee 14 contributed that:

“... sometimes, if you attend any of these, it just a repetition, and the repetition does not take account for modern advancement. It is a boring something. We have sex sessions, and it's almost like the same thing. But, if the stakeholders try to bring something that is applicable to our setting that will help us, not necessarily what the world is doing. In that case, people will be willing to apply it” (Clinician Interviewees 14).

The Clinician Interviewee 3 made a similar comment on the currency of the courses but, also wondered if the CPD courses would be just meant to extort money from the clinicians or to promote quality care standards. He said:

“Last year there was a complaint because it was early morning orientated and had to pay before you could access the CPDs. It was more duplication year upon year without changes of content of what you will learn. People became disinterested and they started murmuring; it was all about the money rather than not about ensuring much quality of progress as far as standards are concerned” (Clinician Interviewee 3).

In medical practice, the training packages needed to reflect emerging dynamics of treatment cases. The above arguments suggest that the clinicians would subscribe to the CPDs if the courses were economical, current and more applicable to clinical practice.

CME/CPD Evaluation

Meaning drawn from the interpretation of data on the CME/CPD evaluation is that, there was lack of a hospital-wide learning assessment framework for evaluating the impact of learning to suggest potential weaknesses in quality care of patients. The existing annual review approaches were accused of focusing too much on financial performance indicators, as seen in the following comment:

“The focus of mid and end of year reviews should have been on clinical care rather than how profitable you have been and the attention on how you have achieved manager targets, in terms, of how you have not broken even. I think this is not the objective of the hospital” (Clinician Interviewees 2).

No methodical appraisal of ICT-supported learning evidence was found to explain how the real skills had been acquired from technology-enhanced learning over the years (Interviewees 10 and 13). When asked about the criteria used for measuring the quality of the hospital learning processes, the participants fumbled with their responses, indicating a methodical and methodological gap for assessing learning. The following two separate discussions between the participants and the researcher were used to gain insight into how learning processes were measured in some instances:

Researcher: *“How effective do you find the way the CPDs and training courses are delivered?”*

Manager Interviewee 13: *“... For CPDs, they are organised like conferences and people go for their own slots. I haven't attended clinical oriented courses as I am*

skewed towards management for long time. In terms of evaluation, I thought the CPD seminar I attended was a recap of good clinical practice. Some others, they were motivated to come because they believed they would learn something”.

Researcher: *“Do you measure learning processes in the hospital?”*

Manager Interviewee 13: *“Eeemmm, No. We do not measure”*

Researcher: *“Have you considered measuring to know how effective they are?”*

Manager Interviewee 13: *“Wee, wee, I’ll say no we are not measuring but sometimes we are introducing something. For example we introduce the use of an alcohol hand-drug. At the end of the day, or after a period we went to assess, and found out whether people were using it. So, in quotes, sometimes we assess the learning processes because ...”*

Researcher: *“It is not formalised”*

Manager Interviewee 13: *“It is not formalised but we do an assessment. We go round with our evaluation forms”*

Researcher: *“Who designs the evaluation forms?”*

Manager Interviewee 13: *“With the hand-hygiene one, there is one on the WHO website which we are using”*

Researcher: *“Does the WHO form capture the local emergent issues?”*

Manager Interviewee 13: *“No, that is an interesting thing. What we do is to observe people washing their hands when they attend to patients. So, it is more of observational studies. I come in your ward and sit down or pass by and observe: How many opportunities of washing hands did a staff have and how many did he/she utilise? For instance, if you have to do something on a patient and you don’t wash the hands before wearing your gloves, that is one opportunity you have missed. If you did it, I tick it like you have done it. So, I’ll look at the number of opportunities you had and based on that how many you utilised. Those are the evaluation tools we use. But if we revisit sensitisation, we normally will not assess learning”.*

The Manager Interviewee 13 grappled to find satisfying example to describe how the learning processes were assessed but it can be inferred that, there was lack of a formal framework for evaluating the effectiveness of learning. The Clinician Interviewee 10 acknowledged the hospital’s effort to provide CME for the clinicians but was very religious about the fact that the existing situation lacked a framework for evaluating learning including ICT.

Researcher: *“So, how do you measure the quality of learning in the hospital? What are the criteria for measuring the learning processes? If you want to include content, that is fine. Do you use appraisals, CMEs, ...?”*

Clinician Interviewee 10: *“The CMEs are crucial but the CMEs occur once so often. You may have it occurring, let say, twice or thrice in a year so if you are relying on the*

CMEs to update your knowledge, it will not be enough. But most departments have the way of doing that, like we do team reviews, we do club set up and general clubs. So, the hospital is doing their best to get things going but in terms of appraising of it, we haven't been doing it systematically over the years. We haven't been appraising the ICT over the years so it is difficult to give a good answer. But it could help if the users had a way of evaluating it themselves. Then, if we are given that opportunity, it will provide feedback to the providers."

Mostly, for the CPD/CME courses, a quantitative tick box feedback method of assessing learning was used to measure the quality of training (Clinician Interviewees 6, 10 and 14). Often, the attendees of the CPD courses sympathised with the trainers when evaluating CPD sessions (Clinician Interviewees 10 and 14). They usually avoided any critical comments that might hurt the trainers. The CPD/CME feedback responses were, therefore, far from the true representation of the attendees' thoughts and true assessments. Spuriousness took precedence over objectivity. Observable examples might be taken from the following quotes:

"As human as we are, we are sometimes not objective. Sometimes, even though you don't like it, you are prompted to say well that is satisfactory but while within your heart you know that you didn't like it. But, sometimes you have no other option than to say this is below expectation so that it will help them to improve" (Clinician Interviewee 14)

"They give questionnaires to tick as a feedback but almost invariably everybody ticks 'goods' and 'excellents' so the people may not be aware that what they are doing is achieving the impact they want to achieve. But there is more room for improvement if they will have honest feedback from the participants" (Clinician Interviewee 10)

These suggest existence of potential inconsistencies with any CME/CPD reports on workshops. Feedbacks could therefore not be accurately used to inform future courses design. Honest feedbacks on the design and delivery of CPD would have been much more useful for improvement. A rigorous qualitative feedback form would be appropriately adopted to assess the quality and impact of the CPD/CME training. This might be ideal, in particular, for assessing the level of participation in clinical learning, including the number of cases seen by physicians and their impact on treatments.

Sometimes, if the CPD courses aimed at improving patient care, their intentions were self-defeating because they rarely occurred (Interviewees 6, 10, 14 and 16). The Clinician Interviewee 14 recounted an experience where, in an effort to retain practising certificates, doctors walked out of the clinics without the prior notice of patients, leaving them waiting without attention. The danger is, sending almost all clinicians to the CPD workshops without providing a cover for patient care, might place lives at risk. The Clinician Interviewee 14's response to such practice is:

"I don't think that is nice. So in that case, even if we are going to go by that system, we have to strategise it in such a way that, there will never be one time that, when everybody be present leaving the patients behind".

Achieving CME/CPD credits through formal research activities was an option. The KATH research database outlined a number of investigative studies of varied clinical connotations, numbering 139 for KATH/KNUST staff, as of December 2009 (KATH Annual Report, 2009). But, findings had not been systemically collated and shared in the hospital-wide knowledge memory. For instance, the 2011 KATH Programme of Work report explains the fact that, uncoordinated research activities had led to the hospital's inability to realise the full benefits of research applications (KATHPoW, 2011: 69). The tendency is that, individual researcher's credentials might receive far too much attention, compromising organisational memory enhancement. This is an implicit case of 'Another Certificate in a Wardrobe' to suggest that a more unified research platform would be useful to share scientific findings amongst the various staff for improved practice.

5.4.2 White Elephant IT Systems

The failure of the planned ICT-supported learning and knowledge management systems was, in some instances, interpreted broadly by the clinicians as 'White Elephant IT Systems'. A white elephant is an idiomatic expression used to describe an indisposable but valueless asset

with a high maintenance cost. It originated from the possession of sacred white elephants by the Southeast Asian monarchs, to symbolise power and justice, but which cannot be put into any practical use.

Generally, the development of the KATH ICT systems was rated rudimentary and needed improvement. Intranet platform setting challenges, on its own, had prevented content population (Clinician Interviewee 11). For clinicians who had some experience in working or educating overseas, such as the UK, the USA and Australia, the effectiveness of the KATH ICT-supported learning systems was assessed by the advanced countries' benchmarks (Clinician Interviewees 2, 11, 12 and 15). For them, the limitations of the KATH ICT systems were astonishingly obvious, and needed to be brought up to international standards.

From the clinicians' contributions, the aims of IT implementation to support learning and job procedures did not account for the end-users requirements, particularly the needs of clinicians, who were at the forefront of KATH's core operations. Deployment of the IT systems for learning and knowledge management, such as telemedicine, emails and intranet, as would be discussed shortly, were mainly driven by a top-down approach, believing that the clinicians would use them. But, the low clinicians' responses to the hospital's ICT-supported learning systems suggest that, generally anything imposed is not readily acceptable (Interviewees 2, 9 and 15).

All the clinician group interviewees extended negative attitudes towards the implemented IT systems, of which they were not involved, but encouraged to use for learning and knowledge sharing. Some clinicians therefore used the 'White Elephant IT Systems' slogan to interpret the technology that had become useless for learning in the hospital yet needed to be maintained at an extra cost (Clinician Interviewees 6 and 15). The following is an excerpt:

“In fact there are two dangers. Like we have come to know; you don’t involve them they don’t use it. So you developed a White Elephant. Especially in this our culture; you don’t involve them they don’t use it. So whatever you come up with may be good but you find out that no one is interested. The other danger is that, you may develop something that when people intended to use, don’t have the skill to use it. So that is the other danger. So for me when you develop it and you involve them, you create more participation, you create the enjoyment in the team from the start. Once they know what is going on, how the process is going on, as you go along the sort of training that you need to give them to use the system you give them, then they can use it. Because if you don’t involve them, you may create a system they don’t know how to use” (Clinician Interviewees 6).

The hospital had therefore brought non-performing assets. Design and implementation did not fully consider the clinicians’ requirements leading to their reluctance to use. Poor design strategies had turned a good intention into a worthless product which could not support organisational learning adequately. Design of the ICT systems failed to sufficiently account for how the staff benefits of IT could be translated into real patient satisfaction. The telemedicine, Internet, KATHmail systems, intranet and medical pro resolve are typical examples.

Telemedicine

The interpretation of the data shows that the potential benefits from telemedicine were rated very highly but that had not been translated down to effect positive clinical practice in KATH. For some physicians, the increasing caseloads made it impossible for them to attend telemedicine sessions. For example, the Clinician Interviewee 3 said:

“I have been to the telemedicine centre once when I was in residence and I have not had the time to go again to have any ideas that are shared through this technology”.

The clinicians considered the telemedicine location a considerable distance away from their wards, one major problem with the system, discouraging them from walking down for sessions. Only three out of the fifteen clinicians including clinician managers interviewed had visited the centre for, at least, a session. In fact, the research observation of a telemedicine

session, conducted on 25 October 2010, did not record any medical staff attendance other than the ITech technicians as described in Appendix 4.13.

For the Clinician Interviewee 5, the low clinicians' patronage of telemedicine sessions was not foreseen at the planning stage where possible topics of clinicians' interests and location could have been discussed. Her opinion was expressed in the following quote:

“I only saw telemedicine where they put up some topics to see if any topics were of interest to you before you attend. I don't know how it is feasible but I think that probably if telemedicine topics are tailored for specific departments at the departmental levels. If you noticed, it was being done elsewhere [abroad]. But, if it is such that it can be easily accessible in the Department of Medicine, maybe we could use it during a clinical meeting or something like that. You will get a lot of people attending the telemedicine because [but], crossing over to the centre, it takes a lot of motivation to do even with the topics that is of interest to you” (Clinician interviewee 5).

Others were appalled by the fact that they only became aware of the telemedicine after its implementation. The Clinician interviewee 12, for example, said:

“I didn't know anything about it until there was a memo that a telemedicine programme is going on and there are discussions for some months and we should go and sit there” (Clinician interviewee 12).

Clinicians felt they were just asked to attend telemedicine lectures without having their learning needs assessed. Some topics, they argued, would cover what they already knew. Coupled with the disgruntling feelings of not being involved in the whole implementation process, they tended to discourage other colleagues from attending. There was a complete apathy for the system.

The ensuing conversation with the Clinician Interviewee 15, one of the key attendees of the telemedicine session, described some practical issues with the eLearning system.

Researcher: *“What important factors were not foreseen or probably overlooked when planning for ICT-supported learning?”*

Clinician Interviewee 15: *“From experience, the first thing that was overlooked was the fact that people might not be very interested in it. So, you go to the room where telemedicine is and you realise that for the whole day you are the only person sitting there looking at this big screen”.*

Researcher: *Hmmm*

Clinician Interviewee 15: *Definitely, people are not used to that, it is something new. So, if you are going to introduce something new, you must be ready to push it, otherwise it is not going to work, that seems to be the other issue.*

Researcher: *“So the communication was a problem”*

Clinician Interviewee 15: *“Eeeem, communication was a problem and it is definitely because, often these lectures come and pass and you never get to see what lectures were given, often you just stumble upon it one day and say these lectures were given. Ok, some lectures are being given next week, I can go and then you go for that lecture but then you probably would have missed the lectures that were given earlier in the month which could have been beneficial to you. So, definitely, communication was a problem and of course communication comes with planning and planning too was obviously a deficient. The last part is people are not very conversant with that kind of system”*

Researcher: *“Ok”*

Clinician Interviewee 15: *“Which means that, if you are introducing what people are not conversant with you have to teach them how to use it. Many people are not even conversant with computers. What more go and sit there and start to chat with people who are in other countries, ask your questions through a chatting system and those things? I realise that it was elaborate system to have a telemedicine there but unfortunately it's a bit too elaborate for most of the people in the hospital”*

Researcher: *“Is it difficult for the clinicians or other health care professionals like nurses and laboratory technicians? Are they the people who find it very difficult?”*

Clinician Interviewee 15: *“A lot of them are computer illiterate”.*

The findings exposed communication and planning limitations with the telemedicine system.

The fact that the lectures were given in successions meant that, appropriate communication of the lecture schedules, such as the use of an outlook appointment facility, could have been used to remind the clinicians of the sessions. With the lack of a local virtual repository to store scripts of previous lectures, it was very difficult to connect one's constructs with current lectures when the previous sessions were missed.

Effective learning, expected to be achieved with the telemedicine system, therefore, suffered.

Failing to recognise the importance of clinicians' (core users') decisions in planning and

implementation had undermined the potential patient care benefits that the eLearning tool might have brought. The argument is, it would have been preferred having the system replicated in postgraduate libraries, at the various directorates, with a schedule of sessions displayed on the internal notice boards (Clinician Interviewee 3). The Clinician Interviewee 12 added that, the replication could be simply done by linking the telemedicine technology to the PCs in the libraries or conference rooms where clinicians would comfortably enjoy the sessions.

Even better, the clinicians could be given personalised access codes to download and watch previous sessions at home (Clinician Interviewee 12). Deferred design decision opportunities were missed in the telemedicine implementation, in that planning failed to address the local actors' concerns, and at the close of the fieldwork, Clinician Interviewee 12 confirmed that the system was at its worst form and had recorded zero attendance for most of the time, as quoted in Section 5.2.2 earlier. The eLearning technology had therefore become a White Elephant system with increasing operational costs, such as rent, electricity and technician wages.

A contrasting view defending the existing location of the telemedicine centre was, however, held by the Clinician Manager 8, who saw the implementation or replication of the eLearning application in offices/clinics as waste or disruptive. He argued:

“Perhaps the telemedicine application is situated a bit far requiring people to walk a considerable distance for sessions. But, I think it also has to do with budget rather than overlooking something. The hospital could not provide us with screens in all our offices. It might be possible to interface telemedicine with the PCs in offices but these are not connected to the telemedicine system. Our work patterns are such that we don't sit in our offices as we mostly work in the clinics. It will therefore be a waste to make those connections with PCs. Doing it in clinics too will be disruptive because clinicians are there to see patients. It has to be in place where people are free to engage in such learning” (Clinician Manager Interviewee 8)

The Clinician Manager 8 acceptance for the telemedicine-PCs interfacing in offices failed to match with the claim that, budgetary constraints might make PCs supplies in offices unaffordable. His argument oriented towards keeping the current location was ideal to enable effective videoconference learning. A conflicting opinion was that, if telemedicine technology was intended for medical learning, then restricting access to one location would defeat its ubiquitous knowledge sharing purpose (Clinician Interviewees 3 and 12).

An IT person actively involved in the design and implementation of the telemedicine seemingly agreed to the White Elephant label for the system, suggesting the issue would have been prevented if planning had involved the clinicians' decisions. This is what he said:

“One of the reasons why this telemedicine is not too successful is that, may be the clinicians were not too involved in the planning and execution. If they were involved, the problems of location would not have arisen, as they would not like to walk all the way to the telemedicine centre from their clinics. We, as technical staff, thought it would be easier to walk down here [telemedicine centre] but looking at their schedules, it would have been better if they had had it out there. I think this is one of the reasons why we should involve everybody, both the clinicians and technical people to solve these issues” (Manager Interviewee 9).

Internet, Email and Intranet systems Frustration

The interpretation of the data reveals negative expressions of the effectiveness of the hospital's internet system, the AfriConnect. Amongst the twenty interviewees, including the focus group participants, a common perception was shared on the speed of the hospital internet. Typical phrases used to describe the situation included: 'Very poor'; 'too slow'; 'not fit for purpose'; 'difficult to access outside the hospital'; 'waste of time'; 'frustrating'; 'terrible'; 'quite limiting'; and 'miserable'. The slow internet flow rediscovers another case of a White Elephant IT system because it was not providing value for money.

Research observation, conducted in the Medicine Directorate residence room, to assess the KATH email connection velocity confirmed the slow speed claim (described in Appendix

4.13). Within ten minutes after logging in, the email system failed to connect to the server.

The Clinician Interviewee 12's description of connection failure was:

"The internet system in the hospital was the poorest I have ever come across".

The Clinician Interviewee 12 accused the hospital's lack of internet vision as the cause of the slow internet access. Internet service distribution across the directorates and units was selectively deployed. Others squabbled that the internet connections were unfairly distributed in the hospital to serve the managers' interests.

"I recognise the importance of ICT to support learning but, my personal impression is, it is poor here. It is not well organised in the hospital. I think it is the managers that have them. I think when the internet was set up, it was set up in the offices. I have seen people using internet for browsing or doing other things but people who may need it for clinical care, immediate evidence-based medicine don't have it. I don't think majority of clinicians have access" (Clinician Interviewee 2)

The interpretation of the data shows that, Internet misuse might, therefore, not be just waste of productive time but would also represent an opportunity denial for those who could have used the computers productively.

Inadequate distribution of the hospital internet facility was, for instance, noticed in the CanCARE Directorate, where access was only available to the Head of Directorate's and the secretary's offices, denying access to other sections. How such unlimited provision of internet could enhance effective collaboration between the managers, clinicians and other staff, was a difficult question to answer.

Internet misuse appeared to have been confused with the time spent working actively online. The latter was used as a marker to refuse a staff's request for an internet facility in the CanCARE Directorate.

“When my physicist asked for internet access, they said they were not going to put much emphasis on the internet access because staff may spend too much time on the net while they have to work” (Clinician Manager Interviewee 16).

Clearly, this was an illustration of excuse to deny a request for an internet access. Interpreted from Argyris and Schon (1974), it was a defensive reason for not meeting the physicist’s need. What was needed is to install software to monitor staff online activities at work, something to consider in the staff IT usage policy to control internet use.

Challenging the ‘time wasting’ on the internet argument, as a way to advocate a judicious use of the facility, the Clinician Manager Interviewee 16 rebutted as follows:

“If they have to spend too much time on the net, it is because the internet access is very slow. So if you have a very fast internet access, it takes you seconds to look for information and you go. If you click on something and it takes 10 minutes to download a little information, then at the end of the day, people are going spend much more time. If you have a very fast internet access and want to check your mail it takes you a couple of minutes. If you go round this hospital and you want to check your email at any point where there is an internet access, it takes you quite a long-time”

Indeed, fast internet access would mean a shortest possible time for checking corporate emails, and a fast exchange of knowledge that could be translated into effective patient care.

Perhaps, a much stronger argument assigned to explain limited provision of internet access was an inadequate budgetary allocation. Buying big broadband servers would be very expensive. Therefore, for every unit of currency spent, a certain threshold of usefulness needed to be achieved. Financial budgets explanation resonates with the planned-specified decision empirics discussed in section 5.3.1. Further explanation relating to budgets and computer systems acquisitions is detailed in section 5.4.3 (Inadequate Computers versus e-Patient System) to tell a coherent story.

The managerialist position on cost minimisation, achieving more with few inputs, was sharply contrasted with an emergent argument. From the clinicians’ viewpoint, getting the IT right

was not necessarily about funding, but employing expert knowledge for health information systems. The Clinician Interviewee 12 contended that:

“It is about getting the right people with the right know how, and those with vision, but not just a vision of ICT but also a vision of ICT in terms of medicine, ICT to advance medicine. Somebody can have all the knowhow of ICT but if the person doesn't know how the ICT is applied to advance medicine. You will be sitting there and having all sort of things discussed which at the end of the day will not benefit the healthcare providers” (Clinician Interviewee 12)

Critical interpretation of the Clinician Interviewee 12's contribution is that, the benefits of ICT to healthcare learning would well be realised if the design requirements addressed the changing medical practices.

It emerged through informal discussions that, different Internet Service Provider (ISP) models had sprung up across the departments, mainly acquired on private basis, or/and with the support of Kwame Nkrumah University of Science and Technology (KNUST), the School of Medical Science (SMS). These models were common amongst the resident clinicians, who went to work with their own internet services, accessible in the residence rooms.

Some individual Units adopted their own ISPs. The IntCompliance, for example, was using the Zain Internet model. Certainly, planning for internet failed to account for how the unforeseen internet usage fragmentation, obtained separately from the different ISPs, could have been coherently merged into an efficient single provider.

An adequate consideration of emergence might have been far more useful in the internet financing. One possible way would have been considering a cost sharing approach for consolidating private internet usage into one whole package for the entire hospital. Though the financial constraint was a limiting factor, the provision of the internet relied too heavily on strategic decisions.

The hospital-provided internet connection points were reported limited, though some clinicians benefited from the internet connection points installed by the KNUST SMS [Clinician Interviewees 2, 6 and 11]. Clearly, the poor internet connection in the hospital had some constraints on the effective communication and knowledge sharing between managers and clinicians. The Manager Interviewee 1 articulated this:

“We pray that the internet becomes faster so that we can use emails. For instance, the report that we generate, a draft can just be sent to a clinician for him to review and we can always remind them on the controls they have to put in place and so on via the email or the KATH's intranet”

Plans to deploy an intranet system had taken between 4 and 5 years with no concrete intranet deliverables to support healthcare learning and knowledge sharing between managers and clinicians (Clinician Interviewee 2). Presenting his disaffection for using the newly deployed KATHmail system to enhance clinician-manager collaboration, the Clinician interviewee 2 said:

“If I'm to arrange a meeting with my manager, I'll either use a phone call or memo other than to send an email which I'm not sure he will read it before the scheduled meeting. One has to be convinced as to how others also use the internet systems as a medium of communication but for outside collaboration, internet-based systems are easier. For me, teleconference and Skype are mostly the type of interactions I use with collaborators outside”

The Clinician Manager Interviewee 18 expressed a similar degree of frustrations with the email system to expatiate why it was not used as a corporate communication platform:

“The email could only work whereby we have the system, where everybody is emailed. I don't know if you understand. You know when you go to hospitals, you have various directorates, everybody and their name and their email addresses, so that you've not even met the person before, you can still communicate through email to that individual, which I don't think we really have in this hospital. Even, if I want to send an email, what email address?”

The Clinician Manager Interviewee 18 comments confirmed another possession of a White Elephant IT system by KATH. The email system was ineffective. The critical ethnographer

saw the ‘internet access frustration’ as an irritating feeling towards KATH’s internet-based learning processes. Losing tempers and getting ‘headaches’ were not uncommon experiences with email access (Clinician Interviewee 14). Some complained about sitting by their computers for two hours without being able to send information via email because of the slow internet connection and eventually gave up using the email system (Clinician Manager Interviewee 18).

The slow internet speed frustration led to staff relying on the KATHmail technology shifting their electronic communication preference to private email systems, such as yahoo and hotmail. Their frustrations at using slow internet was exacerbated by the limited time needed to see many cases, 20-30 patients per day, plus doing research. This was a case of the 15-minute observation conducted on a physician struggling desperately to send an attachment email but to no avail, as logged in the field notebook summarised in Appendix 4.13. When the issue was later picked up in the one-to-one interview, this is what he felt:

“Yes, it’s so frustrating. Even, yesterday I had wanted to check my mails because I wanted to send an abstract urgently for a conference and the internet was down so I did not know what to do. So, if you want to check your mails quickly and go to work to see your patients, it wastes your time. So, you eventually have to stop whatever you want to do on the net and go back to your patients” (Clinician Interviewee 10).

Efforts to download recent medical articles and read new publications online were, reported by the clinicians as something that they were, often denied. The internet access frustrations had eventually discouraged many clinicians from engaging in eLearning activities on site (Clinician Interviewee 14).

“I am the [leading figure] of the hospital’s internet committee but ask me the last time that we met. The hospital doesn’t really see the internet as something that should be viable. Even though, the CEO will tell you that, oh the hospital’s website is my heart desire but you don’t see in practical terms or on the ground that sort of feeling so you set a committee and get people to do work, and easily they are frustrated” (Clinician Interviewee 12).

While the hospital's lack of interest in the staff internet access might be a relevant issue to explore, the significance of the Clinician Interviewee 12 linking the internal internet access to the hospital's website was not clearly understood. What was, indeed, observable is the sense of frustration experienced by the core stakeholders of KATH internet service, was poor internet service for healthcare learning (Interviewees 3, 9, 10, 11, 12 and 15).

Apart from being very slow, the KATH email system lacked capability to accommodate voluminous documents, zipped files or attachments and was inaccessible from outside the hospital (Clinician Interviewee 12). It was reported that, in some cases, sent emails were rejected. The central role of the KATH email, as a method of communication, was unattainable. In one instance, it was reported that most clinicians might not be even aware of the KATH email system let alone knowing how to use it (Clinician interviewee 6). The Clinician Interviewee 12 further reported that the email platform had poor reliability functions to support signing on to the various groups of doctors and managers, for information and knowledge sharing. The interpretation of the data therefore, supports the generalisation that, the internet, email and intranet systems planning failed to meet the actual use and changing practices of the users.

Medical Pro Resolve Software

The interpretation of the data identifies another failed system, the Medical Pro Resolve system, which failed to cater adequately for emergence, such as potential system integration problems and actual user requirements. This was off-the-shelf software brought up to solve the hospital's data management problems, and to generate medical reports. The system did not meet the required consultation of the core users (Manager Interviewee 1). Before reaching the final agreement of the system lifecycle, money had been paid to cover the procurement contract. These problems led to limiting its successful implementation for the Records,

Health Insurance and, Medical and Pharmacy Stores, the key areas which the Medical Pro Resolve system was expected to serve. A manager, who was part of the Medical Pro Software development committee, pointed out that, different and complex ideas relevant to the uptake of the Medical Pro Resolve system only emerged at the system implementation stage. He vented his frustrations as follows:

“the Pro Resolve system we partly paid for never saw the light of the day ... while you think you advanced [in planning], somebody would bring very elementary issue that should have been considered at the initial stages” (Manager Interviewee 1).

The uptake decisions were pre-determined and failed to address the changing local information needs. The implementation was therefore incomplete, capturing fractional activity data of the departments. Integration of Medical Pro Software with other system solutions of the hospital was virtually lacking. Processing failure was reported with the Health Insurance data. The hospital procured Oracle software to fix the Health Insurance Pro Resolve malfunctioning but the interfacing between the Oracle and the Health Insurance Pro Resolve was poorly executed leading to slow running of the system.

In the usage areas, the estimated performance rate of the Medical Pro Resolve system was less than 50% (Manager Interviewee 7). One major issue of planning KMS/IT in KATH was how to solicit adequate information and capture the concerns of the core users, including clinicians (Manager Interviewee 1). Indeed, the insurmountable problems with the Medical Pro Resolve exposed through the interpretation of data provide support for the theory of deferred action thesis that, to plan successful KMS/IT systems for emergent organisations, they should be done in actuality to address user requirements and changing organisational situations.

Follow up discussions with the Manager Interviewees 1 and 7, however, revealed that, a new system was being procured to replace the Medical Pro Resolve because the initial system failed to address emergent actuality of the core users and their daily intricacies. The findings

were quite disappointing, leading us to classify the Medical Pro Software as another White Elephant system.

5.4.3 Inadequate Computers versus e-Patient System

The interpretation of the data indicates that, allocation of computers was disproportionately distributed in favour of managers causing resentment among some clinicians. In the CanCARE Directorate, only two computers were meant to serve about 46 staff while five computers were in the Medicine Directorate library serving between 75-80 doctors (Interviewees 10 and 16). See Figure 5.1 below:



Figure 5.1: Inadequate Computers MedCARE Directorate library

Some clinicians argued that the key medical staff who actually needed computers for patient-related team collaboration, and quality care were denied access (Clinician Interviewees 2 and 3). The clinicians proposed that, having patient information computerised and accessible by a group of clinicians would enable e-discussion of cases and might shorten patient waiting time. The Clinician Interviewee 12, for instance, made a point that, simply phoning from the consulting rooms to discuss treatment cases with consultants would not be sufficient. A better way to enhance patient management, especially to find improved solutions to complex cases, would involve effective application of an e-Patient system.

Desperately, the data interpretation reveals that, all clinicians would have liked internet-furnished consulting rooms, but the Clinician Interviewee 3 said that, doctors serving large blocks did not even have computers available. Findings from empirical observations in a number of consulting rooms corresponded with the clinicians' claim of inadequate computers. See Figure 5.2 below showing lack of computers in a consulting room. The strife for the web-based consulting room solutions had not yielded any meaningful results (Clinician interviewee 12).



Figure 5.2: Lack of Computer/IT Network in Consulting Room

Once again, the insufficient budget was readily assigned by managers including some clinician managers, as an excuse for not providing computers in the consulting rooms. Yet a rather contradictory reason relating to prioritisation and scarcity was inferred. A fundamental economics principle of opportunity costs and choice, in particular, was invoked by some managers to explain computer inadequacies. The Manager Interviewee 9's contribution summarises this as:

“There are always challenges managers face and these are real. For instance, do I have to go and buy computers or syringes? My purpose here is to see patients who need drugs. Buying two computers means I will have less money to buy drugs. There is always a conflicting demand for budget. Therefore ICT always tends to suffer because money goes to the core clinical areas, because that will directly benefit patients. There is inadequate funding for ICT but if we will be able to put in more funding for ICT, we

can buy more learning tools (ICT) which I believe have a lot of indirect benefits that can be transformed into quality patient care”.

Prioritisation does neither denounce the clinicians’ cry for computers nor challenge the indirect importance of ICT to patient care. But, what it could not escape is the rationalist idea of managers’ reliance on planning and allocating resources. A more excruciating reason to get away with the hospital’s inability to provide more computers draws on the economic scarcity principle (Clinician Manager Interviewee 8) to explain the view that the limited funds could not afford the insatiable needs of the staff. To put it in a different way, the Clinician Manager Interviewee 8 argued that, spending money on computer systems, just to gain skills, was a waste. The dissimilarity between the prioritisation of healthcare supplies and managing the scarce funds could be a complete denial of ICT importance to patient care.

The cost side of deploying computers for the consulting rooms, as the Clinician Manager Interviewee 8 further maintained, was to supply expensive computers which he doubted if the benefits would exceed the costs. Disagreeing with the consulting room networking, he said:

“You have to put things in reality. People have to travel 100 miles just to get medical attention and we need to look into these rather than spending money to put up screens in our hospitals just to gain skills. It will be wasteful and the skills gained will make no difference if people cannot reach the hospital in time for medical attention. Hence we have to balance the costs factors with the IT needs in the hospital” (Clinician Manager Interviewee 8)

Taking the managers’ side of the story, the Clinician Manager Interviewee 8 contended that computers did not solve the healthcare problems for the people, yet counter-posing interplay between mixing the traditional healthcare costs factors with the IT needs of the hospital. While the former is certainly plausible, the fact is, the changing medical practice requires improved health information systems and technology, a position endorsed by all the clinician group interviewees. This orientation supports the merits in deploying effective ICT-supported learning systems in KATH.

Possibly, overindulgence in the belief that ICT is a tailored-made solution to healthcare problems might worsen a patient's plight. However, healthcare IT systems guide clinicians to identify the possible causes of illness, to know the type of test they should carry on patients, and to develop broader and deeper knowledge of health issues (Manager Interviewee 1).

The benefits of healthcare ICT were narrowed to the role of e-Patient record systems, relating particularly to the management of multidisciplinary clinical meetings and inter-directorates electronic records communication for improved patient care (Clinician Manager Interviewees 16 and 18).

“We have been agitating for network that will allow the clinicians to log on and get the results of laboratory and other investigations. Sometimes you send the patients to the lab and it takes hours or days before getting the results back. If there is a network where the results are input for us to access, it becomes easier. Even elsewhere patients don't have to carry their results back because they are put on a network and all that clinicians have to do is to query the system with the patients' references and we get the results” (Clinician Manager Interviewee 16)

When asked, whether it would be beneficial for the hospital to start implementing the electronic database of patients' records, the Clinician Manager Interviewee 16's response was affirmative.

Researcher: *“So do you think we should start using the electronic database of patients?”*

Clinician Manager Interviewee 16: *“We think that will be the best because if there is common site where such cases can be pasted or uploaded, then the members of the team can access it and know what cases to be discussed. For instance, the sub-units of the team could put up such cases in the site so that any member of the team who would be attending could look at this a day before and find out the cases to be discussed tomorrow. But we still have not been able to do that”*

Researcher: *“So this is the basic sharing of information and not even the extraction of hidden knowledge”*

Clinician Manager Interviewee 16: *“Yes, it is not yet there”.*

The preceded critical narrative analysis is a representation of how the clinician managers' learning could sometimes sway between strategic corporate decisions and clinicians' everyday

practices (Edmonstone, 2009). The respective split of argument for and against the KATH ICT uptake was evident in the above contributions provided by the Clinician Managers 16 and 8; to support the generalisation that, there is power struggles in healthcare information systems development (Myers and Young, 1997). Without a systematic storage of patients' information on computers, providing instant and accurate answers to questions relating to local cases would be very difficult. The Clinician Interviewee 10, for example, said that he could not answer a simple question like:

“What is the prevalence of stroke? Because such data are not kept in the consulting rooms” (Clinician Interviewee 10).

But, with lack of adequate computers to meet the clinicians' needs, any plans to deploy an electronic patient record system across the hospital were illusion. For the majority of KATH, there was no robust e-Patient information system at the time of fieldwork. An exception is made of the Sickle Cell Clinic, which was maintaining patient records in an electronic database and the HIV Clinic, where patients' folders were being entered into the computers. But, generally, patient data were manually managed, documentation was poor and congestion remained a problem.

The Clinician Manager Interviewee 18's contribution on e-Patient system encapsulated the issue of manual patient documentation but her reason for not having computers in the consulting rooms was attributed to change of government. Excerpts of the discussion are shown below:

Researcher: *“Do you have patient electronic data system?”*

Clinician Manager Interviewee 18: *“Not at the moment. We're trying to establish that but is not fully established now. They brought in some people who came to do the assessment, but when we met, we realised that they didn't even include Radiology. So, we drew the attention of IT people. At the moment, Accident and Emergency, which is a newer centre, has a PAS system working there. So, we are hoping the e-system would be working so we just push the images to where is needed. But we still have to do with the hard copy, written reports to other people. So if you want information and*

it is not written on that hard sheet the patient is bringing, you don't have it. If you have the doctor's number then you are lucky and can call and maybe get more information" (Clinician Manager Interviewee 18).

Researcher: *"Do you have computers in your consulting rooms?"*

Clinician Manager Interviewee 18: *"At the moment no, because the e-hospital is not working now. It is something that has been planned but not effective"*

Researcher: *"How long ago has the plan been?"*

Clinician Manager Interviewee 18: *"The previous administration (government) started the planning and negotiations, but then because of change of government there was a change"*

Researcher: *"And how long ago is this?"*

Clinician Manager Interviewee 18: *"The current administration has been on for two years so during the term of the previous administration that they wanted it to be established but because it depends on each one and their priorities. So I think not much has been done about it since the new administration came into power"*.

The argument of a change of government and its spending priorities might clearly affect the hospital's plans to furnish the consulting rooms with computer networks, but an equal reason could not be accepted for the hospital's inability to implement computer systems, within the previous government's eight years tenure of office. The data suggests the ineffective planning for e-hospital as a more relevant point. Planning failed to anticipate future change of government and how it could bring e-hospital designs to a halt. The unsatisfactory manual documentation, therefore, lingered on as alternative for e-Patient system while the long patient waiting time continued.

To address the worsening congestion situation, an urgent stakeholders meeting was held between the KATH Medical Consultants and the Ashanti Regional Directorate of the Ghana Health Service (GHS) in 2011. The consultation offered the CEO an opportunity to express concerns about a substantial number of patients' folder losses in the hospital, urging the doctors to assist checking this problem to avoid legal and financial costs to the hospital.

Poor documentation and overcrowding were, therefore, some emergent issues providing impetus for a serious rethink over deploying a robust e-Patient system, including the supply of adequate computers. Many participants agreed that, e-Patient systems would support regular accessibility of patient information without walking between directorates, just, to access laboratory results. Compared with advanced countries, the Clinician Interviewee 14, for instance, concurred with the universal acceptability of e-hospital systems (Liddell et al, 2008) and felt the KATH could draw on other countries' success stories without necessarily copying their ICT implementation models.

“In the UK for instance, you can easily type up patient information and obtain from net at any point in time. Wherever you are, if you are a staff and need certain information to take a decision, you just sit behind computer and everything will be in front of you. Unlike our case, where you need to go for a folder and some patients have more than one, and some might be missing, and you will need such information. We might not be able to import everything from there, but at least; we have to consider our situation and what is applicable” (Clinician Interviewee 14).

The benefit of having inter-directorate collaboration about patients was, indeed, commonly cited as a reason for an e-Patient system. Linking up the system with the various laboratories in the directorates would reduce the current 72 hour waiting time allowed, before tracing patients' laboratory results, which were sometimes untraceable (Clinician Interviewees 3 and 10).

5.4.4 In-house ICT Training and Technical Support

The interpretation of the data shows that, the acceptance of in-house IT training courses amongst the clinician group was very low though some had ICT skill gaps. The crowded physical environment of the ITech suite did not attract doctors who had health concerns about congestion (Interviewees 4 and 12). Observations conducted in the ITech suite (see Appendix 4.13) concluded the setting as woefully inadequate for providing meaningful ICT training.

Only ten old computers, available, were crowded on a table, in a cafe-style layout. Figure 5.3 below illustrates the situation.

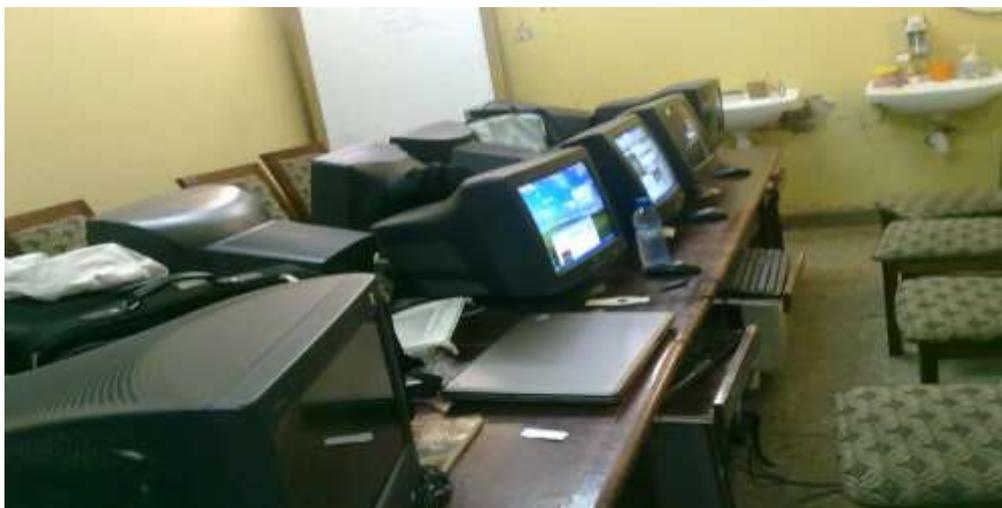


Figure 5.3: Crowded and Poorly Furnished ITech suite

An estimated 200 staff were expected to receive ICT training and knowledge updates under the human resource development and welfare priority agenda under the ITech department's 2011 programme of work. Yet, the quality of training provision did not escape criticisms from the clinicians. The Clinician Interviewee 12 reported that his boss received a memo from the ITech Group requesting whether his staff might be interested in the 'Microsoft Word and Microsoft Disk Operating System (MS-DOS) training' being offered, a provision which turned out to be inappropriate for many clinicians. Even, the highlights of Microsoft applications training for only 12 staff, analysed from the 2009 KATH Annual Report, were indication that Microsoft training might not be required by the staff.

Arguably, the MS-DOS training, would more suit program writers than the clinicians, whose training need would revolve around advanced medicine and knowledge sharing applications (Clinician Interviewee 12). The Clinician Interviewee 12 argued that most of the clinicians, if not all, used Microsoft word application for assignments or projects processing while in

medical schools, and were very familiar with the Microsoft Word application. These arguments provide a reason to believe that, many clinicians might generally not need basic computer training such as Microsoft word processing.

Even for the nurses who attended the ICT training offered by the ITech Unit, the general claim was that, they did not have computers to practise the basic IT skills learnt, as emerged in the interviews and informal discussions. For many, they eventually forgot what they had learnt after a couple of weeks. Observation below is a typical example:

Researcher: *“How do you find the training systems?”*

Clinician Interviewee 15: *“The ICT training that they did over there?”*

Researcher: *“Yes”*

Clinician Interviewee 15: *“It was a waste of time”*

Researcher: *“Why”*

Clinician Interviewee 15: *“I mean of course, all the nurses who went there to do it, you meet them after two weeks and ask them; what did you go and do there? Oh we went to learn computer. What did you learn? They’ve forgotten. We don't learn computer like that, you need to play with computer to know how computers work, so they just went there and they were shown click, click, click, the click. Those things and they all forget it”*

From the clinicians’ perspective, the in-house ICT training had ‘*rationality-emergent*’ gaps, in which what was offered did not meet the advance medicine IT requirements, and attending was a waste of time (Clinician Interviewees 6, 12 and 15). So long as clinicians disassociated themselves from the IT training target audience, we could identify another example of a White Elephant package. For the nurses, the findings suggest that, they appeared not to have benefited from deep ICT learning, especially in the context of quality care provision.

The collaborative nature of the everyday clinical practices required the clinician engagements in virtual forums for improved treatment options. The clinicians sharing knowledge on Skype, MSN and sometimes Facebook favoured training on the eLearning 2.0 platforms, including their applications to cases management (Clinician Interviewees 6, 11, 12 and 15).

For these reasons, an advanced medicine ICT vision is, according to the Clinician Interviewee 12, what was needed to improve the quality healthcare provision in the hospital.

Technical support in repairing minor network problems, installing application and upgrading software, and installing servers were provided by the ITech Unit. The trend analysis of hardware repairs in Table 5.2 shows a general increase in the equipment repairs between 2006 and 2009, except printers/fax which plummeted between 2006 and 2007 while repairs for *UPS* and photocopy also fell between 2008 and 2009.

Item Description	2006	2007	2008	2009
System Unit	321	412	589	623
Monitors	32	162	285	320
Printers/Fax	162	56	84	109
<i>UPS</i>	25	32	235	220
Photocopy	20	43	57	38

Table 5.2: Hardware Trend Analysis (Copied from KATH Annual Report 2009: 91)

The reasons for the increase or fall in the IT equipment repairs were not as important as the technicians' responses to fix technical problems, which were considered not quickly enough in some instances. The Clinician Manager Interviewee 4 described the accessibility of IT personnel as readily unavailable, arguing that they were either not many for the service demand or inefficient. Her solution was to provide a hotline to address the immediate IT related problems. The Manager Interviewee 7 would have liked one IT person assigned to each department to address technical IT problems. These emergent issues were discussed with the deputy ITech manager during the field work, and the job roles for IT support officers were re-assigned to address the specific needs of the departments.

On a positive note, the ITech Unit was highly recommended for upgrading some clinicians' personal notebooks, being used to support KATH care delivery service, with software

packages (Clinician Interviewee 11). The IT support service was, in this case, adopting user changing requirements to enhance quality service provision but there was still more to be done, which would need all-inclusive support.

5.4.5 Information Hold up and Poor Communication

Information flow through the traditional memo method received criticisms as poor and inadequate to meet the growing numbers of the hospital staff, some with very dynamic and complex routines. Memos were addressed to heads of directorates and cascaded down to their staff, but the targeted staff did not often receive the information. A clinician described the interaction between managers and clinicians as follows:

*“The communication between clinicians and managers is so poor. Very very poor”
(Clinician Interviewee 6)*

A classic example of poor communication was identified with the telemedicine system, as discussed in Section 5.4.2 above, where managers failed to communicate the uptake decisions to the clinicians, leading to a White Elephant system. Generally, all the failed IT systems suffered communication inadequacy between managers and clinicians, as previously discussed.

An episode demonstrating a poor communication was linked with Kofi Annan, a former UN Secretary General’s visit to the hospital on 21 October 2010. The Clinician Interviewee 2 reported that, he had no prior knowledge at all of such a high profile visit until he went on the afternoon break, and saw police guarding the hospital premises. It was at this point that the Clinician Interviewee 2 became aware of Kofi Annan’s visit. Whilst this episode might well be important for many reasons, its implication on the hospital communication systems is what matters. Thus, the hospital had not developed an efficient system to inform all the staff of regular events and important notices.

A sharply opposing view was provided by the Manager Interviewee 17, challenging the poor internal communication system. He maintained that, all vital information was disseminated in the morning meetings held in all clinical directorates. His argument is that, those who cared about announcements would know from their lead clinicians who co-ordinated most of the affairs in the directorates.

The Manager Interviewee 17's claims, however, dwelled too much on the rationalist school, failing to acknowledge fully the implications of daily emergent issues of the clinicians, such as those attending to emergency cases during morning meetings. First, both the lead clinician and the one caring to know would easily miss each other if the latter attended to emergency call. Second, both the lead clinician and the one caring to know could attend to emergency cases and might miss important information disseminated in the morning meetings. Third, medical practice is evidence-based and informal spoken discussions are less preferred to documentations, especially when it comes to matters relating to patient treatments.

While not downplaying the significance of informal discussions and morning meetings, clinicians recognised the importance of ICT for improved knowledge sharing and healthcare learning, and would have liked the ITech Unit to be more forthcoming on what the core users required for effective communication systems implementation (Clinician Interviewees 2, 3, 6, 10 11, 12 and 15).

The ITech Unit was accused of not communicating effectively with the clinicians, as far as ICT-supported learning tools were concerned to gather information about user specifications.

The Clinician Manager Interviewee 18 vented this on the ITech Unit:

“If IT want to be really effective, if you can ask them they are not very effective. If they need to be very effective, they need to go round; solicit the ideas of people. What do you want us to do? ... because, if you are lacking ideas and you don't go to the end users. Oh, we want to improve our service what do you expect of us? Like we [working

in a directorate], we know the various directorates need our service so we make it a point to go there from time to time. What are we doing that you think is not too good for you? What do you want us to do that we are not doing? Are there any new text that you want us to write that we don't have the service available? That is the way to improve your work but if you sit in your office, you don't go out, you don't do anything, nothing gets done"

Underutilisation of doctor-to-doctor talkline, a communication service implemented with the support of Vodafone to promote knowledge sharing and case management amongst the clinicians, might suggest evidence of poor communication. Though some clinicians found the doctor-to-doctor talkline useful, opinions differed on its effectiveness, making it difficult to draw a conclusive remark. For one clinician, who was part of the doctor-to-doctor steering and implementation team, the system did not work well:

"To be honest I don't think it was well publicised and the first few cases I sent I didn't get any response so I thought of stop using it" (Clinician Interviewee 10)

Though the communication network was freely provided by the Vodafone, under the doctor-to-doctor talkline agreement, the handsets were the individual clinicians' property. One might agree that, if the clinicians used their personal phones as corporate communication equipment, there would be propensity to manage the technology as they please. Yet, this could not, in any way, escape the issue of communication breakdown. The interpretation of the data, as elaborated above, demonstrates evidence to conclude that communication was indeed a problem, and needed to be tackled for quality care delivery.

5.4.6 System Confidentiality Issues

The KATH code of ethics maintains that, patients confer their illness information with staff in confidence and the staff should not break loose the confidentiality issues. Confidentiality was held high esteem but there was a perception that hackers could use key loggers software to gain illegal access to KATH's computerised systems. This sense of hacking apprehensiveness, as the Manager Interviewee 1 suggested, could lead people to believe that

having paper-based records and locking them would be safer than storing information on computers.

The concerns that unauthorised persons could access patients' confidential information raised questions about computerised data management and security. Records of some departmental meetings blamed the ITech Unit for not customising passwords for the Stores computers to prevent potential access by non-audit staff. As an interim measure, the IntCompliance Unit, for instance, advised staff to lock sensitive documents on computers to avoid easy access by unauthorised staff.

There was misunderstanding amongst some staff of who hackers might be or how they could operate. The Manager Interviewee 17 played down the possibility of hacking activities, arguing that hackers might not be around in the hospital. This conception raised questions on how the information security was maintained.

Spam and unsolicited messages were identified as other potential threats to the integrity of the KATH email system. As the Manager Interviewee 9 observed, spam usually blocked the hospital's external Internet Protocol address, preventing outgoing emails though incoming emails could still be received. He expressed concern about the seriousness of this issue but, at the same time, attempted to hide his disposition of the situation. He said:

“Spams, though it has not happened in the hospital but I hear the clinicians saying that their hotmail accounts are hacked, and there are messages like I am desperate and got stranded somewhere and they should send them some money. We are likely to face some of these as threats but if you want to create a corporate email then there should be a server out there to host your systems and there is an issue of apprehensiveness” (Manager Interviewee 9).

However, a follow up conversation with the Manager Interviewee 9, ten months after the interviews, concluded that KATH did not have external host(s) or working towards an agreement for one to secure virtual or computer data back-ups. This is an emergent forgotten

factor that would require immediate solution for sustainable ICT-supported learning systems in KATH.

5.4.7 Change Management Issues

The interpretation of data shows IT change management problems including people issues that could affect full implementation of KATH electronic health information systems and eLearning, as elaborated below. The Manager Interviewee 9 said that, compelling someone who was more used to keeping paper-based records to switch over to managing patient records on computers could certainly be a problem. This corroborated well with the Manager Interviewee 1's assertion that people would want the old ways of learning and might not be ready to change. He said:

“Some systems are not user-friendly as most staff are not IT experts and just use IT as a tool. Unwillingness to learn something new; some lack self-motivation to learn again perhaps due to age or might consider IT not really important in the work they do. For instance, you may bring IT thinking that somebody here has to upgrade his skills but he will just deviate from the normal traditional procedures of doing things while not making adequate use of the systems” (Manager Interviewee 1).

Generally, lack of ICT skills among staff and inadequate software applications were change management issues. ‘Technophobia’, the fear of touching operating hardware components, was used to describe staff attitude towards using computers.

“Some staff have no confidence to touch computers. They are ‘technophobians’. We have inadequate computers in the hospital including insufficient software to upgrade our systems” (Manager Interviewee 7)

Staff requests for IT training in their appraisals forms indicated lack of adequate IT skills among some staff. So, despite some clinicians' argument that, clinicians would not need the in-house IT training provision, as discussed in Section 5.4.4, there was evidence that not many clinical staff had received adequate IT skills (Clinician Interviewee 3). In cases where this

had been done; the Clinician Interviewee 3's argument was that, the in-house IT training targeted the clinician managers and not rolled out to the entire clinical staff.

Tailoring the IT training provisions to reflect advanced medical practices would serve the needs of clinicians who might like to develop their competencies in health information systems (Clinician Interviewee 12). While, the Manager Interviewee 7 provided a reasonable argument to address software and IT support issues. He suggested:

“The problems would be resolved if the hospital could provide good software and put up plans to procure computers every year to augment the existing ones. We could also engage more [ITech] technicians” (Manager Interviewee 7).

The Manager Interviewee 7's suggestion for regular procurement of software to update IT applications, with the aim to address the evolving needs of the local actors echoes the deferred design decision where IT design is done in actual situations by local actors.

How to supply back up power to enable saving and recovering of clinical data also came up as an emerging change management issue. Improving and sustaining ICT-supported learning would require reliable energy supply to power the KATH ICT systems. The Manager Interviewee 7 remarked:

“Our back up electricity only serves the essential areas such as the theatres and CT scan equipment. Our office, for instance, is not supported by the backup electricity so when the power goes off and you do not have UPS (uninterrupted power supply solution) to save your all essential information everything will go unrecovered”

Many systems depending on the electricity power for functioning would therefore become redundant whenever the electricity power went off.

This section has elaborated 'emergent forgotten factors' in the planning of the KATH ICT and learning processes, leading to the staff disuse of the implemented systems. The participants agreed that, consideration of actors' changing requirements in the KATH ICT-supported

learning planning could have improved the expected outcomes of the learning systems. It was observed that managers' learning could be only effective for quality care if it would integrate with everyday clinical practices of the clinicians. Analysis of how such coordination could be made fruitful is discussed in Section 5.5 below.

5.5 Deferred Synergy

It was observed from the participants' contributions that, the hospital lacked a unified model for measuring learning processes that could transform into quality patient care. The systemic methods of designing and delivery of CPD provisions were insufficient to generate knowledge necessary for clinical practices (Clinician Interviewees 3 and 10). Existing evaluation approaches of learning were based on strategic conceptions, with others adopted directly from external agencies without appropriate considerations of local issues they sought to address. Typical examples were the CME programmes and the telemedicine system. Others, such as annual review methods were deemed budgetary focused, lacking on-going clinical needs (Clinician Interviewees 2).

The manager group interviewees acknowledged a shortfall of many existing learning processes, calling for change in the KATH ICT-supported learning and KMS design and evaluation approaches. The Manager Interviewee 13 maintained that if money were to be spent to educate people then, quality check would be necessary to evaluate the impact of learning on care delivery. As the Manager Interviewee 1 conceived, that the hospital would be throwing money away without reaping the full benefits of the potentials of the ICT systems if they failed to embrace widening participation.

The search for actuality-based methods for designing and evaluating learning processes was recognised, as an effective way to find out whether the hospital was achieving sufficient

results from learning or not. This was a prospect for considering the deferred model of reality in KATH learning systems design, as suggestion was well received amongst the participants that planned actions of managers should be organised in actuality to address clinicians' daily practices (Manager Interviewee 9; Clinician Interviewee 10; Clinician Manager Interviewee 16).

Critical analysis of the empirical data, as discussed in Sections 5.2-5.4, suggests the need for a consultative and deferred-based approach for re-designing and evaluating KATH learning and knowledge management processes as summarised in Table 6.1 in Chapter 6. This is a representation of the cohered emergent transformation model, demonstrating how KATH could achieve continuously improving care delivery service. The participants' recommendations are archetypes of deferred design decisions, exemplifying a move towards a unified organisation in which actions and responsibilities of both managers and clinicians are collectively managed in actuality.

The findings so far might provoke considerable reforms in the way ICT is used to enhance knowledge sharing and patient care. These suggest a conscious move away from the existing 'Another Certificate in a Wardrobe' model to an 'Explorable Organisational Memory' and 'White Elephant IT Systems' to 'Usable Healthcare IT Systems' to demonstrate how the deferred synergy could support effective healthcare learning processes and improved patient care.

5.5.1 Turning Wardrobe Certificates into Explorable Organisational Memory

Introduction of CME programme was rated a good idea in principle but the way it was rolled out needed rethinking (Interviewees 5, 10, 15 and 16). The clinicians wanted flexible and relevant knowledge creation CME courses that would enhance their professionalism and

modernise clinical practice; and not one imposed on them for credit accumulation and certification.

Information acquisition and existing systemic routine-based learning processes were less effective for skills updates in clinical practice (Interviewees 8, 10 and 15). Those taking part in the systemic learning processes were considered to have locked up their potentials, with little to contribute to clinical knowledge creation. The Clinician Interviewee 15 commented on why this was a problem:

“If you are doing a job that you are supposed to give an injection and for the next 30 years that is what you do and you don't do anything else, that is definitely a systemic problem. It is just the system that is creating that kind of thing”

Systemic learning and its evaluation methods relied too much on planned-specified decisions. When questioned if the hospital would need redesigning of the existing systemic methods of learning, the Clinician Interviewee 15's response demonstrated his exasperations and desired for change:

“Absolutely, we need to redesign everything, right from the human beings working here to our equipment and everything” (Clinician Interviewee 15)

The metaphoric use of 'human beings' was used to expatiate on the current weaknesses of the learning processes and calling for a holistic change. A consideration of appraisals was a possible option for measuring learning, but its credibility did not receive acceptance amongst the clinicians, with the Clinician Interviewee 12 being unsympathetic towards the appraisal system.

“The appraisal is supposed to, but how effective is our appraisal system? Our appraisal system, if you want me to be frank with you, is just a formality” (Clinician Interviewee 12)

Interim and annual performance reviews though useful for measuring learning progress, their usefulness was limited to the evaluation of financial and budget indicators, not for assessing

knowledge sharing processes. For improvement in patient care, the clinicians would prefer models of reality to guide clinical knowledge management and practice. The regular weekly and monthly meetings in the departments, and peer reviews were adjudged more actuality-based to address emerging problems, as when and where they would happen (Interviewees 6, 7 and 18). However, the application of ICT to regular meetings like clinical conferences and ward rounds was very little in practice.

More coordinated learning, including effective IT-based communication between clinicians and managers, was seen as a way forward to transform patient care. As the Clinician Interviewee 2 contended, individual-based learning, as good as it might be, could not on its own transform into improved patient care unless it received the hospital backing. He said:

“The new things I have learnt from the Internet that are evidence-based to improve practice, the hospital may not necessary have the systems to implement it. For example, if I’m learning about new drugs, new technology, new PCR to do something quicker, the hospital can’t provide it. So I’m not sure if it has direct benefits to the patient” (Clinician Interviewee 2)

The Clinician Interviewee 2 pointed out that clinical meetings, informal discussions and individual-oriented ICT-enhanced learning amongst clinicians were effective to help identify best medications for treating diseases, such as prescribing co-artems for malaria treatment. However, such learning processes, he said, were not necessarily linked with managers’ learning in KATH to make all-inclusive decisions for effective patient care.

The Clinician Interviewee 2 further argued that, treating malaria patients with co-artems, for example, might be unattainable, for some patients, because of the various institutional and decision making structures. He cited the Ghanaian MoH, National Health Insurance Scheme, hospital procurement policy and managerial dominance, as typical constraints that could block the clinicians’ suggestions to procure best medication. So, improving quality care of patients

with organisational learning could be enhanced if such central planning barriers were removed.

A similar expression for increasing the hospital's knowledge repository takes the high expectation view of the hospital management to invest more in clinical procedures including evidence-based theatre video-conferencing to support knowledge sharing.

“For a teaching hospital like this, most of us were trained outside; you know a lot of things happening outside. Yes, nothing like that happens here. Let me give you an example. For instance, when a theatre procedure is being done, that is limited to the person doing the procedure and then the assistant. Elsewhere you have, hmmm... cameras and things, taking [covering] what is being done at a particular table to a classroom for other people to see or watch” (Clinician Interviewee 6)

The Clinician Interviewee 6 showed a sense of desperation about the system but was hopeful that the outcomes of the study would provoke a rethink for improved learning processes in KATH. His concluding comment was:

“Well, since our system is in the infancy and this [referring to the study] is going to start us from somewhere” (Clinician Interviewee 6)

The conception of knowledge sharing was seen, amongst all interviewees, as something that needed to be encouraged rather than pursuing it through the use of sanctions. It was noted vehemently that, the fact that knowledge sharing would breed creative thinking should not permit people in key positions to claim ownership of resources created by junior colleagues (Clinician Interviewee 12). Doing so would discourage the motivated staff from sharing knowledge. It would undermine the hospital's intentions of recognising hard work and innovation (KATHPoW, 2010: 5). The Clinician Interviewee 12 was disgusted by the fact that, a senior colleague presented material he [the Clinician Interviewee 12] produced in a big conference without acknowledging him as the originator.

“We believed that the work we did would be looked at by other clinical practitioners and I would show you evidence of some of these later. So, that consciousness was

there, but it became disheartening when someone used the resources you have produced as his/her own and you are not acknowledged. So, I stopped because of that but I don't know why others stopped” (Clinician Interviewee 12)

A supposition that knowledge is an intellectual asset, localised in minds of staff and worthy of preservation explains why actions intended to cause knowledge loss, either directly or indirectly, have to be checked. Individual knowledge contribution to organisational memory needs nurturing for improved working practices.

Training programmes intended to bring change in patient care, as suggested by the Clinician Interviewee 14, should not only target the clinicians but also the manager and clinician manager groups who have power and control to make a difference. Having all-inclusive training on a timely basis would enable the dominant group to develop awareness of emergent clinical issues that would need management commitment, in a way that managers would become pre-informed in decisions affecting quality care, when such issues were being discussed (Clinician Interviewee 14). This is the deferred learning process, cohering planned actions with emergence in actuality to enable effective exploration of local actors' knowledge.

5.5.2 From the White Elephant IT Systems to Usable Healthcare IT Systems

A sense of optimism demonstrated amongst the participants showed that the staff had creative ideas regarding how ICT could enhance staff learning and patient care, but that needed to be done in actuality, seeking consultative knowledge.

Invoking Barak Obama's campaign slogan of the 2008 USA presidential elections, the Clinician Manager 18 discussed how the ICT implementation could be improved with actors' consultation while expressing confidence in the study, as potential information to support effective IT deployment decisions.

“I think it is possible, Obama said: Yes we can. There is nothing that we cannot do, but it’s got to do with, as I was saying, the department sitting there. You understand. You don’t wait for someone to come and tell you something before you do it. Because you know the thing is not working well. So what can you do to enhance it? And in Africa here, you can’t say one thing now and is done like elsewhere. So, oh! I need this done for me and you just go to bed and sleep and it would be done. You have to keep pushing, you have to keep walking around, you have to keep talking to people, you understand, before that thing is done. So I think the ICT should sit up. They should go round; get the ideas from people, because people expect so much from them that it is not happening. So, if you say you are here to help, I don’t know if you will give them all this information at the end of the day. But they need to sit up and do a lot”

For a successful healthcare IT system implementation, the clinicians’ role in planning was argued to be, at least, equivalent to the managers’ decision-making to enable the clinicians specify their requirements for the developers’ actions (Clinician Manager Interviewee 4). Co-involvement of managers and clinicians in planning, the Clinician Manager Interviewee 4 said, would enable a holistic design package tailored to the users’ requirements. Though managers’ decisions dominate clinicians’ requirements in the obvious healthcare role demarcations, planning to achieve continuously improving patient care should firmly cohere with the changing clinicians’ requirements as a deferred process.

The Manager Interviewee 9 was convinced that ICT-enhanced learning is characterised with a multi-sense approach of using the ears, the eyes, the hands and the heads to receive training. He stated that ICT-supported learning processes have become a new trend in hospitals with, almost all, medical equipment becoming computer-based. He continued that, KATH was beginning to realise the importance of accepting ICT-supported learning with more funding and budget allocations being given for that. He sounded positive on the KATH ICT-supported learning, saying:

“We cannot run away from it and IT is not going to die now, and for as long as IT keeps improving it is sustainable. Definitely, these can transform into patient care. For instance, some doctors use doctor-to-doctor talklines to discuss patient cases which

needs collaboration. It helps doctors to learn and this transforms into patient care. We are planning for efficient patient appointment systems which can reduce waiting time and improve patient satisfactions” (Manager Interviewee 9).

The growing need for ICT-supported learning was putting pressure on management to provide more investments in ICT; otherwise the hospital would be left behind (Manager Interviewee 1), corroborating with the Manager Interviewee 9’s assertion that more money was being invested into the hospital’s IT systems in recent budgets. A conflicting view, taken from the management-oriented budgetary controls, was however used to explain the fact that, the management prioritised the requisition for specialist medical equipment over the expenditure on general ICT tools for learning (Manager Interviewee 7).

Cost implications could therefore not be ruled out, but it also serves to justify the acknowledgement of the planned-specified evaluation decisions in the *CET* model. What is interesting, however, is enabling emergence the opportunity to practicalise management rigid propositions which, more often than not, fail to meet the changing IT systems needs of users.

Implementing usable knowledge management and ICT-supported learning systems in KATH was generally approved by the participant managers and all clinicians. Even those, who had reservation about the direct relationship between ICT deployment and health care needs of patients, the direct importance of ICT to the staff training needs, could not be overemphasised (Clinician Manager Interviewee 8).

Emails, SMS text messages and satellite-based learning tools like telemedicine emerged as exemplar tools for capturing and sharing tacit knowledge in the hospital. These tools were rated more effective for self-organising learning in the focus group discussions, with emphasis placed on email and virtual platforms in the following data:

“The other thing is the use of email platforms to discuss emerging issues in the hospital, which we may not be aware of or hidden in some people’s files or folders

which are not pulled out. If we have such platforms for people to put their knowledge or findings, including observations of cases that have been seen sequentially, then other people can also take note of it and begin to delve into what they themselves are observing. And this is how new knowledge emerges. By seeing that others are observing particular trends as one I am observing, we can conclude that it is not so strange that I am seeing this, because other people are seeing similar things. So, if we have a common email and virtual system to access these kinds of hidden information then I think it is going to open up more discussions and learning among colleagues both clinical and non clinical” (Clinician 3 in Focus Group).

Beyond collaboration, the participants approved the fact that evidence-based ICT-supported learning tools could help clinicians made valid decisions. The Manager 9 in Focus Group, for example, made a point that he witnessed a pharmacist calling a doctor to query a prescription given to a patient.

“You gave this patient this drug but I think that it is not the right prescription or it is too much or too little. If both of them have available information, I am sure they can compare from a certain benchmark but this person might say this and that might say this but I think if there is a benchmark each of them can make a valid decision”

In a direct response to the Manager 9 in Focus Group’s observation, regarding a pharmacist seeking clarification from a doctor about the accuracy of prescription, the Clinician 3 in Focus Group argued that, doctors’ decisions on treatment prescriptions might be based on information that the pharmacist was not privy to. The Clinician 3 in Focus Group maintained that having more efficient health information system could dispel such tensions. He stated that:

“Sometimes, you have to adjust doses for the sake of a particular condition that you are giving to the patient. But, if the information system is such efficient, then such collaboration can go on without any agitation or any eye raising, regarding why this person gave this or why this person did that”

Application of the **CET** model, as we have come to know, would improve our knowledge of how KATH could achieve *real* transformative learning for quality patient care. This is where

all-inclusive learning processes such as consultations and widening participation are pursued, but enabling emergent factors to shape planned actions.

5.5.3 Consultation and Widening Participation for Sustainable ICT Systems

Acceptance of the study and its merits, for the sustainability of the KATH staff learning processes, was evident in participants' responses, acknowledging widening participation, inclusivity and actuality-based consultations. At the individual, department and corporate levels, the *CET* framework, and its ultimate significance on patient care improvement was endorsed. The following quotes from the concluding sessions of two interviews demonstrate how the participants showed their genuine acceptance of the research:

“What I will say is if you finish with your work give us a copy of the report to inform, not only the [ITech] Unit, but personally for the ITech Unit may be I will pick a few programme of work from your report, but for the management so that they can also incorporate in their strategic plans for subsequent years to come” (Manager Interviewee 9).

“Emm, I think that is it. But I think with what you are doing, if ICT is up and keeping, I think it would be of help to us as individuals and as a whole. It will go a long way to help our patient reduce turn-around times and patients time they spent in the hospital” (Clinician Manager Interviewee 18).

The potential benefits of combining critical hermeneutics analysis with critical narrative analysis (section 4.6) were once again unfolded, as the participants' responses clarified limits of KATH learning and ICT adoption failures, and signified approval of the study as a first call to enable change in the learning processes in the hospital.

The Manager Interviewee 1 accepted the view that having sustainable ICT-supported learning would bring with it an advanced way of looking at the old problems with better treatment options though the diseases themselves might not be new. His suggestions for sustainable ICT-supported learning considered elements of consultations and widening participation.

“It is a must that planning and evaluating of the hospital's ICT-supported learning should be an all-inclusive system so that every hand should be on deck. People from the bottom up, those that we think do not matter, they may have very complex ideas but the whole thing is that their ideas may not be so refined but when picked up at the management level, we pick such ideas from the directorate/unit levels through gatherings of professional groupings where the ideas can be critically examined. When all these have been done, the paper can be presented to the managers who can look at the plans from another angle. When it is done this way and suggestions are brought back to the people who then become owners or part owners of the systems, so it can become so beneficial” (Manager Interviewee 1).

Having sustainable computer-based learning systems requires management support and dedication. Management willingness to procure a hospital-wide integrated learning system with unrestricted access to eLibrary references would make eLearning sustainable (Manager Interviewee 1). Getting strategic commitment is an invocation of planning, a dimension of the theory of deferred action to start the processes of sustainable learning, but not forgetting the bottom-up ideas valuable for consideration in the top-down decisions to enable real improvements.

The Manager Interviewee 7 accepted all-inclusive planning and evaluation of ICT-supported learning but argued that, managers should initiate the planning of the hospital ICT systems because they are usually responsible for the budget:

“If we want to get the whole hospital computerised, the management must first buy the idea. Those at the departmental levels and users can give inputs but the idea must be started by the management” (Manager Interviewee 7).

The Manager Interviewee 7's quotation confirms the inevitability of planning as a necessary dimension in the theory of deferred action (Patel, 2006) required to structure organisational objectives. However, the management endorsement of planning could be pointless without cohering such support with the emergent needs of clinical practice. Plans lacking deferred decisions could easily be shelved, restraining their potential benefits from the onset, because they lack timely responses. The initial idea of implementing collaborative eHealth systems to

enable clinicians, including those at the district levels, share knowledge on complex medical cases with KATH consultants on virtual learning platforms was, for example, held by the former CEO (Manager Interviewee 1). This was supposed to provide a real time collaborative system for improved healthcare solutions but that was an illusion, as it failed to account for the actual actors' decisions.

Upholding the all-inclusive design and evaluation idea, the Clinician Interviewee 5 passionately suggested a bit more commitment from every staff for sustainable ICT-supported learning processes. She prescribed:

“All of us can make it sustainable. Somebody has to be in charge, somebody has to get the data from the clinicians or managers so whoever is in charge should know is required, how people are responding to it and if people are not responding to it immediately as you are talking to me now to find out how you want to be part of this and respond to it, so you want people to be more involved and make it sustainable” (Clinician Interviewee 5).

Her contribution reveals another example of the participants appreciating the study, in a manner that an all-inclusive initiative was being advocated to change the weaknesses in the existing learning and knowledge systems. Reporting the story, together with evidence from the focus group and informal discussions, in a constructive critiquing way to transform social practices is what the critical researchers submit (Messners et al, 2008; Cecez-Kecmanovic, 2010).

The Clinician Interviewee 10 contributed to the staff commitment idea, maintaining that it would be suicidal if the doctors and other healthcare professionals for whom the ICT-based learning was principally designed, were not buying in. He strongly believed that, the clinician involvement would make them [clinicians] take full ownership of the system. This contribution validates the view that IT uptake decisions lacking tight coherence between

planners' specifications and users' requirements fail to thrive (Patel, 2006). The Manager Interviewee 17's contribution reinforced the collective involvement view as follow:

“If people are involved in decision making and contribute to how things should be done, they take it as theirs and they own the idea. But when managers plan for a group of people, it does not make it so effective because it is being dictated and it is not what people may want it. So participation in decision making gives broader interesting ideas than one person doing it. I think widening participation will be very beneficial” (Manager Interviewee 17).

The risk of not providing sustainable computer-based learning meant doctors would be leaving their current roles to join more competitive healthcare institutions where such systems would be readily available to improve practice (Manager Interviewee 1). A similar sentiment relating to doctors leaving for posts elsewhere was seen as an option, in a situation, where there would be inadequate technology to support clinical collaboration (Clinician Interviewee 15). But, the Clinician Interviewee 15 advised that:

“In this area [Ghana] where we are very few clinicians, leaving your post to go somewhere else is a leisure we can't afford”

Potential benefits of clinician knowledge, especially the experienced ones, for organisational performance are undeniably far too significant to give way for clinical workforce mobility to shrink KATH's knowledge base.

Accepting the consultative and widening participation ideas were synonymous to endorsing teamwork, with some managers strongly advocating team practice, as a way forward to developing sustainable evidence-based ICT systems for learning. The organisational structure of KATH, decomposed into various units and directorates, could create opportunity for team cohesion and emergent knowledge (Patel and Ghoneim, 2011), which embedded in humans and unexpected. The Clinicians 19 and 20 in Focus Group suggested active involvement of all KATH staff in developing effective learning management system for improved patient

care, citing meetings, forums and consultations as appropriate platforms for such engagements.

The Manager Interviewee 7's recommendation for effective knowledge systems design did not differ from the all-inclusive idea, but emphasising that without teamwork patient satisfaction would be risky. Ideas generated through focus group confirmed how 'deferred teamwork', making actuality-based decisions in teams, could contribute to a successful system design, helping to close the gap between managers and clinicians differences in systems design decision making. The first focus group discussion, for instance, introduced varied important ideas, all valid from the perspective of the **CET** model for designing and evaluating learning and knowledge management systems framework for KATH. Excerpts from the discussion are shown below:

Researcher: *"If we are going to plan and implement learning systems for use, right from the planning stages to the implementation and evaluations stages, what will be your recommendation? As a doctor what specific role do you think you should play?"*

Clinician 3 in Focus Group: *"For me, what will make my work efficient; and I will look at an integrated system in the hospital where I could access my patients' laboratory results. I could access past information about my patients without necessarily have to walk for about 30 minutes to get such information. So, what will make the work efficient? As a teaching hospital striving to become a centre of excellence, [something] to help me make my diagnoses within 24 hours that I have seen the patients, and also, to make sure that knowledge sharing between clinicians is prompt because it bothers on attitude. If we have all been primed that these systems are being implemented to achieve these specific goals, then the responses of other directorates in the patient care giving should also be prompt which we don't see as of now"*

Researcher: *"Mr [Manager 1 in Focus Group], is there any role that you should play in terms of internal audit, quality and may be from the finance point of view?"*

Manager 1 in Focus Group: *"Just as the doctor has pointed out, the needs of the users and so on. So, the system development itself should base on certain assumptions. For example, if I want to review the system I would like to know how they came about the system itself. Did they take into account the need of the users? Were the needs adequately addressed? How adequate budget is for these things? How do we intend to monitor and evaluate the systems? So, when I have had all these things, then I can test the systems based on the initial plan and criteria set so that I will know whether the system is achieving its intended purpose"*

Researcher: *“To what extent can the clinicians be involved in planning and evaluating ICT-supported learning systems in KATH?”*

Manager 9 in Focus Group: *“All through the planning, implementation and evaluation, I think they should be involved because basically, they are one group of the prime people who will meet the patients, and I think every information system should take into consideration their needs and requirements. I think that to meet their requirements we have to bring them on board. The clinicians should be involved all through, and they should be the key members the design and implementation team should focus around”*

Clinician 3 in Focus Group: *“For me, the clinicians who are part of managers must be contacted when these things are being developed. For the clinicians who are not managers, they are hardly thought of, and this is my perception, as a clinician in the hospital. Because, I have not heard of any forum where it is discussed that we are going to develop this kind of information system for this unit and what are your inputs and how we should go about it? All is, we wake up one day and they say there are about five computers in your library and they say it’s connected to the internet for accessing information. That’s all. So, I think involving the prime users of this information technology is very very key, and the clinicians, I honestly think they should be involved”*

Manager 1 in Focus Group: *“And looking at the complex nature of an organisation such as KATH, the risk is that somebody will go to contact another person whose knowledge is too parochial, so specific to certain setting of the whole complex structure. For that matter, the input that person is even going to give is not relevant to the needs of other clinicians and it’s going to impact on the systems development. Somebody will just want to have a check list. Did you contact a clinician? Yes, but who was that clinician?”*

The participants bounced opinions and experiences off each other to signify the importance of focus group, as a tool, to solicit ideas for designing and evaluating the evidence-based learning and knowledge systems framework for KATH. Emerging complex ideas needed for the systems design and evaluation were explored to help our understanding of why planning should account for local issues, such as the changing needs of clinicians.

The Clinician 3 in Focus Group articulated his disagreement and frustrations about the clinicians’ marginalisation in the hospital’s ICT uptake, the view which corresponded well with other responses from the one-to-one clinician interviews, accusing the management dominance in the KATH ICT systems implementation as a cause of failure. Management dominance in systems design was unveiled with the conception that some potential users of

the ICT systems could only bring ‘*too parochial*’ knowledge to the system design and evaluation decisions. Of course, lack of IT knowledge of some clinicians, obtained from the interviewees, could substantiate the Manager 1 in Focus Group’s ‘*too parochial*’ comment. Albeit, his remark could not escape the entrenchments of power relations in systems design decisions which use rationalism, as embodied in IT systems design, to pre-mediate how organisational systems should be developed and function.

The significance of systemic emergence in designing effective knowledge systems for emergent organisations was revealed, in the focus group, as something that could not be taken for granted. As the focus group discussion developed further, the clinicians seemingly became more involved to challenge the weaknesses in the management dominated learning design systems including supporting ICT in KATH and brought up emergent ideas for *re-designing* the systems in actuality.

As the focus group progressed to the issue of involvement, the discussion became intense but the participants (managers and clinicians) agreed on a compromise that the clinician involvement should be inevitable for an effective and sustainable KATH ICT-supported learning systems design and implementation. The literature on higher-order learning and complexity discuss how involvement and openness could persuade management decisions to subscribe to emergent ideas for effective systems design without considering the latter as mediocre or ‘*parochial*’ (Brodbeck, 2002). This credence is an element of the Deferred Action Learning Tools and Synergistic Lens of the **CET** model, showing how managers’ learning could unify clinicians’ learning in actuality to enable improved patient care. In what follows, the critical ethnographer probed into the extent to which clinicians should be involved in the KATH ICT adoption, with the participants 3 and 9 in Focus Group grappling with involvement and fair representation in the ICT uptake decisions:

Researcher: “How could KATH clinicians to be more involved in ICT deployment decisions and deploy tailorable technology for improved learning processes?”

Manager 9 in Focus Group: “Is a matter of involving them in decision making. I think there should be a way where the clinicians will set for example, on any ICT team that has to do with the development of the systems”

Researcher: “At the moment they are not and how come ...”

Manager 9 in Focus Group: “They are, they are, they are...The former Medical Director was a chairman of the ICT committee though they never met. In fact, he was eventually concerted into the Health Insurance Committee because more issues with health insurance were coming up but we have clinicians”

Researcher: “The users like a doctor here, who wants information. We want more and more of them to be involved”

Clinician 3 in Focus Group: “It should be representative. For example, the Medical Director who is a clinician manager, and really involves in the day to day running or delivery of care, represents doctors, as Mr [Manager 1 in Focus Group] said, his inputs will be what he thinks will serve the specific needs which may not represent what the clinicians themselves find appropriate”

Irrespective of the Manager 9’s initial defensive response in Focus Group to justify the existing clinician involvement, the session ended amicably with collective responses collated on a flipchart sheet (see Figure 4.4), and participants subscribing to the deferred model of reality as a possibility for re-designing KATH ICT-supported learning systems. Application of focus group, as one of the effective methods, for managing actors’ behaviour on the edge of order and chaos, a point where emergent outcomes occur in organisational learning as a complex adaptive system (Brodbeck, 2002), was clearly evident in the discussion.

Discussions seeking valid points to guide the development of an evidence-based framework for designing and evaluating KATH learning and knowledge management processes including supporting ICT, that would enable continuously improving patient care, brought up a varied range of interesting proposals. The Clinician Interviewee 15 was interested in learning output, learning impact and actual knowledge sharing indicators, and their implications on patient care. Interests in excellence in research and medical practice in KATH saw collaborative learning activities such as effective knowledge sharing, as something important for improved patient care.

Clinicians, therefore, as the data suggests, needed learning tools that help actors to assess the present situations and make complex treatment decisions in quickest possible time. The Clinician 19 in Focus Group would like to see efficient ePatient systems securely connected to all directorates to handle changing patient information, harmonising with others' (Interviewees 4, 6 and 12) suggestions for real-time learning systems with feedback and patient-focused functionalities. For the Clinician 20 in Focus Group, deploying such healthy systems would require reliable computers with scalable functionalities to enable new software adaptability.

The participants' recommendations for developing the evidence-based framework, based on the deferred model of reality, spread around sustainable organisational systems. Being sustainable is about having the ability to learn and innovate continuously to bring the desired change, a cornerstone of transformative learning organisations. The Clinician Interviewee 2's suggested evaluation criteria for KATH staff learning covering: Defining the scope of the ICT-based learning processes; allowing accessibility to all staff; ensuring the availability of continued power supply; and maintaining continuity of information flow. These are sustainable factors sanctioned by the Deferred Action Learning Tools and Synergistic Lens of the *CET* model, but in actuality, in which power centres are seen to regularly recognise bottom up ideas for transformative growth.

Having competent and well exposed IT experts managing the KATH eLearning tools was the Clinician Interviewee 11's proposal for measuring the ICT-supported learning sustainability. He also suggested the following for the evidence-based framework: A number of visits on the Internet-based learning sites and actual usage, and simple quiz material to assess knowledge; as equally effective way of measuring the effectiveness of the hospital's knowledge systems. Others upheld the view that, populating quality learning material on the internet-based

learning platforms would be worthier than the processes for evaluating the learning supporting tools (Clinician Manager Interviewee 8).

However, in a fast changing information digital world, where new clinical findings are spreading with medical technology, the processes of sharing knowledge are becoming exponentially more important for patient care than stagnating credible knowledge in a discrete repository (see Section 2.5). Clinicians could improve medical practice with new knowledge but that is subject to validation. One way to ascertain the credibility of clinical findings would be to engage critically on a collaborative learning platform, with effective feedback loops to challenge ideas, and develop knowledge further. So, while not dismissing the quality learning material viewpoint, the fact is, the effectiveness of collaborative learning tools are exceedingly important and these have been attested by the clinicians' cry for robust learning tools in KATH. Evaluating the role of such knowledge systems could not be overlooked, but, should be appreciated as suggested by Manager Interviewees 1 and 13.

Learning to improve patient care with ICT was important but unlearning old attitudes towards patients, work and government property was unquestionably an obvious observation obtained through document analysis, interviews and focus group discussions. The Manager Interviewee 7, for instance, advised that the computers for working should not be abused for playing music at work. Staff attitudinal change, therefore, became a relevant inclusion factor for measuring effective learning in the hospital. Indeed, deferred learning processes create self-organising platform to evaluate behavioural issues and cognitive maps in actuality.

5.6 Conclusion

The critical analysis of the ethnographic data, interpreted on the key modules of the *CET* framework, deferred model of reality, defines KATH as a learning organisation. The

hospital's intentions of providing quality care were the core reasons for KATH staff learning through different media and platforms. For instance, appraisals, clinical meetings and annual reviews represent managers' learning, clinicians' learning and clinician managers' learning but the disharmony between the fundamental focus of these forms of learning hampered continuously improving patient care. Performance evaluation methods adopting managers' learning, for instance, use planned-specified evaluation decisions, such as the use of appraisals to correct errors; excluding emergent evaluation decisions, such as clinician knowledge sharing and daily clinical practices, necessary to change the existing healthcare learning processes.

The role of planning and management decisions in designing KATH learning processes were important to direct the strategic course of the hospital but not sufficient for the changing patient-focused learning processes which required regular clinician collaboration and knowledge sharing. The systemic manager-led CPD courses were certification-driven and inclined towards information acquisition. These forms of managers' learning were far removed from the knowledge sharing and skills acquisition processes, required for improving quality care of patients, as certification is non-equivalent to emergent learning. The clinicians disapproved the design and evaluation of the existing certification-driven CME/CPD courses though they were forced to attend sessions. These learning processes were therefore packaged as 'Certificates in a Wardrobe' by respondents because they did not contribute to knowledge sharing and improved patient care.

Technology adoption for KATH staff learning failed to achieve the expected outcomes because planning, as a management strategy, was not working. Implementation of telemedicine, emails and intranet, internet and Medical Pro Resolve systems failed because planning and design adopted a top-down approach without adequately considering the

requirements of the clinicians and other staff who were meant to use the systems. The existing ICT systems had many design and implementation limitations, making ICT application to KATH learning generally difficult with clinicians refusing to use the telemedicine eLearning systems while internet frustration denied effective email usage. KATH ICT systems had become ‘White Elephant Systems’ since emergent factors had been forgotten.

The participants acknowledged weaknesses with the existing design and evaluation methods of the KATH learning processes including the supporting ICT, intended for improving quality patient care. Irrespective of many consequences of the failed KATH learning, the participants were hopeful that, a concerted effort of individuals, departments and the organisation itself for *re-designing* the systems could bring the desired quality patient care intentions. They sought credence in this research, applying the theory of deferred action to propose an evidence-based framework, the *CET* model, for designing and evaluating organisational learning and knowledge management processes, as potential renaissance for moving KATH towards a transformative learning organisation.

A wide range of recommendations made by the diverse participant groups validate the credibility of the *CET* model, postulated in Chapter 3, for (re)-designing and evaluating KATH learning process to enhance continuously improving care of patients. These recommendations, together with other ethnographic evidence analysed in this Chapter, are collated in Table 6.1 in Chapter 6 to show the implications of the *CET* model, derived from the deferred model of reality, on healthcare learning and knowledge systems for improved patient care.

Chapter 6: Conclusions, Implications and Future Research

6.1 Research Overview

The organisational learning and knowledge management design mismatch between strategists and users privileged the critical ethnographic researcher to propose an evidence-based framework, the *CET* model, using the constructs of the theory of deferred action, to understand how organisations can plan and collectively learn in actuality to achieve transformative growth. To understand the phenomenon, the critical ethnographic researcher reviewed literature on organisational learning/learning organisations, knowledge management and ICT, and contextualised these in a healthcare setting where planning and learning inclusive of actuality for improved patient care has been problematic and, in some instances, failed. The consequences of failure to plan, in actuality, to cater for contextual requirements have been disappointing health information systems development and usage, marred with investment and life losses (Beynon-Davies, 1999; Littlejohns et al, 2003; Heeks, 2006). The review was categorised into three school ideations—the rationalist, the emergence and the balanced-view schools—to show that they are exclusively inadequate to achieve transformative growth intentions.

Rationalist school assumes application of reasoning only as a source of knowledge for achieving predetermined results. Its significance lies in missions and target setting, appraisals and performance evaluation, budgeting and financial planning, variance analysis and deviation corrections; but it orientates towards positivism which uses formal propositions to understand social phenomena. Rationalists fail to address the sensitivity of human processes such as intuitions, unplanned actions and changing organisational environments as emergent because it is at odds with the emergence school.

The emergence school and its 'complexity-based' frameworks have committed to addressing uncertainties in changing business environment and unintended consequences of planning intrinsic in rationalist conceptions. Patel (2006) summarises emergence as an unpredictable outcome that arises through the interaction of agents, interactions between agents and learning technologies, and agents' spontaneous reactions to their environments. These interactions produce order generating rules to address systemic problems. So, the emergence school's merits lie in the ability to challenge issues characterised with specified actions, such as planning failures, and allowing such failures to be resolved in actuality (Patel, 2006: 61).

Though unpredictable, responsive, evolving and self-organising, exclusive application of emergence school to solve organisational design and evaluation issues is deficient for avoiding patterned thinking and planned structures. By eluding framework of thinking and planning, those who appropriate emergence and its complexity-based approaches have focused on interpretive methods and methodology to explain meanings (Brodbeck, 2002; Kim and Kaplan, 2006; Matthews and Thomas, 2007) whereas emergence's ability to resolve crisis requires challenging situations in actuality (Patel, 2006: 61). So, the critical ethnographic researcher argues that, addressing failures with interpretivism is uncritical of power relations and orthodox practices.

It is argued from the literature that, planning strategically to achieve transformative growth in emergent situations is a misunderstood conception that has created '*rationality-emergent*' design and evaluation gaps in organisational learning and knowledge management processes. Attempts to address the gaps with the balanced-view school fail because, it requires theoretical concessions between the two schools of thought—the rationalist and the emergence. The balanced-view school is theoretically pleasing but lacks practical design to resolve power relations entrenched in organisational structures in emergent actuality.

Much literature on the balanced-view school orientate towards conceptual expositions (March, 1991; Hildreth and Kimble, 2002; Rodan, 2005; Smith and Graetz, 2006) while empirics situate in interpretivism and avoided criticisms of managerial authority and distribution of power relating to planning innovative actions for organisational growth (Huysman, 2000). So, to confront established practices, resolve crisis in actuality and achieve transformative growth, the critical ethnographic researcher argues that the balanced-view school prospects should cohere rationalist approaches with emergence conceptions in situ and be explored from critical research methods and methodologies perspectives.

Credence was found in the theory of deferred action to address organisational learning and knowledge management processes design and evaluation problematics because it proffers planning social actions for the actuality of organisational actors as a composite third order phenomenon such as third-order change (Patel, 2006). This type of change is representative of transformative growth because it is achieved by changing patterns of thinking, addressing power differentials and resolving organisational design problems in emergent organisations and contextual situations.

The theory of deferred action was therefore applied to propose the *CET* hypothesis to prescribe how organisations could design and evaluate organisational learning and knowledge management processes to achieve transformative growth intentions. *CET* is learning inclusive of actuality. It draws on the principles of socio-technical systems to assume that, planned learning processes including supporting technology should be flexibly designed to enable actors to modify design to reflect the actual learning processes required to achieve organisational transformative objectives.

Using critical research methods and methodology, the *CET* model was validated with empirical data from KATH to conclude that, the model could be used to design and evaluate

organisational learning and knowledge management processes to support continuously improving patient care, the transformative growth objective. By this, the critical ethnographic researcher addresses the key research question: ‘How can hospitals design effective staff learning processes including supporting ICT systems to enable continuously improving healthcare delivery?’ Achieving this did not come without challenges and limitations as discussed in the next subsection.

6.1.1 Challenges and Limitations

First, understanding the research problems required the review of literature from three schools of thought—the rationalist, the emergence and the balanced-view, which was challenging because it involved categorising literature on interrelated subject matters with the defined three ideations. This methodical approach was applied to organisational learning including transformational changes; knowledge management technologies including eLearning tools, knowledge management systems design and evaluation; and healthcare learning processes including ICT. The difficulty is, some literature demonstrate characteristics of two schools of thought, such as Matthews and Thomas (2007) utilising complex adaptive system, emergence, but recommending a balance between mechanistic and organic approaches, the balanced-view, for organisational learning. In such cases, the researcher applied subjective judgement to classify the literature so it could gravitate towards the more dominant school of thought in the context of a particular literature. Second, applying critical research methodology and methods to achieve the research intentions was nothing less than *critical thinking* which required commitment and tenacity of the researcher to submit constructive and thought provoking findings for change.

Third, gaining access to clinical setting was difficult and frustrating because ethical clearance procedures were lengthy, rigorous and involved three independent ethical committees in both

cases of the Whipps Cross University Hospital NHS Trust, the original plan, and the KATH, the fall back plan. The three ethical committees reviewing the research protocol from independent perspectives created 'conditional relationships', in which one committee's requirement depended on the approval of others. Lack of progress by the NHS Trust, the original plan, and its eventual abandonment led to about six months delay of the project calendar. Fourth, pursuing the Plan B, the KATH, required redrafting and modifying the research protocol to suit the context of KATH. Though interesting insights were developed and new knowledge gained, the process was time consuming, arduous and challenging.

Fifth, adding to the challenges was to pursue the study from ethnographic traditions, which was not only time consuming but also involved difficult tasks of collecting and analysing huge amount of qualitative data. Writing ethnographic report has equally been onerous because it involved constant reviews and amendments while sharing emerging evidence with research communities in conferences and seminars (see Appendix 1.1). It is of these reasons that, the critical ethnographic researcher pays tribute to those who apply the methods in healthcare setting (Myers and Young, 1997).

Sixth, conducting the study in Ghana was not only costly but, also brought the dilemma of choosing rigorous methods of analysis and interpretation of data to satisfy the thesis requirements and presenting the story to KATH participants, who wanted to consume the research findings for healthcare learning system re-design. This dilemma, however, led to the combined critical hermeneutics and narrative analyses for reporting. Though the combined hermeneutics and narrative analyses approach has been recently applied to secondary data collection methods, this was pursued from the interpretivist traditions (Lejano and Leong, 2012), and not in a critical ethnographic context as applied in this study; hence, the justification for methodological contribution, as discussed in Section 6.2.3.

Seventh, the study was conducted in KATH, an emergent organisation exemplar, so its generalisability is relevant to KATH and other hospitals and learning organisations exhibiting patterns of emergent organisations, as argued from Macpherson et al's (2010) observations in Section 1.4.1. So, applying the findings and insights from this study to rule-based bureaucratic organisations would require thoughtful evaluation because rule-based bureaucratic organisations, as Burnes et al (2003) and Rodan (2005) argue, do not encourage staff to experiment and are not susceptible to change.

Eighth, there is theoretical limitation relating to when exactly can actuality be located as a deferred point (Ramrattan, 2010) for interrelating planned actions and emergence to achieve transformative growth. While this can be an issue for managers and planners designing systems to cater for emergence, it should be noted that the underlying theory of deferred action takes emergence as causal power to instigate planning in actuality to address contextual issues affecting transformation. The critical ethnographic researcher response to the deferred point limitation is that, the interpretation of actuality or context within which deferment is required should be seen as 'context', which varies from one situation to another and how it is perceived by organisational actors interacting in that 'context'.

Ninth, situating the research in critical research traditions implies the tendency to effect change is inevitable and this is possible when feminist voice is given priority. The sampling of 1:3 corporate healthcare managers to clinicians including clinician managers favoured the emergence school as force for change.

6.2 Research Contribution and Significance

The research problem was identified through a systematic synthesis of extant knowledge from three schools of thought, and approached with the theory of deferred action and critical

research methods and methodologies. The conceptual model, the *CET*, was developed and empirically confirmed with data from KATH, as an accepted theory; to demonstrate originality and a contribution of new knowledge which has implications for consumption (Phillips and Pugh, 2005:62). The study's contributions relate to: (i) Practical implications for KATH learning and knowledge management processes *re-design*; (ii) theoretical application and theoretical development for addressing design problematics in actuality; and (iii) methodical and methodological applications which could be appropriated to study related phenomena in management and organisational studies.

6.2.1 Practical Contribution: Re-Design KATH's Knowledge-based Systems with *CET*

A widespread acceptance of the study by the participants, as evidenced in Section 5.5, demonstrates potential merits of the findings to contribute to changing the weaknesses in the existing learning and knowledge management systems of KATH to enable improved patient care. The participants' desire to consume the research output, suggestions to use the findings for strategic decisions, support for all-inclusive learning and widening participation, acceptance of planning in emergent actuality, proposal to offer clinicians and users choices in design specifications, and submission to continuously improving patient care are indicative of the study's significance for the hospital. This endorsement confirms the practical relevance of the *CET* model, as an evidence-based framework, for (re)-designing KATH's learning and knowledge management systems.

Re-designing KATH's learning processes and knowledge systems with *CET* would characterise the hospital as an organisational complex adaptive system, an organisation that can self-organise and introduce inclusiveness to resolve, in context, internal organisational politics. Its implications is to address, in actuality, the design mismatch problems relating to power and presuppositions of healthcare managers and the changing practices of clinicians' daily work to reaffirm the theoretical novelty of the *CET* model in practice. Discussions of these, explored with the contextual representation of the *CET* model, and exposed through the four main modules of the model with the evidence gained, as shown in Figure 6.1, demonstrate the benefits of the study for KATH.

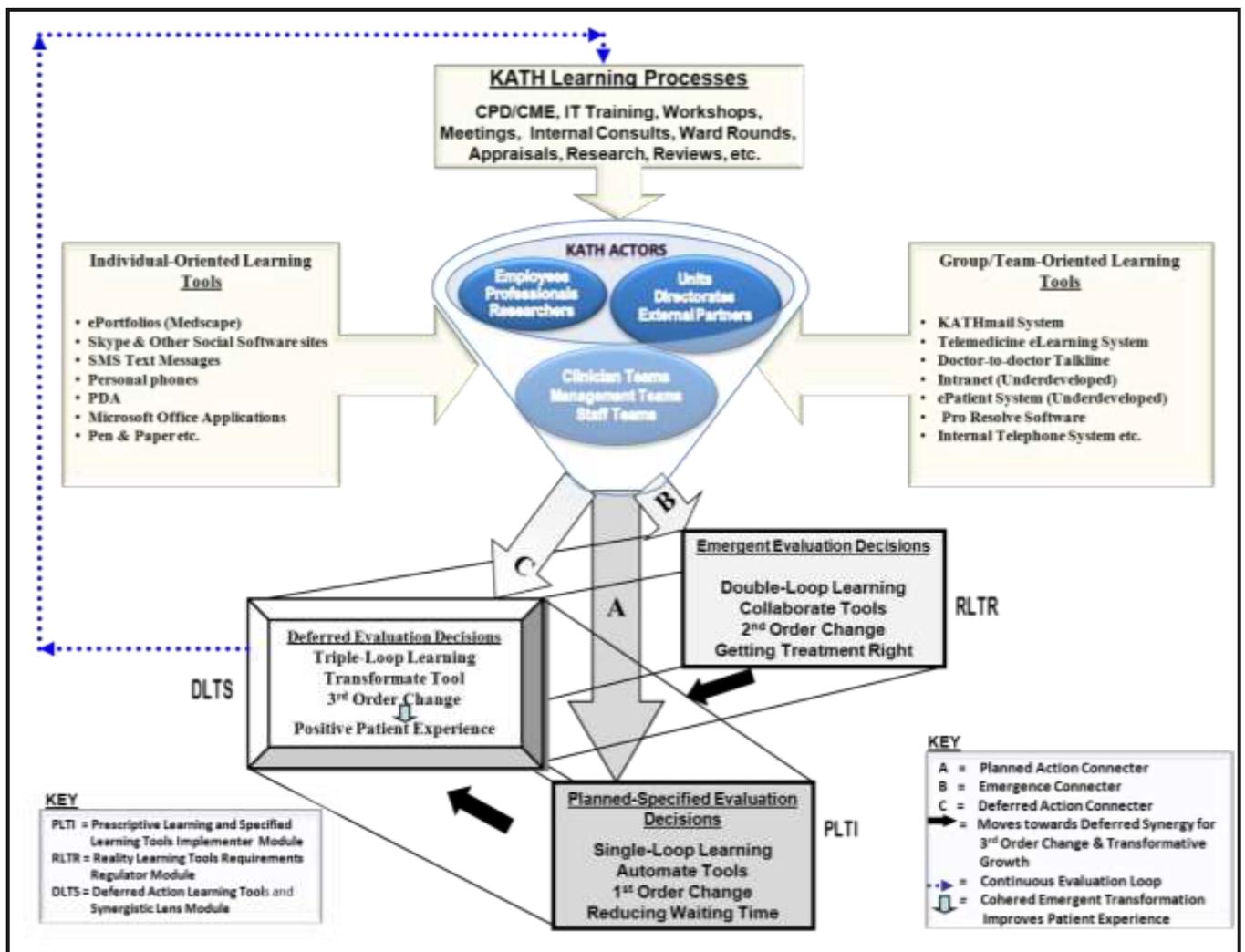


Figure 6.1: *CET* Applicability for Re-designing KATH's Learning and Knowledge Systems

The Input-Output Designer-Evaluators' Funnel module of *CET* typifies KATH as a learning organisation with a learning platform of inclusivity, allowing managers, clinicians, clinician managers and other actors to use a number of learning technologies for a wide range of learning activities. The identified KATH main actors, constituting an organisational complex adaptive system, with a common intention to promote quality patient care, were individual employees, professionals and researchers. Teams represent a few individuals drawn from the larger clinician or management groups, or other staff category who used true commitment and balanced skills to achieve mutually agreed care-giving objectives. They differ from the KATH main groups, departmentalised into units and directorates, with clearly defined roles and prescribed lines of authority to achieve patient care aims. There were also external partner groups or institutional bodies like GMDC whose formal engagements or obligations impact on KATH learning and knowledge management processes and are, therefore, relevant for re-designing KATH's learning and knowledge systems.

The KATH actors' interactions were evidenced by clinical meetings and conferences, internal consults, ward rounds, clinical and peer reviews, interim and annual reviews, CPD/CME courses, IT training, workshops, appraisals, research, self-enhancing postgraduate courses and general management courses. These forms of learning and knowledge creation were supported by emails, intranet, telemedicine eLearning system, doctor-to-doctor talklines, SMS text messages, personal phones, PDAs, clinical databases and pro resolve software systems. Critical interpretation of data, however, revealed that many of the learning supporting technologies were inadequate while many existing CPD/CME learning processes lacked the desired capabilities to transform quality patient care (Interviewees 2, 3, 6, 10, 11, 12, 14, 15, 16 and 18).

The participants criticised lack of effective design and evaluation models for the existing KATH learning processes including supporting technology, and the subsequent weak team collaboration between managers and clinicians (Interviewees 2, 6, 9, 12 and 14). Their contributions, as interpreted with verbatim quotations in Chapter 5, suggest that the study could contribute to effective organisational learning and knowledge management systems design and evaluation for KATH, with implications for enhanced team collaboration between managers and clinicians, and improved work communication. This validates the theoretical relevance of the *CET* model, as a model of reality, for designing and evaluating healthcare learning systems, in actuality, to accommodate changing local needs of clinicians and workers to improve quality care.

The interpretation of the data confirms the postulate that, the Input-Output Designer-Evaluators' Funnel module of *CET* is an organisational complex adaptive system, immutable with a corporate discussion forum, for actors' continuous engagements. The data further confirm the module's varied learning arrangements and processes which could be analysed collectively and continuously from diverse viewpoints to bring the desired transformation. Dynamic consultation elements of the Input-Output Designer-Evaluators' Funnel module, such as regular meetings and informal discussions, were confirmed by the KATH actors' monthly and weekly meetings, reviews and informal chats to justify the model's applicability in practice as a learning platform of inclusivity that could integrate managers' learning, clinicians' learning and other employees' learning tightly. The data validate the view that, the outcomes of organisational actors' interactions emerge as consequences of planned-specified evaluation decisions, emergent evaluation decisions or deferred evaluation decisions, as discussed in following other three modules of *CET*.

The *CET* model uses the Prescriptive Learning and Specified Learning Tools Implementer module to define the planned-specified evaluation decisions as aggregate rationalist choices for designing and evaluating learning processes including supporting technology. The study exemplified employee appraisal systems, management supervisions, and before and after evaluations as attributes (elements) of planned-specified evaluation decisions. The *CET* hypothesises single-loop learning, automate tools and first-order change (linear change) as key attributes of the module. Corresponding empirical data confirming the proposed attributes are management-controlled CPD/CME courses, eLearning 1.0 tools and centrally planned processes to reduce patient waiting time. The evidence gained to verify the module's attributes, though necessary, is insufficient to transform quality patient care intention; because, the planned-specified evaluation decisions were influenced by decision-making powers of managers and central planners without considering the dynamics of clinical practice adequately, as emergent factors (Clinician Interviewees 2, 6, 10 and 15).

The significance of the Prescriptive Learning and Specified Learning Tools Implementer module, however, lies in its strategic understanding of KATH's learning and knowledge management systems as something that should be consciously planned and evaluated. So planning of CPD/CME courses, ICT and knowledge systems is necessary and should occur. Yet, this must be done flexibly, in context, to cater for circumstantial local issues and changing users' requirements to enable the hospital to achieve its continuously improving quality care objectives.

The interpretation of the data shows that managers' plans for CPD and ICT-supported learning would only be effective if they were orchestrated to cohere strategic aims with clinicians' locale to transform quality care, as failure to do so would bring little to no impact on the desired medical care intentions of the hospital (Interviewees 2, 3, 6, 10, 12, 14 and 15).

Therefore, emergent factors are sufficient requirements for designing and evaluating effective organisational learning and knowledge management processes for KATH.

The Reality Learning Tools Requirements Regulator module depicts all emergent factors and contextual influences affecting the effectiveness of strategically planned technology-supported learning as emergent evaluation decisions. The module conjectures double-loop learning, collaborate learning tools and second-order change as typical attributes of emergent evaluation decisions. Corresponding empirical exemplars of these attributes are clinical team meetings, email systems and emergent actions for achieving better treatment options.

The Reality Learning Tools Requirements Regulator module of *CET* is significant for its clinician learning and bottom-up ideas which emerge from daily working processes to inform practice as a self-organising process. The emergent factors of this module could help KATH actors to evaluate the effectiveness of their learning systems, recognise unknown problems of planning and solve them in actuality to support improved patient care. So, making plans sensitive to emergence and unexpected changes is a requirement for eliminating organisational systems design and implementation failures. It is of these reasons that legitimate the clinicians' involvement, as a sufficient condition, in (re)designing and implementing successful CPD/CME courses, ICT and knowledge management systems for improved patient care in KATH.

The interpretation of the data shows evidence of clinicians' resentments in situations where emergent evaluation decisions were forgotten or unaccounted for in KATH's staff learning and ICT design and implementation processes, leading to the concluded 'Certificates in a Wardrobe' CPD/CME courses and 'White Elephant IT Systems', as discussed previously in Chapter 5. The relevance of these for the effective KATH learning and knowledge management processes redesign is, for the management and central planners, to consider the

regular directorate/unit/team meetings, consultations, short break chats and collaborative learning tools as platforms for critical reflections of the existing practices. The subsequent implication of the emergent evaluation decisions is to enable KATH actors to assess their knowledge gaps, explore ways of filling such missing capabilities and share them with colleagues for improved patient care. The Reality Learning Tools Requirements Regulator module, therefore, contributes to inquiry-based learning, in which attitude problems constraining effective change could be challenged, and all-inclusive learning enabled to facilitate the continuously improving patient care intentions.

The Deferred Action Learning Tools and Synergistic Lens module of *CET* uses practical synergy principles to explain how learning organisations could design and evaluate ICT-supported learning processes to achieve transformative growth intentions. The module draws on the deferred action's constructs of interrelating planning and emergent actuality for successful contextual design. It, therefore, describes all evaluation factors which interrelate the rationalist choices for designing and evaluating planned learning processes, and emergent influences, affecting the success of such planned learning processes including supporting technology as deferred evaluation decisions.

The deferred evaluation decisions, when explored on the evidence from KATH, connote consultative and interim review processes. The module exemplifies triple-loop learning such as attitude change and deferred learning, transformate tools such as SMS text messages and doctor-to-doctor talklines, and third-order change such as continuously improving and positive patient experience, as empirical examples of transformative growth processes and systems.

Typified by the deferred design principles (Patel, 2012), the Deferred Action Learning Tools and Synergistic Lens module is practically significant for explaining how healthcare

managers' strategies could be effectively achieved when embedded in the changing clinical practices. Deferred design, therefore, positions clinician managers' learning in context to explain that managers' decisions could be firmly cohered with clinicians' choices for continuous quality care of patients. So, in emergent actuality, where learning and knowledge management systems are designed to meet users' requirements, managerial dominance in design should be deferred to allow emergent knowledge to shape and sustain strategic actions for desired outcomes.

The contributions of deferred evaluation decisions are exemplified by the move towards a unified healthcare organisation in which actions and responsibilities of both managers and clinicians could be collectively managed in actuality. The Deferred Action Learning Tools and Synergistic Lens module's implication for practice relates to its recommendations for re-designing management-driven (policy-driven) learning and ICT systems flexibly to allow clinicians and users to take greater ownership and more responsibilities in design and implementation of such systems for enhanced patient care. Adopting usable models of reality, such as deferred design decisions (Patel, 2006), for ICT-supported learning uptake would potentially allow KATH to channel its limited resources to effective use and bring time- and cost-savings benefits.

The interpretation of the data revealed the following insightful deferred evaluation decisions as resourceful contributions for (re)-designing KATH's learning and knowledge management systems to achieve continuously improving patient care objectives:

No.	Interpreted Deferred Evaluation Factors Recommended for KATH's Systems Re-Designing	Source	Section
1	Use peer reviews, peer learning and clinical learning as opportunity to inform and situate planned learning in actuality of staff working practices for improved quality care.	Clinician Interviewees 6 & 10	5.2.1
2	Use collaborative learning tools like Moodle to shape prescriptive learning provisions in local contexts of actors' cognitions to validate knowledge	Clinician Interviewee 15	5.2.2
3	Plan and deliver patients' treatment options and care needs in context to reflect changing local and global standards of clinical practice.	Clinician Manager Interviewee 16	5.2.3
4	Design CPD/CME training packages to reflect emerging dynamics of treatment cases and clinicians' learning needs for improved care.	Clinician Interviewees 3, 10, 12, 14 & 15	5.4.1 5.4.2
5	Provide evaluative and emergent feedbacks on CPD/CME provisions to address design and delivery weaknesses, and improve staff training requirements for quality clinical practices of local relevance.	Clinician Interviewees 10 & 14	5.4.1
6	Schedule CPD/CME training attendance to allow cover for patients' consultations and treatment on training days.	Clinician Interviewees 6, 10, 14 & 16	5.4.1
7	Consider online and interactive CPD/CME courses for emergent knowledge sharing and cost-saving while addressing the issue of sending almost all clinicians to training at one time.	Clinician Interviewees 11 & 16	5.4.1
8	Review telemedicine implementation to contextualise clinicians' specifications and location choices for effective clinicians' learning and improved clinical practice.	Interviewees 3, 5, 9, 12 & 15	5.4.2
9	Re-assign ITech technicians' job roles to address specific and contextual needs of user departments as and when required.	Manager Interviewee 7 and ITech Unit	5.4.4
10	Procure evolvable software for updating IT applications to meet actual system requirements of local actors and changing healthcare situations.	Interviewee 7 & 20	5.4.7 5.5.3
11	Provide uninterrupted power supply solution with backup energy supply to cater for unanticipated power cuts and to support effective patient data processing.	Clinician Manager Interviewee 7	5.4.7
12	Review theatre procedures to include videoconferencing technology, and accommodate many specialists and clinicians' involvement other than surgeon and assistant to share expert knowledge and capture unplanned occurrences of surgery.	Clinician Interviewee 6	5.5.1
13	Make budget allocations sensitive to accommodate procurement requisitions for advanced medicine technology requirements and clinicians' ICT needs for improved care.	Interviewees 4, 7, 8, 9, 12 & 14	5.3.2 5.4.2 5.4.3 5.5.2
14	Review internet server and internet-based systems procurement to address the narrow bandwidth, slow internet connection and design mismatch issues, discouraging KATHmail, intranet and internet-based system usage, and on-site eLearning activities.	Interviewees 2, 6, 9, 10, 11, 12, 14, 15, 16 & 18	5.4.2 5.3.3
15	Make quality care evaluation plans responsive to address regularly changing medical practices and diverse ideas emerged from all-inclusive discussions such as weekly team meetings, monthly departmental consultations and regular widening participation forums.	Interviewees 1, 3, 5, 7, 18, 19 & 20	5.5.1 5.5.3
16	Make provisions for accrediting knowledge creation contributors, such as significant ideas from individual junior staff, in knowledge management strategies to serve as an incentive for promoting sustainable clinical knowledge sharing	Clinician Interviewee 12	5.5.1

17	Incorporate coordinated manager-clinician sessions in CPD training programmes to allow exploration of quality care issues requiring attention of management decisions.	Clinician Interviewee 14	5.5.1
18	Co-involve managers and clinicians in healthcare ICT and knowledge systems design to enable clinicians to make design choices that inform managers' system deployment decisions.	Interviewees 1, 3, 4 & 9	5.5.2 5.5.3
19	Make learning technology strategies flexible to accommodate emergent learning tools requirements, such as clinicians' requirements for virtual learning platforms, ePatient systems, SMS text messaging tools and corporate email system, to enable effective staff collaboration, knowledge sharing and self-organising medical learning.	Interviewees 1, 3, 19 & 20	5.5.2 5.5.3
20	Make staff ICT usage policy design amenable to address any unexpected internet and computer misuse such as using computers to play music at working hours.	Interviewees 7	5.5.3

Table 6.1: Deferred Decision Factors for Re-designing KATH's Knowledge-based Systems

Findings from the study reveal the deferred evaluation decisions as useful design factors for re-designing planned-specified learning processes to address actors' actuality of daily practices and desired aims of emergent organisations. Table 6.2 summarises the modular attributes of *CET* with some evidence-based indicators which have future research implications for learning organisations, particularly healthcare settings, aiming to pursue continuously improving objectives.

Input-Output Designer-Evaluator's Platform	Prescriptive Learning & Specified Tools Implementer	Reality Learning Tools Requirements Regulator	Deferred Action Learning & Synergistic Lens
Learning Processes & Aims	Single-Loop Learning <ul style="list-style-type: none"> ➤ Institutionalised procedures ➤ Management-controlled CPD courses & workshops ➤ Managers' learning 	Double-Loop Learning <ul style="list-style-type: none"> ➤ Medical Research ➤ Clinical Meetings ➤ Clinicians' learning 	Triple-Loop Learning <ul style="list-style-type: none"> ➤ Deferred Learning ➤ Attitude Change ➤ Clinician managers' Learning
Supporting Technology & Tools	Automate <ul style="list-style-type: none"> ➤ eLearning 1.0 Tools ➤ Information Processing Systems ➤ Pro Resolve Software 	Collaborate <ul style="list-style-type: none"> ➤ Email ➤ ePatient Systems ➤ Telemedicine 	Transformate <ul style="list-style-type: none"> ➤ Social Software Tools ➤ Doctor-to-Doctor Talk lines ➤ SMS Text Messages
Intended Degree of Change	1st Order <ul style="list-style-type: none"> ➤ Reducing Waiting Time ➤ Only Correcting errors 	2nd Order <ul style="list-style-type: none"> ➤ Getting Treatment Right ➤ Replacing Methods of Operations 	3rd Order <ul style="list-style-type: none"> ➤ Positive Patient Experience ➤ Transformative growth ➤ Continuously improving
ICT-Supported Learning Evaluation Decisions	Planned-Specified Evaluation Decisions <ul style="list-style-type: none"> ➤ Appraisals & Supervisions ➤ Before & After Evaluation Measures 	Emergent Evaluation Decisions <ul style="list-style-type: none"> ➤ Internal Consults ➤ Randomised Evaluation 	Deferred Evaluation Decisions <ul style="list-style-type: none"> ➤ Interim Reviews ➤ Consultative Evaluation

Table 6.2: Evidence-based Cohered Emergent Transformation Matrix

6.2.2 Theoretical Contribution

Three theoretical contributions arise from the study and are summarised as follows. First, deferred ontology, the underpinning theory of the study has emerged as a postmodernist school, 'the deferred school', and fourth category of organisational learning conception for studying healthcare learning systems, as a way to support continuously improving patient care intentions. Deferred ontology explains simultaneous interactions between rational actions and emergence as two inextricable factors for designing social systems in emergent situations (2006). Deferred systems ontology draws on the deferred model of reality to plan social actions in context to reflect changing environments (Patel, 2005).

Deferred constructs have been cited in the IS discipline and recognised by the Association for Information Systems as a theory used in information systems research (Ramrattan, 2010; Patel, 2012). Deferred theory is applied extensively in interdisciplinary research and practice, and contributes to the practice of organisation design, KMS/IT/IS design, and integrated organisation and IT systems design in emergent organisations (Patel and Irani, 1999; Elliman and Eatock, 2005; Dron, 2005, 2007a; Ramrattan, 2010; Patel and Ghoneim, 2011) as discussed in Section 3.2.2. This acceptance has been extended, in this study, to learning organisations to illuminate the potential of the theory to categorise the literature on organisational learning into ‘the deferred school’, as a body of knowledge that mixes the rationalist conceptions with the emergence school in context to achieve the transformative growth objectives of emergent organisations.

The theoretical relevance of the theory of deferred action is also evidence in the way the study’s findings validate the applicability of the theory to design ICT-supported learning organisations, including its generalisability for Ghana healthcare learning systems, where it has, hitherto, not been empirically confirmed. Phillips and Pugh’s (2005:62) support for this thread of contribution relates to applying techniques and knowledge developed in one country to another, just as the researcher transferred knowledge developed from Brunel University to the context of KATH.

Second, deferred learning, a new attribute of deferred constructs has been added to knowledge to explain how to achieve triple-loop learning and third order change in actuality. This is where prescriptive learning provisions are enabled in the local context of actors’ cognitions to achieve the real results intended by organisations. This contribution extends single- and double-loop learning conceptions to a mutual and more realistic learning process for achieving transformative growth in emergent organisations. Deferred learning harmonises

managers' learning and workers' learning to articulate a better understanding of perspective change and achieve transformative growth in emergent environments, where planned actions are unsustainable and intuitions irreducible.

Third, the *CET* construct has been developed from deferred ontology and confirmed with empirical evidence from KATH to demonstrate how learning organisations could design organisational learning systems in actuality to address users' and changing environmental needs to achieve continuously improving transformation. Emerging from the theory of deferred action, the *CET* model invokes the reality tenets of the theory of deferred action to challenge structured systems ontology for its lack of active models to resolve design failures in emergent organisations, and confirms deferred action's relevance for modeling emergent theories in context (Patel and Hackney, 2010).

The theory of deferred action, therefore, confirms the theoretical underpinning of the *CET* model, which is in turn confirmed with empirical data from KATH to validate the model's definitive theoretical contributions. The model is, therefore, notable for drawing practical conclusions into theory, as an evidence-based model for designing and evaluating organisational learning and knowledge management processes to support transformative intentions. By this, the *CET* model provides a practical toolkit for achieving and sustaining higher-order learning, such as triple-loop learning (redefined as deferred learning), a possibility whose attainment was postponed to unforeseeable future by anecdotal studies (Gash and Orlikowski, 1991; Chen et al, 2003) because of the difficulty involved in challenging long held assumptions in social organisations. The *CET* model is, therefore, an actuality-based transformative growth framework, a '*real*' critical epistemology that challenges established social systems in actuality and proffers inclusive change. Its implications for future research would be explained in Section 6.3 shortly.

6.2.3 Methodical and Methodological Contribution

Two methodical and methodological contributions have also emerged from the study. First, three schools of thoughts—the rationalist, the emergence and the balanced-view, were applied as a methodical literature review approach to identify organisational learning and knowledge management design and evaluation mismatch problematics. The critical researcher considers this logical exposition useful for knowing system design and evaluation problematics including power sharing issues from relevant interrelated subject themes to solve management and organisational problems in actuality. This exploration has led to the conceptualisation of the '*rationality-emergent*' gap, a terminology to envelop organisational learning, knowledge management and ICT design and evaluation disparity problematics.

Two, by combining the critical hermeneutics and narrative analyses to explore the data interpretation, the critical researcher approached the sense-making of ethnographic data from critical theory and qualitative pluralism positions to explain how emergent voices could bring change to healthcare learning processes. Critical hermeneutic analysis help to question and criticise the limits of KATH learning systems and ICT failures holistically, whereas critical narrative analysis help to unveil salience stories required for re-designing the systems. Their integration promised a useful lens to interpret the data for the participants' consumption with opportunity to re-design the existing KATH knowledge systems to support improved patient care.

6.3 Future Research

This study began with a premise that planning strategically for transformative growth is problematic for learning organisations because literature rarely explains how to plan in actuality to cater simultaneously for design mismatch issues and power relations. Earlier

contributions, though identified triple-loop learning and third-order change as ultimate points of achieving transformative growth with robust learning tools (Gash and Orlikowski, 1991; Bartunek and Moch, 1994; Chen et al, 2003), they rarely provide practical solutions to explain how to achieve higher-level learning and transformative growth, making the concepts difficult to realise. For pessimists, it would require a deep redefinition of human disposition and changing long held assumptions to achieve higher-level learning and transformative growth (Visser, 2003; Chen et al, 2003) or even postponement of the triple-loop learning attainment to unforeseeable future (Gash and Orlikowski, 1991).

The study has, however, drawn on the theory of deferred action to demonstrate that the attainment of triple-loop learning and third-order change, the transformative growth conceptions, is conceivable. First, the *CET* model presents theoretical possibility for achieving triple-loop learning, a kind of composite third-order phenomenon explainable with deferred learning, where prescriptive and specified learning provisions are contextualised in actors' locale to achieve the intended results of emergent organisations. Second, the *CET* model is empirically confirmed to show that it provides a better understanding of planning to achieve transformative growth by integrating planned-specified evaluation decisions and emergent evaluation decisions in contextual situations as deferred evaluation decisions.

The empirics have shown that, it is possible to plan strategically for transformative growth with the *CET* model, developed from the theory of deferred action, which adjuncts strategic decisions with everyday practices of organisational staff, local actors whose actions and inactions impact on business strategies. The study, therefore, has merits in sustained change strategies which organisational learning designers, aiming to achieve transformative growth, could not afford to despise. So, it is promising for practitioners and researchers investigating

the effectiveness of technology-supported learning organisations to contextualise their design and evaluation questions within the properties of the *CET* model.

While formulation of the *CET* postulate explains how to plan strategically to achieve transformative growth, the triple-loop learning and third-order change phenomena, in emergent organisations, the quantitative impact of learning inclusive of actuality on transformative learning organisations is unaddressed. This study appropriated the theory of deferred action in qualitative traditions so the researcher had no privilege to investigate the variations in the *CET*'s factors arising from omissions, commissions and changes of any particular evaluation dimension(s) that could impact on learning inclusive of actuality. This conclusion leaves opportunity for future empirical work to simulate the *CET* model, and its underlying deferred model of reality, for evaluating the impact of technology-supported learning on emergent organisations.

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7 Appendices

Appendix 1.1: List of Publications, Academic Recognition and Presentations during the PhD Study

Conceptual Paper Ready for Journal Publication

Nyame-Asiamah, F. and Patel, N. V. (2012). *'Designing and Evaluating Technology-Enhanced Transformative Learning Organizations: The Deferred Model of Reality'*

Peer Reviewed Journal Publications

Nyame-Asiamah, F. and Patel, N. V. (2010). *'Informing Knowledge Management Systems Design and Evaluation with the Theory of Deferred Action'*. The International Journal of Technology, Knowledge and Society, Volume 6(2): 191-210

Peer-Reviewed Research Protocol

Nyame-Asiamah, F. (2010). *'Evaluating the Role of Knowledge Management Systems in Learning Organisations - A Case Study of Komfo Anokye Teaching Hospital'*. Committee on Human Research and Publication Ethics, 20 September 2010, Kumasi, Ghana

Refereed Conference Publications

Nyame-Asiamah, F. (2012). *'The Deferred Model of Reality for Re-designing ICT-Enhanced Learning and Knowledge Management Processes at KATH, Ghana (Working Paper)'*. Proceedings of the Brunel Business School Doctoral Symposium, 27-28 March, London, England

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Nyame-Asiamah, F. (2010). *'Evaluating the Role of Knowledge Management Technologies in Learning Organisations - A Case Study of Whipps Cross University Hospital (Working Paper)'*. Proceedings of the Brunel Business School Doctoral Symposium, 4-5 March, London, England

Opuni, A. M. and Nyame-Asiamah, F. (2010). *'Designing an Effective Internally Generated Funds Utilisation System for Mission Hospitals – A Case Study of SDA Hospital Asamang'*. Proceedings of the 4th International Conference on Design Principles and Practices, University of Illinois, USA, 13-15 February 2010

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Nyame-Asiamah, F. (2009). *'Web2.0 and Business Transformation'*. Proceedings of eLearning2.0 International Mini-Conference, 6-7 July, Brunel University, London

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Nyame-Asiamah, F. (2009). *'Assessing the Role of Knowledge Management Technologies in Learning Organisations'*. Proceedings of the Brunel Business School Doctoral Symposium, 23-24 March, London, England

Peer-Reviewing and Academic Recognition

2010

Associate Editor - The International Journal of Technology, Knowledge and Society, CGPublisher

Invited Presentation – Healthcare Research Ethical Process Presented to the Brunel Business School MBA Students on 10 December 2010

2009

Peer Reviewer - The European and Mediterranean Conference on Information Systems, (EMCIS2009). Crowne Plaza Hotel, Izmir, 13-14 July 2009

Conference Session Chair - Reflective Practice and CPD Session. The Learning Forum London Conference, European Institute for E-Learning (EIFEL), 22-24 June, City University, London

Non-Refereed PhD Consortium Presentations

2012

'Research Findings and Implications'. Presented at the ISEing PhD Consortium Brunel Business School, January 2012

2011

'Research Findings and Methods of Analysis'. Presented at the 'Deferred Action PhD Research Group' Seminar in Brunel Business School, August 2011

Non-Refereed Conference Submission unable to attend

Nyame-Asiamah, F. (2011). *'Ethnographic Study using a Critical Narrative Method'*. Proceedings of the Research2 PhD Data Analysis Conference 2011, 7-8 July 2011, Loughborough University, England

Appendix 4.1: Brief Proposal to the R & D Office of Whipps Cross University Hospital

Evaluating the Role of Knowledge Management Systems in Learning Organisations - A Case Study of Whipps Cross University Hospital

Background of the Research - Organisations can improve working practices through collective learning and this can be effectively achieved with the support of appropriate information and communication technology (ICT). However, the existing models of technology adoption are either too creative or too rigid and therefore fail to meet users' learning requirements. In addition, the processes of achieving effective learning are often influenced by organisational structures which draw a dividing line between managers' learning and workers' learning. These problems prevent organisations from achieving the desired learning goals.

Problem in Context - Technology adoption in the NHS is influenced by four different models spearheaded by the Department of Health, local management, clinicians and consumers (Liddell et al, 2008), but these have not fully brought the expected change. The Commons' Public Accounts Committee described the IT programme for the NHS as disparate systems (Shamash, 2007). The NHSmail was also criticised for achieving only 12% active usage, representing 153,000 of 1.3 million NHS staff, yet the critics failed to acknowledge the fact that the role of health care professionals is changing to fit technology adoption (Liddell et al, 2008). It was also reported that the diverse professionals and clinicians of the NHS have self-determining and self-motivated attitude to respect managers' opinions yet they frequently oppose being managed and supervised (Weightman, 1996). Consequently, effective communication was highlighted in the 'Case for Change Engagement Plan' contained in the minutes of Whipps Cross Hospital Trust Board's meeting held in March 2009. The question is: 'How effectively can the NHS learn to transform working practices through ICT adoption and improve service delivery?'

Research Aim and Objectives - This study aims to evaluate how information and communication technology help the NHS to learn better to improve health care delivery service. Specific objectives are:

- i. To examine the role of planning ICT adoption for organisational learning
- ii. To identify and analyse the effect of self-organised outcomes of integrated managers' learning and workers' team learning in the NHS
- iii. To evaluate the importance of using organisational learning support technologies to achieve emergent outcomes for the NHS
- iv. To examine how the NHS use the available knowledge management technologies to capture, share and manage their members' knowledge
- v. To investigate how the NHS create a culture of transformative growth through higher level learning
- vi. To provide an evidence-based framework for developing effective learning information systems for the NHS

Methodology and Research Design - The research employs an ethnographic case study approach involving researcher collecting data through in-depth interviews, focus group discussions, observation and documentation. Participants will be drawn from managers and workers of the diverse cluster groups of the Trust. Part of the data will be gathered through the Trust's intranet system and the whole fieldwork exercise will take 5-8 months. Data collection design will cover: Organisational structure and learning programmes, learning tools and

planned learning goals, emergent outcomes and knowledge management systems, and actual organised learning and transformative growth.

Significance of the Research - Practically, the expected results will transfer the technology adoption decisions from the government to the NHS Trusts in which users' requirements will take precedence over management specifications. The findings will likely change the management driven learning programmes and allow workers take greater ownership and more responsibilities in learning activities. The overall benefits for Whipps Cross Hospital will include effective deployment of ICT systems that support tailorable clinical care of patients, improved knowledge management of the Trust's staff and better working communications. Theoretically, the outcomes of the study will provide a framework for designing and evaluating information and communication technology that can effectively support collective learning processes in the NHS Trusts.

References:

Liddell, A., Adshead, S., Burgess, E. (2008). *Technology in the NHS: Transforming the Patient's Experience of Care* Available at:
http://www.kingsfund.org.uk/research/publications/technology_in_the.html [Accessed on 10 January 2009]

Shamash, J. (2007). *'MPs Condemn NHS IT Project'*. General Practitioner, April, p4

Weightman, J. (1996). *'Managing People in the Health Service'*. I.P.D. London (Ed.)

Zairi, M., Jarrar, Y. F. (2001). *'Measuring Organizational Effectiveness in the NHS: Management Style and Structure Best Practices'*. Total Quality Management & Business Excellence, 12(7): 882 - 889

Appendix 4.2: Approval Letter from the Brunel Business School (BBS) Research Ethics Committee for the NHS REC



Brunel University, Uxbridge,
Middlesex, UB8 3PH, UK
Telephone +44 (0)1895 274000
Web www.brunel.ac.uk

Brunel Business School
Research Ethics Committee

25 January 2010

STATEMENT OF ETHICS SPONSORSHIP/INDEMNITY

Proposer: Frank Nyame-Asiamah

Title: Analysing the Role of Knowledge Management Systems in Whipps Cross Hospital

It should be noted that, following internal scrutiny and approval in accordance with Brunel University Research Ethics Standard Operating Procedures, the University agrees to act as Sponsor and to provide appropriate indemnity in relation to the above study.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'T. Eldabi', written in a cursive style.

Dr. Tillal Eldabi
Chair, Research Ethics Committee
Brunel Business School

Appendix 4.3: Certificate of Notification from the KATH R & D Office



**KOMFO ANOKYE TEACHING HOSPITAL
RESEARCH AND DEVELOPMENT UNIT (R & D)
*CERTIFICATE OF REGISTRATION***

REG. NO. RD/CR093

This is to certify that

Prof/Dr/Mrs/Mr/Ms. Frank Nyame-Asiamah
has registered his/her proposed study titled Evaluating the Role of
Knowledge Management Systems in Learning Organisations - A Case Study of
Komfo Anokye Teaching Hospital
.....with the Research and Development Unit.

Date 12th May, 2010

Name of issuing officer

Bernard Arlin

Signature



²Must tally with registration number on the registration form

Appendix 4.4: Approval Letter from the Brunel Business School (BBS) Research Ethics Committee for KATH & CHRPE



Brunel University, Uxbridge,
Middlesex, UB8 3PH, UK
Telephone +44 (0)1895 274000
Web www.brunel.ac.uk

**Brunel Business School
Research Ethics Committee**

06 October 2010

STATEMENT OF ETHICS SPONSORSHIP/INDEMNITY

Proposer: Frank Nyame-Asiamah

Title: Evaluating the Role of Knowledge Management Systems in Learning Organisations – A Case Study of Komfo Anokye Teaching Hospital

It should be noted that, the Brunel Business School's research ethics committee has scrutinised the above named proposal. Acting under a delegated authority from Brunel University Research Ethics, the school's committee is satisfied that there is no objection - on ethical grounds - to the proposed study. Approval is given on the understanding that the applicant will adhere to the terms agreed with participants and to inform the committee of any change of plans in relations to the information provided in the application form.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Tillal Eldabi', written in a cursive style.

**Dr. Tillal Eldabi
Chair, Research Ethics Committee
Brunel Business School**

Appendix 4.5: Approval from Letter from the CHRPE



KWAME NKURUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
COLLEGE OF HEALTH SCIENCES

SCHOOL OF MEDICAL SCIENCES
COMMITTEE ON HUMAN RESEARCH PUBLICATION AND ETHICS

Our Ref: CHRPE/Student/116/10

September 20, 2010

Mr. Frank Nyame-Asiamah
Brunel Business School
Uxbridge, England

Dear Sir,

LETTER OF APPROVAL

Protocol Title: *"Evaluating the Role of Knowledge Management Systems in Learning Organisations – A Case Study of Komfo Anokye Teaching Hospital"*

Proposed Site: Komfo Anokye Teaching Hospital, Kumasi

Sponsor: Principal Investigator

Your submission to the Committee on Human Research Publication and Ethics on the above named protocol refers.

The Committee has considered the ethical merit of your submission and approved the protocol. The approval is for a fixed period of one year, renewable annually thereafter. The committee may, however, suspend or withdraw ethical approval at anytime if your study is found to contravene the approved protocol.

Data gathered for the study should be used for the approved purposes only. Permission should be sought from the committee if any amendment to the protocol or use, other than submitted, is made of your research data.

The Committee should be notified of the actual start date of the project and would expect a report on your study, annually or at close of the project, whichever one comes first. It should also be informed of any publication arising from the study.

Thank you Sir, for your application.

Yours faithfully,



Rev. Prof. John Appiah-Poku
Honorary Secretary
For: CHAIRMAN

Room 8 Block J, School of Medical Sciences, KNUST, University Post Office, Kumasi, Ghana
Phone 233-3220-63248 or 233-20-5453785 Email: chrpe.knust.kath@gmail.com

Appendix 4.6: A cover letter amending the CHRPE review comments

PhD Researcher
Room EJ006
Brunel Business School
Uxbridge, UB8 3PH
England

25 August 2010

The Administrator
CHRPE Office
Room 8 Block J
Anatomy Block 3
KATH
Ghana

Dear Ms Anane-Sarpong,

Evaluating the Role of Knowledge Management Systems in Learning Organisations - A Case Study of Komfo Anokye Teaching Hospital

Thank you for expediting the review of my application. I appreciate the CHRPE's expert review. Please find below my response to the concerns raised:

On CHRPE forms:

1. 2.1 The Five year programme of work has been cited as (Ministry of Health, 2009). The full reference has also been provided:

Ministry of Health (2009). *'Creating Wealth through Health - The Health Sector Programme of Work: 2007-2011'*. Available at: http://www.moh-ghana.org/policies_content.aspx?id=11 [Accessed on 10 September 2009]

2. 2.14 A compensation package issue is addressed as follows:

As a show of our appreciation, we intend to compensate participants with reasonable lunch and/or refreshment vouchers for their time and inconvenience.

On the Participant Information Leaflet (PIL) and Consent Form:

3. The PIL form has amended to address the participants actively as suggested.

4. An appropriate compensation package (reasonable lunch and/or refreshment vouchers) has been chosen. Both the PIL form and research protocol have been amended accordingly.

5. The contact landline of the Chairman has been changed as suggested.

6. Consent form provisions for mother and father have been deleted.

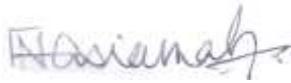
General Issues:

7. Requirements for seeking permission from the relevant Heads of departments before accessing minutes of meetings have been addressed in section 2.4 of the CHRPE form and in page 6 of the research protocol.

8. Proposal to direct the participants to the Brunel University Research Archive site has been addressed under the confidentiality section of the PIL.

I am looking forward to hearing your favourably from you, please.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Frank Nyame-Asiamah', with a horizontal line extending to the right.

Frank Nyame-Asiamah
(PhD Researcher)

Appendix 4.7: Approval Letter from the Project Supervisor for KATH & CHRPE

Brunel Business School

Head of Department
Professor Zahir Irani



Uxbridge, Middlesex UB8 3PH
United Kingdom
Telephone: 01895 265295

Dr Nandish V. Patel
Ph.D, M.sc., B.A. (Hons), Cert. Ed., MIET, ILTM

Director Brunel Organization and Systems Design Centre
Lecturer in IT-Enabled Management Systems

E-mail: nandish.patel@brunel.ac.uk

Your Ref: RD/CR093

21 June 2010

To Whom It May Concern,

Frank Nyame-Asiamah

Thesis Title: *Evaluating the Role of Knowledge Management Systems in Learning Organisations – A Case Study of Komfo Anokye Teaching Hospital*

I write this letter as the supervisor for Mr Frank Nyame-Asiamah who registered with us in October 2008.

This is to confirm that Frank is registered as a research student (PhD) with us at Brunel Business School.

He is required to undertake empirical research in order to complete his dissertation.

Yours sincerely,

Dr. Nandish Patel
Ph.D, M.sc., B.A. (Hons), Cert. Ed., MIET, ILTM

In accordance with Brunel University regulations this reference is given in good faith but without legal responsibility

Appendix 4.8: Sample Email Sent to Informants & HoDs before the Site Visit

Dear Dr ...,

I am pleased to hear that you might be able to help me undertake a PhD research in your clinical department starting 6 October 2010. In fact, Mr, your contact speaks highly of you and I appreciate your willingness to help. The study evaluates 'the Role of Knowledge Management Systems in Learning Organisations – A Case Study of Komfo Anokye Teaching Hospital'.

The proposal for the study has been formally approved by the Committee on Human Research Publication and Ethics (CHRPE). Please find attached a copy of the letter demonstrating the CHRPE's approval of the study. I have attached the Participant Information Leaflet and Consent Form outlining the intentions and processes of the study. I would be grateful if you could find me 5 participants in your department including yourself.

As a brief introduction of myself, I am a third year PhD researcher at Brunel University. I am also a qualified teacher lecturing in business at Hackney Community College, London. As part of my research, I have published some peer reviewed papers and presented papers in academic/professional conferences. I coordinated a British Council sponsored International Educational Project involving three institutions and led selected students to display the findings for the Queen of England's visit in Turkey, in 2008.

My co-investigator, Mr Augustine Acheampong, a staff in IT department will be willing to answer any immediate questions. He can be contacted on 0264803770 or at akacheampong@kathsp.org I can always be contacted at Frank.Nyame-Asiamah@brunel.ac.uk Better still, I will be able to speak with you directly if you let me have your contact number. My telephone contacts are: 0044-7930498535 and 0243991025(temporary local number to be activated on 20 October 2010).

I am looking forward to hearing favourably from you soon, please.

Yours Sincerely,

Frank Nyame-Asiamah

<p>15 questions grouped in 5 themes</p> <p>Using probes to reinforce clarity of responses:</p> <ul style="list-style-type: none"> • Could you give specific examples? • Would you explain further? • Is there anything else? • How did it happen? etc 	<p>Proposed Healthcare Managers Interview Questions</p>
	<p>Learning Technology and Team Collaboration (Objective 1)</p> <ol style="list-style-type: none"> 1. Of what importance are the features of the internet-based learning technology such as emails, ePortfolios and eDiscussion boards to the clinician and manager teams' collaboration? <i>Please explain with specific examples</i> 2. How user-friendly are the Hospital's learning technology for extracting and sharing staff knowledge? <i>Could you give specific examples for the tools, please?</i> 3. Comparing different ICT systems, which of the Hospital's learning tools do you consider most effective for supporting communication between clinicians and managers? <i>Please explain why you think so</i>
	<p>Staff Learning and Quality Care Delivery (Objective 2)</p> <ol style="list-style-type: none"> 4. What are the current healthcare quality plans of the Hospital? 5. In what ways is staff learning important for quality care delivery? <i>Which learning processes would consider most important here</i> 6. What specific learning tools do managers use to manage the Ghana Health Services learning for National Standards? <i>How are these designed?</i> 7. What specific training courses does the Hospital provide for the clinicians? What are the objectives of these?
	<p>ICT-Supported Learning Planning (Objective 3)</p> <ol style="list-style-type: none"> 8. What specific roles do clinicians play in setting the Hospital's ICT-supported learning goals? 9. How might the clinical professionals' role in ICT planning differ from the managers' decisions on technology uptake for the Hospital? 10. How important is planning for ICT-supported learning to the Hospital's aim of achieving improved healthcare provision?
<p>ICT-Supported Learning Issues and Solutions (Objective 4)</p> <ol style="list-style-type: none"> 11. What have been the main staff issues with technology adoption for learning in the Hospital? How could these have been resolved? 12. What potential confidentiality issues are associated with the Hospital's learning technologies? How are these been tackled? 	

	<p>ICT-Supported Learning Evaluation Approaches (Objective 5)</p> <p>13. What specific benefits, in your opinion, has the ICT-supported learning brought to the Hospital? How important are these for quality healthcare provision? <i>How do you know this?</i></p> <p>14. How sustainable are the Hospital's ICT-supported learning processes? How do they support varied healthcare needs?</p> <p>15. How beneficial could widening participation (including clinicians) in planning and evaluation of the Hospital's ICT learning systems be for effective learning? <i>Why do you think so?</i></p>
<p><i>Additional Comments</i></p> <p><i>What happens after the interview?</i></p> <p><i>Gratitude</i></p>	<p><i>Closing Remarks</i></p> <p><i>Is there anything more you would like to say?</i></p> <p><i>We will analyse your responses and information other participants have provided and write our draft report in four months later. I will send you a copy of the report if you are interested. The final report will be published on academic websites and you will be directed to access this free of charge if you wish. We will also publish a snap shot of the findings on the Hospital's website in six months after this interview.</i></p> <p><i>Thank you for your time and participation</i></p>

Appendix 4.9b: Interview Guides & Questions

Clinicians Interview Guide

<p>Key Issues</p> <ul style="list-style-type: none"> • Appreciation • Interview's name • Objective • Duration • Nature and processes • Confidentiality • Opportunity to ask questions • Consent 	<p>Introduction</p> <p>I want to thank you for offering to meet with me and talk about your experiences in learning on the job. My name is Frank Nyame-Asiamah. I would like to talk to you about your opinions and experiences in the learning processes used by the clinicians and managers of KATH to improve healthcare delivery service.</p> <p>Our objective is to propose an agreed framework for designing and evaluating learning systems for KATH based on the hospital's information and communication technologies.</p> <p>I would like to ask 15 main questions, which are grouped into five key themes. The interview will last for about 45-minutes. I would like to tape-record our discussions and take notes at the same time. The reason is, I cannot possibly write faster enough to get all your answers but I do not want to miss your responses. We would be thankful if you could please speak up so that we do not miss your comments.</p> <p>Your responses will be kept confidential and only be shared with the members of the research team for quality assurance. Information to be included in our report, including direct quotations will be anonymised, and we guarantee these will not identify you as the respondent.</p> <p>Remember you participation is completely voluntary and you do not have to talk about anything you are not comfortable with. You may end this interview at any point without giving reasons for your decision.</p> <p>Are there any questions you want to ask about what I have explained? Are you willing and ready to participate in the interview? If so, please sign below to demonstrate your consent</p> <p>_____</p> <p><i>Interviewee</i> <i>Witness</i> <i>Date</i></p>
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<p>15 questions grouped in 5 themes</p> <p>Using probes to reinforce clarity of responses:</p> <ul style="list-style-type: none"> • Could you give specific examples? • Would you explain further? • Is there anything else? • How did it happen? etc 	<p>Proposed Clinicians Interview Questions</p>
	<p>Learning Technology and Team Collaboration (Objective 1)</p> <p>16. Of what importance are the features of the internet-based learning technology such as emails, ePortfolios and eDiscussion boards to the clinician and manager teams' collaboration? <i>Please explain with specific examples</i></p> <p>17. How user-friendly are the Hospital's learning technology for extracting and sharing staff knowledge? <i>Could you give specific examples for the tools, please?</i></p> <p>18. Comparing different ICT systems, which of the Hospital's learning tools do you consider most effective for supporting communication between clinicians and managers? <i>Please explain why you think so</i></p>
	<p>Staff Learning and Quality Care Delivery (Objective 2)</p> <p>19. In what ways is staff learning important for quality care delivery? <i>Which learning processes would consider most important here</i></p> <p>20. What are your motivations for taking CPD courses or job-related training? <i>Anything else</i></p> <p>21. With reference to specific examples, how effective do you find the ways CPD/training programmes are delivered?</p> <p>22. What specific training courses does the Hospital provide for the clinicians? <i>What are the objectives of these courses?</i></p>
	<p>ICT-Supported Learning Planning (Objective 3)</p> <p>23. What specific roles do clinicians play in setting the Hospital's ICT-supported learning goals?</p> <p>24. How might the clinical professionals' role in ICT planning differ from the managers' decisions on technology uptake for the Hospital?</p> <p>25. What specific technology or ICT packages have the Hospital deployed to support clinical learning processes? What factors were considered for their implementation?</p>
<p>ICT-Supported Learning Issues and Solutions (Objective 4)</p> <p>26. What important factors were not foreseen or overlooked when planning for the Hospital's ICT-supported learning? <i>Please explain the impact these have had on effective learning</i></p> <p>27. What have been the main staff issues with technology adoption for</p>	

	<p>learning in the Hospital? How could these have been resolved?</p> <hr/> <p>ICT-Supported Learning Evaluation Approaches (Objective 5)</p> <p>28. How sustainable are the Hospital’s ICT-supported learning processes? How do they support varied healthcare needs?</p> <p>29. What are the key criteria for measuring the quality of learning processes of the Hospital? <i>How open are these?</i></p> <p>30. What are the main issues with the application of professional self-regulation standards for evaluating the Ghana Health Services staff learning? <i>How could these be issues?</i></p>
<p><i>Additional Comments</i></p> <p><i>What happens after the interview?</i></p> <p><i>Gratitude</i></p>	<p><i>Closing Remarks</i></p> <p>Is there anything more you would like to say?</p> <p>We will analyse your responses and information other participants have provided and write our draft report in four months later. I will send you a copy of the report if you are interested. The final report will be published on academic websites and you will be directed to access this free of charge if you wish. We will also publish a snap shot of the findings on the Hospital’s website in six months after this interview.</p> <p>Thank you for your time and participation</p>

Appendix 4.10: Focus Group Questions - 1 hour session

Questions	Objective
1. Which learning tools including ICT systems are more suitable for capturing and sharing tacit knowledge in KATH?	1
2. Of what importance are these tools to collaborative learning between managers and clinician staff including decision making?	1
3. In what specific ways could the KATH clinicians and managers' team collaboration impact on patient care?	2
4. What specific factors are necessary for consideration when planning learning systems for quality healthcare in the KATH?	3
5. What specific issues (emergence) may change these factors in the course of planning and implementation?	4
6. How realistically can the KATH account for these issues when the learning systems are being implemented? (actuality)	4
7. How do the hospital design and implement learning programmes capable to address patient care issues?	5
8. Which group of people are involved and what specific roles do they play from planning stages to implementation and evaluation stages?	3-5
9. To what extent can the clinicians be involved in planning and evaluation of ICT-supported learning systems in KATH?	5
10. How could the clinician involvement improve continuous staff learning processes and the quality of patient care ?	1-5
11. How could the KATH empower clinicians to be more involved in ICT deployment decisions and deploy tailorable technology for improved learning processes? (Deferred decisions)	1-2, 4-5

Appendix 4.11: Consent Forms and Participant Information Sheets

Participant Information Leaflet and Consent Form

This leaflet must be given to all prospective participants to enable them know enough about the research before deciding to or not to participate

Title of Research:

Evaluating the Role of Knowledge Management Systems in Learning Organisations - A Case Study of Komfo Anokye Teaching Hospital

Name(s) and affiliation(s) of researcher(s):

This study is being conducted by Frank Nyame-Asiamah of Brunel Business School - Brunel University, London

Background (Please explain simply and briefly what the study is about):

A study explores the learning processes including ICT used by the KATH managers and clinicians to improve healthcare delivery service. How effectively can we transform working practices through ICT-supported learning? Can you help us understand how well is the managers' learning integrated with clinicians' learning to improve service delivery? How effectively do you think we can use ICT to capture, share and manage the KATH's staff knowledge? The answers to these questions will improve our understanding of how ICT can help KATH staff learn better to improve care service delivery.

Purpose(s) of research:

The purpose of the study is to propose an evidence-based framework for designing organisational learning management processes using information and communication technologies of KATH. We believe that Ghana Health Services/Teaching Hospitals can improve working practices through collaborative ICT-supported learning but we know very little about how we can better bond the healthcare managers' learning with clinicians' learning. Secondly, the Healthcare Service is often criticised for not achieving the expected change with the available learning systems including ICT. Yet, the critics fail to acknowledge the fact that, the existing models of technology adoption fail to meet users' learning requirements, and that the role of healthcare professionals is changing to fit technology adoption. In the midst of these debates, we will look into the role of planning ICT adoption for learning and analyse how ICT support the integration of managers' learning and clinicians' team learning in KATH. We also want to evaluate how the Hospital use ICT to manage their staff's knowledge and examine the importance of using learning support tools to improve service delivery. Based on the outcomes of these objectives, we will develop an evidence-based framework for designing effective learning information systems for KATH

Procedure of the research, what shall be required of each participant and approximate total number of participants that would be involved in the research:

The intentions of the study will be introduced to you through a 30-minute short PowerPoint presentation and questions session. We intend to engage 20 participants in one-to-one interviews lasting for approximately 60-minutes in the early stages, and an hour focus group discussion involving 5-10 participants, to be held at a later stage of the study.

The interviews will cover your experience and opinions of the Hospital learning processes including ICT, the role of staff learning in quality care delivery, the Hospital's ICT planning and implementation issues. We will also seek your opinion and experience of how collective design

and evaluation of the KATH learning systems could improve working communication and staff learning. We would like to tape-record interviews in order to produce accurate reporting of the study and, we will be happy to give you a copy of the transcript on request. In case you decide not to have your voice recorded, we will allow your responses be provided in writing. We will, in all cases, ask for your consent before recording or taking notes, and we will respect without question your right to withhold that permission.

We will also ask for your consent to take part in a focus group discussion which recaps the key areas covered in the initial one-to-one interviews. We will ask for your views on how the Hospital could collectively design an evidence-based framework for developing and evaluating effective learning systems. The focus group will be organised in a café-style discussion, in which your creative answers will be stated on flip chart sheets (sugar papers) for further discussion. We believe that your contribution in this discussion will help us develop an evidence-based framework for evaluating effective ICT systems, which has implications for management practice and improved healthcare delivery. Your consent to any request will be voluntary, and we will respect your decision regarding whether or not you participate in interviews or focus group or both.

Risk(s):

Spending 1 hour 45 minutes (2 hours 45 minutes for those who will take part in both interviews and focus group) over the period may be considered too long, and a burden for some participants especially in relation to tight working schedules. Other risks may include tape recording and tracing your identities, storing your traceable data on computers and how to manage participants' confidentiality generally. These risks will be managed as follows:

The Researcher will arrange convenient slots with you. If you become distress and do not want you voice recorded, you will be allowed to have your responses written. If you become extremely busy and cannot attend the interviews, you will be allowed to provide your responses in a refined structured interview format. Similarly, if it becomes difficult to fit your working arrangements within the focus group slot, you will be given opportunity to chip in your views through teleconferencing exchanges, and answer questions. However, this will be limited to 10% of sample size.

In general, your anonymity will be maintained throughout the data collation, analysis and reporting, and the assurance of your confidentiality is provided under the confidentiality section below. The researcher will not intend storing your traceable data, and any unintended capturing of personal data through tape recording of interviews will be deleted during script editing. Pseudonyms will be used to anonymise traceable data and stored on a password protected laptop and in manual files during the period of the field work. Your name will therefore not be used in the report and your confidentiality will be assured as indicated under the confidentiality section below.

Your comments, if cited, will also be anonymised. Your participation is voluntary and the researcher will respect your decision to withdraw from the study at any time.

Benefit(s):

The study aims to find practical solutions to the technology adoption mismatch issue between managers' decisions and users' requirements as well as finding workable solutions to a dividing

line between managers' learning and clinicians' learning. We would therefore like to explore your experience and provide answers to the above problems. Practically, the findings will help KATH:

- i) To develop better working communications for improved healthcare delivery services
- ii) To develop improved ways of managing the staff's knowledge
- iii) To deploy evidence-based ICT systems that support effective learning and tailorable clinical care of patients
- iv) To potentially achieve cost-savings in the KATH's learning technology uptake through a joint-tested approach by the users and the managers.

Confidentiality:

We guarantee that your involvement in this study, and all information you provide, will be treated in confidence. We will comply with the UK Data Protection Act 1998, and will guarantee conformity with its provisions. All interview and focus group discussion transcripts will be anonymously coded and stored on secure electronic media. We will destroy the original data kept on computers or manually kept, three years after the end of the study. Information obtained from the Hospital documents such as annual reports and minutes of meetings and through our observations will be aggregated for the writing of reports and academic publications. However, individuals and departments' names will not be disclosed. For the purposes of clarity, direct quotations of some participants may be cited in the report but these will be anonymised to disguise the source. The final report will be published on the Brunel University Research Archive website and you will be directed to access this free of charge if you wish. We will also publish a snap shot of the findings on the KATH's website. This will demonstrate how collaborated technology-supported learning by the staff could help the Hospital improve its healthcare delivery service.

Voluntariness:

Your participation in this study is completely voluntary and confidential. You are not obligated to participate and you may withdraw at any time without giving reasons for your decision. We will ask for your consent to participate in both interviews and focus group discussions and you may choose not to participate.

Alternatives to participation:

The expected outcomes of the study will provide a practical guide for designing and evaluating learning systems for KATH. However, if you choose not to participate, this will not affect your treatment in this hospital.

Withdrawal from the research:

Your decision to take part in this study is entirely voluntary and confidential. Though your participation will be much appreciated, you may withdraw at any time, before or during the interview and the focus group discussion without giving reasons for your decision. You may also choose not to answer any question you find uncomfortable or private.

Consequence of Withdrawal:

If you choose to take part in the study and later change your mind, please contact the Researcher on 00447930498535 (temporary local number - 0243991025) or at Frank.NyameAsiamah@brunel.ac.uk. Your decision to withdraw will be completely respected without questions, and will be treated as confidential. However, some of the information that may have been obtained from you, before you chose to withdraw, may have been modified or used

anonymously in analysing reports and publications. These cannot be removed anymore but we do promise to make good faith effort to comply with your wishes as much as practicable.

Costs/Compensation:

We much appreciate your time and effort to participate in the research. As a gesture of our appreciation, we will compensate you with reasonable lunch and/or refreshment vouchers for your participation.

Contacts:

If you would like to know more about the study, please contact the Researcher, Frank Nyame-Asiamah on 00447930498535 (temporary local number - 0243991025), or at: Frank.Nyame-Asiamah@brunel.ac.uk or Mr Augustine Acheampong on 0264803770 or at akacheampong@kathsp.org

Similarly, you may contact Dr Nandish Patel, the lead supervisor on: 0044-01895 265295 or at: Nandish.Patel@brunel.ac.uk and he will be happy to answer your questions on the research requirement on a doctoral student registered at Brunel University.

Further, if you have any concern about the conduct of this study, your welfare or your rights as a research participant, you may contact:

The Chairman

Committee on Human Research and Publication Ethics

Kumasi

Tel: 22301-4 ext 1098 or 0322063241

CONSENT FORM

Statement of person obtaining informed consent:

I have fully explained this research to _____ and have given sufficient information, including that about risks and benefits, to enable the prospective participant make an informed decision to or not to participate.

DATE: _____ NAME: _____

Statement of person giving consent:

I have read the information on this study/research or have had it translated into a language I understand. I have also talked it over with the interviewer to my satisfaction.

I understand that my participation is voluntary (not compulsory).

I know enough about the purpose, methods, risks and benefits of the research study to decide that I want to take part in it.

I understand that I may freely stop being part of this study at any time without having to explain myself.

I have received a copy of this information leaflet and consent form to keep for myself.

Name _____

DATE: _____ SIGNATURE/THUMB PRINT: _____

Appendix 4.12: Interviewees Background & Scheduler

Interviewee Group	Directorate/ Unit (Anonymised)	Position	Date	Recording Times (Minutes)	Follow up - Telephone time not recorded
One-to-One Interviewees (All tape-recorded)					
Manager	IntCompliance	HoD	21 Oct 2010	50.15	Email- 29/03/11 Tel. 23/12/10
Clinician	TestCARE	Microbiologist	22 Oct 2010	53.08	Email- 08/11/10 Tel. 20/04/11
Clinician	InfantCARE	Specialist Paediatrician	22 Oct 2010	34.69	Email- 24/08/11 Tel. 24/08/11
Clinician Manager	BloodManage	HoD	22 Oct 2010	38.10	Email- 07/02/11
Clinician	MedCARE	Snr. Specialist Physician	22 Oct 2010	40.12	
Clinician	FemaleCARE	Lead Clinician	22 Oct 2010	43.41	Tel. 23/12/10
Manager	MaterialSup	HoD	22 Oct 2010	41.29	Tel. 23/12/10 Tel. 20/04/11
Clinician Manager	ManyCARE	HoD	25 Oct 2010	58.25	Tel. 29/04/11
Manager	ITech	HoD	25 Oct 2010	44.01	Tel. 11/08/11
Clinician	MedCARE	Specialist Physician	26 Oct 2010	43.39	Email- 24/08/11
Clinician	MedCARE	Snr. Specialist Physician	26 Oct 2010	30.44	
Clinician	ManyCARE & MedCARE	Specialist Physician	26 Oct 2010	43.33	Email- 05/11/10
Manager	CareQual	HoD	26 Oct 2010	11.19	Email- 24/08/11 Tel. 24/08/11
Clinician	MedCARE	Dermatologist	26 Oct 2010	30.08	Tel. 13/03/11
Clinician	InfantCARE	Clinician	27 Oct 2010	35.38	
Clinician Manager	CanCARE	HoD	27 Oct 2010	50.17	Tel. 23/12/10
Manager	PeoManage	Senior Manager	27 Oct 2010	51.50	Email- 18/01/11 Tel. 20/04/11
Clinician Manager	TestCARE	HoD	28 Oct 2010	50.20	Tel. 11/08/11
Focus Group Discussion 1* (Tape-recorded)					
Manager	ITech	HoD	28 Oct 2010	50.21	Tel. 11/08/11
Manager	IntCompliance	HoD			Tel. 20/04/11
Clinician	InfantCARE	Specialist Paediatrician			Email- 24/08/11 Tel. 24/08/11
Focus Group Discussion 2** (Non tape-recorded)					
Clinician	CanCARE	Resident Clinician	29 Oct 2010	35.00	
Clinician	CanCARE	Resident Clinician			

Notes:

1. Focus Group Discussion 1*

Two clinicians from the FemaleCARE and TestCARE departments sent their apologies just at the beginning of the discussion, assigning emergency calls to patients as a reason. Three participants therefore took part in the discussion.

2. Focus Group Discussion 1**

One clinician from the CanCARE department received an emergency call just before the discussion and left. Two clinicians therefore took part in the discussion.

Appendix 4.13: Field Notebook Entries***20 October 2010 – ITech suite***

Observed the ITech suite to explore how the available computers, internet connections and the room facilities could impact on effective staff learning. The researcher considered the general conditions of the IT room poor for any serious IT training and online collaboration sessions. The outer chamber of the room housing 10 old computers, purchased 6 years prior to the study, and the inner chamber serving as office and store were all very congested, not airy and appeared inadequate for staff IT capacity need. The impression developed was how a few computers, unconnected to the Internet, could serve the purposes of collaborative learning training. Some photos were taken to substantiate evidence. These are aggregated with the analysis and interpretation (5.5.4).

21 & 27 October 2010 – Computer Availability and Distribution

Observed that managers' offices had been provided with computers but the consulting rooms had not received the same facility. Libraries had very few number of computers, at most five per each clinical department library. The intention was to find how the computer availability and distribution between managers and clinicians could impact on collaboration between the two groups, so as to improve care delivery service. Photographic evidence is analysed with other evidence in section 5.4.3.

25 October 2010 - Telemedicine Centre

Visited Telemedicine Centre, observing eLearning facilities and watching live medical lectures transmitted from India. The aim was to develop knowledge of KATH's internet-based learning systems used to support Continuing Medical Education (CME) and its potential impact on patient care. Attendance in the lecture was with ITech technicians other than medical staff. Posting to the eLearning platform came from Egypt and other countries participating in the Pan-African e-Network Project on medical education but no contribution was presented from Ghana when the latter was prompted to contribute. The researcher's question on the lack of participation from Ghana received the following answer from the telemedicine coordinator: *"There was no registration from Ghana"*.

The Centre had two chambers: the Tele-Consultation section and the CME 'theatre'. The former had four computers, each assigned for a respective purpose as follows: Monitoring the KATH Network; supporting doctors in consultations; entering patient data from remote consultations; and serving a communication link between KATH and an external network. Photographic evidence is analysed with other evidence in section 5.4.4.

25 October 2010 – Internet Speed and Hospital Mail System

Observed the speed of the Internet at various connection points to corroborate the evidence provided through the interviews and develop practical insights into the issue. The researcher appreciated the frustrations of a physician trying to send an attachment to external conference, in the MedCARE Library, as the internet speed slowed down considerably. Observation of the KATHmail connection conducted in a residence room, located in the MedCARE department, failed after 10 minutes of continuous trial, by a clinician, to sign into the system. The internet flow was slow.

*The researcher asked: "How long has the systems been slow for?"
The clinician replied: "It's been like this for many many months"*

Appendix 4.14: CHRPE Annual Report

INTERIM RESERACH REPORT – REF: CHRPE/STUDENT/116/10

To: CHRPE

Cc: R & D Unit, KATH

From: Frank Nyame-Asiamah (PhD Student, Brunel Business School, London)

Topic: “Evaluating the Role of Knowledge Management Systems in Learning Organisations - A case Study of Komfo Anokye Teaching Hospital”

Date: 30th October 2011

A draft version of a ninety-page report, covering the analysis of a multi-method data collected over a 10-months period, has been completed and submitted for academic review. The analysis of the complete ethnographic material would provide more credible evidence to propose an evidence-based framework for designing and evaluating organisational learning management processes using ICT of KATH.

The potential merits of the project were accepted by the participants. Many were eager to reading the findings and how it could be taken up to improve technology uptake in KATH. Participants’ contributions revealed their appreciation of the study, in a manner that an all-inclusive initiative was being advocated to change the weaknesses in the existing learning and knowledge systems. The following are some quotes showing acceptance of, and confidence expressed in, the study:

“What I will say, is if you finish with your work give us a copy of the report to inform, not only the [ITech] Unit, but personally for the [ITech] Unit may be I will pick a few programme of work from your report, but for the management so that they can also incorporate in their strategic plans for subsequent years to come” (Manager Interviewee 9).

“Emm, I think that is it. But I think with what you are doing, if ICT is up and keeping, I think it would be of help to us as individuals and as a whole. It will go a long way to help our patient reduce turn-around times and patients time they spent in the hospital” (Clinician Manager Interviewee 18).

“Well, since our system is in the infancy and this is going to start us from somewhere” (Clinician Interviewee 6)

“All of us can make it sustainable. Somebody has to be in charge, somebody has to get the data from the clinicians or managers so whoever is in charge should know is required, how

people are responding to it and if people are not responding to it immediately as you are talking to me now to find out how you want to be part of this and respond to it, so you want people to be more involved and make it sustainable” (Clinician Interviewee 5).

“It is a must that planning and evaluating of the hospital's ICT-supported learning should be an all-inclusive system so that every hand should be on deck. People from the bottom up, those that we think do not matter, they may have very complex ideas but the whole thing is that their ideas may not be so refined but when pick them at management level, we pick such ideas from the directorate/unit levels through gatherings of professional groupings where the ideas can be critically examined. When all these have been done, the paper can be presented to the managers who can look at the plans from another angle. When it is done this way and suggestions are brought back to the people who then become owners or part owners of the systems, so it can become so beneficial” (Manager Interviewee 1).

“If people are involved in decision making and contribute to how things should be done, they take it as theirs and they own idea. But when managers plan for a group of people, it does not make it so effective because it is being dictated and it is not what people may want it. So participation in decision making gives broader interesting ideas than one person doing it. I think widening participation will be very beneficial” (Manager Interviewee 17).

During the mandatory annual doctoral review meeting held in June 2011, the academic reviewers assessed the project as on track and progressing well. A conference paper relating to the progress of the project was submitted and presented at the 2011 Brunel Business School Doctoral Symposium. Please find attached a copy of the paper. It can be also accessed at: http://www.brunel.ac.uk/_data/assets/file/0010/90856/phdSimp2011FrankNyameAsiamah.pdf

I would continue to update the Committee on the progress of the study as required.

Thank you once again for giving me the opportunity.