Evaluating ICT for education in Africa

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Declaration of authorship

I, David Hollow, hereby declare that this thesis and the work presented in it is entirely my own. Where I have consulted the work of others, this is always clearly stated.

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Abstract

This thesis is situated at the intersection between the three themes of education in Africa, impact assessment, and Information and Communication Technologies (ICTs). Specifically, it seeks to develop a critique of current practices regarding monitoring and evaluation of ICT for education within Africa, and explores plausible alternatives to such practices that would make the benefits of education and technology more available and structured towards the poor and marginalised.

Two participatory case studies of ICT for education programmes in Malawi and Ethiopia were used as the main empirical focus for the research. These involved working in partnership with implementing organisations, whilst simultaneously abstracting myself so as to evaluate the evaluation process and assess the underlying reasons for what was occurring. These case studies were supplemented by three international participatory workshops and a pan-Africa survey of ICT for education practitioners.

The findings from the empirical work are examined within four analytical contexts. The first of these analyses the different methodological approaches employed in the case studies and considers the limitations and opportunities encountered. The second focuses on the role of partnerships within ICT for education programmes, especially in regard to their impact in defining the nature of monitoring and evaluation processes. The third investigates the marginalising of pedagogy within many ICT for education programmes, especially in regard to educational outcomes. The fourth explores the significance of aspiration within technology related development initiatives, focussing on consequences for effective impact assessment.

The applied nature of the research emphasises the need for both critical rigour and innovative alternatives in assessing ICT for education in Africa. This thesis concludes by demonstrating the ways in which monitoring, evaluation and impact assessment can be positively reframed in the light of

the research findings to emphasise process, participation, capacity enhancement, and the centrality of education.

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Abbreviations

AAG	Association of American Geographers
CEO	Chief Executive Officer
DelPHE	Development Partnerships in Higher Education programme
DFID	Department for International Development
EaSSY	Eastern Africa Submarine Cable System
ECBP	Engineering and Capacity Building Program
EFA	Education For All
EICTDA	Ethiopia ICT Development Agency
ENEDI	Ethiopian National E-education Initiative
FDRE	The Federal Democratic Republic of Ethiopia.
G8	The Group of Eight
GDP	Gross Domestic Product
GeSCI	Global eSchools and communities initiative
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HEI	Higher Education Institution
ICT	Information Communication Technology
IMF	International Monetary Fund
InWEnt	Capacity Building International
ITU	International Telecommunication Union
LEG	Link for Education Governance
MDGs	Millennium Development Goals
MIT	Massachusetts Institute of Technology
MoCB	Ministry of Capacity Building
MoE	Ministry of Education
MoEST	Ministry of Education Science and Technology
MoIT	Ministry of Information Technology
MoU	Memorandum of Understanding
MSC	Most Significant Change
NEPAD	New Partnership for Africa's Development
NGO	Non Governmental Organisation
NOC	Network Operations Centre

NOLNet	Namibian Open Learning Network Trust
OECD	Organisation for Economic Cooperation and Development
OLPC	One Laptop Per Child
PEA	Provincial Education Authority
SPSS	Statistical Package for the Social Sciences
SRA	Social Research Association
TCO	Total Cost of Ownership
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNICEF	United Nations Children's Fund
UPB	Unique Perceived Benefit
UPE	Universal Primary Education
VSAT	Very Small Aperture Terminal

Acknowledgements

1. Introduction

Significant attention is currently focused on the potential for ICTs to assist in leapfrogging educational problems within developing nations (Pye and Stephenson 2003, Tinio 2003, Leach 2005) and there is much enthusiasm for a possible technology-enabled 'breakthrough in learning' (Wagner 2005a p.6). However, considerable debate surrounds the question of whether the infusion of technology into education has actually instigated more than incremental changes to the field. Proponents assert that the last decade has resulted in the emergence of 'a new landscape for education' (Keats 2005 no pagination) with technology positively affecting student motivation (*info*Dev 2005) and, when implemented with fidelity, leading to a significant increase in learning (Linden *et al.* 2003, Lemke and Fadel 2006). This is challenged by sceptics who argue that achieving structural technological change in schools takes far longer than anticipated (Cuban 2001) with no substantial evidence existing that the introduction of technology has yet caused any fundamental changes to education (James and Miller 2005).

Establishing which of these positions is a more accurate reflection of reality, or, more precisely, what are the conditions and contexts within which one or the other is more likely to occur, is a pressing concern. This is because, in addition to pedagogical concerns, the use of technology in education is driven by substantive economic, political and ideological motivation. An understanding of the varying appropriateness and efficacy of using technology within education in Africa has significant and long lasting consequences for the way education is undertaken across the continent. The nature of these consequences is dependent upon effective monitoring, evaluation and impact assessment.

Wagner *et al.* (2004) note that there have been a variety of outcomes from ICT for education projects, with negative impacts including the reinforcing of dependencies, imposition without community involvement and collapse due to lack of funding or political commitment. Due to the rapidly increasing

number of ICT for education programmes through the last decade, and the varying degrees of success they have experienced, there has been increased recognition of the need for monitoring and evaluation to assess impact (Ting Seng Eng 2005). However, overall ICT for education strategies remain weak (Guislain *et al.* 2006) with major institutions only gradually incorporating initial baseline surveys, monitoring of progress and rigorous evaluation of impact into their projects (Batchelor *et al.* 2003). Having assessed a wide variety of studies, Kozma (2005 p.21) concludes that there is 'no consistent relationship between the mere availability or use of ICT and student learning'. However, beyond such generic assertions, there are significant knowledge gaps remaining regarding what works and what does not. As summarised in an *info*Dev (2005 p.5) report, 'despite thousands of impact studies, the impact of ICT use on student achievement remains difficult to measure and open to much reasonable debate'.

Effectively assessing impact is a familiar issue encountered within every sector of development related work and grappled with by theorists and practitioners alike. The agenda of this thesis is to address the issue within the specific context of ICT for education in sub-Saharan Africa by exploring innovate and alternative approaches to monitoring and evaluation in an attempt to reconceptualise the debate with an intentional focus on the educational interests of the poor and marginalized. Sub-Saharan Africa was chosen because it is the poorest region in the world (HDR 2009) and faces the most severe challenges in primary education provision (EFA 2010). The normative theoretical objective was crafted into a practical research agenda through adopting an approach of sustained cyclical reflection on monitoring and evaluation processes through engaging with two empirical case studies of ICT for education programmes in Malawi and Ethiopia. Supplementing these methods were three international participatory workshops and a pan-Africa survey.

The way monitoring and evaluation is conceptualised is built into many societal understandings of quantifiable value and progress (Watson 2006, ITU 2007, OECD 2002). Linked to this is the popular assumption that the

spread of technology constitutes a positive aspect of modernity and also serves to inform ideas of progress and development (Brewer 2005, Wainwright 2008). This discourse feeds into the notion of pursuing international development, a constantly debated objective within the global community that is increasingly defined in terms of economic growth and competitiveness (Sachs 2005, Collier 2008, Prahalad 2004). Finally, within the development framework, it is education that is frequently heralded as the primary means through which to achieve key objectives (DFID 2010, EFA 2010, EFA 2000).

In the light of this, Chapter 2 of this thesis engages with each theme, problematising and exploring them in order to build a theoretical framework for subsequent analysis and a foundation for the aim and objectives. The methodology, Chapter 3, then provides an explanation of the variety of approaches through which the aim and objectives were operationalised. In Chapter 4, I document the findings of the monitoring and evaluation exercises in Malawi and Ethiopia, providing the practical context of the case studies for subsequent analysis that is structured into four chapters. The first, Chapter 5, analyses the development of the methodology, especially in regard to the innovative approaches employed in the case studies of Malawi and Ethiopia. The intention is both to provide a critique of orthodox practice and give examples of credible alternatives through a cyclical process of reflection. The second, Chapter 6, focuses on the role and influence of partnerships within ICT for education programmes and the impact they have in defining the nature of monitoring and evaluation processes. The third, Chapter 7, assesses the issue of pedagogy within ICT for education and considers the reasons behind current emphases, especially in regard to the marginalising of educational outcomes and definitions of impact. The fourth, Chapter 8, explores the significance of aspiration within technology related education initiatives at both a personal and societal level, focussing on consequences for decision making and subsequent criteria for effective monitoring, evaluation and impact assessment. Following these four analytical chapters, Chapter 9 concludes this thesis by drawing the themes together, ensuring practical application of the research and emphasising the need for critical rigour,

innovative alternatives, and the centralising of educational objectives in assessing ICT for education.

2. Theoretical context

2.1 Overview

Sustained investment in the use of ICT in education is 'fuelled by the rhetoric that almost every government in the world believes that technology and education are the keys to competitive advantage' (Selinger 2009 p.8) (see also Temple 2001, World Bank 2007, Aghion 2009, OECD 2010). This leads to the implicit dominant assumption that adoption of ICTs within education is an inherently positive trend and a causal factor in promoting growth, primarily defined through economic criteria.

This thesis focuses on the monitoring and evaluation of ICT for education in Africa and utilises the topic as a lens through which to assess underlying issues of methodology, partnership, pedagogy and aspiration. In order to do this I begin with a theoretical context that engages with the three foundations of this thesis. The first of these examines the role of education within development, the second the philosophy of technology, and the third the priorities and constraints surrounding monitoring and evaluation. I then draw together and build upon these by considering the nature of ICT for development, providing an overview of its progression and utilising aspects of development theory to emphasise the benefit of critical approaches. Following this I highlight the need to engage with the complex and disputed consequences of using ICT in education, exemplified through considering plural and participatory technologies. This chapter closes by returning to ICT for education in Africa, demonstrating the need for rigorous monitoring, evaluation and impact assessment that engages with education, development and technology.

2.2 Substance, rationale and approach to education

2.2.1 Introduction

In considering the role of education within development I focus on the prominence of education within development agendas, the way in which education is conceptualised and undertaken and the underlying reasons for this. The discussion is based upon the premise that good quality education should constitute a high priority within development initiatives (Sperling 2008, The Basic Education Coalition 2004, Watkins 2001) because of its potential both to provide basic literacy and numeracy (DFID 2010, EFA 2006) and also to catalyse high-end skills such as critical thinking, creativity and decision making (Brighouse 2006). Alongside this, I challenge the dominant conception of education as being justified through catalysing economic growth and provide an alternative liberal rationale.

2.2.2 Substance of education

Providing access to education has long been recognised as a key development priority (Colclough and Lewin 1993, Jolly 1969) and currently holds a uniquely prominent position within global development agendas. This is reflected in the Millennium Development Goals (MDGs) (UN 2000) where it is the explicit focus of goals two and three (Figure 2.1). Education is also an implicit requirement in achieving the remaining six goals: especially promoting health (Smith and Haddad 2000, Vandemoortele and Delamonica 2000) and gender equality (UNICEF 2009, Save The Children 2005, Abu-Ghaida and Klasen 2004, Herz and Sperling 2004, Rugh 2000).

Goal 2 – Achieve universal primary education

Ensure that all boys and girls complete a full course of primary schooling

Goal 3 – Promote gender equality and empower women

Eliminate gender disparity in primary and secondary education preferably by 2005, and at all levels by 2015

Figure 2.1: MDGs (UN 2000)

In addition to the MDGs, the Dakar Framework for Action adopted at the World Education Forum in April 2000 reaffirmed the global commitment to achieve Education For All by 2015 (EFA 2001) (Figure 2.2).

We hereby collectively commit ourselves to the attainment of the following goals:

(i) expanding and improving comprehensive early childhood care and education, especially for the most vulnerable and disadvantaged children;

(ii) ensuring that by 2015 all children, particularly girls, children in difficult circumstances and those belonging to ethnic minorities, have access to and complete free and compulsory primary education of good quality;

(iii) ensuring that the learning needs of all young people and adults are met through equitable access to appropriate learning and life skills programmes;

(iv) achieving a 50 per cent improvement in levels of adult literacy by 2015, especially for women, and equitable access to basic and continuing education for all adults;

(v) eliminating gender disparities in primary and secondary education by 2005, and achieving gender equality in education by 2015, with a focus on ensuring girls' full and equal access to and achievement in basic education of good quality;

(vi) improving all aspects of the quality of education and ensuring excellence of all so that recognized and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills.

Figure 2.2: EFA goals (EFA 2001)

Although considered to be 'one of the most exciting pledges that the international community has ever made' (Commission for Africa 2005 p.63),

progress towards the EFA goals has remained slow in much of Africa. A considerable body of literature demonstrates that gender parity, class sizes, teacher training, limited places at secondary level, sporadic attendance and low overall attainment remain significant challenges (EFA 2007, 2009, 2010, Mulkeen 2009, Bennell and Akyeampong 2007, Save The Children 2005, Herz and Sperling 2004). Across sub-Saharan Africa there are on average 44 pupils per teacher in primary school (EFA 2010) and an estimated 32 million children out of school. In the light of this it is predicted that another 1.6 million teachers will be required in employment by 2015 in order to provide primary education for every child (UNESCO 2006a). Indeed, at current rates of progress it is projected that in 2015 there will be more children out of school in the region, and across the world, than there are today. This is primarily due to the fact that the rate of enrolment increase has slowed and is now being surpassed by population growth (EFA 2010a).

The challenging and complex situation that these figures exemplify is the context within which any ICT for education initiative in Africa must find relevance. Considering how best to undertake effective monitoring and evaluation of ICT for education initiatives is therefore dependent on considering two questions. The first, 'why do we educate?', is addressed by reviewing the dominant economic rationale for education, revealing potential flaws, and presenting instead the philosophical foundations of liberal education, exploring the impact this has upon the way in which ICT for education programmes are assessed. In the light of the answer to this question, the second therefore considers 'how do we educate?' Within this, the provision of widespread access to good quality education is identified as a long-term priority (Herfkens 2002, Watkins 2001), with an acknowledged need for greater engagement with flexible approaches to learning (Mayer 2004).

2.2.3 Rationale for education

The prevailing global rationale for prioritizing investment in education is encapsulated well by the World Bank (2007 p.1): 'in today's world,

characterized by intense global competition and rapid technological change, the key to prosperity is a well-educated, technically skilled workforce producing high value added, knowledge intensive goods and services'. Widespread consensus exists between Western governments that education is central to ensuring competitiveness within the global economy (Schleicher 2006, Temple 2001). Positioning the provision of education as central to sustaining prosperity and economic productivity ensures significant financial support for the sector, perceived as a worthy investment due to the subsequent national benefits (Aghion 2009, Friedman 2006, Boissiere 2004, Hanushek and Kimbo 2000). This notion is ultimately founded upon the human capital theory of Adam Smith (1776) and supposes that the value of education should be defined largely on the basis of the resultant increased income. When the promotion of economic growth is the foremost development priority (UNECA 2007, G8 2007) then educational agendas are ultimately subsumed within this, forming a useful tool in attaining to, or legitimising, the pursuit of the overarching goal.

The anticipated economic return from education results in a certain form of investment in education being legitimised and promoted (see Woessmann 2003, 2002). This serves to position the school system as subservient to an overarching economic and political agenda and as the 'natural' place to inculcate a technological literacy viewed as central to economic advancement (Illich 1970). To illustrate the implications of this, Brighouse (2002) articulates the possibility of a situation arising in which the economy is no longer most effectively served by providing universal access to education and is instead strengthened by restricting access to education for all but an elite minority. This hypothetical context demonstrates the importance of promoting an environment where agents external to market forces constitute the primary driver for education (White 2002). Although education and the market are not inherently antagonistic, it is imperative that schools and education systems primarily 'orient themselves to the needs of the children who will have to deal with the economy, and not to the needs of the economy itself' (Brighouse 2006 p. 28).

The critique posed to the market through liberal education principles is useful in constructing a viable alternative to an exclusively economic rationale for education. This is grounded historically in Mill's (1859) assertion that promoting liberal education is a key for avoiding hegemony and ensuring society remains free from domination by an approved state-sanctioned ideology: in this instance, free market capitalism. Commentators following this tradition have isolated what they consider to be the defining rationale for such an alternative approach to education. For Freire (1970), at the radical edge of liberal thinking, the purpose of genuine education is to enable critical engagement with the world, developing the capacity to solve problems and serving as an emancipatory tool through developing a critical consciousness among the poor (McLaren 2000 p.6).

More recently, and situated within development literature, Sen (1999 p.11) suggests freedom as the ultimate purpose of education, positing it as the major access point for ensuring that 'individuals can effectively shape their own destiny and help each other' to make informed choices throughout life. Other liberal views on the role of education promote its place in catalysing autonomy (White 1982, Winch 2005), individual well-being (White 2002), self-determination (Walker 2005), social capital (Putnam 2001), creativity (Chomsky 2000), flourishing human life (Brighouse 2006), democracy (Barro 1999), and capacity for critical reflection (Paul and Elder 2005) and engagement (Hirst 1993). Whilst stemming from multiple perspectives, these theorists each encapsulate the notion of educational value as somehow intrinsic and not subsumed within a solely economic agenda. The education process is ascribed with inherent value due to the individual and communal good, regardless of whether it is externally deemed to constitute a perceived benefit, such as the promotion of economic growth.

2.2.4 Approaches to the practice of education in development

It is estimated that 60% of children in Africa who complete primary school fail basic literacy tests (Selinger 2009). Although recognised as a dual priority (Sampa 2003), steadily increasing attendance and decreasing overall levels of

attainment (Fredriksson 2004) indicate that, contrary to the emphasis in the MDGs, improving education quality while ensuring equity is a 'greater challenge than administering expansion of enrolments' (Naidoo 2003 p 21). It is clear therefore that examining what is being taught to children in the classroom and in what manner they are being taught is of critical long-term significance (Patrinos and Kagia 2007, EFA 2004). This has major implications for the manner in which teaching is undertaken, in regard to both theoretical approach and curriculum delivery.

In both the developed and developing world, conventional classroom education has traditionally been shaped through a rote-based approach to learning (Smith and Ngoma-Maema 2003). This was widely criticized in Europe, Australasia and North America during the latter part of the 20th century, with increased acknowledgment that the primary goal of education cannot be simply to learn a set of prescribed answers which form the basis of assessing attainment (Croft 2002). This reflects a shift towards focusing on the priority aim of developing capital for oneself (Ellerman 2004), fitting 'the present and future needs of the particular learners in question and the community, given the particular circumstances and prospects' (Fredriksson 2004 p.2). Although subject to much recent attention, ideas regarding more flexible approaches to education have been circulating, albeit with a variety of different labels, for more than a century. Dewey (1897) exemplifies this through his concern for educational reform and the campaign against authoritarian approaches in favour of experiential education, linked to the discovery-based approaches in vogue today.

This shift has resulted in much educational discourse presenting learning as occurring in one of two possible models: the first is rote-based, where the teacher transmits knowledge to a waiting audience, and the second is constructivism, a student centred approach emphasising autonomous discovery learning and minimal teacher input (Cromer 1997). However, such dichotomising fails to acknowledge the subtle nuances of applied classroom teaching that clearly fails to fit into neatly prescribed categories. Outside the theoretical realm, every learning and teaching experience falls somewhere

between these two extremes as a result of multiple factors and pressures. Again, although often ignored, the combination of both forms of learning has long been acknowledged, with Dewey (1938 p.28) noting that all schooling falls somewhere along the 'experiential continuum'.

Despite the propensity to polarize debate regarding classroom practice as either rote-based or constructivist, Brighouse (2006) views no fundamental tension between the two extremes. He suggests that both forms of learning are vital for promoting increased autonomy and ability to live well because approaching the world critically is dependent on first being taught facts about it (Brighouse 2006). Whilst in agreement with this conceptual representation of a balanced education, it is necessary to consider potential areas of disconnect. The first is that whilst promoting free enquiry in education it is also important to recognize that the reality of the current educational landscape in the majority of African schools is far removed from this pedagogical blend, with most classroom activity still predominantly didactic and based within the previously mentioned rote approach to learning (UNICEF 2010, Selinger 2009, UNICEF 2004, Watkins 2001).

The second is specific to the question of ICT for education where technology enhanced constructivism is often presented as an all-encompassing solution to rote-based deficiencies. It is important to recognise the limitations of a constructivist model to teaching and learning (Mayer 2004), regarding with scepticism those who promote its uncritical adoption in education and instead viewing it as one aspect of pursuing a flexible and guided approach to education (Kirschner *et al.* 2006). Within this it is also necessary to be conscious of the motivating factors behind the vocal proponents for increasingly constructivist approaches to education in developing regions. The strongest voices in favour of this pedagogy are often the same as those advocating an increased role for technology in education and promoting private sector interests (see Lemke and Fadel 2006). This raises concern surrounding the promotion of constructivist learning as a tool for private sector aspirations to inculcate an increasingly technology dependent mode of schooling and education.

Indeed, there is insufficient problematising regarding the rationale for education and approach to appropriate pedagogy within ICT for education initiatives. As Kellner (2002 p.155) notes, the technological revolution 'provides educational reformers with the challenge of whether education will be restructured to promote democracy and human needs, or whether education will be transformed primarily to serve the needs of business and the global economy'. The implications of this in the specific context of monitoring and evaluation are explored in Chapter 8.

2.3 Historical and current perceptions of technology

2.3.1 Introduction

Following this outline of the role of education, I now examine the philosophy of technology and the position it holds within society. This begins by outlining the frequently dystopian portrayals regarding the impact of technology that were prevalent in the mid-20th century. I contrast this with the naïve optimism now espoused by certain commentators, somewhat reminiscent of early 20th century thought. Within this setting I argue that the increasing influence of ICT within developing countries necessitates a stance of critical engagement to ensure that the benefits of new technologies are made available to those who need them most, rather than only those who have the economic resources to access them.

2.3.2 Impact of technology

The emerging digital age has been labelled as a 'new technological paradigm' with current advancements in ICT heralded as being of greater significance than both the industrial and print revolutions (Castells 2000 p.9) and technology promoted as being potentially the most significant agent of change in the modern world (Chambers 2006). As Floridi (2002 p.2) asserts, 'no previous generation has ever been exposed to such an extraordinary acceleration of technological power over reality with the corresponding social changes and ethical responsibilities'. He goes on to note how ICT has been

promoted to become 'the characteristic technology of our time, factually, rhetorically and even iconographically' (Floridi 2002 p.2). This is further developed by Wagner (2009 p.368) in the specific context of poverty. He notes: 'In an era of increasing globalisation, there is no social and economic domain where one feels a greater pressure of rapid change than that of technology. And, there is no domain where it appears that the gap between rich and poor seems to be laid bare so starkly'. Such dramatic claims, although contestable, serve to demonstrate the magnitude of the technological shifts occurring. It is therefore necessary to acknowledge the complex and contrasting implications they embody for society, and specifically developing contexts (Castells 2000).

In order to build a foundation from which to determine the most appropriate approach for monitoring and evaluating within the context of ICT in education, it is necessary to engage with the progression of philosophical understanding regarding the relationship between technology and societal development. The conclusions of such a discussion form a vital foundation for understanding why and how monitoring and evaluation are undertaken, rejecting technological determinism and advocating a stance of applied critical engagement. The practical job of assessing the use of ICT in education in Africa is founded upon, and driven by, the underlying, often subconscious philosophies of technology that stakeholders adhere to. It therefore follows that undertaking rigorous and effective monitoring and evaluation is dependent upon a more conscious engagement with the implications of these foundations.

2.3.3 Philosophies of technology

Technology and associated innovation was perceived in Greek philosophy as distinctly inferior to the immutable arts. There was widespread suspicion of technological innovation throughout this period with 'the sphere of technical affairs … something that persons of the ruling classes sought to avoid' (Winner 1995 p.69). Only within the modern capitalist structure of post-Enlightenment Europe has technological innovation attained a position of

central value within the ethos of society, primarily due to its significant potential for wealth generation. Since this time, the increasing momentum of technological innovation and its potential consequences for both individuals and society has been the subject of sustained philosophical debate.

Conceptions of the role of technology within society in the early 20th century were defined by a broadly uncritical, although not unregulated, perspective (see Dewey 1930). This optimism was in contrast to later theorists, exemplified in the Frankfurt School, disillusioned through witnessing the destructive power of technology and crafting a dystopian critique in opposition to an increasingly technological society. Significant and frequently polemicised theses regarding the place of technology within society were developed by a succession of philosophers during this period. For Ellul (1964 p.219), the increase of technological domination had impact at a more fundamental level than any official ideology with which a society may align itself such as liberalism or socialism, eclipsing all else and inculcating 'the abstract concept of the economic man'. This was reflected in McLuhan's (1964 p.1) conviction that technological progress was initiating 'the final phase of the extensions of man', increasing negative autonomy and isolation and reducing humanity to the point where man simply constitutes 'the sex organs of the machine world' (McLuhan 1964 p.56). This is grounded in Heidegger's (1954) assessment of technological advancement as a fundamental violation of humanity, constituting a central dimension of his critique on the Platonic ontological foundations of western society. More recently, related emphases have been sustained by Postman (1992) who suggests that current social and cultural values have become subservient to modern technologies, especially the computer, leading to the destruction of humanity through removing all ultimate meaning, direction and purpose. The outworking of dystopian portrayals such as those illustrated necessitates a rejection of technology due to what is perceived as its intrinsically dominative and destructive nature.

In partial contrast, Marcuse (1964, 1968, 1969) proposed a perspective somewhat less intrinsic in its rejection of technology, focusing attention on

appropriate application in recognition of the potential for exploitation. He rejects the neutrality of the machine and emphasises the place of power, asserting that technology constitutes a historical-social project that asserts 'what a society and its ruling interests intend to do with men and things' (Marcuse 1964 p.25). He argues that this 'new technological work-world' binds technology to capitalism and domination, because 'the prevailing forms of social control are technological (Marcuse 1964 p.11). The projected outworking of this is the enforcing of a socio-political system with totalitarian tendencies, increasing the oppression of the working class and producing a one-dimensional thought system of technical rationality that delegitimises critical opposition. In the light of this Marcuse emphasised the need for an alternative liberated technology that can promote a non-dominative society, targeting his critique at the current prevailing expression of technology rather than the notion of technological advancement itself.

2.3.4 Practical implications

A weakness with the Marcusian perspective is his presentation of technology as a singular entity which is only capable of being utilised for one of two options: either maintaining the status quo or entirely restructuring society through 'a science and technology released from their service to destruction and exploitation' (Marcuse 1969 p.31). Such dichotomising serves as an abstract philosophy but is of limited practical assistance in the complex realm of applied engagement, especially when considering the specifics of ICT for education. The limitation is highlighted by Feenberg (2003 p.42), who notes that 'the logic of dystopia is too totalising and does not correspond to the rather chaotic realities of technical life'. Building a framework to facilitate active involvement is therefore dependent upon acknowledging the potential for a third option that is based on critical engagement and embraces a vision of technology that encompasses a wide variety of tools which have potential to be utilised simultaneously for a multiplicity of different purposes and desired ends. Such conflicting opinions surrounding the multiple and varied potential uses of technology within a development or, more specifically,

education context are usefully illustrated by the debate between Helmreich (1999) and Lansing (2000) centred on digital technology and water.

Advocates for critical engagement (Feenberg and Hannay 1995, Vogel 1995) dismiss the assumption that technology has autonomous and static functional logic as deterministic, fatalistic, and offering 'only condemnation of the present and no guidance for the future' (Feenberg 1999 p.193). Arguments that position technology as the primary structure of society (Ellul 1964) can be simply contested on the basis that technology, in itself, is ambivalent. Put simply, technology can be used either to serve the interests of those in power or to transform the nature of power relationships (Castells 2000). Emphasising the 'malleability of technology' challenges the Marcusian dichotomy and recognises the potential for incremental change, diversity and choice as well as complete paradigm shift. Thus technology is positioned as subservient to people and as a potential element of both liberation and subjugation (Vogel 1995).

Feenberg (1995 p.20) makes the important point that although a dominant experience of recent history has been the use of technology in hindering participatory democracy, it is foreseeable that 'technology can support more than one type of technological civilisation, and may someday be incorporated into a more democratic society than ours'. Castells (2000 p.20) reinforces this stance within the specific context of current ICT, pointing to its emancipatory and transformative potential, serving to enliven democracy, create networks and redefine power to the point where 'the power of flows takes precedence over the flows of power'. Indeed, potential indications of this are found in participatory web-based technologies such as blogging and twitter and I return to discuss these later in this chapter.

Offering practical steps towards a view of technology that could help bring about such a transformed society is dependent upon holding lightly to these abstract reflections and engaging with the practical implications of rapidly shifting, technology-induced, time-space interactions in both developed and developing contexts. Once it is recognised that the application of technology

can instigate both harm and good, it becomes necessary to form a framework for promoting principles such as political transparency, social creativity and individual freedom. It is such issues that constitute holistic definitions of social and individual development (Sen 1999) and thus should be central elements within any ICT for development and education initiative. Employing technology effectively within development therefore requires a normative agenda, harnessing the potential of technology to help form a 'non-alienated society' where 'humans consciously and explicitly assert their responsibility for the world, transforming it on the basis of needs that are discursively expressed and social decisions that are democratically made' (Vogel 1995 p.38). If achievable, this has the potential to break the determinist link between technology and domination, challenging the notion of technology as self-generating and detached from society, and simultaneously shifting its position away from one of unquestioned acceptance.

2.3.5 A note of caution

Having outlined this perspective it is necessary to add a cautionary note. Despite the potential for critical engagement, this is rarely fully realised within an arena dominated by private sector led, unquestioned adoption of technology. Whilst rejecting dystopian critiques on the basis of their essentialist claims, it is important to acknowledge that many of the fears they articulate are currently being realised to varying degrees as a consequence of uncritical social choices regarding what constitutes development and, more specifically, the appropriate application of technology in education. This is particularly pertinent in the light of recent naïve optimism regarding the potential of new digital communication technologies within the contemporary world and the presumed inevitability of positive change from their promulgation (see Battelle 2005, Sunstein 2006). Such populist approaches serve insidiously to undermine and delegitimise a critically engaged approach. I return to consider the implications of this for assessing ICT for education throughout Chapter 8.

A more reasoned approach is offered by Castells (2000), who highlights how ICT has caused a diminution of hierarchy within structures and instigated a transition towards reliance on a network-based approach to social and business interaction. Although still idealistic, his analysis of potential impacts is more appropriate than the generic optimism often expressed. However, it remains important to avoid transposing such ideas, reasonable in a developed context, simply to be assumed as being applicable in the developing world. To do this would be a naïve oversimplification: optimism regarding the potential of ICT to dissolve or realign hierarchies and power relationships must be tempered with realism regarding embedded structural inequalities that dictate much use and abuse of technology.

Regardless of the context or level of optimism, the spread of technology serves to raise the consequential stakes across society, with a simultaneously increased potential for both greater control and manipulation and also liberation and freedom (Feenberg 1995). However, in spite of this there exists something of a philosophical vacuum regarding how society defines what constitutes an appropriate response to the power, opportunity and potential danger offered by new technologies (Winner 1995 p.65). This reality requires more than a superficial acknowledgement, focusing attention on intentionally maximising the non-subjugative potential, recognising that the progression of democratic society is intrinsically aligned with perceptions of and responses to technology (Feenberg 1999).

Despite the varying potentials, the primary current use of technology is as a tool of global capitalist hegemony, serving to define linear conceptions of progress, legitimise consumerism and enable the status-quo to be maintained. Indeed, choosing to engage with a topic so delicately positioned at the interface of conflicting agendas could easily serve unwittingly to lend credence to the aforementioned technocratic, expansionist agendas. Any attempt to develop a pro-poor alternative to this system requires intentional subversive action, caution and humility. This in turn requires a clear framework for decision making that is distanced from the worldview of global capital and instead focuses on the priorities of the poor and marginalised.

Such an undertaking is central to the rationale for this thesis and constitutes a core objective of my monitoring and evaluation (Wagner 2009). Assessing the manner in which technology, within the context of ICT for education in Africa, can be utilised to bring about the most good and least harm is a theme that recurs throughout the analysis and especially in the discussion regarding aspiration in Chapter 8.

2.4 Foundations and priorities in monitoring and evaluation

2.4.1 Introduction

Following the above discussion regarding education and technology, I now focus on the place of monitoring and evaluation and the quantification of value within society. In order to understand this, it is necessary to examine the extent to which quantifiable impact and increased efficiency have become synonymous with perceptions of value across different sectors of society, especially in relation to notions of development. Both the positive and negative connotations of this trend are explored, expressed through accountability and good governance discourses. Following this, I scrutinise the modernist foundation for such an approach and outline the benefits for pursuing an alternative form of monitoring and evaluation work based on critical realism. I then close this section by focusing on definitions, outlining conventional understandings of monitoring, evaluation and impact assessment and explaining how my working definitions for the research are situated within these.

2.4.2 Quantification of society

The attempted quantification of the information society and associated impact of ICT on education has been the subject of numerous reports (UNCTAD 2005, OECD 2005, OECD 2006, ITU 2007, UNESCO 2007) and research (Pena-Lopez 2009). As one example, the ITU has developed numerous quantifiable and input-based indicators for the monitoring of progress towards target 18 of the 8th MDG which states, 'In cooperation with

the private sector, make available the benefits of new technologies, especially information and communication technologies' (UN 2000). These indicators include 'telephone lines and cellular subscribers per 100 population … personal computers in use per 100 population … Internet users per 100 population' (ITU 2003). A similar approach has been adopted in attempting to measure ICT for education, with frequently promoted listings of quantitative indicators of ICT for education resources such as 'number of devices (computers, printers, projectors) per school, number of students/teachers using the Internet per school' given as the basis for monitoring and evaluation (Kozma and Wagner 2005) as summarised below (Figure 2.3). It is pertinent to ask why the predilection for quantitative and input-based indicators has developed in monitoring and evaluation of development and within ICT for education more specifically. In order to address potential reasons for this, the following discussion reflects on broader trends within society towards increased efficiency, accountability and quantification of value.

Conventional national education indicators for monitoring and evaluation:
- Total public expenditure on education
- Educational expenditures per student
- Relative proportion of public and private investment in educational institutions
- School enrolment rates at various levels
- Instructional time
- Class size and ratio of students to teaching staff

Conventional national ICT for education indicators for monitoring and evaluation:
- Presence of a national educational ICT policy
- Presence of a master plan with a timeline
- National expenditure on ICT in education
- Ratio of students to computers

- Availability of computer networks in schools
- ICT as a separate subject in the curriculum
- Integration of ICT into the curriculum
- Number of schools incorporating ICT

Figure 2.3: National ICT for education indicators (UNDP 2004)

2.4.3 Implications for development

In the latter half of the 20th century a significant transition has occurred across European and North American society towards increased emphasis, in both public and private spheres, upon fiscal accountability, return on investment and quantifiable indicators of impact. This is associated with the development of a distinctly target driven culture, with subsequent implications for the manner in which development is both conceptualised and practiced. The MDGs are indicative of this trend, offering quantifiable objectives, detailed schedules and projected completion dates for eight internationally agreed goals (United Nations 2000). Alongside this, the Good Governance Agenda is established as the primary framework for aid allocation within the international donor community, emphasising good governance, transparency and capacity development as key criteria for funding (Commission for Africa 2005). The same trend is reflected in donor emphasis on international measures to 'significantly increase accountability' for funds (DFID 2006) and the Paris Declaration (2005, statement 44) agreement to 'establish results-oriented reporting and assessment frameworks'. Similarly, UNESCO (2003) adheres to the link between accountability and monitoring and evaluation by identifying it as their primary tool for ensuring the proper spending of funds. These emphases are demonstrated in the widespread use of logical frameworks or 'logframes' as a tool for improving the efficiency of project interventions through strategic identification of inputs, outputs, outcomes and impact (OECD 2002). The impetus and rationale for mainstream development work and objectives is therefore founded on an increasingly results-based approach (Clark and Sartorius 2004), with strategies primarily 'focusing on performance and achievement of outputs, outcomes and impacts' (OECD 2002 p.34).

These trends within development policy and practice have both positive and negative manifestations with significant ideological and practical implications. The rationale in promoting effective governance is that it should lead to a decrease in corruption and facilitate aid reaching intended beneficiaries. This in turn should lead to positive feedback on donor willingness to increase support. Likewise, increased monitoring and accountability of aid allocation and spending through a systemised feedback of results is intended to promote confidence that support given makes a positive difference. However, the ensuing tendency to promote definite dimensions of impact and the restriction of development work to activities that can be contained within a quantitative framework also has significant negative consequences.

The development industry becomes structured towards promoting programmes that are disposed towards having pre-determined impacts (Kleine 2009). In addition, implicit assumptions of neutrality, objectivity and universal applicability (United Nations 2005a, ITU 2007) that accompany more positivist conceptions of impact can serve to delegitimise alternatives and sideline equally significant subjective aspects of development and education impact. This applies particularly in the context of deciding whether quantitative or qualitative measures should be prioritised in educational evaluations (see Chapter 5). Current emphases ensure that monitoring and evaluation are no longer at the fringes of development (Elkins 2005) but occupy central, frequently scrutinised, and often profoundly confused positions within the sector (George 2008).

2.4.4 Focus on efficiency

Considering the implications of prioritising definable impact within development is linked to broader questions of efficiency and quantifiable return on investment within the wider aims of society. For Borgmann (1984) and Ellul (1964) an increasingly technology-based society has the perpetual quest for efficiency as its ultimate goal, willing to sacrifice anything not

assisting towards this end. The implication is that monitoring and evaluation constitutes an explicit tool within the wider agenda of 'efficiency, productivity, and control that now drives technological choices in the global economy' (Winner 1995 p. 82). Promoting efficiency as an end goal is clearly problematic, but it is equally futile to propose the adoption of an anti-efficiency position. As Goulet (1983) makes clear, efficiency is an indispensable tool for those who would seek to humanise the world, it is the form of efficiency that requires redefining 'so as to serve human values' (Goulet 1983 p.621). Similarly, Feenberg (1999 p.199) notes that it is too simplistic to dismiss all technological progress as the uni-directional goal-oriented pursuit of efficiency as it also 'constitutes an essential dimension of the contemporary struggle for a humane and liveable world.'

It is therefore clear that whilst increased efficiency should not constitute a goal in itself, it may also be utilised as a means through which to achieve more substantive humanising goals. This emphasises social relativity (Feenberg and Hannay 1995) and the need to resist panoptic depictions of linear progress towards perpetually increased efficiency, whilst promoting critical alternatives and the ability to learn and develop in the midst of uncertainty.

In the light of this, the foundation for current dominant conceptions of monitoring and evaluation may be called into question. The standard epistemological foundation is that truth can be proved through observation and repeated experiment. Because all variables within a process are ultimately knowable one can be confident in assuming results based causality and universal applicability. For Eyben (2005), such a preoccupation of donors with results-based management reflects this and is indicative of the unequal power relationships maintained with recipients, facilitating a privileging of certain perspectives over others. Dissatisfaction with this has led to a growing emphasis on alternative systems-based approaches to evaluation where external evaluators attempt to understand the historical, social, cultural, religious context within which they are operating (Horstman 2004). Indeed, these emphases significantly shaped my own approach to

monitoring and evaluation (Chapter 3). Recognising the importance of positionality and subjectivity enables movement away from the presumed rationality of a solely results-based approach (OECD 2002). However, recognising the necessity for moving away from a logical results-based orthodoxy is still largely marginalised within monitoring and evaluation in the arenas of both theoretical reflection and practical implementation.

2.4.5 The place of critical realism

Critical realism provides a critique of the confident epistemology of modernism, whilst maintaining a normative aspiration to instigate positive change through effective monitoring and evaluation. This provides a pathway between the objective and the relative, in acknowledging the role of both observer and subject and the formative influence of both (Wright 1992). The development of contemporary critical realism within the social sciences (Bhaskar 1975) emphasises human involvement in processes and the influence of social conditions and structures, assuming 'open systems and a generative model of causation in which the outcomes of the activation of mechanisms always depends on specific contexts' (Sayer 2000 p.23). Relativism is acknowledged alongside maintaining an optimistic perspective regarding the potential of human interaction with the world consciously to reflect upon, engage with and alter reality.

The notion that truth, although existing, is never fully or objectively observed, has profound implications for both the theory and practice of monitoring and evaluating. It leads to a recognition that overly prescriptive approaches can result in unintended disempowerment both generically and in specific reference to ICT for education. Linking to wider conceptions of development, George (2008 p.31) notes that monitoring has a 'significant role to play in the unfolding of the subject's freedom and empowerment … an oppressive strategy cannot be employed while striving to free the oppressed'. Acknowledging that monitoring in itself can constitute a potential tool for capacity enhancement and development necessitates a dynamic relationship between subject and observer. In turn, this facilitates an appreciation of

being rooted in specific socio-cultural and historical contexts and the process of mutual shaping through an intervention. This demonstrates the value in reconceptualising approaches to monitoring and evaluation, avoiding the certainty of positivism and engaging with participants in humility in order to facilitate progressive change (Haraway 1995).

It is important to note here the close relationship between the private sector and many ICT related education initiatives. This is a theme that I return to throughout sections 6.3.2 and 8.5.2. One challenge that results from this association is the profit motive of the corporate environment that tends to lead to simplistic cause and effect and prediction-based monitoring tools. Effective programme monitoring within the development sphere requires a more holistic and ethnocentric approach, consciously revising the efficiency paradigm conventionally employed (George 2008).

2.4.6 Key definitions

Significant and ongoing contestation exists regarding appropriate definitions for the three terms 'monitoring', 'evaluation' and 'impact assessment'. This is unsurprising as it reflects the underlying tensions between different sectors regarding appropriate interpretation and emphasis (Watson 2006, Elkins 2005). A recurring project within this thesis is the renegotiation of these terms within the context of ICT for education. However it remains useful to provide clarity by situating the discussion within current understandings and working definitions.

The two words 'monitoring' and 'evaluation' are often referred to in conjunction to encapsulate the task or process of assessing programme efficacy. Indeed, throughout this thesis I frequently utilise the joint term for this purpose. However, it is important to note that this does not mean they are synonymous. The OECD (2002) definitions in Figure 2.4 exemplify the conventionally accepted distinction between the two terms.

Monitoring: 'A continuing function that uses systematic collection of data

on specified indicators to provide management and the main stakeholders of an ongoing development intervention with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds.'

Evaluation: 'The systematic and objective assessment of an on-going or completed project, programme or policy, its design, implementation and results. The aim is to determine the relevance and fulfilment of objectives, development efficiency, effectiveness, impact and sustainability. An evaluation should provide information that is credible and useful, enabling the incorporation of lessons learned into the decision making process of both recipients and donors.'

Figure 2.4: Definitions of monitoring and evaluation (OECD 2002)

The clear emphasis is on monitoring as a continual process and evaluation as an event that is temporally defined and distinct. James (2004) makes a similar distinction between ongoing performance monitoring that emphasises performance and target tracking, and discrete evaluations that assess impact and effectiveness. Within this broad categorisation there are numerous additional terms conventionally utilised to describe specific approaches to monitoring and evaluating of programmes. The OECD (2002) provides a useful synopsis of the various relevant terms (Figure 2.5).

Ex-ante evaluation: 'An evaluation that is performed before implementation of a development intervention.'

Ex-post evaluation: 'Evaluation of a development intervention after it has been completed ... the intention is to identify the factors of success or failure, to assess the sustainability of results and impacts, and to draw conclusions that may inform other interventions.' This is related to **Summative evaluation**: 'A study conducted at the end of an intervention (or a phase of that intervention) to determine the extent to which anticipated outcomes were produced. Summative evaluation is intended to provide information about the worth of the program.' This is related to **Independent**

evaluation: 'An evaluation carried out by entities and persons free of the control of those responsible for the design and implementation of the development intervention.'

Formative evaluation: 'Evaluation intended to improve performance, most often conducted during the implementation phase of projects or programs.' This is related to **Mid-term evaluation**: 'Evaluation performed towards the middle of the period of implementation of the intervention.'

Participatory evaluation: 'Evaluation method in which representatives of agencies and stakeholders (including beneficiaries) work together in designing, carrying out and interpreting an evaluation.' This is related to **Self-evaluation:** 'An evaluation by those who are entrusted with the design and delivery of a development intervention.'

Performance monitoring: 'A continuous process of collecting and analyzing data to compare how well a project, program, or policy is being implemented against expected results.'

Program evaluation: 'Evaluation of a set of interventions, marshalled to attain specific global, regional, country, or sector development objectives. Note: a development program is a time bound intervention involving multiple activities that may cut across sectors, themes and/or geographic areas.' This is related to **Project evaluation**: 'Evaluation of an individual development intervention designed to achieve specific objectives within specified resources and implementation schedules, often within the framework of a broader program.'

Process evaluation: 'An evaluation of the internal dynamics of implementing organizations, their policy instruments, their service delivery mechanisms, their management practices, and the linkages among these.'

Figure 2.5: Additional related definitions (OECD 2002)

The third term that requires definition is impact assessment, also known as impact evaluation. This refers to the 'positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended' (OECD 2002 p.24). It is concerned with the attribution of change, with the central question of what would have happened to the intervention beneficiaries had the programme in question not been operational (World Bank 2007a).

It is important to consider the distinction between the terms both conceptually and in regard to practical application. James and Miller (2005 p.59) summarise this well in specific regard to monitoring and evaluation:

> 'The monitoring process looks at what is being done and how it is being done. It could involve continuous tracking of activities, review of the flow of service and activities provide by the program ... Evaluation looks at performance against goals. This can and should take place while the program or research project is underway and is concerned with evaluating how the intervention is meeting its performance goals.'

This distinction is vital, but a consequence has often been the positioning of internal monitoring as inferior to externally-imposed evaluations. Thus, whilst the terms and conventionally defined distinctions do provide a useful framework for operating within the monitoring and evaluation arena it is important that they are not accepted uncritically. Throughout the analysis I problematise each of them through practical encounters in the various research environments. This forms part of the broader project of this thesis, redefining the nature of dependence, looking beyond the imposition of power and highlighting participation and empowerment. In turn, this falls within the overarching agenda to reconceptualise the nature of effective monitoring, evaluation and impact assessment within the context of ICT for education initiatives in Africa.

Central within this is recognising that, whilst conceptually and practically distinct, there is also considerable overlap between the terms. Indeed, alongside distinguishing between the terms, James and Miller (2005) also note the importance of the overlap between monitoring and evaluation. This recognition, as adopted throughout this thesis, is both facilitated and developed by emphasising the process-based and participatory nature of monitoring, evaluation and impact assessment. In regard to this, a pertinent question is posed by the Commission for Africa (2005 p.105): 'for whose primary benefit is monitoring and evaluation conducted?' Reflecting on this is useful in defining where ultimate accountability lies within the plethora of activity encapsulated by the terms. One dominant current perspective is that monitoring and evaluation exists primarily for donors as a tool for ensuring their criteria for good governance are adequately met (Watson 2006). This is encapsulated well by a study from the World Bank (2005), demonstrating how the results-based culture of external accountability defines orthodox approaches. Watson (2006 p.5) notes how the study found that 'incentives for monitoring and evaluation have been traditionally weak in the Bank because of the lack of a learning culture' with interviewees reporting that 'they felt discouraged from monitoring results when things had not gone quite as anticipated'.

Adopting a different approach that prioritises learning, two-way accountability, process, participation, and beneficiary concerns is therefore a considerable challenge (Leach 2006) that requires intentional engagement (Wagner 2005b). Throughout this thesis I advocate for an approach to monitoring, evaluation and impact assessment that recognises the importance of efficiency and quantifiable indicators but also looks beyond these, engaging with intangibles, promoting capacity development and recognising that it is a dynamic and ultimately flawed process in which 'taking risks and making mistakes is how progress is made' (Unwin and Day 2005 p.121).

2.5 Synthesis of overviews

The first half of this theoretical context has provided overviews regarding education, technology and monitoring and evaluation. This has highlighted their points of confluence and the tensions involved in engaging with each sphere. Education, and especially the identification and attribution of causal impact within education, is notoriously difficult to assess quantitatively. However, a scientific rationality increasingly significant in defining value within society serves to promote a focus on results-based assessment and conceptions of value. This trend is particularly strong within areas of society engaged with ICT and infused with the value of technical efficiency. The international development arena is in no way immune from this trend and is increasingly dominated by a results-based approach emphasising good governance and accountability. It is therefore unsurprising that one encounters significant confusion and conflict when considering how best to approach monitoring and evaluation within African education.

2.6 ICT for development: rigour and appropriate engagement

2.6.1 Introduction

The second half of this theoretical context builds upon the three previous overviews by considering the history and current state of ICT for development and particularly ICT for education. I highlight the need for increased critical engagement, challenge the unquestioned economic rationale for spreading technology, and utilise development theory to exemplify this. The limited rigour in much ICT for development research is then demonstrated through two issue-specific studies regarding the plurality of technologies and the complex participatory potential of technology. In closing I focus on the specific implications of each issue in the outworking of monitoring and evaluation of ICT for education initiatives.

2.6.2 Maturing of the discipline

Early ventures in ICT for development were characterised by a noticeable lack of critique, with high hope that the emerging field might prove something of a panacea for development. Heeks (1999 p.12) notes that this is unsurprising due to the fact that, 'like any new generic technology, ICTs lend themselves to sweeping statements about what they can do for development'. Although the high failure rate of ICT for development projects is now more widely recognised, an underlying assumption still exists in many sectors that introducing ICT will in some way simply cause development (Parkinson and Ramirez 2006). This has led to recognition that much ICT for development research is overly descriptive and lacking in analytical rigour (Weber 2009, Heeks 2007, Tolani-Brown *et al.* 2009).

Within the assumption of ICT as panacea for development, a primary objective is to bring 'as much technology to as many people as quickly as possible so that they can obtain the claimed benefits it provides' (Heeks 1999 p.15). This approach tends to promote a form of technological determinism within ICT for development programmes. The popular belief that every problem has a technological fix is promoted by optimistic neo-liberal protagonists (such as Friedmann 2006) and ultimately serves to validate society in maintaining orthodox understandings of process and social relations. Such a perspective is also encountered within sectors of the academic ICT and development community who casually adopt an uncritical approach (see Brewer *et al.* 2005). Goulet (1994 p.48) articulates well the danger in this:

> 'Much irresponsible technological creation or adoption is fostered by the benevolent attitude toward change that prevails in 'developed' societies. Most scientific and technological researchers uncritically share the general society's bias that whatever is new is necessarily better. This bias gives them a vested interest in perpetuating the innate tendency of technology to impose itself independently of larger human purposes.'

It is important to engage with Goulet's warning and recognise the extent to which the 'technology as development' thesis has become entrenched within popular conceptions of development. Technology constitutes a primary symbol of capitalism and modernism, and much of what is labelled as development also constitutes a sub-project of this endeavour to strengthen the discourse of capitalist social relations (Wainright 2008). Thus there are only narrow conceptual distinctions between technology for development, technology in development, technology as development and finally, technology as the overarching solution for the development 'problem'. As within any such problematic metanarrative, it becomes easy to dismiss creative alternatives and downplay internal inconsistencies, in this case due to an unquestioned optimism regarding the place of technology within progressive society combined with its symbolic power as an emblem of individual and communal success.

The aspiration to be incorporated within the global market means that leanings towards technological determinism may be significantly amplified within certain developing country contexts. The developed world is observed and a replica of its relationship with technology is desired. This is driven, at least in part, by a belief that technology is the causal factor in 'solving' problems and promoting development in the developed world, and thus can instigate mirrored change in the developing world. Instead of recognising that effective utilisation of technology constitutes one visible but non determining dimension to development it is assumed that the uncritical adoption of technology determines and signifies belonging to the developed, modern or capitalist system (see Government of Malawi 2006). Such a perception of technology shrouds the complex array of factors that contribute to what might be considered 'genuine' development (Sen 1999). Likewise, it perpetuates and exacerbates aspiration to technology and undermines the place of restrained critique. The impact this has in shaping development priorities and decision making is explored in Chapter 8 regarding aspiration. Having outlined this issue I now focus on how it is influenced by a worldview

that conceptualises ICT for development as an endeavour concerned primarily with economic growth.

2.6.3 ICT as economic development

There is a noticeable lack of critique regarding the underlying rationale for spreading technology (see Brewer 2005). The default assumption is that the desire for more ICT is universal, 'natural', 'good' and warrants no questioning. As a result there are numerous examples of conclusions regarding what constitutes the appropriate use of ICT being reached on the basis of description, without any substantive attempt at critical assessment (see Addison 2006).

In sub-Saharan Africa it is widely acknowledged that promoting the spread of ICTs is likely to 'create capitalist tendencies' (Raiti 2007 p.4). However the point of most interest is often bypassed, concerning whether or not it is actually desirable to promote a worldwide capitalist mode of operation. The point is not to suggest that withholding technology is a desirable or popular alternative but to question the assumption of development in post-colonial societies as following a linear progression, through embracing technology, along a predetermined course towards western modernity (see Sumner and Tribe 2008). Indeed, the assumed consensus on the neo-liberal rationale for ICT within development deligitimises criticism and means few discussions engage with philosophical concerns regarding technology in development (Pal 2008). As a result, seemingly neutral technologies can be used in 'packaging an economic ideology' (Kleine 2009 p.183).

From a private sector perspective, such marginalising of critical questions within ICT for development is clearly desirable as it means conceptualising less-developed regions as potential 'emerging markets' is gradually imbibed as the norm. As Simon (2003) notes, this can define development as a project to make 'other people' more like 'us', spreading and suggesting adoption of our values and culture. Almost invariably this contains 'an implicit underlying assumption of a civilisational, technological or political-economic

hierarchy, with the donors at the summit, and the objective of development assistance being to 'uplift' the recipients' (Simon 2003 p.27).

Allowing only market forces to dictate the diffusion of ICT to developing regions means there will always be marginalised regions (Kelly 2005), with the 'bottom billion', or 'long tail' growing more slowly than any other (Collier 2008) due to the inherent focus on maximising returns and continual expansion. Corporate social responsibility has a significant and complex role in this context but will always be entwined with and ancillary to the profit objective (Blowfield 2005, Ford 2009).

Recognising that 'western market forces will continue to meet the needs of developing regions accidentally at best' (Brewer *et al.* 2005 p.25) is valuable in identifying the increased significance of digital marginalisation. However, such approaches still largely fail to question the assumption that diffusion of ICT is necessarily good, promoting a reduction of the 'digital divide' (West 2006, Panos 2004, Kelly 2005, Roy 2005). Heeks (2008 p.27) demonstrates the same assumption, suggesting that when standing 'on the threshold of ICT4D 2.0, we confront the key technical question of how to deliver the Internet to the remaining five billion people who lack such access'. Again, the key point is his uncritical acceptance that delivering, providing and potentially imposing the internet is something that should always be aspired to. The benefits of access to information and participatory communication may result ultimately in affirmative answers to this question, but it is necessary to explore the reasons underlying the assumption, rather than simply accepting it as truth.

Acknowledging that ambiguities are introduced to people's lives as a result of digital technology enables discussion to focus on the contested place of power embedded within technology and reveals as fallacious the assumption that 'connectivity is always advantageous' (Mansell 2005 p. 85). An acknowledgement of the potential for both empowering and disempowering consequence leads Mansell (2005 p.86) to call for increased focus of debate on the politics of technology and embedded ideological agendas (Kleine

2006). This also requires the adoption of a broader perspective regarding development, challenging the notion that it is always synonymous with spreading technology and market growth.

2.6.4 Alternative approaches to development

If technology, capitalism and the wider modernisation project do not have a monopoly on development, then alternative framings should be explored (Wainwright 2008). In order to address this I now review recent contributions to development theory and shifting focus and priorities. My main purpose is to demonstrate how the 'development' referred to within ICT for development is often framed in a manner reminiscent of theory from the 1970s. I begin this section by analysing the current context of development theory and its recent progression, critiquing a solely market led approach to the application of ICT in development and promoting critical engagement as a positive alternative if ICT for development is to bring long-term benefit to the most marginalised people (Weber 2009). This is well explained in Mansell's (2005 p.93) observation:

> 'People's livelihoods do not change because of technology; they change in the light of the way technology becomes embedded in the overall context of the local and the global. Where that context is consistent with poverty reduction, then it is possible for the newer and older technologies to make positive contributions.'

The recognition that development has often been synonymous with the spread of global capitalism has led to mounting criticism of orthodox practice. By the 1980s Simon (2003 p.7) notes that 'conventional development came to be challenged in some quarters as constituting little more than a self-interested Northern capitalist and geopolitical industry seeking to extend markets and perpetuate spheres of influence in a manner redolent of the colonial era'. However, despite widespread acknowledgment regarding the weaknesses of conventional development, significant contestation remains regarding the most appropriate alternatives. This is

unsurprising due to the widespread distrust of any grand narratives of development emerging in reaction to the distinctive westernising discourse that is portrayed as constituting development' (Simon 2007 p.207).

Initial work in this vein was characterised as anti-development and highlighted the extent to which modernist, conventionally defined development theory had reached a practical and intellectual impasse (Escobar 1994, Crush 1995, Ferguson 1999). Although this recognition provided opportunity to reflect on the magnitude of the impasse, it broadly failed to provide any alterative frameworks from within which to operate. More recent analyses in the form of post- and critical- development have sought to address this with a key outcome being a re-articulation of the moral imperative for sustained engagement, positioning purely anti-development ideas as largely obsolete (Simon 2006). Within the specific context of this thesis, the key point is that much of the theory and literature relating to ICT for development has bypassed, not yet encountered or almost entirely disengaged from debates of critical development theory, or even the impasse that preceded them. Indeed, Simon (2003) suggests that rather than constituting a critical voice, ICT for development theory has tended to buy into notions of a 'development continuum' and assimilate to western culture, embracing dominant meta-narratives and 'constituting latter day versions of modernisation theory' (Simon 2006 p.15). Despite this there have been significant examples of alternative, critical perspectives, challenging this notion in both theory and practice (Unwin 2009) and it is such work that this thesis builds upon.

Promoting such critical approaches is aided by exploring recent alternative conceptions of development and examining how they may affect ICT for development and education. Easterly's (2006) exposition regarding the failure of many macro-level schemes within development is a positive example of the aforementioned post-impasse position. He provides a critique of those still advocating for grand narrative approaches (Sachs 2005) and instead emphasises the impossibility of fully grasping the complex structures and systems that underlie poverty. In doing so, he argues that it is futile to

attempt to impose overarching solutions on development 'problems' (Easterly 2006b). Cameron (2005) proposes a similar shift in foundation away from development as modernism, basing genuine development on the universal right to non-deception and non-coercion (Cameron 2005 p.148). Likewise, Sen famously contends that genuine development must be assessed on the basis of whether it promotes freedom (1999) and the enhancing of human dignity (Goulet 1983).

Imaginative restructuring of the way development is conceptualised and undertaken is necessarily a constant process. It also warrants a cautionary note as, in enthusiasm for rejection of a modernist approach, it would be possible to fall back into similar traps in adopting an alternative discourse. This is exemplified by challenging the notion that working to reduce 'un-freedoms' is the same endeavour as promoting an expanding range of choice. The manner in which Sen (1999) links these two endeavours is ultimately problematic and is partially grounded in the flawed notion that immediate access to a diversity of options is an embodiment of the good life. Rather, it is plausible that a plethora of choices may lead to decreased well-being 'in the sense that we have to make more decisions than we can comfortably make' (Himma 2007 p.270).

Adopting a critical approach to technological change and the associated development implications is dependent upon clearly distinguishing between increasingly complex choices and a reduction of un-freedom. Facilitating this effectively is dependent upon understanding the most appropriate intellectual foundations for ICT for development (Wilson 2006, Heeks 2008). This requires recognising the contribution of multiple disciplines within this sector of research (Raiti 2007, Sumner and Tribe 2008, Lawrence and Despres 2004, Schoenberger 2001, Ramadier 2004, Bruce *et al.* 2004). However, in contrast to Heeks' (2009) suggestion that there is no hierarchy within the disciplines related to ICT for development, in this thesis I assert that the primary foundation is located within that study which relates most closely to the purpose and final objective, the 'for' of the discipline, that is, 'development' (Weber 2009).

2.7 Educational technologies and increased participation

2.7.1 Introduction

Having considered appropriate approaches to development I now concentrate on practical perspectives in preparation for the subsequent analysis. First, I overview different technologies and the way they are connected when engaging with ICT for education. Second, I focus on the internet and how participatory communication and education can be catalysed through increased uploading opportunities and online communities. Following this I review the potential consequences, considering issues of information and empowerment and the complex implications for effectively assessing ICT for education initiatives.

2.7.2 Computers for education

Much technology related literature is based on the implicit assumption that the term 'computers for education' is synonymous with 'ICT for education' (see Kozma 2005, Roy 2005, Steinmueller 2001). The result is a popular conceptualising of ICT for education as an exclusively computer-based arena. One consequence of this is the way ICT for education has become associated with the spread of numerous computer labs in schools across Africa. Although some such labs are utilised effectively this is often prevented due to issues of training, maintenance and mindset. In addition, the 'computers for education' view has fuelled the transporting of large numbers of derelict machines into Africa. At its most effective this is undertaken in partnership with organisations such as ComputerAid who refurbish the machines and run strict quality control procedures (http://www.computeraid.org accessed 07/02/10) and at its worst serves to exacerbate the trend of digital dumping (Puckett 2005). The recognised limitation of conventional lab-based approaches to computers has led to a rapidly burgeoning industry in developing alternative educational computing products. Innovative amongst these is the thin client solution offered by NComputing (http://www.ncomputing.com accessed 07/02/10) that provides what is

currently the lowest available 'per child' cost for computer access. In addition, various low-cost laptops are being promoted as educational tools appropriate for Africa including the high profile Classmate PC from Intel (http://www.classmatepc.com accessed 07/02/10) and XO from the non-profit One Laptop Per Child organisation (http://laptop.org accessed 07/02/10).

Despite the transition from a solely computer-lab approach towards more innovative and flexible alternatives it is still necessary to challenge the computer-based emphasis and incorporate a wider variety of technologies (Unwin and Day 2005) that offer locally more appropriate approaches (Schumacher 1973) and respond to user requirements (Batchelor *et al.* 2003). A multiplicity of factors including the aforementioned conceptions of progress and private sector agendas combine to create considerable pressure to utilise the latest and the fastest ICTs in education. This desire for progress may result in excluding pre-existing and potentially more appropriate technologies from ICT for education programmes. As noted by Batchelor *et al.* (2003 p.82): 'Existing technologies – particularly the telephone, radio and television – can often convey information less expensively, in local language, and to larger numbers of people than can newer technologies.' In the light of this I now review briefly the role of television, radio and the mobile phone in order to demonstrate the potential for alternative technologies to promote a broader view of what constitutes ICT for education..

2.7.3 Alternative technologies

There is significant and often unrecognised potential in utilising already popular technologies for educational aims. This is exemplified through Sesame Street (http://www.sesamestreet.org accessed 07/02/10), an educational television programme that helps prepare children for basic literacy in 140 countries. It is reported that 'in Egypt, more than 90% of children under the age of eight in urban areas and 86% in rural areas watch the show' (Wagner *et al.* 2004 p16). Significantly, over 50% of mothers are also reported to watch the programme regularly.

In addition to television, radio is another ICT often overlooked when considering education. However, as the most pervasive and cost efficient medium of communication across Africa (Buckley 2000, Duncombe and Heeks 2001, Sposato and Smith 2005), it still constitutes the most significant technology-based method of disseminating information across the continent (Coldevin 2003). The challenge of ensuring adequate coverage (Sposato and Smith 2005) combined with traditional dependence upon state-run broadcasters (Mtimde *et al.* 1998) has hampered the educational potential of the radio. However, proliferation of independent and community radio stations over the last two decades has engendered significant improvement in signal access (Hartenberger 2006) and quality of content (Pye and Stephenson 2003). In addition, development of the Lifeline radio by the Freeplay   Foundation (http://www.freeplayfoundation.org/lifeline_radio.html accessed 20/02/10) utilising solar and wind-up technology in place of batteries, has enabled access for marginalised communities where the cost of conventional power is prohibitive. Such initiatives have led to rejuvenated enthusiasm regarding the educational potential of the device and the development of Interactive Radio Instruction as a significant curriculum supplement in several African countries (Bosch 1997).

The development of the mobile phone has also had profound implications for social and economic interactions across the globe and led to fundamental changes in patterns of business and entrepreneurial opportunity (Dutta and Mia 2007). Between 2003 and the end of 2008 the mobile penetration level across Africa rose from 5% to well above 30%, with an estimated total of 246 million mobile subscribers (ITU 2009). Eight years ago, in 2002, Africa became the first region in the world where mobile phones outnumbered fixed-lines (Kelly 2005). As Plant (2002 p.39) notes, it is the relatively low cost and simplicity of the mobile phone that have 'made its spread and reach unique in the history of technology.' Until recently, and in spite of the impact of the mobile phone within Africa, the devices have largely been overlooked within academic considerations of ICT for education (Castells *et al.* 2007,

Garcia-Montes *et al.* 2006). This is now altering, with growing emphasis on the potential for mLearning (Traxler 2009) as progression beyond conventional eLearning, utilising the educational potential of a mobile personal device.

2.7.4 Integration and participation

In addition to viewing ICT for education as broader than just computers, it is also necessary not to view technologies as distinct and isolated, recognising how recent advancements have caused conventional boundaries between discrete technologies to be increasingly blurred. Although acknowledgement of this shift has often been ignored within academic literature (see Kozma 2005, Roy 2005) there is significant educational potential within the digitally enabled fusion of multiple technologies (Downes 2005, Garcia-Montes *et al.* 2006). This transition is linked to the increasingly participatory nature of internet communication (Addison 2006), presenting significant challenges and opportunities for education, especially in terms of peer to peer activity enabled through the capability to upload content and also gain unparalleled access to information.

This reflects the profound shift in emphasis that the internet is undergoing, from being centred on transmission and consumption into being a platform on which content is 'created, shared, remixed, repurposed, and passed along' (Downes 2005 p.5). Friedman (2006) concurs, suggesting that the ability for individuals to up-load as well as download content is potentially the most disruptive of all forces currently altering the world, representing a historical tipping point in the nature of mass human communication (Gladwell 2000). The collective term that has increasingly been used for the up-loading enabled shift that is altering the ethos of the internet and its educational potential is Web 2.0. Rather than a technical revolution, the emergence of Web 2.0 can be seen as constituting 'a social revolution ... an attitude not a technology ... enabling and encouraging participation through open applications and services' (Downes 2005 p.1).

This shift presents complex educational implications, with proponents claiming a sustained transition from internet-based education conceived in technologically determinist terms to a more participatory and open approach (Keats 2005). The full implications of Web 2.0 are only gradually emerging, but are currently exemplified through blogging environments, twitter and user-based platforms such as Facebook, YouTube and Wikipedia. As Unwin (2009 p.25) notes, the existence of such sites 'offers an unprecedented opportunity for the emergence of new trans-global communities'. Indeed, collaborative and participatory communication combined with mass uploading of content has significant potential to undermine traditional channels of power (Unwin 2009). This is grounded in Hayek's (1978 p.14) observation that 'civilisation rests on the fact that we all benefit from knowledge which we do not possess'. The espoused egalitarian and sharing nature of user-based platforms means that the nature of information production, dissemination and therefore approaches to education may be significantly challenged through their usage (Leuf and Cunningham 2001).

2.7.5 Connectivity, information access and knowledge

In the light of this, Web 2.0 may be considered as indicative of a broader shift in regard to the perception of information, from a modernist to a more people-centred model (Sunstein 2006). The first is characterized by the uni-directional imparting of information, with the assumption that this will lead to increased knowledge and thus 'development'. The second is alternatively defined by an ethos of mutual learning, sharing and the embracing of indigenous knowledge (Mchombu 2004). As Unwin (2009) notes, information and communication within development initiatives has often been seen as the former of these, with a focus on unidirectional transmission. Proponents of web-based participatory communication argue that the advent of Web 2.0 presents a challenge to the transmission model of information and education, embodying the ethos of the second approach to learning. As Castells (2007 p.213) notes, 'when the dominant institutions of society no longer have the monopoly of mass-communication networks, the dialectics between power and counter-power is, for better or for worse, altered forever'.

However, despite such claims and the clear potential of Web 2.0, it is dangerous to suggest that the change necessarily constitutes a repositioned epistemology where all knowledge is viewed as a collaborative resource as commentators have recently claimed (Battelle 2005, Sunstein 2006). Indeed, the potential benefits of these trends are highly contested in regard to education. Contrary to the knowledge sharing community that proponents claim is inculcated through the widespread uploading of material on the Web, critics assert that it equally serves to develop narcissistic individualism (Keen 2007, Sigman 2009). Rather than empowering through access to information, Keen (2007) suggests that the primary implication of Web 2.0 is to propagate a culture of amateurish content, damaging long-established and valuable channels of expertise and authority and subsequently devalue remunerated creativity and undermine formal education. Although such claims should be viewed with caution, it is clear that these trends hold significant and undoubtedly fractured consequences for society, especially when considering the liberal rationale for education.

The varied educational consequences of students and teachers uploading their own content have thus far been rarely encountered in an African context, primarily due to prohibitive bandwidth limitations. However, increasing connectivity and the significant momentum behind the Web 2.0 movement is likely to have significant educational impact across the continent in the near future (Economist 2007) with maritime cable solutions such as the NEPAD East Africa Submarine Cable System (EASSy) initiative being significant enabling factors. When operating at full speed, it is intended that EASSy will facilitate a broadband connection that is 40 times faster than conventional ADSL dial up links (Mutume 2006). The rapidly increasing quantity of new digital information potentially available for education may have striking implications for Africa (Lyman and Varian 2003). However, as Unwin (2009) notes, the increased tendency for digital storage and access is leading to increased disadvantage for those who are marginalized or excluded. A pertinent development priority is therefore to identify what

information is of benefit in education for cultivating relevant knowledge for those who need it (Schilderman 2002).

Considerable enthusiasm exists regarding the process of change in society whereby information and communication have become its key ingredients (Castells 2000), lifeblood for all interactions (Marker *et al.* 2002), and tools for creating identity (Buckley 2000) and co-dependency (Garcia-Montes *et al.* 2006). However, finding an appropriate definition of benefit and relevance in regard to information and communication 'needs' for education is notoriously esoteric. The needs of poor and marginalised people are diverse and complex and may differ significantly from the perceptions of international policy makers (Unwin 2009). Indeed, 'when development agencies and 'pro-poor' activists presume, in their middle class arrogance, that the impoverished just need information about survival or sustenance, the latter's communication rights are shattered' (Gunawardene 2005 p.1). This suggests that an increase in access to information does play an important role in empowerment through education. However West (2006) provides direct contestation, claiming that perpetual increase in access to information actually amounts to pseudo-empowerment, deflecting from other more urgent and important educational priorities. Postman (1992 p.119) concurs, arguing that 'information as empowerment' amounts to empty rhetoric, indicative of seduction by technological advancement. He concludes starkly: 'where people are dying of starvation, it does not occur because of inadequate information'.

These contrasting positions indicate the complexity of the issue but although opposing they share a common weakness in tending towards viewing information and access to it as abstracted from its application. More appropriate is viewing information as inherently joined to its application and dependent upon language, communication and understanding (Floridi 2002). This holistic approach understands that information in itself can be acquired without the recipient necessarily grasping the proposition which embodies it (Dummett 1993). The value of information is held in the potential it has to be utilised through the process of education, being formed

into knowledge and applied in life decisions (Unwin 2009). Such a mindset enables one to avoid the pitfalls identified above. Despite enthusiasm for new information and the increased access enabled through technology, it is important to refrain from drawing premature and determinist linkages between increased information and increased education. Instead, the key factor remains engaging critically to ensure that the manner of implementation is one that promotes knowledge and the educational benefits of the shift whilst minimising the impact of harmful consequences.

2.8 Conceptual framework

In the final section of the theoretical context I now draw each of the themes together to provide a broad framework within which this thesis examines the monitoring and evaluation of ICT in education initiatives in Africa. Following three introductory observations, I focus on the specifics of ICT for education and the way in which it is assessed, monitored and evaluated. Finally I identify the key analytical themes to be developed throughout this thesis.

2.8.1 Observations

Three additional observations draw together and build upon the themes outlined through the theoretical context. First, many individuals and institutions engaged in development and education work consider ICT to be inapplicable and external to their remit. Those who consider it to have significant potential are often people operating outside conventional development sectors. As a result there has often been limited integration and interaction between sceptics and protagonists. In addition, the unconventional positioning of the arena means that a chasm can exist between naïve enthusiasts and detached critics regarding the role of ICT in education in Africa. There are few individuals with the skills or inclination to bridge the divide leading to a lack of intellectual engagement and refinement of ideas (Harvey 2000). However, such interaction is vital if the education benefits of ICT are to be more fully realised. Despite the split there is now a

growing community seeking to engage productively in this manner (Unwin 2009, Tacchi and Lennie 2007).

Second, it is necessary for the technically-minded within the ICT for development community to adopt a more nuanced understanding of the journey 'development' has taken as theory and practice, and engage with lessons learnt and current trajectories. Literature regarding ICT for education in Africa rarely acknowledges its position within a rich and complex tradition regarding what constitutes appropriate intervention (see Brewer *et al.* 2005a, 2006). This exhibits itself in a noticeable lack of post-impasse development thinking regarding the conception and implementation of ICT for education. This in turn links back to the traditional lack of integration between different intellectual traditions that is now being challenged by the increased demand for exploring alternative and effective approaches to partnership (Cassidy 2007, Draxler 2008, Marriot and Goyder 2009, Unwin 2009b).

Third, whilst advocating the relevance of partnership, academics need to be fully conscious of the potential for clashing value systems and subsequent tension. There is a fine line between actively engaging with ICT to utilise it for development purposes and legitimising private sector objectives through providing academic credibility. The position of this line is not fixed and is often difficult to locate. The role of the academic is to influence the nature of the progression of technology, only occasionally to promote its spread. This involves sustained critique rather than adopting the role of sycophant to the corporation and assisting in perpetuating the notion that capitalist values constitute development. The role of the private sector within ICT for education is vital but must not be viewed as a panacea.

2.8.2 Assessing ICT for education: looking forward

This theoretical context has provided a framework from within which to address the central issue of this thesis, namely the monitoring and evaluation of ICT for education in Africa. The assumption that I work from throughout is that improving the way that ICT is utilised in education across Africa is

dependent upon an increased emphasis on monitoring, evaluation and impact assessment. Engaging with this effectively requires understanding the rationale for education, technology and progress, a clear understanding of development, and the rationale for quantifiable assessment of efficiency.

At this juncture it is worth stating explicitly that in advocating for an increased focus on monitoring, evaluation and impact assessment within ICT for education in Africa I am not aligning myself with those who traditionally emphasise the need for more quantifiable assessment within development (World Bank 2007a, Sachs 2005, World Bank Institute 2003). As shall become apparent, despite the use of similar terminology, the shift in thinking and practice that I propose emanates from an alternative foundation and has significantly different objectives. Proposing an increased focus on monitoring, evaluation and impact assessment is a timely, strategic response to the current lack of attention given to educational concerns within ICT for education programmes.

ICT does not constitute a panacea for the many educational challenges faced across Africa but in the appropriate context it may have the potential to catalyse significant reform and development (Selinger 2009). This observation serves as a useful starting point for this thesis, not as the conclusion it is often presented as being. Indeed, the applied value of this thesis is in undertaking structured investigation regarding how the catalytic and transformative potential of ICT in education in Africa can best be realised.

2.9 Aim and objectives

The central aim of this thesis is to develop a critique of current practices, assess underlying constraints and explore viable, creative alternative approaches to the monitoring, evaluation and impact assessment of ICT for education initiatives in Africa.

The primary objectives of this thesis were defined through engaging in a process of reflection and consultation with stakeholders. This began by considering a question that emerged from the literature: 'Why is the monitoring and evaluation of ICT for education programmes so difficult, and what can be done to help improve it?' During the first eLearning Africa workshop in Nairobi in May 2007, participants were asked to decide what were the most significant challenges facing effective monitoring and evaluation and they identified the issues of baselines, impact on learning, indicators and donors. At the eLearning Africa workshop in Accra one year later I presented for discussion four key ingredients of effective monitoring and evaluation that emerged from the field research. These two activities both helped the process of defining the eventual objectives of this thesis (Figure 2.6).

Key challenges in M&E as identified by stakeholders	Key ingredients of effective M&E stemming from case study research	Analytical threads underlying the key challenges and key ingredients
• Baselines • Indicators • Impact on learning • Donors	• Stakeholder participation • Healthy partnerships • Multiple methods • Emphasising process	• Reconceptualise methods • Assess partnerships • Critique pedagogy • Explore aspiration

Figure 2.6: Progression of thesis objectives and analytical structure

The themes from the first and second columns of activities were utilised in constructing an overall analytical framework that could dissect the initial observations and focus on addressing underlying themes. The focal questions for enabling this were: 'why is monitoring and evaluation not more centrally positioned in ICT for education initiatives in Africa?' and 'how can the impact

that ICT is having on education in Africa best be assessed?' In the light of these questions, the four objectives of this thesis are to:

- Reconceptualise conventional methodological approaches to monitoring, evaluation and impact assessment of ICT for education programmes, challenging orthodox practice and providing credible alternatives through a process of cyclical research-based reflection.

- Assess the role, influence and motivation of partnerships within ICT for education programmes, especially in regard to their impact in defining the nature of monitoring and evaluation processes.

- Develop a critique of the place of pedagogy within ICT for education programmes and explore the rationale underlying current emphases, especially in regard to educational outcomes and definitions of impact.

- Explore the significance of aspiration at both a personal and societal level within technology related education initiatives, especially in regard to decision making and associated consequences for effective impact assessment.

2.9.1 Thesis organisation

Having outlined the foundation for this thesis in this chapter, I now review the methodologies used throughout the field research in operationalising the aim and objectives, Chapter 3. The case studies of Ethiopia and Malawi are provided in Chapter 4 alongside summary of the research with ICWE and InWEnt in order to give context for the subsequent analysis which is structured into Chapters 5, 6, 7 and 8. The first analysis chapter assesses the methodological approaches employed and considers the strengths and weaknesses of the process. This is achieved through cyclical reflection on the innovative approaches utilised in the case studies in Malawi and Ethiopia, providing a critique of current practice and seeking to provide credible alternatives. In the second analysis chapter I focus on partnerships within

ICT for education programmes, utilising the partnership-based nature of the fieldwork to assess value systems and the challenges and opportunities created. The third analysis chapter examines the way that pedagogy is marginalised within many ICT for education programmes, considering the consequences of this regarding assessment of outcomes, definitions of impact and understandings of liberal education. The fourth analysis chapter explores the significance of aspiration within technology initiatives linked to conceptions of education, development and progress, focussing on the consequences for effective impact assessment. Chapter 9 concludes this thesis by drawing each of the themes together, offering recommendations, and prioritising educational objectives. The intention is to ensure practical application of the research and emphasise the need for both critical rigour and innovative alternatives in monitoring and evaluating ICT for education in Africa.

3. Methodology

3.1 Introduction

The purpose of this chapter is to explain how the research objectives were operationalised. In much research, the primary function of the methodology is to be a means by which to reach the analysis. However in this research the methodological processes were intrinsic to the substantive analysis. Because of this, much of the research activity involved reflecting on the processes that were taking place and then assessing their implications. In order to do this effectively, the research had to be grounded in the practical experience of undertaking monitoring and evaluation case studies of ICT for education programmes.

In the light of this the methodological approach was structured into three different categories. The first was two longitudinal case studies in Malawi and Ethiopia conducted in partnership and employing innovative approaches to monitoring and evaluation. The second was using methods to facilitate continuous reflection on the monitoring and evaluation processes taking place in the case studies. The third was three participatory workshops, email interviews and an online survey, the objective of each being to provide a broader perspective from across Africa.

3.1.1 Structure

The unusual structure of the methodology, with three different categories, combined with its position of central importance within the analysis requires that this chapter begin with a clear contextual overview and rationale. Having done this I then provide details of the four main partnership relationships which facilitated the research process, including rationale for their selection. Following this, each individual method used throughout the research is explained. I then provide an exposition on the ethical framework for this thesis and explanation for the approach adopted. Analysis of the case study

methods is central to the content of the analysis and so all such discussion is reserved for Chapter 5, a detailed analysis of these methodological processes.

3.1.2 Rationale

Although each category of methods was distinct, they did serve to inform and shape the others with constant interplay throughout the research process. The primary focus and most complicated aspect of the methodology was the case study research in Malawi and Ethiopia. The aim of the case studies was not to construct a prescriptive methodological model for monitoring and evaluation of ICT for education initiatives at the outset of the research which could then be implemented and assessed in a straight forward manner. Instead, the intention was to begin the research with critical analysis of previous documented practice and then embark upon a process of continual methodological experimentation, in order to adjust and refine the approach on the basis of previous findings.

This process of 'learning by doing' was central to the methodology; continually listening, designing, implementing, assessing, reflecting, adapting and revisiting the design throughout the three case study periods in Malawi and two in Ethiopia (Glaser and Strauss 1967, Charmaz 2006). This stands in clear contrast to the notion of a solely deductive mode of enquiry founded on 'positivist conceptions of scientific method and knowledge' which stress objectivity, the 'replication of research, and falsification of competing hypotheses and theories' (Charmaz 2006 p.8). Through utilising a combination of methods the aim was to address the research objectives from multiple angles. Using so many methods did not necessarily make the research more rigorous (Baxter and Eyles 1997, Creswell *et al.* 2003, Morse 2003). However the emphasis on staged reflection, innovation and improvement through the research process made it an appropriate choice in this context.

In adopting this approach, the case study methodology rejected the notion of inherent incompatibility between methods (Johnson and Onwuegbuzie

2004) and instead focused on utilising complementary strengths for different purposes (Johnson *et al.* 2007) through the 'intentional or planned use of diverse methods' (Greene 2005 p.255). Throughout the research critical realism formed a useful tool in conceptualising this position, acknowledging reality independent of individual thought, whilst recognising the impossibility of ever grasping this reality in its entirety (Sayer 2000). Having acknowledged the ultimately subjective nature of the research aims it was necessary then to pursue rigorous enquiry, triangulating wherever possible (Denzin 1978, Jick 1979).

This was outworked in the case studies in Malawi and Ethiopia by approaching them as a unique set of opportunities, constraints and challenges through which constantly to improve the research framework. Throughout the five periods of case study fieldwork, three in Malawi and two in Ethiopia, I immersed myself in the data that was being collected, reflecting on what was taking place and amending the approach accordingly in a cyclical manner. As such I did not view the research experience as a series of quantifiable variables (Rubin and Rubin 1995) and instead structured continual adjustment into the fabric of the process. Whilst clearly an inductive dominated mode of enquiry, operating in this way also facilitated iterative interplay between inductive and deductive approaches both regarding aims and the approach to investigating those aims, serving to instil value in both process and end product (Cohen *et al.* 2007).

This meant that it was necessary not to define tightly the analytical themes at the outset of the research, instead allowing definition to develop gradually through repeated reflection. This is based on the understanding that, as researchers, certain questions and research agendas are carried with us in embarking on fieldwork, whilst others become important having begun as new experiences cause priorities to change and analytical structures to adjust accordingly (Monaghan and Just 2000).

The research in Malawi and Ethiopia was based upon a dual approach whereby I was fully engaged with the designing and implementation of

monitoring and evaluation of ICT for education programmes, whilst simultaneously detaching myself in order to reflect on and evaluate the dynamics of the processes that were taking place. This provided opportunities for reflection on orthodox practice and subsequent methodological innovation. The aim was also to increase the credibility of the findings both regarding academic rigour and the applied purposes of the partner organisations. This was gained through designing and conducting the case studies in a manner subject to 'real world' complexities and constraints of time, budget, data, personnel and politics (Bamberger 2006, Gray 2004). In doing this, the approaches used were demonstrated to be not simply innovative but also practical and realistic, offering value to the partner organisations. Operating in this way required that I maintain two parallel roles throughout the fieldwork process, leading to a heavy work load and requiring constant internal switching between roles. This was exacerbated by my contracting Giardia lamblia and Schistosomiasis whilst conducting the case study research, resulting in a two month medical interruption from this thesis in June and July 2008 whilst I recuperated.

3.2 Context

Having outlined the rationale for the case study research I now situate it within the context of monitoring and evaluation methodologies for ICT for education and consider additional methodological tools valuable in doing this. The approach adopted in the case studies was chosen having previously investigated more conventional methodological approaches to monitoring and evaluating ICT for education initiatives in Africa (Farrell *et al.* 2007, Maclay *et al.* 2005, Kozma *et al.* 2004). Although drawing on these, I was ultimately unsatisfied with the prescriptive and often top-down implementation structure. I therefore developed linkages from related fields in searching for possible innovative methodological alternatives.

Considerable literature exists regarding methodological guidelines for conducting monitoring and evaluation in related fields such as the evaluation of technology and education programmes (Johnston and Barker 2002), the

evaluation of ICT and development programmes (Parkinson and Ramirez 2006), and the evaluation of education and development programmes (Glewwe and Kremer 2005). Despite such guides, much debate remains regarding the most appropriate methodology for evaluation of education and technology, with the need for a greater degree of thoroughness, quality and clarity widely acknowledged (Farrington 2003) with a current climate dominated by somewhat 'fragmented and uncoordinated approaches' (Roblyer 2005 p.1). This situation led Trucano (2005 p.3) to conclude that there remains 'an absence of widely accepted standard methodologies and indicators to assess impact of ICTs in education' with this being particularly apparent in regard to the lack of research concerning impact on learning outcomes within ICT for education (Wagner *et al.* 2005, World Bank IEG 2006, Tolani-Brown *et al.* 2009).

Having recognised the need for monitoring and evaluation of ICT for education programmes to embrace more holistic processes, it was useful to engage with generic monitoring and evaluation literature, and draw on systems-based thinking in designing the approach to the case studies (Morgan 2004, Watson 2006, Cabrera 2006). This provides a flexible framework (Taylor and Soal 2004) within which concepts can evolve until an internally consistent conclusion is approached. Equally valuable in this regard was engaging with empowerment evaluation (Fetterman 1996), an approach that has gained cross-sectoral credibility structured around principles of improvement, inclusion, community ownership, democratic participation, social justice and accountability (Fetterman and Wandersman 2004). Such emphases represent significant progression from conventional and solely outputs-based approaches and were valuable in shaping my own systems-based approach to monitoring and evaluation. Alongside this it was beneficial to gain practical grounding through studying the development of three related methodological approaches called 'Outcome Mapping', 'Action Aid Accountability, Learning and Planning System' (ALPS), and 'Most Significant Change' (MSC).

Outcome Mapping is presented by Earl *et al.* (2001) as an opportunity to progress beyond evaluation tools which presuppose western, linear, cause and effect based conceptions of reality (Powell 2006, Taylor and Soal 2004). The benefit of this tool is in facilitating a shift in focus, viewing learning as a process throughout the project lifespan and helping to pursue an ethnocentric approach to impact that operate more deeply than simple attribution analysis (http://www.outcomemapping.ca accessed 18/10/07). The ActionAid ALPS (Chapman *et al.* 2004) also places prominence on the process-based development of a learning culture, emphasising participation, power sharing and gender equality whilst not negating the need for accountability and external influences. Linked to these is the MSC approach to impact assessment (Dart and Davies 2003) which utilises open questions and story collection to learn about positive and negative changes that have taken place as a result of an initiative. The objective is to facilitate a greater degree of transparency than orthodox evaluation methods, being free from pseudo-objectivity and providing rich, people centred data (Sigsgaard 2002).

My approach developed by drawing on these tools which helped me to engage productively with the frequent tension 'between the creativity of the qualitative research process - which implies contingent methods to capture the richness of context dependent sites and situations – and evaluation – which implies standardized procedures and modes of reporting' (Baxter and Eyles 1997 p.505). Providing a critique of solely quantitative measurement bound approaches to evaluation is not necessarily critical of measurement in itself. Measurable, quantifiable indicators make an important contribution to rigorous monitoring and evaluation and the necessary emphasis on each of them will vary depending on client and audience. Indeed, there is no inherent error in the frequent connection between numerical results and accountability, as long as it remains a tool which is ancillary to the primary goal of transformation (Taylor and Soal 2004).

Although the methodological approaches adopted meant that I was often operating in relatively unfamiliar research territory, it was still possible to utilise the rapidly growing literature on the various approaches to assessing

ICT for development programmes (Heeks and Molla 2009). There have been encouraging examples of attempts to engage with the unquantifiable and unexpected dimensions to such research (Kremer 2003) in effective monitoring and evaluation of ICT for development (Heeks 2009) and ICT for education specifically (Wagner *et al.* 2005, Kozma *et al.* 2004).

In particular, my work built on the examples of Lennie *et al.* (2008) who emphasise a context specific, mixed method approach to impact assessment of ICT for development programmes, and Tacchi *et al.* (2009b) who promote participatory approaches and engage with Ethnographic Action Research. This comes from recognising the lack of embedded monitoring and evaluation within the arena of ICT for development, and the desire to promote more innovative and participatory approaches (Tacchi and Lennie 2007). I also utilised the example of Catley *et al.* (2008), building on their notion of participatory impact assessment as a progression from participatory rural appraisal. In this I provided practical demonstration and exploration of Wagner's (2009) argument that monitoring and evaluation of ICT for development can be used as a driver of effective change and future innovation that is structured towards the interests of the poor.

3.3 Partnership

Selecting appropriate research partners was intrinsic to realising the objectives of this thesis. I now explain the rationale for the choice of partners and give an overview of each. In considering how best to operationalise the objectives of this thesis the initial inclination was to limit the research to a particular education sector, connectivity level, technology, country, gender or age group. However, such a framework would not have enabled me to address the significant themes that were identified through the theoretical context and remain unresolved within current literature. In order effectively to explore viable alternative approaches to orthodox monitoring and evaluation of ICT for education it was of critical importance to engage with a variety of initiatives in different settings. The most appropriate way to achieve this and better understand the real-world constraints and

opportunities faced (Bamberger *et al.* 2006) was to operate in partnership with organisations already engaged with initiatives related to ICT for education in Africa.

Whilst the choice to operate through engaged partnerships rather than as a detached observer was a straight-forward theoretical decision, it presented additional complexity regarding suitable field locations, partner organisations and potential analytical variables or focus points for the research. Having investigated numerous potential partners and research locations I decided to collaborate with EuroTalk in Malawi and Eduvision in Ethiopia.

There were four significant reasons why these two companies were selected for case study partnership. First, both the programmes were already operational and the proposed timeframe for their monitoring and evaluation exercises were compatible with the pre-existing research schedule of this thesis. Second, the programmes were of interest and I considered that my involvement had potential to improve the programme outcomes with the partners demonstrated their commitment to invest time and resources into the monitoring and evaluation exercise. Third, the partners welcomed academic expertise and rigour to inform their approach to both the methodology and implementation of each monitoring and evaluation exercise. Fourth, each partner was keen to be flexible and look beyond conventional approaches to monitoring and evaluation, engaging with the innovative, process and value-based approach that I proposed.

Despite the rigorous selection process for suitable partners there were significant complexities encountered in working with both EuroTalk and Eduvision. These are addressed in detail in Chapter 6, focusing on the implications for effective monitoring and evaluation.

In addition to the case studies with EuroTalk and Eduvision there were three other significant research partners with whom I collaborated. These were the ICT4D DelPHE partnership, ICWE and InWEnt. An overview of all five

organisations, explanation of the partnerships and a table of the methods utilised with each is included below, preceded by a table explaining the progression of the field research (Figure 3.1).

	Feb 07	May 07	Sep 07	Nov 07	Dec 07	Feb 08	Mar 08	Apr 08	May 08	Dec 08	May 09
Delphe	**Winneba** One week workshop of Delphe partners	**Nairobi** Half day workshop on effective M&E			**London** One week workshop of Delphe partners				**Accra** Half day workshop on effective M&E		**Dakar** Half day workshop on effective M&E
eLearning Africa (ICWE)									**Accra** Online survey and email questionn-aire		
EuroTalk			**Malawi** Fieldwork stage 1	**Malawi** Fieldwork stage 2		**Malawi** Fieldwork stage 3					
Eduvision						**Zurich** One week to develop partner-ship		**Ethiopia** Fieldwork stage 1		**Ethiopia** Fieldwork stage 2	
InWEnt							**Zschor -tau** One week workshop -eLearning alumni				

Figure 3.1: Methodological timeline

3.3.1 EuroTalk Ltd

EuroTalk (http://eurotalk.com/en accessed 21/08/08) is a London-based publishing company producing educational software for language learning. The company have been working in Malawi since 2005, operating in partnership with the Ministry of Education Science and Technology (MoEST) in order to develop and deliver interactive learning solutions to primary school children through the use of handheld video players (http://learnaboutonline.com accessed 21/08/08).

My partnership with them was established in July 2007 and it was agreed that I would provide independent input to a planned monitoring and evaluation exercise with EuroTalk and the MoEST regarding their pilot programme in Malawi. In exchange for my assistance, EuroTalk agreed to cover all travel and living expenses during the fieldwork. This arrangement was formalised through signing a Memorandum of Understanding between the two parties. There were a total of three field visits in September 2007, November 2007 and February 2008, each of between two and three weeks in duration. The initial output of the research was a co-authored monitoring and evaluation report for EuroTalk and the Malawi MoEST (Masperi and Hollow 2008). The methods used during this case study are shown below (Figure 3.2) and are expanded on in Chapter 4 which gives a detailed account of the Malawian case study.

Method	Stage 1 Sept 07	Stage 2 Nov 07	Stage 3 Feb 08	Total
Focus groups with teachers	5	5	5	**15**
Group interviews with children	5	5	5	**15**
Individual interviews	4	7		**11**
Observation sessions	14	5	5	**24**
Baseline test	120		120	**240**
Teacher diary	5			**5**
Learning Octagon		5	5	**10**
Stories		3	2	**5**

Questionnaires		45		**45**
Research diary	15 entries	15 entries	21 entries	**20,000 words**

Figure 3.2: Methods used with EuroTalk

3.3.2 Eduvision Ltd

Eduvision (http://www.eduvision.ch accessed 01/08/08) is a Swiss company that has been operating since 2005 and are now operating under the name BlankPage Ltd (http://www.blankpage.ch/en accessed 12/01/10). They provide educational content for use on a variety of technology platforms with the aim of lowering the cost and improving the quality of primary and secondary education. In Ethiopia, Eduvision work in partnership with the Engineering Capacity Building Programme (ECBP) (http://www.ecbp.biz accessed 01/08/08), a division within the Ministry of Capacity Building (MoCB) that is partially funded by the German organisation Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ). The role of Eduvision is to provide curriculum-based content for the XO laptops (http://www.laptop.org accessed 12/09/08) being distributed across the country as part of the One Laptop Per Child (OLPC) initiative.

My partnership with them was established in December 2007 and again was formalised through signing a Memorandum of Understanding. It was agreed that I would advise Eduvision regarding their pre-existing project assessments and assist in developing and delivering an appropriate monitoring and evaluation programme for their work in Ethiopia. In return for this assistance, Eduvision agreed to cover all travel and living expenses during the fieldwork. The initial stage involved a week of discussions and providing methodological training in Zurich in February 2008. The second stage was four weeks of fieldwork in Ethiopia in April 2008 in order to establish the methodological framework for the monitoring and evaluation. The third stage was continual distance-based support to the office in Zurich and Addis Ababa between May and November 2008 regarding developing and maintaining effective monitoring processes. The fourth stage was a

further two weeks in Ethiopia in December 2008 gathering data collected since the second stage and conducting further research. The direct output for Eduvision was a monitoring and evaluation report and additional feedback regarding programme and product suitability (Hollow and Everts 2009) (Figure 3.3).

Method	Stage 1 Zurich Feb 08	Stage 2 Ethiopia Apr 08	Stage 3 UK Apr-Dec 08	Stage 3 Ethiopia Dec 08	Total
Student drawings		10 (test)			**10**
Teacher diaries				5 (test)	**5**
Focus groups		8		4	**12**
Individual interviews	3	17		10	**30**
Baseline test				200 (test)	**200**
Observation sessions		3		4	7
Group interviews with children		4		2	**6**
Stories		3		12	**15**
Research Diary	5 entries	30 entries	10 entries	11 entries	**37,500 words**

Figure 3.3: methods used with Eduvision

3.3.3 ICT4D Partnership for African HEIs

The ICT4D Partnership for African Higher Education Institutions (HEIs) promotes collaboration between Universities across Africa and the UK (http://www.ict4d.org.uk accessed 01/08/08). Central to the initiative is exploring an innovative approach to partnership based on principles of equality and empowerment. In this way it is substantively different from many other partnerships between African and European or US HEIs built on 'the basis of an operational division of labour that is erected on existing

asymmetries' (Olukoshi 2006 p.540). The partnership receives funding from DFID and is a beneficiary of the Development Partnerships in Higher Education (DelPHE) programme (http://www.britishcouncil.org/delphe.htm accessed 01/08/08). I utilised my membership of the international DelPHE project team to convene half-day workshops on effective monitoring and evaluation of ICT for education in Africa at three consecutive years of the eLearning Africa conference and participate in two related one week workshops (Figure 3.4).

Topic and role of workshop	Stage 1 Ghana Feb 07	Stage 2 Kenya May 07	Stage 3 UK Nov 07	Stage 4 Ghana May 08	Stage 5 Senegal May 09
Effective monitoring and evaluation of ICT4E in Africa (role of organiser and facilitator)		Half-day workshop with 60 participants		Half-day workshop with 45 participants	Half-day workshop with 12 participants
ICT for development in HEIs (participant)	One week workshop		One week workshop		

Figure 3.4: Workshops from DelPHE partnership

3.3.4 InWEnt

Capacity Building International (InWEnt) (http://www.inwent.org/index.en accessed 01/08/08) is a German non-profit organisation that operates worldwide and specialises in advanced training, human resource development and capacity building. Global Campus 21 (http://gc21.inwent.org/en/index.jsp accessed 01/08/08) is the InWEnt internet learning platform and is used as a knowledge portal to facilitate online training.

I was invited by InWEnt to participate in a one-week eAlumni workshop in Zschortau, Germany in February 2008. The event gathered 40 course alumni, trainers and 'eLearning champions' from 15 countries across the developing world. In exchange for access to the workshop and conducting research with participants I wrote a report for InWEnt regarding the place of monitoring, evaluation and impact assessment within eLearning programmes (Hollow 2008).

Method	Frequency
Participant observation	5 days - throughout workshop
Interview	11
Focus group	1
Research diary	Daily (total of 4000 words)

Figure 3.5: Methods used in InWEnt workshop

3.3.5 ICWE

ICWE GmbH (http://www.icwe.net accessed 08/08/08) is a German-based company that specialises in conference organisation for the education, training and ICT sectors. They are hosts of the eLearning Africa conference, an annual event to develop eLearning capacities across the continent (http://www.elearning-africa.com accessed 08/08/08).

The position of ICWE as one of the major actors within the African ICT for education sector made them an ideal partner for gaining access to a wide range of perspectives from across the continent. As the organisers of eLearning Africa, the company maintain a database of 2000 members, mainly African, which enables them to conduct research regarding how they can best improve the service they are providing. I designed an online questionnaire in collaboration with ICWE in order to gather data from these members (Appendix A). The primary agenda for ICWE was to obtain information pertinent for gaining increased donor funding, and for my research it was to ask questions regarding monitoring, evaluation and impact assessment. I received 147 responses from a total of 2000 people contacted

for the survey. In return for access to this database I wrote a report which encapsulated the findings relating to potential future donor funding of the event (Hollow 2009). The findings of the survey are explored in more detail in Chapter 4.

At the eLearning Africa conference there is an exhibition area with a variety of ICT for education organisations represented. My partnership with ICWE also enabled me to distribute email questionnaires to each exhibitor regarding monitoring and evaluation of ICT for education following the eLearning Africa conference in Accra 2008. The initial contact with 38 exhibitors received 15 responses which progressed into ongoing online conversations with a smaller group of 8 respondents (Appendix B) (Figure 3.6).

Method	Frequency
Online Survey	147 responses from 2000 surveys
Emailed interviews	15 interviews from 38 emails
Email-based conversations	8 conversations (developing from 15 initial responses)

Figure 3.6: Methods used with ICWE

3.4 Case study methods

Having explained the nature of my involvement with each partner organisation I now concentrate on the three categories of research methods previously outlined. First, a brief description is given for each of the methods utilised during the two monitoring and evaluation case studies in Malawi and in Ethiopia. Second, the methods employed throughout these case studies when reflecting upon and evaluating the processes taking place are outlined. Third, an explanation is given for the methods used in gaining a broader perspective on the research aims to complement the detailed case studies and reflection. From the perspective of an external observer it would have been difficult to distinguish in the field between the first and second research categories due to the continual interplay between the two. However, in both

planning and implementation they constituted distinct categories with different research objectives and so are presented as such. The sampling strategy for each method is discussed in detail in Chapter 5.

3.4.1 Individual and group interviews

The interviews conducted followed a variety of formats based upon the semi-structured interview (Burgess 2003) termed by Patton (2002) as the 'interview guide approach'. This meant that each interview contained more planned structure than an informal conversation but avoided determining the exact wording and sequence of questions in advance. Confidence to embrace unplanned deviations from the questions allowed exploration of rich dialogue as it developed (Burgess 2003). Individual interviews of this nature were conducted with many types of stakeholder in Malawi and Ethiopia including children, parents, teachers, head-teachers, community leaders, administrators and government officials. These interviews lasted between 20 and 90 minutes. In Malawi 11 individual interviews were conducted and in Ethiopia 25 (Appendix C). 15 structured group interviews were also conducted with groups of between four and ten children in Malawi. These interviews were conducted in Chichewa with a teacher acting as interpreter. Samples of the group interviews conducted are included in Appendix D. In Zschortau an additional 11 interviews were conducted with eLearning experts and samples of these are included in Appendix E.

3.4.2 Focus groups

A total of 15 focus group discussions were conducted with adults in groups of between four and ten in Malawi. These groups lasted for between 30 and 120 minutes and were conducted in English. In Ethiopia, 12 focus group discussions were conducted with teachers and students, also in groups of between four and ten and lasting for between 45 and 150 minutes. These groups were conducted in Amharic and English, according to participant preference. The framework used when conducting the focus groups in Malawi and Ethiopia is included in Appendices F and G. There was also one focus group conducted during the workshop in Zschortau.

Each focus group began with a structured introduction (Unwin, Tan and Pauso 2007) followed by flexible discussion with guiding questions from the facilitator. This ensured consistency and provided a commonly understood framework to facilitate both clear communication and a safe environment for dialogue (Valentine 1999). When operating effectively the focus groups also facilitated robust dialogue (Stewart and Shamdasani 1990) whilst ensuring that no one felt pressurised to share personal experiences (Bhattacharjee 2000).

3.4.3 Interactive Learning Octagon

I designed the Interactive Learning Octagon in response to recognising the need for a visual demonstration tool to help the teachers in Malawi consider the positive and negative impacts of the initiative and stimulate more detailed discussion than had been possible through the focus groups. The octagon providing a pictorial representation to assess the strengths and weaknesses of eight different dimensions to the programme by drawing on a combination of the Octagon tool (Sida 2002), radar diagrams (Catley *et al.* 2008) and Most Significant Change approach (Sigsgaard 2002, Dart and Davies 2003). The eight categories were student attendance, student enthusiasm, student curriculum attainment, student life skills attainment, teacher workload, teacher enthusiasm, device effectiveness and solar effectiveness. The intention was that the teachers would work together to create a visual representation of the impacts of the initiative as a whole.

The eight categories of potential change each had a score between -3 and +3 that the teachers selected, first individually and then reaching consensus through group dialogue. -3 signified a strongly negative change, 0 no change, and +3 a strongly positive change. Each category constituted a line of the octagon, extending from a central point and with the numbers -3 to +3 positioned equidistantly along the line, with -3 at the centre of the Octagon, 0 half way out, and +3 at the outside edge. Teacher responses were marked by circling a number on each line and then connecting each circled number to

the one on the adjacent line. This produced an irregular octagon which demonstrated the areas of most pronounced change, both positive and negative, as a result of the initiative. The outline of sample questions and scoring guide can be viewed in Appendix H. Between four and eight teachers used the tool at one time and I acted as facilitator, guiding them through the process and helped to construct their unique representation on a large piece of paper (Photos 3.1 and 3.2). The Learning Octagon was utilised ten times during the research in Malawi.

Photo 3.1: Completed Octagon on classroom floor

Photo 3.2: Completed Octagon on classroom wall

3.4.4 Stories

During the group interviews with children, particular stories were frequently alluded to and these were explored further by conducting detailed individual, conversation-based follow-up. This involved talking with children through an accompanying interpreter regarding a particular experience or perspective that they had expressed. Listening to individual stakeholders in the form of unstructured conversation provided opportunity to learn from their experiences and reveal unanticipated programme impacts (Chambers 1994). Five stories from children were gathered in Malawi and a further 15 stories from Ethiopia, an example story from Ethiopia is included in Appendix I.

3.4.5 Drawings

In Ethiopia eight children were asked to draw pictures and then explain what they had done, with the facilitator asking them to 'please draw me whatever you think of when I say the word "computer"'. The primary use of the

drawings was as a precursor to ancillary method to help the children overcome the intimidation they felt in the group interview environment (Valentine 1999). Drawing together helped them to relax and begin to talk openly whilst also focussing their minds on the subsequent discussion (Punch 2002).

3.4.6 Teacher diaries

Teacher diaries were used in Malawi and Ethiopia over a three month period. In each setting it was explained to the teachers what keeping a diary would involve and volunteers were requested. The first two pages of the diary contained handwritten instructions in which it was explained how to complete it. It was clearly stated that there were no right or wrong answers and that the diary was simply there to provide them with an opportunity to record their thoughts and feelings towards the programme alongside particular challenges encountered. Five diaries were distributed to teachers in Malawi and five in Ethiopia. The specific text written in the front of each diary can be viewed in Appendix J for Malawi and Appendix K for Ethiopia.

3.4.7 Observation sessions

Observation involved both detached overt observation of classes and also engaged observation through participating in a variety of activities within the programme setting, such as training and feedback sessions (Creswell 2005). Detailed written notes were taken to provide a record of the observations, structured around key questions and focusing on a reflection of what was taking place in order to understand and interpret broader findings (Shurmer-Smith 2002). This was time consuming but constituted a valuable method in gaining a more comprehensive understanding of the programme (Herbert 2000). Teachers were asked to conduct the lesson as they normally would, without altering the arrangements. Observing usage of the technology in the normal classroom environment provided an ideal foundation for the subsequent methods, providing opportunity to discuss successes and suggest ways to work around challenges with the children, teachers and head-

teachers. A total of 24 lessons were observed in Malawi and seven in Ethiopia.

3.4.8 Questionnaires

Questionnaires were also distributed to the head-teachers of the 45 schools in Malawi participating in the initiative requesting response to questions regarding the overall programme strengths, weaknesses, challenges and specific feedback regarding patterns of usage. The questions were phrased so as to give maximum opportunity for free expression amongst respondents and provided opportunity to gain a broad view of programme impact in locations that it was impossible to visit in person. A complete questionnaire can be viewed in Appendix L.

3.4.9 Baseline tests

Baseline testing was conducted in Malawi prior to the introduction of the programmes and then again after three months of operating. In Ethiopia the same process was followed, testing prior to the introduction of the programme, but due to government constraints as explored in Chapter 6 and 8 the second stage of testing is yet to be completed. The aim of the tests was to assess the impact of the technology on the education of the children in regard to both curriculum and life-skills.

Photo 3.3: Students completing the baseline test in Malawi

Photo 3.4: Student completing the baseline test in Malawi

In Malawi a total of 120 children were tested, 60 boys and 60 girls selected at random and evenly from Standard 3 and 4 (Photos 3.3 and 3.4). Of these, 60 were from five control schools and 60 from five test schools, selected by the government partners. The tests were conducted in Chichewa and implemented by teachers. The story below in figure 3.7 exemplifies the challenges faced in implementing the baseline tests in Malawi. A copy of the baseline test can be viewed in English and Chichewa in Appendix M. In Ethiopia an Amharic baseline for curriculum-based and life-skills test for Grade 6 and 7 students was developed in collaboration with the Ethiopia Tests and Measurements Centre. 200 children were tested in four schools

prior to implementation of the programme, the baseline test can be viewed in Appendix N.

As we approach Golgota [I am told it is a Chichewa variant of 'Golgotha'], a rural primary school, the MoEST official accompanying me warns that the children might respond strangely as, this far out from town, they rarely see white people. Arriving in the school, I sense an unfamiliar atmosphere and am ushered into the office of the head teacher where he informs me of the 'Blood Myth'. It turns out that the community are terrified of me because they believe that when white people visit it is for the purpose of stealing blood from the local children. As we wait in the office I am told that the last visit of a white person had prompted a panga-wielding mob to rapidly assemble in order to protect the children and kill the blood-thief ... In the light of this, caution is advisable and the official suggests that I should remain inside and liaise with the village leaders before attempting to conduct any baseline test. Much as I am committed to my baseline testing, the thought of being mistakenly identified as a blood thief leads me to concur with his recommendation.

Once it is deemed safe to proceed we venture outside and select the children for the testing. The underlying assumption that I am here to steal their blood means the children will panic if I try to lead them into the confined space of a classroom. So we decide to conduct the tests underneath a tree. The public setting allows a crowd of 200 interested onlookers to gather round and monitor proceedings. After a while the community chief joins the crowd and he positions himself alongside me in front of the children. I am reassured by his presence, he asks to see the test questions and I give him a copy. However, it quickly becomes apparent that the man is totally drunk as he begins, at considerable volume, to provide the children with his perspective on the answer to each question. Taking note of his suggested answers is not likely to give the children any unfair advantage, and their discreet laughter suggests they are well aware of this. I manage to distract the chief into conversation regarding his role as community chief and the testing continues in relative peace.

Figure 3.7: Research in Golgota

3.5 Methods used in reflection

This section of the methodology outlines the methods that were employed alongside the two monitoring and evaluation case studies in order to reflect on what was actually taking place in the research process. The purpose of these methods was, in effect, to facilitate a monitoring and evaluation of the monitoring and evaluation exercises. These category two methods include interviews, longitudinal interviews, focus groups, observation and research diary.

3.5.1 Individual interviews

In the latter stages of each case study, participants were asked a set of questions regarding the manner in which the monitoring and evaluation exercise had been conducted. The questions were asked in order to help participants reflect upon the process and provide feedback. A core set of three questions were used asked to participants in Ethiopia and Malawi a total of 25 times:

- What do you think would be the best way of monitoring and evaluating this programme?
- What do you think are the strengths and weaknesses of the way this programme has been monitored and evaluated?
- What changes would you make to the way that this monitoring and evaluation exercise has been conducted?

3.5.2 Longitudinal interviews

Repeated and in-depth interviews lasting several hours were conducted with two key stakeholders at each stage of the case studies. Most of these sessions occurred face to face whilst others were conducted over Skype and email. A combination of digital recording, typed responses and detailed note-taking were used in these interviews. These longitudinal interviews formed a central theme within the iterative, process-based approach to the research and

provided regular opportunity for semi-structured discussion with the two individuals most closely involved with the two research situations. An example of the questions from the longitudinal interviews is included in Appendix O.

3.5.3 Focus groups regarding process

In Ethiopia four focus groups were conducted with the five key members of the project team at regular intervals throughout the research process. This provided an opportunity to check progress and assess the strength and weaknesses of the monitoring and evaluation. In addition, the process of self-reflection through the focus group environment proved to be a valuable experience of capacity development for the team.

3.5.4 Research diary

During the daily research of the case studies I made detailed observations, written down in situ and then expanded in my research diary in the evenings. The hectic nature of the fieldwork and my dual role maintained throughout meant that making an immediate note of any significant observations was the only way to ensure that as much as possible was remembered, recorded and available for later reflection. The daily research diary of detailed thoughts constituted a primary method for reflecting upon the monitoring and evaluation process that was taking place and the issues that were emerging. This daily introspective critique of the activities, including strengths, weaknesses and problems encountered provided a valuable avenue for identifying potential appropriate innovative methodological alternatives.

3.6 Third category methods

In this section I explain the methods used in conjunction with the case studies and reflection regarding process. The purpose of these third category methods was to consolidate the other approaches and gain a broader, alternative perspective on the research aims by interacting with a wide range of stakeholders. The workshops, email questionnaires and online survey

provided three avenues through which to connect with a wider group of stakeholders and so contributed to the context specific data of the case studies, making it more transferable, credible, dependable and confirmable (Baxter and Eyles 1997).

3.6.1 Participatory workshops

I coordinated three half-day participatory workshops (Chambers 2002) regarding effective evaluation of ICT for education initiatives through the DelPHE partnership at the eLearning Africa conferences in Nairobi (2007), Accra (2008), and Dakar (2009). There were a total of 117 participants from across Africa, representing civil society, private sector, government, schools and international donors. The first workshop in Nairobi constituted a significant formative aspect of the research, providing an opportunity to shape the research agenda in a participatory manner and identify significant stakeholder priorities from across the continent.

The primary objective of the initial workshop was to identify the current central issues and problems regarding monitoring and evaluation of ICT for education in Africa. The second workshop explored in more detail what constituted effective monitoring and evaluation, considering innovative approaches through case studies. The third workshop concentrated on methods, tools and techniques for appropriate evaluation and considered potential ethical dilemmas arising. It was important for the research integrity that these issues, problems and solutions were defined by the stakeholders and so the workshops were designed and conducted in a participatory, bottom-up manner (Mikkelsen 2005). Alongside this, the workshops provided a broader perspective regarding the level of consciousness regarding key issues across the continent. An example of the way I adopted a participatory approach to the workshops is demonstrated through the design of the first workshop programme in Nairobi (2007). This involved sending an email to all registered participants two weeks prior to the workshop, and requesting that they rate what they considered to be the three most pertinent topics for workshop discussion regarding monitoring and evaluation of ICT

for education in Africa from a list of ten possible options (Appendix P). The most popular participant choices of 'donors', 'baselines' and 'impact on learning' were then selected as the themes for the three breakout discussions that took place within the workshop.

The Nairobi workshop served to generate considerable interest in my research and assisted in developing networks which I then built upon through meetings with key stakeholders and ongoing email contact. Following the workshop, reports from each of the breakout sessions were emailed to all participants and uploaded to both the ICT4D Collective website (http://www.ict4d.org) and Moodle environment (http://moodle-ict4d.rhul.ac.uk//mod/resource/view.php?id=98). The report for this workshop and the subsequent workshops in Accra and Dakar can be viewed in Appendices Q, R and S. At the close of the workshop and through subsequent email communication I encouraged participants to continue the dialogue through a discussion forum on the Moodle environment. However, maintaining participant collaboration after the event proved to be a significant challenge. I had intended that the workshop would serve as catalyst for an online discussion forum for sharing relevant experiences amongst participants throughout the year and that this in turn could constitute data for the analysis. In reality, the contributions to the Moodle environment were very limited and no ongoing conversation developed in the manner intended. Such reluctance to expend energy on sustaining online communities has been widely noted (Butler *et al.* 2002, Cummings *et al.* 2002). Despite this unanticipated set back, an alternative form of discussion did develop amongst several of these participants throughout the research as many of them also attended the subsequent workshops in Accra (2008) and Dakar (2009).

3.6.2 Interviews with related stakeholders

The InWEnt workshop in Zschortau in February 2008 provided opportunity to conduct 11 semi-structured interviews and one focus group with eLearning practitioners from across the developing world. Participants were encouraged

to reflect upon their relevant experience of monitoring and evaluation of ICT for education in Africa and then offer their analysis regarding the reasons behind its relative neglect within the field (section 4.5).

3.6.3 Online survey

An online survey was distributed in English and French through the ICWE database to 2000 individuals involved in eLearning throughout Africa. A total of 147 anonymous responses (Madge 2007) were received from 34 countries across Africa. This response rate of 7.5% is slightly lower than the 10% that Witmer *et al.* (1999) consider it appropriate to anticipate. The decision to conduct a pan-Africa survey required me to assess whether I was engaging in cheap 'data-mining' facilitated by advancements in communication technology (Chen 2004). I was satisfied that use of the eLearning Africa mailing list circumvented this problem as every participant had expressed their willingness to be contacted on such grounds and so I could not be accused of 'unsolicited mass mailing' as cautioned against by Denscombe (2003) and O'Dochartaigh (2002) in their guidelines for effective online research.

The online survey provided opportunity to understand the perspective of stakeholders involved in ICT for education across Africa, assessing the emphases from each country and sector (section 4.4). Electronic distribution gave opportunity to interact with a large number of physically disparate people in a short space of time (Harris 1997), lowering research costs and avoiding additional travel. The survey was designed and collated using the Zoomerang online software tool (http://www.zoomerang.com accessed 06/01/10) and can be viewed in Appendix A.

3.6.4 Email interviews

Email based interviews were sent to the 38 exhibitors from eLearning Africa in Accra 2008. From the 15 responses received I engaged in eight follow-up

conversations with respondents, as presented in Appendix B. The email conversations were structured around the following two questions:

- Does [*name of organisation*] conduct monitoring, evaluation and impact assessment of its ICT for education activities in Africa? If No, please explain why you do not. If Yes, please explain what you do and why you do it.

- What do you consider to be the most significant challenge faced in conducting effective monitoring, evaluation and impact assessment of ICT for education in Africa? Please also explain why you think this is a significant challenge and how you think it can best be overcome.

The initial intention was to conduct face to face interviews with each of the exhibitors during the eLearning Africa conference but illness throughout the proposed interview period prevented me from accomplishing this. Having missed the only opportunity to interact with them in person I decided that conducting the interviews by email was an appropriate alterative choice.

3.7 Ethics

Having outlined the three different methodological categories that defined my research I now focus on the ethical challenges encountered throughout the research process. Ensuring good practice in the ethics of social research is an arena of rapidly evolving complexity and concern (SRA 2003, Edwards and Mauthner 2002, Thomas 1996) and much debate has occurred within geography regarding whether to emphasise firm guidelines or individual conviction (Unwin 1997). In the light of this I now provide explanation and rationale for the positioning of the research within the ethical spectrum.

A degree of conscious engagement with ethics always constitutes a prerequisite for authentic social research. However, the specific positioning of this thesis required that rigorous ethical consideration was central throughout the research process. Ensuring ethical conduct within educational research (Bannister 2007), development research, or technology research are each sufficiently complex when considered as single spheres. However, this

research was situated at the point of convergence between the three and also faced the additional challenges of being conducted in partnership, utilising multiple qualitative methods, working with vulnerable children and operating in situations of absolute poverty (Wilson 1992). In addition, the normative agenda of improving current practice meant that, by necessity, ethical concerns were outworked throughout the analysis as well as simply explained here as abstract notions.

I begin the discussion of ethics by briefly outlining two categories of meta-ethics, identifying the challenges of each and recognising the need for a contextualised approach to employing both. The limitations of universalist ethical codes, informed consent and the maxim to 'do no harm' are then each considered, providing a framework for the alternative approach adopted in this thesis. I then present my principles-based approach of imagination, care and appropriate use of power, illustrating them with a case study of online research ethics. In closing I document the ethical checklist that was utilised throughout the research process and informed all interactions with stakeholders.

Ethics are conventionally categorised through adopting either a teleological or deontological position. The first is commonly associated with utilitarianism and the belief that ethics are primarily determined by the likely consequences of an action rather than on the basis of fundamental laws. This is most obviously understood by the axiom of operating in whatever way will result in the greatest good, or least harm, for the greatest number of people. In contrast, a deontological position rests on principles which remain constant and should be adhered to as such regardless of context or consequence (Thomas 1996).

Neither of these positions is on their own sufficient for constructing an effective ethical framework. A solely deontological position is poorly equipped to grapple with the specifics of contextualised and ambiguous research settings and a solely teleological position falls short in tending to default towards relativism. Although contrasting perspectives, both are

partially based on the flawed notion that an individual or institution engaging in decision making regarding ethics can maintain a panoptic perspective, with absolute ability to quantify value and reductively assess consequences, or assume total knowledge regardless of cultural context and conditions. In the light of this, my research sought to resist dichotomising the ethical approach into either of these two Western dominated philosophical traditions and instead recognised the need for embracing nuance and ambiguity. As Birch (2002 p.6) notes, dependence on either of these traditions may serve significantly to 'mask the complexities of ethical considerations that can be encountered in qualitative research'.

One of the significant attractions of aligning behind a traditional approach to ethics is the provision of 'a firmly anchored epistemological security from which to venture out and conduct research' (England 1994 p.81). Whilst much current social research has progressed beyond adherence to traditional meta-ethics norms it still maintains a widespread tendency to offer near unanimous perspectives regarding what constitutes appropriate ethical conduct in research. The consequences of such epistemological security may result in a somewhat sterile scenario whereby researchers simply subscribe to the ethical modus operandi established by predecessors. Throughout my research, I was forced to confront such shared assumptions and recognise the limitations inherent within them. In order to illustrate the process of doing this I now outline the contention within the widely accepted maxims of 'informed consent' and 'do no harm'.

3.7.1 Informed consent

The notion of informed consent constitutes a central tenet of much participant-based ethics amongst social researchers (Hay 1998, Edwards and Mauthner 2002), particularly in regard to appropriate interaction with children and other vulnerable populations (Holloway and Valentine 2000, Valentine *et al.* 2001). The majority of debate is framed within well-defined terms with clear emphasis on ensuring rigorous compliance with informed consent guidelines and complete understanding from participants (Miller

and Bell 2002, Bannister 2007). In contrast, my own work suggests that a more valuable line of enquiry may be found in questioning whether such guidelines are universally realistic, necessary and beneficial for all research settings.

Although the basic rationale behind informed consent guidelines is not contentious, repeated fieldwork experience demonstrated the limited value of such prescriptive approaches, revealing them as significantly detached from the reality of applied research in a developing world context. The primary limitation is in presenting informed consent, and therefore supposedly ethical research encounters as a whole, as an objectively definable goal that is attainable through compliance with a box-ticking approach to accounting for issues such as power dynamics and continually renegotiated engagement (Miller and Bell 2002). In this vein, Williams (2006) emphasises the need for consent to be 'fully' informed when conducting research with children and Hay (1998) expounds upon the place of consent in protecting children from abuse of power within research. Similarly, the Social Research Association (SRA) (2003 p.30) highlights the danger of conducting research with those 'who may find difficulty in resisting cooperation' and their increased susceptibility to persuasion because of vulnerability or lack of information. These are each laudable warnings and may constitute pertinent advice within many research contexts. However, experience in Malawi demonstrated that the notion that children should be given the choice whether or not to participate in research that is being conducted in their school is grounded in a primarily Western conception of rights that cannot be assumed as universally applicable or beneficial. The reality I encountered was that of children being co-opted by their teachers into participating. When I queried this it became apparent that the government partners considered the idea of asking for the consent of the children to be cultural anathema.

A related observation can be made in considering guidelines which suggest the need to obtain signed forms in order to ensure and authenticate participant consent as a prerequisite for research (SRA 2003). Had I complied with such instructions for avoiding manipulation and power abuses

in the research then all those unable to read and write would have been immediately ostracised. In Malawi and Ethiopia adult illiteracy figures are approximately 28% and 64% respectively (EFA 2010), and such an approach would have required marginalising these potential research participants and only allowing the voice of the educated to be heard. The detailed and prescriptive natures of the guidelines on informed consent are clearly far removed from the rough and improvised approach adopted by necessity in Malawi and Ethiopia.

These observations do not suggest that the principle of informed consent is in itself inherently negative. The pertinent point is in demonstrating the limitation of viewing full compliance and adherence to the guidelines as a prerequisite for defining what constitutes ethical research. Aspiring to avoid the abuse of power (Hay 1998) is a laudable research aim but producing increasingly complex and intricate guidelines to ensure this through informed consent constitute an ideal solution. The Social Research Association partially acknowledges this in recognising the need for the pragmatic position of 'adequate consent' which 'falls short both of implied coercion and of full-hearted participation' (SRA 2003 p.29). This acknowledgement is closer to a desirable understanding of informed consent, presented as an aspirational principle that is dependent upon locally specific engagement and less reliant on supposedly universally applicable procedures (Horton and Kraftl 2006, Van Blerk 2005, AAG 2009).

3.7.2 Do no harm

The Hippocratic maxim of 'do no harm' is frequently borrowed by social researchers in the construction of their ethical frameworks (Thomas 1996). Such a succinct and overarching instruction that guides and underpins all discussion of what constitutes ethical behaviour has clear appeal. However, my research experience indicates that when the maxim is shifted from medical to social science it becomes an epistemological impossibility and increasingly obsolete in both a macro- and micro- context.

Regardless of intent, human beings consistently cause harm to one another. One potential approach to avoiding doing any harm is to remain in bed all day and circumvent taking any action or decision making. In doing this one would successfully avoid inflicting much active harm but it would not be possible to avoid passive harm through acts of omission. If the primary objective is to 'do no harm' then the only possible outcome is a bland research agenda devoid of all risk. Social research that is beneficial and progressive incorporates an element of risk that harm will be done. Despite my conviction that the overall potential for good is greater than the potential for harm, the arena of ICT for education is a clear example of such risk-filled research, as was considered in the theoretical context, Chapter 2.

A useful recognition that harm may result from research is very different from explicitly intending to cause harm, although this too is theoretically excusable on utilitarian grounds. I never attempted to cause harm through my research but it is undoubted that inadvertent yet considerable harm may have been done to many individuals as a result of the activities undertaken. At various junctures decisions and interactions may have unavoidably and often invisibly caused harm, offence, marginalisation and the reinforcing of power inequalities. This should be acknowledged as an unavoidable reality rather than obscured under pseudo-protective codes and maxims. In the light of this, it is appropriate to employ a thoughtful consequentialist approach of risk and benefit analysis, aware of mixed consequences and unforeseeable impacts but convinced that within these parameters the research is causing or at least contributing to a greater level of good than harm.

If governed by the Hippocratic maxim, then it would be impossible to engage with a sphere of research so ambiguous and contested as ICT for education. As discussed in Chapter 2, engaging with the use of technology in development in general, and education more specifically, is an arena in which research has significant potential to cause real harm, both at an individual and societal level. It is plausible that the research undertaken for this thesis will instigate local empowerment, improved educational outcomes and capacity enhancement through engaging with the introduction of

motivational and aspirational technology, but will simultaneously contribute to disempowerment across the wider society through the knock-on effects of rapid exposure to technology. Despite the attempts to engage critically and sensitively, history may judge that the most significant lasting impact of much research regarding ICT for education was to build a bridge of respectability that legitimised and exacerbated private sector expansion into emerging markets. In effect, it is plausible that the body of research that this thesis is situated within may be considered in hindsight to have contributed towards the caricature of one dimensional man (Marcuse 1964) in regions of the world previously less overrun by the digital machine than the West. As a result of this potential, all research engaging with the role of ICT within appropriate development and education should recognise the potential for harm and proceed with caution, care and humility. Only from such a position of ultimate epistemological uncertainty is it plausible to advance with optimism that the potential for good is greater than the potential for harm and that critical engagement is a more progressive position than detached critique. Having provided the review, I now return to consider practical application, focusing on research with children and conducting research within an online environment, two specific issues that were encountered repeatedly throughout the research process and so require particular ethical consideration.

3.7.3 Conducting research with children

Much of the field research with children was spent interacting with them in group settings within a school environment. The only exception to this was when collecting stories from individual children and in these instances I was always accompanied by an interpreter. In discussion with local stakeholders it was decided that giving payment to the children for their participation would be inappropriate due to the potential for division amongst classmates, suspicion within the wider community and also a reluctance to contribute to commodification trends where it is assumed that assistance will be validated through monetary transactions. Instead, the children were given small gifts that would be considered valuable without causing division within the

community. An example of this was in Malawi where each participating child was given a small star that was stuck on their shirts and allowed to keep the pen with which they had completed the baseline test.

Alongside this it was important also to consider the wider potential implications for the children through their involvement with the research process (Punch 2002). As Padmavathi (2004) notes, children can be at risk of community exclusion or punishment if a project alters or is closed as a result of their comments. Similarly, I was aware of the distinct and ironic possibility that my research and the monitoring and evaluation process could actually detract from the ability of the teachers to teach and the ability of the children to learn (Watson 2006). Care was therefore taken to interact in a manner which caused the minimum possible disruption to the school day whilst creating a fun learning experience of some educational benefit for the participating children (Johnston 2008).

3.7.4 Ethics and sampling of online research

Considering how best to conduct ethical research in an online environment poses interesting questions due to the infancy of the context (Stewart 2000) and has potential to provoke complex dilemmas and ambiguities in regard to the blurring of public-private boundaries and maintaining confidentiality (Ess 2002, Umbach 2004, Madge 2007). Alongside this, online and ICT-enhanced research may provide considerable new research opportunities, having potential to help expose and dismantle inequalities, being 'used in transgressive, resistive, creative and participatory ways' (Madge 2007 p.668). However, in embracing this potential it is important to avoid the naïve assumption prevalent in much literature suggesting that online communication in research is inherently egalitarian (Sade-Beck 2004). Effective engagement is dependent upon an acknowledgment that fundamental ethical challenges remain constant whether online or offline, with unequal power relationships permeating all research contexts.

In the light of the complex challenges surrounding effective online research it has been suggested that the most appropriate means by which to ensure ethical practice is through developing a specific ethical code or principles unique to online ethics (Hine 2005). However, once again the notion of a 'code' infers macro-level principles which remain rigid regardless of new or emerging contexts. The solution cannot be to construct an alternative ethical structure for appropriate action in this new realm of research. It is the context specific guidelines regarding how best to apply ethical principles that change rather than the principles themselves (Thurlow *et al.* 2004).

Effective research in an online environment therefore requires rigorous engagement with the continuum of good ethical practice, rather than separating and segregating them into specific situations in such a way as to promote ever-narrower definitions of applicability. The ethics remain the same but the appropriate application of the ethics changes. This is not to deny the presence of new challenges regarding the appropriate application of ethics, and as Madge (2007 p.656) asserts 'it might not be too extreme to suggest that the particular cultural context of the internet might demand some new thinking about what constitutes ethical inquiry.' This is a valid observation but the emphasis must remain on recognising the linkages and similarities between ethics in both an online and offline context (Thomas 2004, Ess 2002a).

The two online methods used in my research were conducting 15 email interviews and an online survey with 147 respondents. Selecting these methods made the research less ethically complex than with other online scenarios such as chat-rooms and blog-based research (Umbach 2004). However, the additional complicating factor with the online survey was that it was conducted with participants in developing countries. Within Africa there are limited spheres in which it would presently be both appropriate and plausible to conduct online research due to the socially segregated exposure to such environments and the risk of accessing a privileged and digitally literate minority. As Carini *et al.* (2003) note, if you include technology related questions in an online test you will get a higher positive response rate

than if a random sample of the population had been taken. This is obviously due to the fact that only a digitally literate subsection of the population has ability to answer questions online.

My online research specifically situated within the ICT community is a notable exception to this. The respondent pool was restricted to the eLearning community who had already submitted their email address to a database and it was therefore reasonable to expect that they would have some, if limited, access to the internet. Had the research been conducted face to face it would still have engaged with the same group of digitally literate practitioners. Respondents were given two options for completing the survey in order to overcome the challenge of limited bandwidth and the prohibitive cost of connectivity. The first option was to fill in the survey online by clicking on a link and the second was offline completion through opening the attachment to the email.

These brief reflections indicate some of the challenges encountered in the research and also allude to areas of likely future contention at the confluence of online ethics and development studies research. This will undoubtedly constitute an increasingly significant dimension of research, requiring engagement with power relationships and the sampling bias represented in digital divides and participant response ability.

3.7.5 An alternative approach

The two issues of informed consent and doing no harm are indicative of a gradually increasing adherence to prescriptive ethical codes governing research conduct. Such codes have been developed due to increased legislation surrounding research and the perceived need to respond with increased accountability and governance (SRA 2003). The overall agenda stems from a perceived need to offer protection both to the researcher and the researched. Although an understandably significant concern, this has developed into an overemphasis on institutional codes (Birch *et al.* 2002), the consequences of which can be stifling.

It cannot be guaranteed that researchers will choose to act in an ethical manner, but one should not resort to the imposition of increased rules and legislation in an attempt to ensure it. As Bauman (1993 p.11) notes, moral conduct can never be assured and therefore 'we need to learn to live without such guarantees, and with the awareness that such guarantees will never be offered'. The mask of pseudo-universalism offered in codes creates the illusion of efficiency through the promotion of rule-according behaviour, but it is ultimately unsatisfactory as it serves to undermine the place of personal researcher responsibility. Similarly, it positions the researcher as a 'technical operator' of codes rather than as a 'central active ingredient' who shapes processes (Edwards and Mauthner 2002 p.15). In this, codes enable one to abdicate responsibility for something that should be driven and defined by individual and community-based reflection and analysis. As Madge (2007 p.665) asserts, 'without researcher commitment to ethical conduct, no amount of rules, regulations or guidelines will yield ethical practice'.

In rejecting the moral imperialism of supposedly universal ethical codes (Hay 1998) it is necessary to identify a positive but non-prescriptive alternative. Such an alternative recognises that it is only ever possible to make limited and partial assessment of what constitutes ethical behaviour and therefore emphasises a normative, critical process that prioritises principles, flexibility and human engagement. I now outline this approach that shaped the way I operated in the field research and in closing offer a selection of heuristics for guiding appropriate behaviour (Charmaz 2006).

Effective ethics requires principles that prepare and guide the researcher for the constant dialogue, negotiation and decision making faced throughout the research (Edwards and Mauthner 2002). It is a significant challenge that cannot be addressed by filling in a form but one that is wrestled with internally throughout every encounter with another person. A vital dimension of this is found in trusting one's own critical faculties to recognise in situ what constitutes appropriate behaviour and what is an abuse of power. This resonates with the overall methodological framework of this thesis,

continually reflecting on process in order to decide the most appropriate way to proceed (Miller and Bell 2002). This in turn is dependent upon a critical application regarding what is good and bad in a particular context rather than an abstract theory of what is right and what is wrong (Geuss 1981, Hay 1998), As Birch states, 'principles guide our perceptions of how to conduct ethical research and yet ultimately, specific circumstances and contexts inform our decisions' (Birch *et al.* 2002 p.6).

In recognition of the above, and desiring to operate in a value-based, flexible manner, a framework was developed which would ensure constant engagement with the ethical integrity of the research, based on the conviction that conducting dynamic ethical research is dependent upon an enlivened moral imagination and empowerment to illuminate issues and apply creative and critical thinking within them (Hay 1998). This should be combined with a focus on justice, not standing alone but informed by and incorporated into an ethic of care (Edwards and Mauthner 2002). Justice and care are promoted through an intentional focus on appropriate and non-exploitative usage of power, recognising that power differentials always exist within social interactions and must be constantly addressed and subverted. This is linked with the rationale for the overall approach adopted in monitoring and evaluation throughout the research. Hence, a participative and trusting model of monitoring and evaluation should be adopted, which values the inherent worth of the subject of development. Monitoring methods can therefore be employed as aids to enhance the freedom of the subject as part of the development and education objective to promote autonomy and self-determination (George 2008).

In the light of this, the following guidelines constituted a practical plumb-line for all my research decisions and conduct in the field and facilitated the process of constant internal analysis and reflection:

- Consider local specificity, flexibility and innovation as opposed to universally applicable procedures (Chambers 2005, Horton and Kraftl 2006).

- Embrace the heterogeneity of communities and the value of individuals within them (Healey and Killick 2000, Wanyeki 2000).

- Listen to people and hear their stories, adopting a non-coercive, participatory and bottom-up approach (Sillitoe 1998, Briggs and Sharp 2004).

- Be aware of the reality of subjectivity, uncertainty and positionality (Rose 1997, Mohan 1999, Willis 2003).

- Recognise linguistic complexities of cross-cultural communication (Mertens 1995).

- Operate an ethic of reciprocity: 'Do to others as you would have them do to you' (Luke 6 v 31 The Bible).

- Situate an ethic of care within an ethic of justice (Edwards and Mauthner 2002).

- Depend on personal judgement as well as theory (Rose 1997, DFID 2005).

- Refrain from giving unsubstantiated hope to participants (Hailey 2002).

- Engage with a wide variety of different stakeholders (Unwin 2005).

- Critically assess power dynamics (Miller and Bell 2002, George 2008).

- Embrace ambivalence and conflict rather than attempting to eliminate it (Wilson 1992).

- Act in a way which minimises harm and maximises good.

- Always recognise people as an 'end' not a 'means' (George 2008).

3.8 Approach to analysis

Throughout the subsequent analysis there are a large number of direct quotations from research participants that are utilised to illustrate and exemplify the assertions that are being made. Each quotation is italicised and indented for clarity. The first category of quotations is from those participants who were associated with one of the research partner organisations in the case studies in Malawi and Ethiopia. My interactions with these individuals throughout the research process made a substantive contribution to shaping the analysis and they are repeatedly referred to

throughout. For the sake of clarity, the first time that one of these research participants is referenced I introduce them with their full name and position. Following this they are identified by their surname only. Figure 3.8 lists the nine individuals referred to in this way, alongside a summary of their role. In addition are those individuals within partner organisations that I only quote once or twice. When this is the case I refer to them by their full name on each occasion in the analysis. On occasion I spoke in confidence with an individual associated with one of the partner organisations and when this is the case I indicate it in the text. Otherwise, all respondents were happy for me to cite them by name.

Name	Organisation	Role
Bjorn Everts	Eduvision	Education manager for Eduvision and primary research colleague in Ethiopia
Helina Tilahun	Ethiopia GTZ	Project worker
Márton Kocsev	Ethiopia GTZ	Project advisor
Meron Ayele	Apposit	Advisor and interpreter
Olive Masanza	Malawi MoEST	Minister of MoEST
Ostar Chagamba	Malawi MoEST	Coordinating PEA Zomba
Paola Masperi	EuroTalk	Manager of EuroTalk and primary research colleague in Malawi
Phil Johnston	Ethiopia MoE	Advisor
Thomas Rolf	Ethiopia ECBP	Project lead

Figure 3.8: Primary case study research contacts

In addition to this are the individual students, teachers and head teachers with whom I interacted during the school visits in Malawi and Ethiopia. All of the quotations from children are given anonymously, with details provided of their gender and education level. Certain teachers and head teachers requested anonymity whereas others were happy for their names to be used and this is reflected in the text.

The majority of the research encounters, quotations and reflections that are documented in the analysis occurred in the five schools in Malawi and four in Ethiopia. These nine schools are listed below with brief details to provide context (Figure 3.9). I also reference additional schools occasionally throughout the analysis and these are referred to directly in the text.

School name	Country	Notes
Chingombe	Malawi	Rural school to the east of Lilongwe
Dzenza	Malawi	Rural school to the west of Lilongwe
Mbinzi	Malawi	Urban school within Lilongwe
Mtenthera	Malawi	Rural school to the east of Lilongwe
Mwatibu	Malawi	Rural school to the east of Lilongwe
Atse Noad	Ethiopia	Urban school in Addis Ababa
Menelik	Ethiopia	Urban school in Addis Ababa
Mulo Sayo	Ethiopia	Rural school in the Oromo region
Rema	Ethiopia	Rural school in the Amhara region

Figure 3.9: Primary schools in Malawi and Ethiopia

4. Four studies in context

4.1 Introduction and rationale

This chapter presents the data collected whilst engaging in four different aspects of this thesis research: the case studies in Malawi and Ethiopia, the ICWE online survey and the InWEnt workshop. Although the subsequent analytical themes of partnership, pedagogy and aspiration (Chapters 6, 7 and 8) refer only implicitly to large parts of this data, the content of the analysis in these chapters is intrinsically dependent on this foundation of data, as it facilitated the process of iterative reflection that constitutes the core of this thesis. To illustrate, it would have been impossible to ask people about how the presence of technology had affected the processes of monitoring and evaluation, a significant dimension to Chapter 8, had I not grounded this through active engagement in an authentic monitoring and evaluation exercise. Indeed, the substance of category two methods and research, gaining worthwhile reflections and observations regarding monitoring and evaluation, was fully dependent upon rigorous engagement with each of these four aspects (as explained in section 5.2.2).

4.2 Case study of research in Malawi

4.2.1 Introduction

This case study focuses on the Interactive Learning Programme in Malawi, providing a synopsis of the research conducted in partnership with EuroTalk and the Malawi MoEST. The programme was first introduced by EuroTalk in 2006 as a result of the personal interest of the company CEO, and following initial positive feedback the Ministry requested in early 2007 that the initiative be scaled up to incorporate 50 schools. The schools selected for participation by the Ministry ranged from the Karonga District in the north through to the southernmost districts of Mulanje and Phalombe. A total of 520 handheld interactive learning aids were distributed to the participating schools. This totalled ten devices for each school, except for two test schools

which each received 20 devices for the purposes of targeted monitoring and evaluation. The devices were designed each to be used by between four and six children working together in a group. My monitoring and evaluation research focused on five test schools as a sample of the 50 participating in the programme. The schools selected were Chingombe, Mwatibu, Mthentera, Mbinzi and Dzenza.

4.2.2 Contextual review

Free primary education was introduced in Malawi in 1994 as a result of the commitment made by the country at the World Conference on Education for All in 1990. Numerous policy, budgetary and multilevel commitments have contributed to significant progress in primary education since this time. This includes enrolment figures rising from 1.9 million to 3.2 million (EFA 2010), the construction of 1,000 new classrooms and roll out of the new curriculum to 5,500 schools (LEG 2007).

However, Malawi is one of the poorest countries in the world and has a GNI per capita of $230. Life expectancy at birth is 48 years and 63% of the population live on less than $2 per day (World Bank 2006a). Within such a context of extreme poverty, the rapid advancements in access to free schooling have put the national education system under considerable strain. This was witnessed most dramatically in the immediate surge in enrolment rates from 1.9 million in 1993 to 2.9 million in 1994 (Inoue and Oketch 2008). Subsequent long term challenges faced as a result are increased class sizes, a lack of fully qualified teachers, limited teaching materials and inadequate infrastructure (EFA 2008, Nilsson 2003). Alongside this, some 314,000 children still never enroll in primary school (EFA 2010).

It is estimated that an extra 8,000 teachers are currently required to meet the target pupil to teacher ratio of 1:60 (MoEST 2008). In addition, and despite national net enrolment levels of 87%, national dropout rates remain high with only 36% reaching Standard 8, the final year of primary education (EFA 2010). Linked to this and demonstrating the ongoing challenge in regard to

teaching capabilities and educational outcomes is a declining performance in national examinations with a failure rate approaching 50% in Standard 8 (LEG 2007). A comprehensive reform of the curriculum began in 1999 in recognition of the need to ensure good quality education alongside improved access. The relevance of topics such as democracy, human rights, gender and HIV/AIDS was increasingly recognised and these have been systematically incorporated into the new primary school curriculum in the form of life skills education.

4.2.3 ICT for education in Malawi

The Malawi national ICT for Development Policy (Government of Malawi 2006) was adopted in December 2005 following input from the United Nations Economic Commission (Isaacs 2007). There are four objectives within the policy that are of specific relation to education (Government of Malawi 2006) (Figure 4.1). Within these objectives the policy states the aim of mainstreaming ICT throughout the education system, providing access to reliable computers, promoting ICT training in schools and teacher training institutions, using ICT to improve education management and establish computer-based libraries (Government of Malawi 2006).

Objective 1:

To facilitate the deployment, utilisation and exploitation of ICT within the educational system in order to improve access, quality, relevance and delivery at all levels (p.11).

Objective 2:

To achieve universal basic ICT literacy and improve the level of ICT literacy in the country (p.11).

Objective 3:

To transform Malawi into an information and knowledge-driven ICT literate Nation (p.12).

Objective 4:

To improve the management of education systems through the utilisation of ICT (p.12).

Figure 4.1: ICT for development policy objectives (Govt of Malawi 2006)

Despite this comprehensive policy documenting the Government's intent, Malawi faces significant challenges in developing its ICT sector in regard to both human and financial resources, with limited exposure to digital ICTs especially in rural regions (Geldof 2008). Isaacs (2007 p.4) notes that key challenges 'include underdeveloped ICT infrastructure, high cost of telecommunications, and unstable and unreliable power'. The policy also highlights the need actively to address the lack of capacity within the ICT sector that constrains the use of ICT in education. This is exacerbated by the 'brain drain' that occurs due to poor remuneration, pushing skilled workers within Malawi from the public to private sector and also leading to out-migration of skills into surrounding countries (Government of Malawi 2006).

Malawi has 2.2 internet users per 100 population. This places it 27th within Africa and well below the average of 4.2 users per 100 population across the continent (ITU 2009). In 2009, Malawi had 8 mobile phone subscribers per 100 inhabitants. This is the 5th lowest subscription rate across Africa, well beneath the regional average of 33 per 100 (ITU 2009).

There are various initiatives related to ICT for education taking place across Malawi, many of which are supported by funding from international donors (Isaacs 2007). Computers for African Schools Malawi is a programme that collects, refurbishes and sends computers to primary and secondary schools across the country (http://www.cfas.org.uk/malawi.asp accessed 16/02/10). It has so far distributed over 4000 computers to 150 schools and also conducts training for teachers and local IT technicians to build capacity and sustainability.

Until recently, SchoolNet Malawi was operating across the country as part of the pan-Africa SchoolNet Africa (http://www.schoolnetafrica.org accessed 12/02/10). In 2007 it was reported that 50 schools were participating in the programme, working alongside the Ministry of Education (MoE) policy to

ensure access to ICTs and ICT skills for children at primary and secondary school (Salanje 2007). The initiative was initially funded by the International Development Research Centre and SchoolNet South Africa (Isaacs 2007) but there is no indication that the programme is still operational with no current information available on the internet.

The Malawi Library and Information Consortium exists in order to deliver electronic library and information services for the benefit of education in Malawi (http://www.bunda.unima.mw/vismiss.htm accessed 16/02/10). Although there remain few libraries across the country, there are efforts to digitise Malawian publications to ensure that they are accessible online (Salanje 2007) Linked to this is the work of the National Library Services which use low-power, wind and solar powered computers to allow access in areas without electricity (Isaacs 2007) .

4.2.4 The EuroTalk approach

The EuroTalk initiative focused on the distribution of a handheld learning aid, known as an Interactive Learning Machine, slightly larger than a mobile phone and able to play video and audio through either a loudspeaker or headphones.

Photo 4.1: Students exploring the Interactive Learning machine

Positioned next to the screen were buttons which could be pressed by groups of students in response to questions asked in the lesson being watched. The device had an in-built rechargeable lithium battery with power for between four and six hours of continuous play. The per-unit price of each device was approximately US$ 55 (September 2008). The device was designed by EuroTalk and preinstalled with 25 lessons in Chichewa and 40 in English. The decision to include lessons in both Chichewa and English was taken on the basis that early learning content is most effective when communicated in the vernacular language (Bunyi 1999, EFA 2006). The lessons were stored on two gigabytes of internal Flash memory, leaving additional room for newly developed lessons to be incorporated. The lessons were designed for use in Standard 3, 4 and 5, in which children are normally between the ages of 7 and 13. Each lesson lasted approximately 20 minutes, including a quiz and covering a range of curriculum based subjects such as general studies, social studies, science, mathematics, geography, life skills and english.

Less than 5% of primary schools across Malawi have reliable access to mains electricity (MoEST 2008, Brewer 2005) and so the initiative was dependent upon a solar charging system. Each project school was equipped with a 20-Watt solar panel connected to a deep-cycle sealed battery, generating enough energy to power 20 devices. The intention was that the portable, adaptable nature of the devices (Sharples 2000) promotes the benefits of ICT in education without resorting to conventional static computer laboratories (Hoppe *et al.* 2003, Leach 2003, Lehner and Nosekabel 2002). The content was designed in order to promote outcome-based learning, linked to the Malawi national curriculum and actively supporting the government Primary Curriculum Assessment Reform (MoEST 2002).

4.2.5 EuroTalk aims and objectives

The objective of the EuroTalk study was to assess whether the Interactive Learning Programme constituted a suitable application of portable technology to support the provision of basic education within Malawi. A rigorous monitoring, process evaluation and impact assessment structure was built into the programme throughout implementation. The five key objectives of the study were to:

- Assess the impact of the programme on primary education regarding student enthusiasm, attendance and attainment.
- Assess programme feasibility in each test school.
- Identify programme weaknesses for future refinement.
- Develop teacher and organisational capacity.
- Provide feedback to partners regarding suitability of scale-up and sustainability.

4.2.6 Monitoring and evaluation methodology

Eight methods were utilised in the monitoring and evaluation exercise for the Interactive Learning Programme in the three field visits to Malawi and a total of 15 days were spent in these schools (O'Sullivan 2005). The monitoring and evaluation methodology used was participatory throughout (Huberman 1995)

and engaged with children, teachers, headmasters, community leaders, government officials and civil society representatives.

A total of 15 lessons were observed when the learning machines were being used. There were 15 group interviews with children, 15 focus groups with teachers, and another 11 individual interviews. The learning octagon was used 10 times, 120 baseline tests conducted, five teacher diaries completed and 45 questionnaires sent to headmasters (see Chapter 3).

4.2.7 Lessons learnt

The four most significant lessons learnt through the process of the monitoring and evaluation case study are now outlined. A comprehensive analysis of the findings specific to this study can be found in Masperi and Hollow (2008).

First, an increase in student enthusiasm and subsequent higher school attendance rates was reported as a universally felt impact of the initiative in each school. Assessing the quantitative impact on attendance was hampered by the lack of daily attendance records kept by the schools, making it difficult to track exact attendance patterns over periods longer than one term.

Second, the increased attendance and attentiveness of the students had an effect on the attainment of the children in both curriculum and life skills based lessons. Both students and teachers reported that the use of audio and video, as well as the continuous assessment quizzes, increased retention and affected attainment (Photo 4.2). Children spoke about how they had learnt skills useful in their daily lives, explaining how they had put into practice what they had learnt in the lessons, indicating behavioural change. The baseline test failed to verify this quantitatively due to the short testing period and limited scope of questions.

Photo 4.2: Students listening to an interactive lesson

Third, there was a mixed response from teachers regarding the introduction of the programme into their school. Most were positive, keen to utilise technology and noted that the initiative had helped them adopt new and innovative approaches to teaching. However, this was not universal and several teachers showed little interest, were fearful of using the technology and reluctant to let the children use it independently. Teachers also gave varied responses regarding the impact of the initiative on their workload. This was dependent on the manner in which the programme was implemented in each school and the degree to which it was incorporated within the lesson schedule.

Fourth, the majority of children were able to operate the devices after three months of usage receiving only minor guidance from teachers (see Zucker 2009). After the testing period only 8% of the devices had developed problems and most of these were easily resolvable through reformatting. The solar panels operated effectively in each of the five test schools throughout

the programme with all of them having adequate power to charge the devices as often as required. Across the 50 participating schools several reported problems including two faulty batteries, one loose connection and one stolen panel.

Photo 4.3: Students learning to operate the device

4.2.8 Programme future

Significant future potential lies in integrating the content of the devices with new generation mobile phones and other handheld devices becoming progressively more available across the region. Linked with this, increased ability to send and receive data in standard formats (for example Macromedia Flash, xml, mp3 or mp4) will allow for the development of user interaction. However, within all such initiatives, the technology remains a tool, ancillary to the overall aim of catalysing a more fully effective system of education. For such programmes to be of maximum educational benefit then the critical issues for consideration and action remain pedagogy, classroom integration and teacher training.

The future success of the programme is dependent upon the MoEST developing and sustaining a system of training and support for each of the schools. The limited budget of the Ministry means that such an endeavour may prove impossible without continued external donor assistance. The programme would also benefit from the development and distribution of a pedagogical guide for teachers regarding the effective integration of the devices into the lesson schedule, utilising the full range of content available.

4.3 Case study of research in Ethiopia

4.3.1. Introduction

My research in Ethiopia assessed the introduction of 5000 XO laptops into four primary schools. The initiative was a multi-stakeholder partnership between Eduvision, ECBP, GTZ, Apposit and OLPC. The primary focus here is on the educational content on the laptops that was provided through Eduvision and their Akili interactive textbook reader. For a comprehensive report documenting the role of the other partners within the XO 5000 implementation refer to Kocsev *et al.* (2009).

4.3.2 Contextual review

Ethiopia is faced with significant educational challenges from primary through to tertiary. Despite efforts to provide free universal access to primary education (UN 2000, EFA 2000), national figures demonstrate that only 71% of children are enrolled (EFA 2010), with an average of 72 primary school pupils for every teacher (EFA 2008). As with other countries across the region, increasing class sizes in Ethiopia are leading to significant difficulties in maintaining levels of attainment (Fredriksson 2004, Naidoo 2003). Regional disparities are also an ongoing challenge, exemplified through the marginalised Somali region where only 16% of children have ever attended school (EFA DME 2010). Improving educational quality, whilst ensuring equity, therefore constitutes a major challenge and is dependent upon effective teaching, which in turn requires good teacher training. The

widespread lack of textbooks and inadequate access to extra-curricular learning materials also constitute significant educational challenges.

The dominant mode of school-based education in Ethiopia can best be understood within a long-established teaching model that is influenced by both cultural and religious traditions (Lasonen *et al.* 2005). Student obedience and subservience are prioritised and emphasis is placed upon teacher authority. This model plays a significant formative role for the educated population as most current teachers and related professionals received their schooling within such a context and thus often perpetuate the top-down, rote-based approach (Smith and Ngoma-Maema 2003, Negash 2006).

4.3.3 ICT for education in Ethiopia

There has been considerable advancement in ICT infrastructure across Ethiopia in the past decade (Hare 2007). The country has a comprehensive implementation strategy for ICT in Education that forms part of the ICT for Development 2010 Plan. The stated intention in this is that the strategy facilitates 'the deployment of ICTs and other educational technologies and systems to aid the process of the enhancement of efficiency and the enrichment of the education and learning process within the Ethiopian educational system' (Dzidonu 2006 p.183). As Hare (2007 p.2) notes, the challenge is therefore 'for the government to effectively co-ordinate the implementation of the strategy'.

Despite this, Ethiopia has only 0.4 internet users per 100 population, making it the country with the second lowest proportion of internet users across Africa, higher only than Sierra Leone (ITU 2009) and considerably lower than the continent average of 4.2 users per 100 population (ITU 2009). Ethiopia was the country that expanded most rapidly in Africa between 2003 and 2008 regarding the use of mobile phones. However, despite this it still remains well below the regional average, with 4 mobile subscriptions per 100 inhabitants compared to an average of 33 per 100 (ITU 2009).

A significant reason for the overall low levels of mobile phone use in Ethiopia is the monopoly of the incumbent service provider. There is only one mobile operator in Ethiopia, run by the government and heavily regulated. The nationalised system is currently operating inefficiently and contributing to sustained high prices. This situation is widely considered to be symptomatic of a broader government agenda to control communication, prevent the spread of alternative ideologies and constrain rival political agendas (Proenza 2007). Alongside the predilection for controlling communication, there is also a lengthy tradition of technology being used in education in Ethiopia, particularly through the use of Interactive Radio Instruction and television (Tilson and Bekele 2000).

A recent high profile programme has been the government run 'plasma television' broadcasts that have operated in every secondary school since 2004 with a 'plasma mode of instruction for 35 minutes of the 45 minutes assigned for each lesson period' (Bitew 2008 p.150). The government of Ethiopia provide justification for the initiative stating that 'in the globalised world, information and communication technology is vital, installation of satellite receiving devices known as plasma display panels in every classroom at secondary level is necessary' (FDRE 2004 p.8). The pedagogical rationale, as explained by the government, is that the programme ensures all students have access to model teachers, can view laboratory demonstrations, are taught complex concepts in a simplified manner and receive simultaneous education regardless of location (FDRE 2004).

However, despite considerable government enthusiasm, the programme has been subject to widespread criticism. Having conducted a comparative analysis between government secondary schools using plasma education and Catholic schools using conventional education, Bitew (2008 p.159) concludes that 'if the state spends this money to train more qualified teachers, reduce the class size, purchase books and essential equipment for labs, the quality of education will be better than its current status'. Tessema (2006) concurs and argues that not only is the programme an ineffective use of educational

resources but also that it serves to contribute to the deskilling of teachers across the country because their role is reduced to that of facilitator. In addition, Tessema (2006) suggests that the automatic and non re-windable nature of the broadcasts serves to perpetuate an outdated didactic approach to learning. This is pursued more fundamentally by Hussein (2006) who criticises the project as being part of the neo-liberalising of education within the country. Having analysed teacher perspectives on the programme, Hussein (2006 no pagination) asserts that 'there is a great mismatch between the rhetoric of the Ethiopian MoE (the intended active learning/student-centred approach) and the actual experience of teaching and learning in poor Ethiopian schools where teaching is done through plasma television'.

An additional pan-Ethiopia ICT and education project is SchoolNet Ethiopia, a joint initiative from the MoE and UNDP that is affiliated with the wider SchoolNet Africa (http://www.schoolnetafrica.org accessed 15/02/10). Hare (2007) reports that the project has equipped 181 schools with labs of at least 15 networked computers with internet connectivity. However, it is difficult to access information regarding the current status of the programme and the website is no longer functioning (see http://www.schoolnet.et accessed 15/02/10).

The Higher Education sector in Ethiopia is undergoing rapid expansion, with ten new Universities currently being constructed to complement the 13 that were opened in 2007 (Bass 2009). The small number of qualified academic staff and limited relevant curriculum make this is an ambitious target that is leading to significant challenges across the sector (Assefa 2009). Prior to this initiative it was recognised that most Universities in the country had limited connectivity and lacked a network infrastructure, with only a minority of students utilising computers in their learning (Hare 2007). Integrating ICTs into learning is a central facet of the initiative to build new Universities, with plans to invest heavily in ICT infrastructure and develop relevant ICT capacity through skills training (Bass 2009).

4.3.4 The Eduvision approach

The intention of Eduvision was that their technology would act as an effective mediator between the established rote based model and more interactive, participatory approaches to education. The functionality offered by the Akili Reader was intended to position the student in a role where they shape their own flexible learning (Ellerman 2004) and develop creative and independent thinking skills (Carr 2005, White 1982) whilst remaining within the framework of the established curriculum based environment and recognising the vital role of teachers (Kirschner *et al.* 2006). This was assisted through utilising local language content from Amharic textbooks (Stroud 2002, Mazrui 2000) as a foundation for additional exploratory content.

Eduvision were only one partner within the multi-stakeholder initiative and it was the pre-existing presence of the other partners in Ethiopia that led to the decision from Eduvision to operate there. OLPC adopted a distinctly different pedagogical approach, promoting constructivism, as reflected in the Sugar applications on the XO laptops. These were tailored to activity-based tasks designed for a child to complete independently, theoretically without any need for teacher supervision (Cromer 1997). A detailed analysis of the implications of the overall OLPC approach is reserved for Chapter 8. For a more detailed study regarding the overall efficacy of the OLPC initiative refer to Kraemer *et al.* (2009), Leaning (2010) and Unwin (2010). For an analysis of the specific educational issues associated with introducing XO laptops into classrooms refer to contrasting reports from Hartel (2008), Kort and Reilly (2008), Hooker (2008) Nugroho and Lonsdale (2009) and Kipp (2009). For a broader summary of various low-cost computing devices being introduced into the education arena across the developing world see Pal *et al.* (2009) and Zucker (2009).

4.3.5 Eduvision aim and objectives

The primary aim for Eduvision in conducting a monitoring and evaluation exercise was to assess both the feasibility and impact of introducing the Akili Reader software into Ethiopian primary schools on the XO laptop. However,

in order to reflect the involvement of ECBP as the lead partner in this programme, the remit of the monitoring and evaluation exercise was expanded to assess the wider feasibility and impact, including capacity development and the XO laptops alongside the Akili Reader software.

The primary objectives of the Eduvision monitoring and evaluation were to:
- Assess the potential for the programme to influence rote-based approaches to learning and promote a more active and participatory learning environment.
- Assess the impact of the programme on student attendance and motivation.
- Assess the impact of the programme on teacher motivation and enjoyment.
- Assess the impact of the programme on parents and the wider community regarding their perceptions of education and technology.

Additional objectives specific to Eduvision were to:
- Test and enhance the Akili Reader software in an educational context with little previous exposure to digital technology.
- Test and refine the process of converting Amharic textbooks onto the Akili Reader.
- Build strong partnerships with the relevant implementing bodies in Ethiopia.
- Better understand the effectiveness of the Akili Reader for schools in Ethiopia.

4.3.6 Rationale for monitoring and evaluation

Eduvision focused on monitoring and process evaluation throughout product development and implementation and adopted a multi-method, systems-based approach (Watson 2006). Emphasis was placed on the three guiding principles of understanding socio-cultural context, (Horstman 2004), minimising abuse of power (Eyben 2005) and maximising capacity development for all stakeholders throughout the process. The monitoring and

evaluation was undertaken in partnership with stakeholders and all the methods were designed in consultation with relevant authorities to ensure cultural applicability. Following the completion of the Eduvision monitoring and evaluation, all the methods designed were transferred to ECBP to utilise in their ongoing assessment of the programme.

Shifting priorities within the MoCB, combined with logistical and resource constraints as discussed in Chapter 6, meant that it has not yet been possible to conduct a comprehensive statistical assessment of the impact of the Akili reader. Despite this, outputs concerning qualitative impact, challenges and recommendations are valuable in shaping the Eduvision and ECBP approach to future projects.

4.3.7 Implementation

The Eduvision partnership with ECBP began in December 2007 with the initial pilot phase of 60 XO Laptops (Everts *et al.* 2008). This early involvement enabled Eduvision to assess the technical and educational suitability of the Akili Reader software for use in Ethiopian classrooms. The encouraging initial results at this stage demonstrated the potential viability of Eduvision providing appropriate educational software for the XO 5000 project. Prior to the rollout of the XO 5000, Eduvision formed an implementation partnership with Apposit, a technology solutions company situated in Addis Ababa. The purpose of the partnership was to convert government issued curricular textbooks into an interactive electronic format that could be used on the Akili Reader software.

Photo 4.4: Students in Ethiopia exploring their XO laptops

Photo 4.5: Students in Ethiopia demonstrating the XO camera

In early 2008 the launch of the XO 5000 programme was facilitated by the OLPC 'Give One Get One' initiative in conjunction with donations from the city of Florence. The objective was to distribute and implement 5000 XO laptops into four primary schools. Two of these schools, Menelik and Atse Noad, are located in Addis Ababa and were involved in the original pilot phase of the project in 2007 (Everts *et al.* 2008). The other two schools were chosen by ECBP for their rural location and regional diversity. Mulo Sayo is situated a two hour drive from Addis Ababa in the Oromo region, and Rema six hours from Addis Ababa in the Amhara region. The school in Rema relied

on the donation of solar panels from the German Solar Foundation (http://solarenergyfoundation.com accessed 23/02/10) in order to power the laptops. However it transpired that the solar panels provided by the foundation produced insufficient energy, and as a result ECBP chose to recall the laptops from this school in July 2008. The implications of this decision are discussed in Chapter 8.

As the lead and initiating partner within the programme, ECBP have been responsible for strategy, logistics and overall implementation. ECBP are encompassed within the MoCB which is the Government ministry with overall responsibility for the programme. The MoE also assisted through provision of content and advice. OLPC provided the XO laptops and gave technical and implementation advice. Eduvision provided the Akili Reader software and took initial lead regarding monitoring and evaluation. Apposit was the local implementation partner for Eduvision and focused on content conversion into Amharic.

4.3.8 Monitoring and evaluation methodology

The monitoring and evaluation of the XO 5000 programme utilised six methods and focussed largely on qualitative data collection. This fitted the aim of documenting stakeholder perceptions in order to improve the product content and implementation procedure. The methods used were 27 individual interviews, 12 focus groups, six group interviews, 12 stories, seven observation sessions and a baseline of 200 tests (Chapter 3).

4.3.9 Lessons learnt

Six significant lessons from the process of implementation and monitoring and evaluation are now outlined. For a comprehensive review of the analytical themes specific to this study refer to Hollow (2009a). Again, the primary purpose here is to provide context for the subsequent thematic analysis of Chapters 5, 6, 7 and 8.

First, multiple perspectives coexist regarding the primary purpose of the XO 5000 programme. A recurring challenge in assessing the programme was the diversity of perspectives and motivation amongst stakeholders. Agendas concerning political and economic motivation within government and the private sector are often stronger than the educational agenda which is theoretically driving the programme (Kraemer *et al.* 2009).

Second, there is clear motivation for the students to play and experiment with the laptops (Photos 4.4 and 4.5) and this has both positive and negative potential repercussions (Vota 2009, Leaning 2010). The tendency to play could be harnessed in a more effective manner so as to enhance the educational aims of the project. Links need to be established between the games, activities and functionalities that are available on the laptop and the curriculum within which the education occurs.

Third, classroom integration and teacher training remain the long-term challenges for programme sustainability (Kipp 2009). There is significant disparity between the espoused situation of integrated curriculum-based learning with the laptops in the classroom and the more dominant reality of home-based and non-curricula usage. Effective teacher training should acknowledge that teachers are busy and often reluctant to spend time out of school hours learning how to use the new technology (Photo 4.6). Providing financial or other incentives should therefore be considered if training requires teachers to work outside their normal hours of employment.

Photo 4.6: Teacher training in Rema

Fourth, the prestige associated with being a school selected for the initiative meant that some stakeholders were unwilling to criticise any of the activities taking place. Awareness regarding cultural and personal reluctance to engage with critical feedback should be incorporated into both future programme implementation and monitoring and evaluation. In addition, it transpired that certain teachers were only participating in the teacher training and monitoring and evaluation activities under duress, attending because they felt coerced by their headmaster and were afraid of the consequences of dissenting.

Fifth, the Akili Reader has a significant role to play in ensuring that the educational potential of the XO laptop is more fully realised. The future of the XO 5000 and similar programmes involving low-cost laptops for education may be dependent upon ensuring that appropriate curriculum-based content is installed from the outset and that sufficient training is given for effective integration.

Photo 4.7: Everts exploring the XO laptop with students

Sixth, the monitoring and evaluation exercise had significant positive impact on the manner of programme implementation and capacity development of partners. Investing in monitoring and process evaluation through the initial stages of the programme had positive repercussions for the wider implementation approach of the partners. It enabled the implementation team to gain a better understanding of the needs and concerns in the schools and promoted a more culturally and logistically appropriate approach amongst all partner organisations.

4.3.10 Programme future

The XO 5000 programme is currently awaiting additional funds in order to facilitate a national rollout. If this expansion occurs then it is important that awareness is raised with schools, parents and relevant authorities in the planning and implementation process as a means of ensuring quality and relevance whilst promoting engagement and ownership. This requires the teachers involved to be able to see the tangible benefits of using laptops in the classroom both for themselves and the students. Without this, they will quickly lose motivation and lack incentive to maintain participation. The provision of good quality, interactive digital textbooks from Eduvision may offer substantial added value in this respect, aiding curriculum integration and sustaining teacher and student motivation through providing demonstrable educational benefit.

Realising this potential is dependent upon sustained product development of the Akili Reader. Throughout the implementation period Eduvision encountered numerous technical challenges associated with converting the textbooks for use on the laptops. This was exacerbated by the failure of the automated book installation process created by Eduvision. The peer to peer wireless networking system used by OLPC that is called the mesh network, conflicted with the wireless signals of the school server when more than 50 students attempted to load books at the same time. The long-term success of the Akili Reader as a viable ICT for education software tool is dependent on the volume, quality, diversity and accessibility of the content that it contains.

4.4 ICWE online survey

4.4.1 Context

The purpose in conducting a survey in partnership with ICWE was to address the lack of a pan-Africa overview on monitoring and evaluation of ICT for education from a practitioner perspective. The survey included 147 eLearning practitioners from 34 countries across Africa. Here I focus on the results regarding current challenges, priorities for action and the role of donors

within the ICT for education arena. I then outline what the survey results demonstrate regarding the place of monitoring, evaluation and impact assessment and give related recommendations for effective progress.

The majority of survey responses come from four sectors: Universities (36%), NGOs (22%), Government (13%) and the private sector (12%). Of the 34 countries represented, responses were concentrated from Kenya (18%), South Africa (14%) and Nigeria (12%). Ethiopia (6%), Uganda (5%), Zambia, Senegal (each 4%), Ghana, DRC and Tanzania (each 3%) were additional countries with relatively high response rates.

The survey was designed in order to collect data from current ICT for education practitioners within Africa and as such was not intended to be in any way representative of the wider education community in Africa. The intention was to gain a broad array of perspectives rather than a sample representative to fit pre-existing criteria. The survey was available in English and French to ensure accessibility to both Anglophone and Francophone Africa. Of the responses received, 125 were given in English and 22 in French. The survey content, structure and design had contributions from a variety of ICT for education practitioners.

4.4.2 Objective of the survey

The objective of the survey was to gain background information regarding the ICT for education context that would enable me better to understand the reasons for current dominant approaches to monitoring and evaluation. In order to do this I focused my questions on asking why respondents considered ICT for education to be important, what they considered to be the priorities for action, and what the role of donors may be within the sector. The follow summary and analysis draws together the survey responses using direct, anonymous quotations.

4.4.3 The importance of ICT for education

Four dominant themes emerged when respondents were asked why they considered investing in ICT for education to be important for the development of their country. The first of these related to a generic notion that eLearning is good for development, expressed with responses such as 'it provides avenues for human development', 'it bridges the digital divide', enabling participants 'to fit in the global economy' and in order 'to be up to date with the advanced countries'. The second theme related more specifically to the increased educational opportunities available from ICT in education, with respondents noting 'access to quality open educational resources' and 'allowing equitable access to information', which helps to 'foster information exchange and sharing' and leads to the 'promotion of 21st century skills'. The third focused on changing approaches to teaching and learning, with respondents commenting that ICT in education meant 'professors are able to invest in more innovative teaching', 'students are active in their own learning' and that it 'bridges the gap between learner and facilitator', helping to 'improve the teaching methods' and 'reducing pressure on resources'. The fourth theme identified increased connections, access and flexibility and was demonstrated through responses highlighting the 'flexibility of hours', the opportunity to 'study whilst working' and the fact that 'learning can take place anywhere'. Alongside this was acknowledgement that using ICT in education can serve to 'widen (the) reach of learning opportunities', acting as a bridge for the educational 'gap between the rural and urban areas'.

The most significant positive change occurring since the introduction of ICT in education was identified by 24% of respondents as improved student motivation. The second most popular answer was the improvement in student attainment with 15% of responses. Third, with 11%, was that the local community had increased the value it placed on education as a result of introducing eLearning. In answering the converse question, 37% stated that the most significant negative change from ICT in education was the higher costs. Another dominant complaint regarding ICT in education was the fact

that equipment got stolen more often following the introduction of the learning resources.

4.4.4 Priorities for action

Respondents were given a choice of eight categories within which to identify their priority for action on technology in education. The categories were hardware, software, training, management, bandwidth, electricity supply, donor funding and 'other'. First, they were asked to answer in regard to the programmes they had personal involvement with, and three clear priority areas emerged.

The first priority area, highlighted as most significant by 35% of respondents, was the issue of training. An additional 42% considered this to be either the second or third most significant priority area. Respondents gave a variety of reasons why they had selected training, reflecting the diversity of activity encompassed within the term. Many pointed to the simple fact that very few teachers and lecturers are currently able to use technology effectively in education because of the limited opportunities available to learn how to do so. This was linked to a reported lack of understanding and appreciation of the potential of technology enhanced education to teaching and learning. It was suggested that knowledge regarding eLearning leads to an increase in motivation, an appreciation of issues surrounding integration, and subsequent increase in appropriate and innovative usage. This in turn was believed to lead to capacity development for people to begin developing their own content for effective teaching and learning.

Following this, identified as the top priority by 20% of respondents was the issue of donor funding. An additional 25% of respondents identified this as the second or third most significant priority area. The reasons for this were focused around the widespread lack of funds available for people to implement the ICT for education programmes that they had planned, particularly in relation to prohibitive start-up costs. In addition, a recurring

theme focussed on the lack of budget allocation for staff development and training, and subsequent lack of human resources in the form of trainers.

The third most common response, from 18% of respondents, was that bandwidth is the top priority for improving eLearning. Another 40% considered this to be either the second or third most significant priority area. Responses focussed around the prohibitive cost of bandwidth with one respondent stating that 'the high cost of bandwidth in Africa just defeats the whole purpose of eLearning'. The recurring monthly expense meant that people are careful in their usage and forced to limit the amount of content that is downloaded. When questioned regarding the highest priority for Africa as a whole rather than for their programme specifically, respondents again prioritised training, bandwidth and donor funding, with 24%, 23% and 15% of responses respectively.

4.4.5 The role of donors

The analysis regarding donors is taken first from the 20% of respondents who identified 'donor funding' as highest priority for the programmes they are personally involved with, and second from the 15% of respondents who answered the same regarding eLearning across Africa as a whole. The term 'donor' incorporated bilateral, multilateral, private sector and civil society contributions.

Within programmes that respondents were personally involved with, the overarching priorities for donor engagement focussed around training, infrastructure and start-up costs. In regard to training, teacher training, training of trainers and scholarships for course participants were identified priorities. More widely, funds were requested in order to raise public awareness regarding the potential of ICT in education and specifically eLearning. In regard to infrastructure, the purchasing of both hardware and software were prioritised, alongside funds for ongoing maintenance for programmes.

A similar set of issues was identified when answering regarding the priorities for donor intervention across ICT for education programmes in Africa as a whole. Training and capacity development were repeatedly emphasised, alongside more specific requests for funding in order to host workshops. A recurring theme from respondents was the frequent impossibility of engaging with a new ICT for education initiative without some form of donor assistance. As a result, initial start-up costs were considered to be an appropriate priority for donor assistance and the most regularly identified specifics within this were hardware, software, bandwidth and infrastructure.

4.4.6 Monitoring, evaluation and impact assessment

The fourth focal area of the survey was regarding the place of effective monitoring, evaluation and impact assessment. Respondents were asked firstly what they considered to be the most significant factor limiting the implementation of effective monitoring, evaluation and impact assessment within the programmes they had involvement in. The most common answer was 'lack of internal organisational capacity' with 39% of respondents identifying it as most significant. The second most common direct response, with 13%, identified the fact that such activities were 'conducted without stakeholder participation'. Somewhat surprisingly, only 9% suggested that pressure from donors was the most significant constraint.

Following this, respondents were asked three open questions, first regarding what they saw as the three most significant challenges in conducting effective monitoring, evaluation and impact assessment within ICT for education programmes across Africa as a whole, second why this was the case, and third how they should best be addressed. This resulted in over 300 discrete answers with the most striking theme being the diversity of challenges identified. Recurring issues were infrastructural constraints, lack of training, prohibitive costs and logistical challenges, cultural attitudes surrounding assessment, imposition from supply driven agendas, limited awareness and ineffective leadership, absence of standards, baselines and confusion regarding methodology and terminology. Within the broad array of

responses, three dominant themes emerged focused around resources, infrastructure and understanding.

In regard to resources, the main areas lacking were money and personnel. The limited funding, limited trained personal and 'lack of good monitoring and evaluation professionals' occurred repeatedly throughout the responses. These constraints are each exacerbated by the fact that monitoring, evaluation and impact assessment are generally viewed as a low priority and 'considered difficult, time-consuming and expensive'. Alongside this, the lack of infrastructure and systems in place to facilitate effective monitoring, evaluation and impact assessment was a frequent complaint. This was linked to the issue of ineffective 'management' and limited 'internal organisational capacity' resulting in limited opportunities for training, capacity development and lack of understanding regarding appropriate methodology and 'monitoring tools development'. It was considered that this led to a situation where potential monitoring, evaluation and impact assessment was hampered by unreliable data collection, lack of baselines and the challenges surrounding gaining honest, transparent feedback.

The final area of challenge was related to overall understandings of the role of monitoring, evaluation and impact assessment within an ICT for education programme. Respondents noted the difficulty of getting key stakeholders to 'value the importance of monitoring and evaluation' and the 'lack of interest' from authority figures within programmes. A consequence of this was a lack of motivation and limited buy-in to the process, with a challenge of 'getting enough parties to participate in evaluation'. As a result, where such exercises were undertaken they were often 'conducted without stakeholder participation' and became perceived as a threatening and externally imposed activity.

The variety of responses also demonstrated the different perspectives regarding what monitoring and evaluation actually entails and why it is of significance to begin with. Despite this, there was a degree of clarity regarding how current practice might be improved with respondents

highlighting the following five priorities. First, invest in providing training so people understand the specifics of how to assess programmes and are aware of its importance; second, ensure that impact assessment strategies are developed at the early stages of programmes, allocating financial and human resources for this purpose within the programme budget; third, ensure transparency and good governance within monitoring and evaluation and have no tolerance for corruption in partnerships; fourth, ensure that African educationalists have a central role in designing the monitoring and evaluation of programmes rather than just technologists; fifth, engage end users and beneficiaries actively and systematically in the design of the evaluation process.

4.5 InWEnt workshop

4.5.1 Context and structure

Participation at the InWEnt eAlumni workshop at the invitation of Dr Til Schoenherr provided ideal opportunity to engage with a wide variety of ICT for education experts and hear their perspectives regarding monitoring, evaluation and impact assessment within the sector. During the workshop I engaged in the group activities, conducted extended participant observation, and held lengthy discussions with attendees. In addition, I conducted 11 individual interviews and one focus group with five participants.

4.5.2 Observations

The ICT for education initiatives represented at the workshop demonstrated a multiplicity of approaches in regard to monitoring, evaluation and impact assessment including actual experience within projects, perceived limitations, constraints and ideals of best practice. Significant factors were noted to be the variety in project lifespan, different scales of project operation, the global representation and variety of cultural backgrounds. However, despite some projects operating for up to five years, there were no examples of thorough impact assessment based on education or capacity development objectives.

The experience of interacting with these participants demonstrated to me that I had previously maintained an overly optimistic perspective regarding the overall levels of consciousness concerning these issues within the ICT for education arena in Africa. I reflected upon the implications of this at length in my research diary (20/02/08):

> *'Up to now I have been thinking that producing a useful thesis requires interacting with experts in monitoring and evaluation of ICT for education in Africa in order to get the best possible input and advice. The problem is that this gives an overly optimistic perspective that ignores what the average practitioner is thinking and doing. Through interactions with workshop participants here it is slowly dawning on me, through repeated blank faces when I mention it in interviews, that monitoring, evaluation and impact assessment is simply not a priority for most practitioners. My "nice" eLearning Africa workshop, although useful, gave me a skewed perspective regarding the level of consciousness of detailed monitoring and evaluation issues. I subconsciously assumed that those 60 people in the eLearning Africa workshop were somehow representative for all the programmes in Africa and were roughly reflective of the general level of understanding. In retrospect this is clearly not the case and I probably had 60 of the most accomplished practitioners on the continent in that room.'*

4.5.3 Marginalising impact assessment

There was widespread recognition from participants regarding the value of monitoring and evaluation and impact assessment. However, this was frequently accompanied by an acknowledgement that factors such as enthusiasm for projects, limited time and money, and a focus on technology often caused it to be marginalised.

The current widespread enthusiasm for ICT in education means that practitioners often do not consider themselves to have time to pause and reflect regarding how monitoring and evaluation can be incorporated effectively within their programmes. The rapid expansion of the field means that there is limited pressure to engage with complex issues of defining outcome-based objectives within proposals. The level of scrutiny that may be required in other spheres of development work is not yet required in ICT for education. As expressed by Esther Wachira, Senior Programme Officer for GeSCI in Kenya (19/02/08):

> *'What we're doing with eLearning is exciting, there are so many positives and enthusiasm that this overshadows the negatives, you don't take time to figure out what we are missing, what we could have done differently. So we don't think too much about meeting the objectives.'*

Despite the enthusiasm surrounding ICT in education, the majority of participants at the project level are still undertaking it in addition to their normal workload. As a result, eLearning activities are often squashed into whatever spare time is available. This means that monitoring and evaluation is never the top priority, as expressed in a focus group with the NOLNET team (19/02/08):

> *'It is always the same small handful of people trying to do a mountain of work. Everyone was aware of the fact it [monitoring and evaluation] needed to be done and it kept being pushed to the side.'*

A significant area of ambiguity surrounding the marginalising of monitoring and evaluation was in regard to finances. The two contrasting quotations below demonstrate how some respondents perceived money as the reason why it is marginalised whilst others saw securing money as the reason to focus on it. Despite this, participants agreed that undertaking a full impact assessment is both prohibitively expensive and time-consuming. As Wachira noted (19/02/08):

'In the institutions we have worked with, monitoring and evaluation only comes into the programme when someone from outside asks for it. When more money is needed for the project then someone asks for an evaluation, so the project sends some people out into the field to do it… just so that they can get money … Monitoring and evaluation is often forgotten because it is not factored into project costs. It does not bring in money – it draws on the money that you have available for the project.'

Finally, participants noted the emphasis on technology as opposed to information and communication as a significant reason for marginalising monitoring and evaluation within ICT programmes. As noted by Dennis Mazali from Tanzania (18/02/08):

'Monitoring and evaluation is marginalised within ICT for education programmes due to a misconception. In Africa we concentrate on the technology and forget that the tool at the heart is the information and the communication.'

4.5.4 Recommendations

The experiences from the interviews and focus groups led to three overall observations regarding monitoring, evaluation and impact assessment within this context.

First, there is a widespread notion that monitoring and evaluation should not be undertaken until a programme has been established for at least five years. This assumption should be challenged by re-conceptualising monitoring and evaluation as a valuable method for ensuring ongoing improvement of the programme, constituting part of the process of development as well as an occasional event (see Chapter 5) (Watson 2006). Second, there is need to transition beyond anecdotal evidence regarding the benefits of using ICT in education. Several participants noted that there is a significant divide in Africa between those who consider ICT to be useful in education and those

who remain sceptical. Rigorous monitoring, evaluation and impact assessment is of paramount importance in this context, enabling decisions to be based on substantive research regarding outcomes rather than enthusiastic anecdotes. Third, it is necessary to focus on wider educational objectives and agendas when considering the impact of ICT (Unwin 2009). Participants expressed frustration at the lack of knowledge regarding what actually happened as a result of the training they were giving to others using ICT for education. Longitudinal studies are necessary in order to assess the benefits of ICT in education for the livelihoods of whole communities rather than simply direct individual beneficiaries (Wagner 2009).

4.5.5 Case study of NOLNet

Having outlined the recommendations from the InWEnt workshop I now close this section by focusing on the example of NOLNet, the Namibian Open Learning Network Trust that is based on multi-stakeholder partnership and has been active since 2005. NOLNet conducted a monitoring and evaluation exercise concerning their programme and the strengths, limitations and challenges encountered are documented below (Figure 4.1). The observations are taken from the perspective of the key stakeholders within the programe communicated during a focus group discussion (21/02/08).

Strengths of the NOLNet monitoring and evaluation:

- Multiple stakeholder engagement with beneficiaries, policy makers, and implementers.
- A combination of internal and external involvement.
- Clear objectives defined at the outset.
- Appropriate methodology of semi-structured interviews.
- Culturally sensitive and not overly-directive.
- An enjoyable process for participants as space was provided for their feedback.
- Honest regarding weaknesses and recognised areas for improvement.
- Participatory approach in question formation and applicability.

- Access to a wide variety of resources.
- Effective within a limited budget.
- Realistic targets within the circumstances.

Limitations of the NOLNet monitoring and evaluation:
- Time constraints and participants busy with other commitments.
- Much more work was required than initially anticipated.
- Bad timing with people leaving due to it being the end of the academic year.
- Limited number of methods and lack of triangulation.
- Over-emphasis on programme inputs such as number of participants.
- Limited consideration of impact on capacity development.
- Limited opportunities for feedback, with an additional workshop designed for feedback suggested.
- Lack of financial resources.

Figure 4.2: Summary of NOLNet strengths and limitations

The NOLNet exercise demonstrated the benefits of adopting process-based monitoring and evaluation into such programmes. It enabled participants to engage, provide feedback and evaluate what was taking place. Such an approach facilitates a transition in culture from one of monitoring and evaluation as different expressions of solely external imposition, to monitoring and evaluation also functioning as internally driven programmes of improvement (section 6.6). The result, as noted by participants in the NOLNet focus group, is that skills are gained by those involved throughout the process (21/02/08):

> *'It is amazing what those internal staff took out of involvement in the process – it was a significant capacity building event for them in itself … we had our weaknesses as well – but that is the beauty of the report... it helps us now to improve on those areas that we had either turned a blind eye to or were simply not aware. But you can only get that through an evaluation once people have had the opportunity to express themselves.'*

5. Analysing methodologies

5.1 Introduction and rationale

The purpose of this chapter is to engage with the reconceptualising of methodological approaches to monitoring, evaluation and impact assessment of ICT for education programmes in Africa. This was undertaken through a process of cyclical research-based reflection, leading to both a critique of conventional practices and a set of credible alternative emphases.

The decision to conduct research in partnership with operational ICT for education programmes meant that the methodological approaches employed in the monitoring and evaluation case studies were subject to the real-world constraints of tight time-frames, limited financial resources, political constraints and varying agendas (Bamberger *et al.* 2006). My objective was therefore to assess the strengths, weaknesses and implications of the selected methods when utilised under these constraints in different contexts. This was realised through adopting an experimental research design that required continuous evaluation of the evaluation processes themselves, reflecting on the case study experiences to assess what worked, what did not work, and the reasons for this. Grounding these reflections in the reality of standard programme limitations was necessary in order to achieve the overarching objective of providing insight into monitoring and evaluation of ICT for education initiatives more broadly in order to improve upon practice. The intention behind this was to ensure that the research was not only grounded in the reality of development programme delivery, but would also produce results of direct relevance to such programmes.

Working with different partner organisations meant that throughout the research process every methodological choice had to be justified, negotiated and occasionally compromised. This challenge was particularly exemplified in an initial meeting with officials from the Ethiopian MoCB (07/04/08) where it became apparent that my attempt to promote an approach to

assessment that emphasised the transformative potential of education would not be embraced. Following a series of such meetings to discuss appropriate methodologies I noted in my research diary (14/04/08):

> *'The central issue here is that different methods are applicable to different objectives. The things that I want the programme to achieve are most definitely not the same things as the Ministry of Capacity Building wants it to achieve. In ICT for education initiatives various stakeholders may be working together on the programme but for very different reasons.'*

The contrasting ideological foundations and practical priorities of each partner meant that what was considered of central importance by one was often perceived by another as wasting time (Marriot and Goyder 2009). Methodological negotiation was therefore a constant feature of the monitoring and evaluation process. It was important that this was viewed not as a frustrating distraction but rather as a valuable process for refining the methodological assumptions of each partner, my own included, that would otherwise have remained unchallenged.

Continual methodological negotiation was possible because of my choice to adopt a largely inductive approach to the field research case studies. Operating in a responsive manner ensured that the approach could be regularly assessed and improved. This required talking frequently with stakeholders about the evaluation process through conversations on 'evaluating the evaluation' as an addition to individual interviews and focus groups. Alongside this was daily personal reflection through my research diary that assessed the methodological strengths and weaknesses of what was taking place.

The justification for adopting such an inductive approach became clear on my first period of research in Malawi. In interacting with teachers and students at Gambula it became apparent that simply using the methods I had designed prior to engaging with stakeholders would be tantamount to acknowledging

that I did not intend to adapt to local context. As noted in my research diary (28/09/07):

> *'There is little point in designing the detail of methods before you leave because it is tantamount to an admission you are not really interested in being flexible and adaptive to local needs. Instead the focus should be on developing principles and a flexible framework of concern which can then change shape accordingly.'*

It has been suggested (Miller and Bell 2002) that because knowledge production is grounded in shared experiences it is only possible to speculate regarding the most appropriate approach at the outset of a research programme. Whilst wanting to emphasise the importance of flexibility, I did not fully endorse this view. Indeed, remaining adaptive did not mean adopting an unplanned approach and giving no thought to appropriate methodologies, rather it was the nature of the planning that altered. Planning should enable reflection on appropriate methods, recognising that knowledges are contextual, practically applied and locally specific. This in turn is dependent upon operationalising the flexible research principles discussed in the ethical reflections of Chapter 3, in order to reach the overarching objective of promoting field research that facilitates monitoring and evaluation structured towards instigating positive change (Huberman 1995, Fetterman 1996, Fetterman and Wandersman 2004).

5.2. Context and structure

The monitoring and evaluation of ICT for education programmes in Africa is too often undertaken without adequate attention paid to the associated research methodologies. This is exacerbated by the frequent lack of planning for monitoring and evaluation at programme inception that can reduce overall efficacy (Cassidy 2007). Farrell *et al.* (2007 p.9) note in reflecting upon the evaluation of the NEPAD e-Schools initiative, a multinational ICT for education programme, that 'many of the issues that have arisen could

have been mitigated had the project begun with a comprehensive review of lessons learned from other projects involving the introduction of ICT in schools in Africa.' Their review is a classic example of a large-scale monitoring and evaluation exercise that was embarked upon belatedly and remained methodologically conservative due to the constraints surrounding it.

Similarly, a UNESCO (2003a) report sought to use comparative indicators to construct standards for the evaluation and assessment of effective teaching with ICT across the globe. This indicates the tendency to overlook local specificities and cultural context, promoting methods that facilitate simplistic categorisation and essentialising. A similar approach is witnessed with the Harvard and World Bank collaborative assessment survey on computer usage in the developing world (World Bank Institute 2003). The premise in the uni-dimensional methodology adopted is again one of universal applicability, assumed cultural supremacy and limited consideration of diversity. This does not suggest that cultural awareness is completely void from all current assessments but it serves as an indication of the dominant mindset from which monitoring and evaluation of ICT for education is all too often undertaken. The frequent lack of methodological rigour in monitoring and evaluation of ICT for education results in a situation where valuable learning opportunities are often lost (Selinger 2009). In the light of this, my emphasis on reassessing what methodological approaches worked or did not work involved both developing a critique of orthodox practice and providing credible alternatives through my cyclical research-based reflection. This drew on experiences from the sphere of systems-based approaches to evaluation that have an intentional focus on methods that promote empowerment, participation, process and flexibility (Dart and Davies 2003, Chapman *et al.* 2004, Cabrera 2006, Watson 2006). Such approaches are regularly utilised within other spheres of development work but are not yet commonly applied to ICT for education in Africa (Wagner *et al.* 2005).

Because the priority objective of the case studies was a reflection on methodological practice, it was of limited importance whether or not the

specific programmes in Malawi and Ethiopia constituted positive or negative examples of ICT for education programmes. The purpose of the case studies was to provide a context within which the implications of diverse methodological approaches to monitoring and evaluation could be explored, designing a rigorous approach and then examining the subsequent process and outcomes. The evaluation of monitoring and evaluation methods did aim to contribute to improved practice, but from a recognition that educational assessment should adopt a context specific approach (Patton 2001, Kozma and Wagner 2005) that acknowledges the place of culture and importance of process. Thus, rather than aiming to create a universally applicable best practice guide for monitoring and evaluation of ICT for education, the objective of this chapter is to promote guiding principles for better practice (Cassidy 2007). In this, the approach of my thesis differs from much research where the primary function of the methodology is a means by which to reach the analysis. Indeed, as this chapter demonstrates, the methodology constitutes a significant aspect of the analysis as evaluating the methodological processes is intended to be a central contribution of this thesis.

5.2.1 Structure

Having outlined the rationale and context for this analysis of the methods employed in the monitoring and evaluation case studies, discussion now focuses on four specific areas of concern encountered through the methodological engagement and reflection: baseline testing, conversational methods, visual approaches and additional tools. The rationale for focusing on these specific methodological issues rather than proceeding straight to any overarching observations is to illustrate the method-specific challenges that were encountered and to document the process through which the multiple methods were adapted and refined in the light of these challenges. Following this, I identify the wider issues pertinent for reflection when considering appropriate methodological approaches to monitoring and evaluation of ICT for education. This begins by focusing on the implications of partnership, followed by the reality of participation, the benefits of emphasising process

and the need for sustained probing. This chapter ends by assessing the potential capacity enhancing benefits of adopting such an approach as part of a broader reassessment regarding notions of monitoring and evaluation.

5.2.2 Caveats

Prior to embarking on this, five important points are made in order to provide clarity and parameters for the remainder of this chapter. First, the method-specific discussion below is not intended as an exhaustive analysis of the challenges encountered in the case studies but rather to be illustrative of wider issues. This is complemented by the tabulated documentation of the strengths, weakness and improvements of each method used in the case studies. Second, the methods employed in this thesis research are categorised into category 1, category 2 and category 3 methods. Whilst informed by the category 2 and 3 methods that facilitated effective reflection, this analysis refers directly only to category 1 methods as described in Chapter 3. Third, when specific methods are referred to in this chapter, I do not repeat the exact number of times they were used during the case studies as this is also documented in Chapter 3. Fourth, it should be emphasised that this analysis does not document a methodological success story: as much is learnt from reflecting on the reasons for the frequent set-backs, disappointments and failures as is from the occasional successes. Fifth, there is a high degree of interplay between the methodological reflections provided here and the other analytical themes of partnership, aspiration and pedagogy. The issues discussed in each of these chapters both inform and provide the underlying rationale for the challenges and opportunities encountered in this exploration of the methodologies.

5.3 Specific methodological issues

Ten different methods were utilised during the monitoring and evaluation case studies. Figure 5.1 documents the manner in which each method was used, the frequency with which it was used, and strengths, weaknesses and

potential improvements. Following this I focus on four specific areas of methodological concern.

Description of method	Location and frequency utilised	Strengths	Weaknesses	Improvements
Focus groups	15 in Malawi with teachers and 12 in Ethiopia with teachers and ECBP implementation team.	• The flexible structure enabled a wide-ranging conversation. • The teachers were mostly relaxed due to group environment. • Effective facilitation ensured that all participants were engaged in the conversation.	• The flexibility was too much for interacting with students. • Presence of authority figures distorted discussion. • Tendency for some teachers to provide brief and superficial answers. • Appropriate language of communication an ongoing challenge.	• Adopted the group interview method for talking with students. • Ensured that authority figures were engaged elsewhere whilst focus groups took place. • Developed the learning octagon to catalyse deeper discussion.
Group interviews	15 in Malawi and 6 in Ethiopia with students in the test schools.	• A structured environment in which the students felt relaxed and happy to interact. • Local language used to ensure students could communicate.	• Some students still had fear of engaging in the interview and felt pressure to provide the 'correct' responses. • Limited opportunity for in-depth engagement with the students. • When teachers were used as translators it was difficult to get an accurate translation. • Starting the interviews with technology-specific questions	• Explained clearly to the children that there were no 'correct' responses and ensured that authority figures were not present. • Trained members of the research team as translators for the group interviews. • Began the interviews with questions relating to general life

			made it difficult for the students to think beyond these parameters.	and education, then progressed onto technology-specific issues.
			• The students struggled to answer 'why-based' questions.	
Individual interviews	11 in Malawi and 30 in Ethiopia with various key stakeholders.	• Private conversation meant that participants were able to share personal information. • Ability to engage with the participant in detailed conversation.	• Participants expressed reluctance to talk in case their comments were recorded.	• Assured all participants that their responses would be treated with complete confidentiality.
Baseline testing	120 children in Malawi tested twice and 200 children in Ethiopia tested once (incomplete).	• Quantitative assessment of impact. • Large numbers of students tested. • Engaging with 'hard to quantify' change such as life-skills.	• Difficult to design the studies in such a way that demonstrates impact. • Challenging of testing the same students pre and post test and create appropriate testing environment. • Impossible to engage with the breadth of content and related impact. • Political constraints regarding accessing control schools.	• Worked in conjunction with local education experts. • Trialled the tests with various stakeholders prior to implementation. • Provided teachers with clear explanation regarding what was required for the test.

Classroom observations	24 in Malawi and 7 in Ethiopia.	• Provided a first-hand account of how the technology was being utilised in the classrooms.	• The classroom environment was altered because of the presence of the observers.	• Repeated visits so that the presence of the observers became less of a novelty.
Teacher diaries	5 in Malawi maintained for a three month period and 5 in Ethiopia (incomplete).	• Instilled value in teacher selected for the task. • Promoted self-monitoring. • The teachers were familiar with the concept of completing a diary.	• Lack of incentive for sustained engagement. • Challenging to analyse content of the diaries.	• Sent reminder text messages to the schools to remind them to complete the diary. • Allowed the teachers to keep copies of their diary.
Learning octagon	10 octagons completed in Malawi with groups of teachers.	• Visual demonstration of impact that facilitated in-depth conversation and discussion. • A useful tool for reaching consensus.	• The concept of the octagon was complex and initially alien to the teachers.	• Invested time in explaining and giving clear demonstration.
Stories	5 in Malawi and 15 in Ethiopia with participating students.	• Opportunity to engage in-depth with children.	• The tendency was to engage with the most confident children and thus not gain a representative picture.	• Larger number of stories collected in Ethiopia to reflect diversity of participants.
Questionnaires	45 in Malawi to different schools participating in the wider initiative.	• Ability to gather data from physically dispersed locations. • Provide an overall context for subsequent in-depth methods.	• Easy for people to complete superficially. • Of limited value due to the difficulty of understanding rationale for answers given.	• Questionnaires were not developed as a significant methodology.

Drawings	10 in Ethiopia from students prior to the group interview.	• Helped students to think about technology and provided a visual representation of what they considered a computer to be.	• Provided limited potential for analysis.	• No improvements made.

Figure 5.1: Synopsis of progressing methodologies from case studies

5.3.1 Baseline testing

Discussion at the eLearning Africa workshop in 2007 demonstrated that the use of baselines was considered by participants to be a problematic topic within monitoring and evaluation of ICT for education initiatives. Participants identified the specific challenges of ensuring validity, intentional skew, lack of planning and needing to satisfy donors. They emphasised how both impact assessment and overall programme efficacy would ultimately improve if baselines could be conducted more effectively, with one participant noting (28/05/07):

> *'A baseline is to monitoring and evaluation what a foundation*
> *is to a house.'*

Participants also highlighted how baselines are rarely constructed or conducted in a participatory manner that engages with programme stakeholders.

This initial feedback reflected the literature that emphasises the notorious difficulty of implementing baselines and related control groups with fidelity (Shadish *et al.* 2002, Ravallion 1999, Best 2001). Building on this, my research in Malawi and Ethiopia provided opportunities to examine the methodological challenges encountered with conducting baselines and to reflect upon how the process could be improved. The aim of implementing the baseline tests was therefore both to assess programme impact and also act as a platform from which other methods could be utilised to identify causal reasons for that impact (Ravallion 1999).

Appropriate content for the baseline study in Malawi was selected by the monitoring and evaluation team for the national curriculum for Standard 3 and Standard 4. My test questions were translated into Chichewa and given to 120 students by a teacher in September 2007. Identical tests were conducted again under the same conditions (Shadish *et al.* 2002) after three months of using the technology in the schools in February 2008, the extended text period being due to the lengthy vacation period. The presence of a ten week vacation in the middle of the pilot project was unfortunate

because the children could forget what they had previously learnt but external factors of government agenda and EuroTalk schedule meant that it was unavoidable. In order that control schools did not forfeit potential educational benefits as a result of their position within the study it was ensured that these five schools received the intervention three months after the test schools once the control period was complete.

Three significant challenges were encountered in designing and implementing the baseline survey in Malawi. First, regular explanation was required to ensure that the staff in the schools understood that they could not select the most academically capable children for the baseline test. In Mbinzi (02/10/07) a teacher suggested that the students chosen at random from the classroom were not appropriate and that I should pick more capable ones. My colleague, Paola Masperi, Manager of EuroTalk (07/03/08), noted the link with their perceptions of the rationale for the tests and explained:

> *'Because the teachers understood the children were being tested they tried to push forward the best performing ones ... a lot of this is due to the inspection culture, it is how they are rated and how their performance is measured.'*

Because of this tendency, it was always necessary for me to be present when the selection of students was taking place. This was confirmed by Ostar Chagamba, Coordinating PEA for Zomba (05/03/08) when he was asked to evaluate the monitoring and evaluation process and noted:

> *'Make sure that you do not let the teachers choose the children for the test because they will pick the best students, those that do best in class – you need to choose them yourself.'*

Second, it was more difficult than anticipated to locate the same children between pre- and post- test baselines due to them transferring schools or being absent. Despite considerable efforts to locate them, only 80 of the initial 120 children were present for the second test. This was exacerbated by the fact that teachers, as at Chingombe (05/03/08), expressed surprise that the baseline required the same children for both pre- and post- tests. This

indicated that although apparently familiar with the term 'baseline', many teachers were not actually aware of the conditions necessary for ensuring its validity.

Third, the baseline required detailed explanation to the teacher implementing the test to ensure that the children were not assisted. This was exemplified by me having to insist repeatedly that the teacher space the children apart from one another to avoid the possibility of bias through copied answers, as is demonstrated in Photo 5.1 below. It was unsurprising that spacing the children was anathema to teachers accustomed to operating in constantly overcrowded classrooms where they are not afforded the luxury of creating an environment where cheating cannot occur.

Photo 5.1: Teacher conducting baseline test in Malawi outside
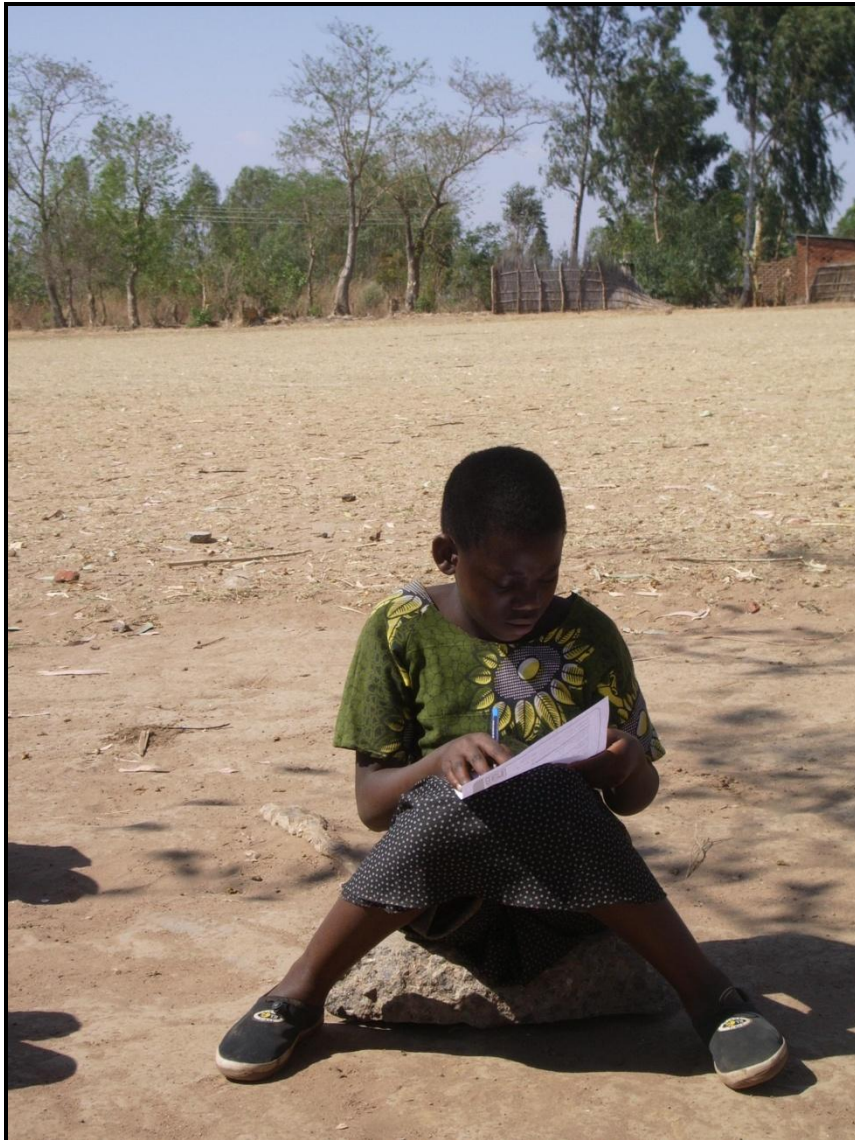
Photo 5.2: Student completing baseline test in Malawi outside

Alongside these three practical constraints, there were limitations regarding the structure of the test. The test was designed with simple A or B choice answers that meant that a total score of 50% could indicate no knowledge. With hindsight it was clear that altering the test to offer four options for each multiple choice question would provide a simple and significant improvement to the rigour of the test. The post-test indicated only marginal improvement in attainment and it was impossible to ascertain if the introduction of ICT to the education was the causal factor. The full data is included in Appendix S.

The lack of evidence from the baseline may be due to the fact that the initiative did not actually cause any change, however this would not correlate with the findings of the other methods. Indeed, the methodological challenges in design and implementation mean that it is unlikely that the baseline would have demonstrated an impact even if the initiative had been a causal factor in improving attainment. To assess impact effectively the baseline would have required broader questions, a longer testing time period and more focussed content, none of which were possible given the constraints under which the research had to be undertaken.

The significant methodological challenges encountered in Malawi served to inform the alternative approach adopted for the baseline survey in Ethiopia. Instead of the test being designed purely by the monitoring and evaluation team, a participatory approach was adopted which involved engaging with educationalists and the official Ethiopian educational government testing centre. Although more rigorous, this level of participation resulted in significant contestation amongst the consulted stakeholders regarding what questions or content warranted inclusion in the test. Literacy, numeracy, life skills, civics, general knowledge, Ethiopian history, human rights, commerce, geography, creativity, worldview and future aspirations were each considered by different Ethiopian advisors to be the most significant focal area for questioning.

Such diversity encapsulates well the overarching challenge encountered in Ethiopia. The objective of the baseline was to enable us to assess the impact of a guided discovery approach through Akili rather than the closed and curriculum-specific content of the programme in Malawi. This required designing questions that engaged with changing student worldviews in addition to curricula attainment. In the light of this, various questions focusing on worldview were considered for inclusion, such as:

- What do you think is the most important thing you can learn about in school?

- If you could have two wishes then what would you wish for?

- What do you think is the most dangerous country in the world, and why?'

Considering such questions represented a significant shift in approach and was prompted by the desire within Eduvision for a test that was applicable for Akili as their educational product for guided discovery learning. However, these questions were notoriously difficult to assess within a test environment and so ultimately only constituted a minor part of the final baseline test conducted in the test schools. These questions regarding the way the students viewed the world, as exemplified above, were instead incorporated within the more flexible and personalised environment of the focus groups where they became a focal point for the dialogue.

A broader constraint was encountered when including any form of open question due to the fact that conventional testing within the Ethiopian education system is always conducted through closed multiple-choice questions. By including any question that required some form of written response to assess the guided discovery learning (Mayer 2004), the tests extended beyond the parameters of what students were accustomed to within the conventional testing framework (Smith and Ngoma-Maema 2003, Negash 2006).

This illustrates a more substantive problem with adopting a participatory approach to baseline design in partnership with the Ethiopian government educational testing centre. Alongside the considerable time required in negotiating this relationship, collaboration with the official testing centre ultimately posed very real challenges regarding quality. Despite the good practice of working with local stakeholders it proved necessary to disregard much of the input they provided. Three questions from the official Grade 6 exam for English comprehension are included below. Of the three, the first has multiple possible correct answers, the second is potentially ambiguous, and third is simply nonsensical. This demonstrates the extent of the challenge associated with adopting a more locally embedded, participatory approach to methodological design.

Choose the correct answer and write the letter in the blank space.

1. Hailu _____ to school every day.

   A. went   B. go   C. goes   D.   will go

2. This is a new machine; do you know _____? I do not know its function.

   A. how it is made   C.   what it is used for

   B. what it is made of   D.   why it works

3. Write down some of the causes that endanger weather conditions

   1. _____

   2. _____

Figure 5.2: Examination questions from Grade 6 test in Ethiopia

Experiences in both Malawi and Ethiopia demonstrated that the design and implementation of a baseline test requires constant refinement and is usually limited by the time, money and personnel available. The most pertinent challenge is to determine what constitutes the most appropriate approach within the resources available in the light of the monitoring and evaluation objectives (Baxter and Eyles 1997). In Ethiopia it transpired that the constraints of the programme meant designing and implementing a test that could effectively determine impact on student worldview was overly ambitious. As Bjorn Everts, Education Manager for Eduvision, reflected (17/12/08) at the end of the fieldwork period:

> *'I really don't believe in this baseline to be honest … It is realistic but it is too small and too simplistic to draw the kind of inference you want from it.'*

Despite this 'failure' the most significant contribution of the baseline in Ethiopia was in helping ECBP to learn how to approach the design of baselines more effectively in the future, as I discuss in Chapter 7. Prior to the

involvement of the monitoring and evaluation team, the team from ECBP were not fully aware of how a baseline could work within the impact assessment of programmes and did not see the need for a control group against which to measure impact and engage in attribution analysis (Shadish *et al.* 2002). Significant delays caused by shifting political agendas outside the control of the monitoring and evaluation team meant that the post-test is yet to be implemented (1/11/2009). However, as a result of the sustained focus of the monitoring and evaluation team on adopting a process-based approach that enhanced partner capacity, ECBP are now equipped with the methodological tools required for completing the baseline test independently in the future.

5.3.2 Conversational methods

Central to the objective of both the monitoring and evaluation case studies was developing methods to facilitate effective dialogue with and between stakeholders. The methods explored in this context were focus groups, group interviews, story collection and individual interviews. Each was utilised in response to the specific requirements of the different research contexts. Here I document the four methods and illustrate the process of learning which occurred regarding their appropriate usage and interplay.

Focus groups

Each focus group began with a structured introduction (Unwin, Tan and Pauso 2006) followed by facilitated discussion with guiding questions. The intention was to ensure consistent understanding and expectation in each group and to provide a commonly understood framework to facilitate both clear communication and a safe environment for dialogue (Valentine 1999). The team wanted to ensure that no one felt pressurised to share personal experiences that they did not want to (Bhattacharjee 2000), whilst valuing the place of robust dialogue and managed conflict within the group environment (Stewart and Shamdasani 1990). Maintaining a flexible approach was vital to the integrity of the focus groups and required continual

reflection upon the format suitability, adjusting it through conversation with participants.

On several occasions individual participants exerted their authority, attempting to dominate the dialogue and challenge the egalitarian nature of the focus group. This was particularly evident when head teachers or government officials insisted on attending sessions designed exclusively for teachers (Bedford and Burgess 2001). In such situations the research team maintained the participatory dynamic by coordinating with colleagues to ensure that these individuals were engaged in productive activity elsewhere at the time of the focus groups.

A recurring challenge was how to identify the most appropriate language in which to conduct the focus groups. In Ethiopia, Meron Ayele noted (11/04/08) that despite the struggle some teachers faced with communicating in English they might find it shameful to have the discussion translated into Amharic because of the associated implications regarding their ability to teach the English language. In the light of this it was decided that Ayele would act as primary facilitator for the focus groups whilst I or Everts observed and took notes on the process. The conversation could therefore switch between Amharic and English as Ayele perceived appropriate in order for the participants best to express their perspectives.

Following initial focus groups Ayele and Helina Tilahun provided feedback regarding improvements that could be made to the way the focus groups were conducted (22/04/08). Ayele commented that the groups had too many categories of questions to go through:

> *'It pressurises us to go quickly and it takes a long time to go through everything. We need to sit down together again and reassess questions – because some of them can be merged.'*

However, Tilahun noted (24/04/08) that despite the challenges:

> *'These focus groups are so much better than the feedback we used to collect from the teachers – that was a complete mockery – we were never going to get anywhere with that.'*

In conversation with Tilahun and Ayele following a day of meetings with teachers at Rema (22/04/08) we reflected on the challenges of stakeholders engaging with the evaluation of the monitoring and evaluation process. Put simply, our discussion was a review of the process of evaluating the monitoring and evaluation. They highlighted that asking the teachers to participate at this level by reflecting on the suitability of a focus group design, although laudable, was not likely to be helpful because as Tilahun expressed (22/04/08):

> *'When you ask them about focus group design it is difficult for them because they can't really think about how to improve the design – because this is all they have seen!'*

Despite the challenge of asking participants to reflect on the suitability of the focus group design and format, Everts noted that the focus group environment in Ethiopia created a relaxed dynamic amongst the teachers and that they responded more openly than when in individual conversation. He suggested (08/02/08) that this was because when speaking individually:

> *'Maybe they felt more singled out, had to justify anything they said, they felt under pressure. The focus group environment was far more conducive to getting information from them - it was relaxed and more jovial.'*

At the close of the fieldwork, Everts (17/12/08) concluded that the focus groups had been the strongest single method for monitoring and evaluation because of their flexibility and ability to progress conversation beyond what he perceived as the pre-programmed answers:

> *'The flexibility allows you to go beyond the answer that they think you want to hear. There is a great potential dynamic between the participants – one idea sprouts into another and*

you can follow that. It gives you guidelines for what to ask and allows you to keep on bringing it back on track.'

Facilitating this dynamic interaction through a focus group enriched the research process when it operated effectively. However in Malawi there were occasions where such interaction could not be achieved without the use of additional tools, particularly the Interactive Learning Octagon, and this is considered in the following discussion regarding visual approaches.

Alongside the success of conducting focus groups with teachers were the challenges encountered when the research team began interacting with children in this environment. Initial attempts to conduct focus groups in Malawi and Ethiopia with students aged between seven and 14 years old demonstrated that, aside from a few notable exceptions, they lacked the confidence to talk without a clearly structured and led environment with questions they could each answer in turn. This was exacerbated in rural Malawi by the fact that the children were entirely unaccustomed to interacting with white people. The underlying reasons for this are explored in greater detail throughout Chapter 8.

Group interviews

Following the first stage of research in Malawi it was decided that focus groups should be replaced by group interviews when interacting with children to provide a more settled and structured environment, and the same was done in Ethiopia. There were considerable benefits from the additional structure of the group interviews in facilitating a more relaxed and informative discussion when compared with the initial focus groups. However, despite the improvement and the efforts of the monitoring and evaluation teams in both locations to follow conventional good-practice guides and ensure consistency (Valentine 1999), the responses from the group interviews with children remained varied. The primary reason for this was the limited ability of the children to engage with critical 'why-based' questions (Paul and Elder 2007a). As I noted in my research diary having spent time in Mtentera (14/11/07):

'The children face a significant challenge in saying negative things - it is not natural for them and they find it difficult to have such conversations. Critical analysis of any sort is very difficult for them, just because we do it all the time we cannot assume that it is easy for the children to do it. The innovative methods have real potential to help with this.'

The structured approach that I adopted was in contrast to the recommendations of much of the literature regarding conducting research with children. Thomson (2007) suggests that using prescriptive methods with children is problematic due to the construct of labels and identities. Within the Malawian and Ethiopian research contexts there were however clear child identities and whether imagined or substantive they were the boundaries within which the partner organisations operated and I was therefore constrained by them also. Thus, whilst recognising the child participants as competent social actors, I maintained, in contrast to Punch (2002) that they did require tailored methods that met their specific needs (Alderson 1995).

The research teams decided that the group interviews with children should be conducted in Chichewa and Amharic, with local researchers used both to facilitate and translate. In Malawi, teachers were chosen as the most suitable option due to their pre-existing relationships with the children and position of trust within the community. Although this was sometimes effective, there was a considerable range of ability between different teachers (see section 7.4.2) and this necessitated clear instructions regarding appropriate interaction. In Mbinzi a recurring scenario was noted (02/10/07):

'When the teachers were translating for the students it often happened that a child would speak for 30 seconds in Chichewa and then the teacher would give a three or four word interpretation of what had been said. The teachers were genuinely surprised that we wanted to hear actually what the children said, regardless of its perceived relevancy – and we had to remind them time and again.'

Following the final iteration of group interviews on the third research visit to Malawi, I reflected on the monitoring and evaluation process and noted how using teachers as translators ultimately had unintended negative consequences for interacting effectively with the children being interviewed in Mwatibu (06/03/08):

> *'Remember next time when interviewing children not to use teachers! It is impossible to say to the children 'feel free to say whatever you like, there are no right answers' when they know they will really get in trouble if they do – not with us but with their teachers – after we have left!'*

In the light of the experiences using teachers as translators in Malawi, the monitoring and evaluation team in Ethiopia decided to employ external facilitators and translators for the group interviews. This led to a more complete and accurate record and also reduced the likelihood that children would respond with fear regarding the need to provide what they perceived as correct answers. The experiences indicated that if the financial resources and suitably skilled personnel are available then utilising external trained translators is a more appropriate option than working with the teachers of the participating children. The high quality personnel hired in Ethiopia, alongside the time invested in training the interpreters in effective facilitation, meant that it was not necessary for Everts or me always to be present when the group interviews were taking place.

Linked to this, we were conscious of the potential deleterious impact from having white faces in the room, disrupting the relaxed environment we aimed to create. Ayele was consulted regarding the appropriate approach and she was clear that our presence should not necessarily be a negative influence. As she said (11/04/08):

> *'It will be ok as long as the students understand what we're doing and why we are doing it. Then they won't be frightened – they need to know the purpose of what we are doing. It is good to always tell them the aim of the activity.'*

Seeking such advice was important for more than simply the good practice of engaging with local people regarding appropriate conduct and likely consequences. In addition to being an Ethiopian national, Ayele had young children and was experienced in qualitative research methodologies. This combination made her an invaluable sounding board when determining the most appropriate way to proceed.

Ayele also noted (07/12/08) how the children talked more freely in the group interviews when the conversation was framed within a context that was not immediately technology-specific. As a result the facilitators adopted an approach whereby they would initially ask the children questions concerning daily life and education, in order to set broad parameters for the discussion. Prior to this, when the children had been asked immediately about computers or ICT, it had proved difficult for them then to think subsequently about education and their lives more generally. This demonstrated the ease of unwittingly biasing the responses of children through the framing of the initial questions and interactions. A central tenet of effective qualitative research was therefore reflecting on how to ask questions to children in the most appropriate way so that they would understand the purpose of the research and would be able to talk as freely as realistically possible, without shaping their answers through restricting their feedback to technology related questions.

Story collection

The group interviews provided an appropriate environment for interacting with children but there were occasions when this did not allow for sufficient detail and so individual story-collection was undertaken. Stoll *et al.* (2002) are strong proponents of such an approach, suggesting that the collection of first-hand stories from people regarding how they make use of technology is an appropriate primary method of research. Our collection of stories in Malawi and Ethiopia constituted a valuable but ancillary method. This was because of the limitation in the anecdotal evidence supplied from stories and the tendency to overemphasise individual success stories (Parkinson and Ramirez 2006, Wenger 2002). Having recognised the limitations and utilised

the method within its appropriate context, story collection provided a valuable opportunity for individual children to tell the team about their lives in more detail, including their family situation, involvement with school and perceptions of technology. This enhanced both the methodological depth and background context for the monitoring and evaluation.

Individual interviews

Individual interviews were held with key adult stakeholders as an appropriate method for gaining in-depth information. The confidence of interviewees when interacting with the monitoring and evaluation team meant that a semi-structured approach, as outlined in Chapter 3, could be adopted, providing increased flexibility and adaptability. A weakness of the semi-structured approach was the potential for the interviewer unintentionally to omit important questions, combined with the variety in response structure proving a challenge in ensuring comparative data (Rubin and Rubin 1995). However, these limitations were outweighed by the benefits of the inductive approach, having time to explore rich dialogue as it developed rather than being constrained by a rigid and predetermined progression of questioning. Confidence to embrace spontaneous deviations from the planned questions enhanced the monitoring and evaluation exercises in both Malawi and Ethiopia by facilitating conversations that would have otherwise been missed entirely (Burgess 2003).

Despite this, in interviewing certain programme beneficiaries I had doubts regarding the authenticity of responses and feedback regarding programme suitability. As I reflected in my research diary having interviewed the headmaster at Aste Noad (17/04/08):

> *'The head is getting a whole load of laptops for his school so what are the chances of him saying anything negative? Either he doesn't have the critical faculties to see beyond the appeal of the donation or, more likely, he does and knows that he should definitely not say anything that might stop him from keeping on receiving all these donations for his school.'*

This challenge is a specific methodological example indicating the way aspiration for technology can skew participant responses within the monitoring and evaluation of ICT for education programmes (Chapter 8). Conversely, other interviewees in Ethiopia spoke openly with the research team but afterwards expressed concern about the implications of having done so in regard to confidentiality. Following one interview with an anonymous employee of the MoCB in Ethiopia regarding the OLPC programme, we reflected together on the strengths and weaknesses of the interview method (08/04/08). This person noted, in confidence, that their greatest concern was insecurity and lack of trust regarding what would be done with the information gathered in the interview:

> *'When it comes to information, we are always afraid of giving out information – because you don't know where this thing is going to lead … We always think about what bad will come from it not what good will come from it.'*

I then asked how this person would respond if I wanted to record the interview the next time we spoke so as to avoid writing constant notes (08/04/08). Their reply was very clear and indicative of underlying concerns:

> *'If you record me I'll only say positive things.'*

It is significant to note that, even in the context of apparently relaxed conversation, interviewees may be reticent due to fear regarding the consequences of their comments being publicised. This illustrates a wider lesson regarding effective research methodologies: information communicated by participants should not be assumed to be the entire truth, especially when conducting research within a context where critical comments regarding the government and its programmes have potential to result in indefinite incarceration.

5.3.3 Visual approaches

Despite the considerable progress made regarding appropriate approaches to facilitating effective dialogue in focus groups, there remained a need for a

more innovative approach to catalyse discussion between groups of teachers. In the light of this need, Masperi and I created a tool called the Interactive Learning Octagon that was used in Malawi to facilitate a greater depth of conversation between teachers, enabling them to progress beyond their default formulaic responses. The method allowed teachers to demonstrate pictorially their perceptions of the impact of the programme. They were able to structure their opinions and then subsequently engage in focus group dialogue to reach consensus and explain the visual representation. The design of the Octagon method drew on aspects of both the livelihoods Octagon tool (Sida 2002) and the Most Significant Change approach (Sigsgaard 2002, Dart and Davies 2003).

The strength of the method was in helping the participants to reach consensus regarding the numerical significance of eight key categories of impact, as discussed in Chapter 3, which I selected in order to reflect different aspects of the programme. Once the need to reach consensus through visual depiction was introduced then the teachers were more willing to discuss, debate and defend their assertions. A teacher from Chingombe (05/03/08) explained that they had found completing the octagon to be helpful because it enabled them to assess the strengths and weaknesses of the initiative and determine an appropriate way forward:

> *'It was good because we know where we stand now and what is happening. It is good because we can keep on assessing what is happening and can come up with a way forward together. Now we are able to see the issue with the teacher workload and the problem of tallying with the Standard 5 curriculum and so it shows us talking through identifying the way forward. Now we can see that life-skills is central to the project and so we will focus on it.'*

The process of reaching consensus regarding impact was valuable in highlighting the varied experiences and perspectives of the teachers. The diagrammatic representation of their perspectives facilitated a greater depth

of discussion when considering subsequent 'why-based' questions in the focus group, providing opportunity for participants to explore the reasons behind the priority impacts they had identified. Similarly, completing the octagon in Mbinzi (26/02/08) demonstrated how the primary value of the methodology rested with the learning process it catalysed. As I recorded in my research diary:

> *'The teachers are objecting to giving their opinions a numerical rating – but it is proving fantastic in helping them to talk about it at a deeper level than normal. So the desired end is not getting a number on a sheet – but the value is in the process of their arguing and discussing and choosing and explaining to us regarding their choice which constitutes the real value of the method.'*

The notion of decision making based on discussion and consensus was unfamiliar to teachers more accustomed to a hierarchical environment. Thus, as the above diary extract notes, the primary value of the method was in stretching teacher perceptions and helping them to think creatively together regarding the impact of the initiative. Although the teachers were initially reluctant to associate their opinions with a numerical score, the presence of the numbers ultimately proved an effective trigger for more in-depth discussion than had previously occurred in the focus group. This served to demonstrate the potential for the use of innovative, visual and potentially unconventional approaches in broadening methodologies for monitoring and evaluation (Catley *et al.* 2008).

5.3.4 Additional methodological approaches

Questionnaires

Questionnaires were utilised in Malawi and Ethiopia as a means of gauging the perspective of large groups of dispersed participants within the limited timeframe available and thereby recording their experiences as part of the monitoring and evaluation process. Although unsuitable for more sensitive and nuanced data collection, the information from the questionnaires served

to identify significant themes that could then be focused upon through the detail of subsequent methods.

It had been anticipated that the questionnaires would be useful for establishing an overall context for the research, but Masperi also noted (07/03/08) how they were useful for a different, unintended purpose. She explained how many of the school head-teachers approached the task of completing the questionnaires:

> *'They fill it out with complete crap – you read the answers and they are just nonsense or the same thing repeated ten times and you see that the head teacher felt responsible for it but wasn't really involved first hand and just sort of, filled it out with the same thing all over.'*

Although the questionnaires in Malawi had limited use regarding the intended data collection, they did serve to reveal underlying limitations within the programme structure. Everts was similarly disparaging regarding the value of questionnaires in Ethiopia (08/02/08) and recalled his experiences as follows:

> *'I started out using questionnaires and survey forms but when I got them filled in and handed back I realised that often the misunderstandings were so great that it was almost useless. They were being filled out as if the teacher thought that they had to give a certain answer and you couldn't probe or go back and ask them again. There was always an answer that was ready to be given – that they assumed was the correct answer, but it was never what you were after.'*

The overarching perspective regarding the use of questionnaires in the case studies was that they were the least valuable research method. Their strength in enabling access to large numbers of people with minimal resources transpired also to be their most significant limitation. The questionnaires were the context in which the methodological challenges encountered throughout the case studies were at their most pronounced. This was

exemplified in stakeholder reluctance to progress beyond simply providing the basic answers that they anticipated the research team wanted to hear. When simply filling in questionnaires from a distance there was no incentive for those completing them to deviate from what they expected were the required 'correct' responses. This experience demonstrated the importance within effective monitoring and evaluation of not depending on quick, far reaching, cheap research methods such as questionnaires which can easily be manipulated in order to provide misleading data regarding genuine programme impacts.

Teacher diaries

The teacher diaries also provided opportunities to monitor from a distance the ongoing process of what was occurring in the schools in Malawi and Ethiopia. However the key distinction between the diaries and questionnaires was that the diaries provided the teachers with a chance to expand on their answers in an unstructured manner and also to keep filling in the diary every week throughout the research process. Once the teachers had completed the diaries over a period of weeks there was opportunity for dialogue as they explained what had taken place. The research team were therefore able to trace the progression of the initiative and what teachers had felt at different points.

Certain teachers clearly valued the opportunity to write a diary, and in Malawi there was an element of prestige for those selected to complete the task. To respect this and further incentivise the teachers, they were allowed to keep the diaries as a record of their work, with the research team taking a photocopy and returning the diaries to them. The use of this method instilled value in the teachers as they were both familiar and comfortable with the notion of a written diary. The quality of the diaries was largely dependent upon the motivation of the individual teachers and their inclination to engage with the process of self monitoring. Following the experience of using research diaries in Malawi, I reflected on their primary value within the exercise (03/03/08):

'Everything that the teachers wrote is interesting to look at and valuable for our analysis. But the most important impact is the effect it has had on the teachers and their approach to the programme. Giving them activities to help monitor what is happening has actually added to the effectiveness of the learning - because the teachers are then more engaged and attentive to the initiative and what is happening.'

There was a clear capacity enhancing impact on stakeholders through participating in the monitoring and evaluation process (see Chapter 6). Having completed the diary for the three-month test period one, teacher from Dzenza (04/03/08) commented:

'I liked doing it – it was nice because I like writing... I wrote both the good and the bad things – but there was not much to say on the bad.'

In Ethiopia the research team followed the advice of Ayele (11/04/08) regarding the appropriate way to use diaries with children and teachers. She identified the recurring methodological challenge of helping participants progress beyond what could be called 'default' answers:

'The key issue will be pushing the children away from their default responses towards deeper answers - it is really important to emphasise that there is no right or wrong answer so that they will feel free to answer honestly and write down other experiences ... It is important to give them the control, give it to them and let them fill it in whenever they want.'

Despite seeking advice regarding appropriate implementation, the attempt to replicate use of diaries as a research method in Ethiopia was met with very limited success. The primary reason was the reluctance of teachers to engage with the exercise because of the extra time required, combined with the lack of incentives available for doing so. Towards the end of the monitoring and

evaluation exercise Márton Kocsev, GTZ project advisor, noted that (09/12/08) although he valued utilising diverse methods, if it had been necessary to remove one of them then:

> *'It would be the diaries that I would lose, they are important but we don't have the resources to analyse them at the moment.'*

The varied teacher responses from Malawi and Ethiopia may also have been due to the different overall responses to development interventions in the two countries. Many of the teachers in Ethiopia were experienced at interacting with donor programmes and some of them therefore maintained a degree of cynicism regarding participation (Cooke and Kothari 2001). Conversely, many teachers in Malawi were employed in schools that were claimed never previously to have been shown such attention through being selected for a donor programme. As a result they were willing to engage more enthusiastically with monitoring methods such as diaries. As I reflected in my research diary in Ethiopia (15/12/08):

> *'There is no best practice example when it comes to deciding what monitoring and evaluation methods should be used. Diaries were appropriate in Malawi but were not in Ethiopia – because of the different contexts. So the key is in not trying to develop a universally applicable methodology but instead keeping flexible and adaptive to changing requirements and capacities.'*

This again served to demonstrate the need both for a flexible approach that was dependent on local contexts, and also for an adaptive multi-method approach to monitoring and evaluation. What worked with a reasonable level of success in Malawi could not necessarily be replicated in Ethiopia because of the different context and history of donor intervention.

Observations

A central method in both the case studies in Malawi and Ethiopia was observing how the technology was utilised within the classroom environment

(Shurmer-Smith 2002, Herbert 2000). The ethnographic and associated time-consuming nature of classroom observation meant that on occasion it was considered a low priority by some of my partner organisations. However, my initial conviction regarding the central importance of observation was corroborated by teachers in Malawi who reported that they considered this to be the most important aspect of the monitoring and evaluation process. Similarly, the headmaster of Mwatibu (12/11/07) informed the research team:

> *'All the methods you have used have been good – the lesson observation is the best because you can actually see what is happening.'*

In order to gain maximum benefit from the classroom observation sessions, the monitoring and evaluation team found it useful not to follow detailed and prescriptive observation sheets as had been initially undertaken in Ethiopia by ECBP, but rather to employ a semi-structured approach with trigger questions that could frame the comments of the observer (Creswell 2005).

Whilst classroom observation was made more complex because of the distorting impact of our presence (Rose 1997), time spent using this method did ultimately lead to a more comprehensive understanding of what was taking place (Herbert 2000). When asked about the challenges of the method, a teacher from Chingombe (05/03/08) explained:

> *'It is good that you spent time in the classroom ... But the children were scared to talk to you because of an inferiority complex due to language and skin colour.'*

As documented in Chapter 3, the distorting impact of our presence did remain a recurring challenge throughout the monitoring and evaluation exercises. This was addressed as fully as possible when conducting classroom observations, taking time to explain to teachers and students that we were not there to test them and that they should continue teaching normally as if we were not present. It was necessary to persist in classroom observation despite the challenges encountered because we were consciously trying to

provide a counter to the small amount of education-related research in the developing world that is conducted through actually spending time in classrooms with pupils and teachers (O'Sullivan 2005, Selinger 2009).

In both case studies every school was told by the government partners what day they should anticipate receiving a visit from the monitoring and evaluation team. Warning the schools of our impending presence and avoiding spontaneous spot-checks ensured that the school schedule was not disrupted and also promoted a collegial atmosphere rather than that of harsh, external evaluators. Alongside this, it meant that schools were prepared for talking with us and so it was possible to accomplish the set tasks within the timeframe available. However, providing the schools with opportunity to prepare meant that they understandably took effort to present a 'polished' environment where they could control what was visible and present a sanitised version of reality. A visit to Mwatibu (06/03/08) demonstrated the negative consequence of warning schools regarding our forthcoming visits. One of the students casually informed the research team during the group interview:

> *'We haven't used the gadgets for some time but we were prepared yesterday.'*

This situation could have been avoided by arriving at the schools unannounced and ensuring that events were not being staged. Although this would have achieved a more accurate view of normal classroom practice through the observations it is likely to have simultaneously undermined the more significant objective of promoting teacher capacity development and overall programme success (section 7.4.2). This demonstrates one aspect of the wider issue concerning the relationship between the research team and the schools. We frequently encountered the tension between wanting to inculcate enthusiasm and develop capacity whilst also needing to rigorously assess impact. This encapsulates the ongoing challenge to operate in a manner that is participatory and empowering whilst maintaining a constant awareness that stakeholders may adjust their behaviour in order to present an idealised vision of their situation.

5.4 Lessons for effective operation

The approaches adopted in monitoring and evaluating the ICT for education programmes in Malawi and Ethiopia facilitated an exploration of the challenges, strengths and weaknesses associated with such methods. Linked to this were the four central themes for effective monitoring and evaluation identified by participants at the eLearning Africa workshop in 2008 in Accra. These were plural methods, partnership, participation and process-based approaches. Participants suggested that these aspects of monitoring and evaluation tend to be marginalised from mainstream practice because they are difficult to operationalise or implement with fidelity within a context of tight time, financial and political constraints (Bamberger *et al.* 2006).

As these four approaches were identified by practitioners as areas of significant concern, I pursued a methodological approach that deliberately sought to engage with each and explored the practical implications of so doing. Positioning my research within real programmes where it was necessary repeatedly to justify prioritising these four issues was an effective way to engage with the broader question of how to shift the methodological status-quo that perpetuates their marginalisation.

The implications of the first of these are dwelt on briefly below before focussing in detail on the methodological implications of adopting an approach to monitoring and evaluation that is grounded in partnership, participation and process-based research. I also add a fifth category regarding the importance of sustained probing. This was not identified in the workshop but its significance as a methodological factor became apparent throughout the field research.

5.4.1 Plurality of methods

The decision to employ multiple methods and reflect upon the consequences of so doing was affirmed in conversation with teachers in Ntentera

(07/03/08). After a day of engaging with a variety of monitoring and evaluation methods in the school they reported that:

> *'It is good that you have used so many methods. It has shown us what is really happening with the children learning and the problems and it has shown you the problems that we as teachers are facing and how the gadgets are assisting the learners.'*

Whilst the teachers noted the benefit of multiple methods for the research team, they also considered that it had helped them more fully to realise the implications and results of the programme. The use of multiple methods in monitoring and evaluation enabled the teachers to reflect and thereby they became increasingly conscious of the programme strengths and weaknesses. In this way the use of different methods contributed to both the capacity development of the teachers and also increased the overall chance of programme success (Unwin and Day 2005, Marker 2001).

Kocsev concurred regarding the importance of a multi-method approach in Ethiopia (09/12/08). He emphasised how each of the methods had served a different purpose within the monitoring and evaluation exercise:

> *'To help us understand what is happening in the classroom the observation sheets are helpful. For overall programme management it is the focus groups which are the most important. Then for assessing educational impact it is the baselines which we need.'*

This demonstrates the way in which different monitoring and evaluation methods are interdependent and can be used in conjunction to encapsulate the multifaceted nature of effective assessment.

5.4.2 Implications of partnership

There were significant benefits in adopting a partnership-based approach to the research, including the opportunity to collaborate with pre-existing programmes, utilise government relationships, gain access to stakeholders,

and be provided with research assistants and interpreters. Despite this, the decision to operate in partnership was not taken because of the potential benefits, but rather due to the conviction that analysis of cross-sectoral partnership is central to making progress within ICT for education (Wilson 2006), engaging productively with associated current debates regarding monitoring and evaluation of ICT for education (Cassidy 2007, Draxler 2008) and building on work regarding monitoring and evaluating partnerships for education (Marriot and Goyder 2009). Exploration of the dilemmas and opportunities presented through working in partnership constitute the primary topic for the analysis in Chapter 5. The discussion here focuses on the implications of partnership specifically regarding methods for monitoring and evaluating ICT for education programmes rather than on the research as a whole.

Whilst presenting rare opportunities and avenues for research, the choice to operate in partnership with external organisations placed significant constraints on the ability to explore innovative methodological approaches to monitoring and evaluation. In each location the partner organisations had key objectives to accomplish and a significant proportion of my time was therefore spent developing methodological approaches that would achieve this end. On occasions these clashed with my academic research objectives, requiring dynamic negotiation throughout the research periods and revealing significant differences in our underlying ideologies.

Collaborating within a context of significant ideological disconnect exposed me to the possible accusation of conducting somewhat commodified research (Heyman 2000) and contributing to the rise of the corporatised university (Gibson 1998). Although a risk, this is not necessarily an inevitable consequence of operating in partnership with the private sector. My objective was to maintain committed yet critical engagement through partnership, recognising that the value systems of academia, governments and the private sector are not always compatible, cannot be homogenised and must remain distinct. Rather than operating in threatened, dichotomised isolation, the most compelling way to achieve progress within the arena is through engaged

dialogue and partnership. Whilst concurring with Heyman's (2000) assertion that commodified research is increasingly common, and indeed constitutes a microcosm of a broader trend of private sector values being imbibed across society, I remain assured that my partnership-based research did not contribute to this trend and instead demonstrated the constructive outcomes from sustained and critical engagement.

In addition to the ideological conflict, there was a more practical challenge regarding the stated intention of both private sector partner organisations to present the findings of the monitoring and evaluation exercise to international donors who could provide the requisite funds in order to take the programmes to scale in other countries. It was therefore important to present the research findings in a manner that was palatable for the target audience of donors and not deviate too far from the anticipated format of a conventional monitoring and evaluation exercise. This required that the innovative methods I wanted to experiment with were combined with more established research methods that could be emphasised in the final reports for donors. This provided a valuable lesson in methodological pragmatism, recognising that the chances of obtaining funding from an international donor are increased by demonstrating impact in a manner which fits within their emphases and pre-established criteria, regardless of my opinion of suitability and rigour (Morgan 2004).

This was not ultimately detrimental to my exploration of innovative approaches but simply meant I needed to work hard to design methods that had a conventional structure for the donor audience alongside the innovative additions. As noted in my research diary from Ethiopia (08/04/08):

> *'Central to the methodology is choosing to work with a project which, to a significant degree, I am actually opposed to. Intentionally putting myself in that position and then exploring the resulting challenges, both those that arise in the project and those that arise in me. I have brought all these problems and dilemmas on myself by choosing to work with a*

problematic problem but it is the only way I can really ever provide a genuine critique of OLPC.'

The partner schedule in Malawi that I was required to cooperate with meant that there was only one day in each school on each of the three research visits. It was necessary to establish and rapidly promote good research principles, as discussed in Chapter 3. This involved intentionally using every spare minute in the schools to build rapport and hear stories, perspectives, concerns and hopes of the students and teachers. Achieving this demonstrated how monitoring and evaluation that is constrained by tight timeframes and ideological clashes can still retain an ethic based on empowering principles of operation that minimise methodological abuse of power (George 2008). However, this does still require very intensive practical engagement, and long hours spent in each school.

Timing was again pertinent when considering the amount required in order to develop relationships between partners in a manner that could contribute to capacity development. Everts reflected on the importance of this towards the end of the research regarding the partnership with ECBP and how things could be improved for similar monitoring and evaluation in the future (17/12/08). He noted:

> *'Although it sounds crazy, I would have spent even more time communicating with ECBP what was being done and why it was being done, getting them to buy into the monitoring and evaluation, getting them to collaborate more, own it more. We thought we were wasting time in the meetings but now looking back I would have spent even more time on it – this is a key lesson of partnership.'*

Maintaining an emphasis on developing partner capacity for effective monitoring and evaluation throughout the research process proved an astute choice due to unforeseen circumstances at the close of the Ethiopian case study. The overarching negative methodological consequence for operating in

partnership in Ethiopia was that the tumultuous political context surrounding the programme meant that several of the monitoring and evaluation methods that had been designed could not be implemented in their entirety. In the light of this, at the end of the involvement of the research team in the programme, all of the methods that had been designed but not implemented were passed to ECBP ownership so that they could be of maximum benefit in future iterations of any monitoring and evaluation process. It was demoralising that the delay in deployment caused by the government meant that not all the methods could be utilised within the programme timeframe, as explained in Chapter 3, but investing heavily in the capacity enhancement process meant that the methods may still be of some future use.

5.4.3 Realities of participation

There is widespread criticism of externally imposed monitoring and evaluation, with pragmatic realisation that a more appropriate approach must be possible (Horton and Mackay 1999). Participatory methods have been promoted as part of the alternative in development work generally (Chambers 1994) and also specifically within the monitoring and evaluation of education programmes (King 1995). Despite this, there is evidence that recent prominent ICT for education related evaluations have been neither participatory nor culturally specific (Kozma *et al.* 2003, Kozma *et al.* 2004), often resorting to reductionist national data sets that marginalise local distinctives (Selinger 2009). Indeed, despite calls for an alternative, the benefits of participation are still viewed sceptically within sectors of the international donor community, with a World Bank report emphasising that 'talking to program participants can be valuable, but it is unlikely to provide a credible evaluation on its own' (Ravallion 1999 p 7).

It is also possible that increased stakeholder participation can become assumed as a simplistic methodological prerequisite for more effective monitoring and evaluation, becoming something of a buzzword within accepted development parlance (Tacchi *et al.* 2009b, Kothari 2005). Whilst

believing that methods that are based on the principle of facilitating increased stakeholder participation do enhance the validity of research activities, I was keen also to ensure that my research did not perpetuate the tendency to offer this as a final solution (Pain and Francis 2003).

Having recognised the need for more participatory methods through the workshop feedback, I then engaged with the real-world complexities of operating in such a manner and used the field experiences to both debunk participatory myths and improve upon practice (Tacchi *et al.* 2009b, Lennie *et al.* 2008). Conflicting agendas can cause much monitoring and evaluation that is labelled as participatory to actually remain somewhat superficial in application (Mikkelsen 2005). In the light of this, I decided to explore the factors that prevent participation, from within the context of a multi-stakeholder partnership.

This decision required an appropriate research foundation from which I could reflect on the challenges of participatory methods in evaluation. I therefore made sure to involve stakeholders in the design and delivery of the methods (Sillitoe 1998, Briggs and Sharp 2004), engaging with teachers, students, parents, community leaders, administrators, government officials, academics and consultants (Unwin 2005). This also involved developing a range of appraisal methodologies (Cohen *et al.* 2007, Tacchi *et al.* 2009a, King 1995, Chambers 1994). From this foundation I was able more fully to engage with the practical implications of critique surrounding participatory approaches (Mohan 1999, Cooke and Kothari 2001).

The benefit of spending time listening to stakeholders and discussing the issues that were of concern to them was reflected in the evaluation of the evaluation process conducted with the teachers in Malawi. A teacher from Dzenza (16/11/07) said that they were more accustomed to an approach to new programmes in which:

> *'Things just start from the top, from the Ministry of Education,*
> *but it doesn't reach us the implementers.'*

The teachers contrasted this with our monitoring and evaluation process, where the participatory approach employed had allowed them:

> *'To express everything that is in our minds, we feel relaxed and can say anything.'*

A teacher from Denza (16/11/07) expanded on this point, explaining how he considered teachers to be in the best position to provide information about what is happening within such an initiative:

> *'We know the situation in the classes, if you want to know what is happening in education you have to consult the teachers and we will tell the truth, we cannot hide anything. If you just come and visit the official office they will just tell you what they have heard somewhere.'*

Similarly, at the close of the monitoring and evaluation exercise in Malawi, after three visits to Mbinzi (26/02/08), the research team evaluated the evaluation process with the teachers. A teacher informed us that they felt engaged in the process:

> *'We have expressed our view and you have heard our problems … you have seen the lessons in operation … we have been a part of it.'*

As demonstrated through the quotations cited, there were teachers who clearly benefitted from the participatory methodologies employed. However this was not universal and a significant minority of teachers were ambivalent or even hostile about the amount of time required in order to engage in the participatory research process. Whilst keen to be asked their opinion, they also pointed out that there were many others things that they should be doing with their time (Patrinos and Kagia 2007, EFA 2005). This demonstrated the danger within participatory approaches when stakeholders are viewed as passive recipients who are always eager to discuss programme-related issues as a rare opportunity to have a voice within their otherwise disempowered lives. The reality is often significantly removed from this caricature, with

teachers maintaining many external commitments that limit the time available for engaging in participatory research activities.

In addition, the presence of teachers during research activities that were supposedly participatory did not always mean that a genuine participatory approach was upheld by all members of the research partnership. As Everts noted (15/04/08):

> *'Rather than being fully informed of what was happening the teachers were just "participated" by someone calling the headmaster the day before and saying "I need to talk with 6 teachers tomorrow". As a result they find it difficult to give their perspective because they were just co-opted into the programme, they are just subjects, not part of the process.'*

Teacher reluctance to engage in lengthy participatory methods within the monitoring and evaluation exercise was also demonstrated through frequently alluding to the fact that their participation would be aided by receiving financial incentives. For many teachers, participating in the research process was more about remuneration than empowerment. Teachers in Addis Ababa were familiar with the good practice requirements of donor programmes and they were therefore often unimpressed at the idea of participating without any financial incentive.

In Malawi this issue was exacerbated by the salary structure of the MoE and all other government ministries, which is dependent upon 'travel allowances' and 'incentives' to supplement the low basic wage. High-level government officials are the primary beneficiaries from these lucrative 'allowances' and so it was unsurprising that our arrival in a school was often accompanied by the palpable expectation from the teachers that this would be a rare opportunity for them also to gain from the system.

In Ethiopia the research team encountered a similar situation. Following a challenging focus group with teachers in Menelik, I enquired of Tilahun

whether the demand for incentives was perhaps exacerbated by the presence of the laptops as high-value objects. She explained to me how the causal issue was in fact more systemic (16/04/08):

> *'It is not just because it is laptops. Most of the NGOs here are accustomed to giving out money for training. If they ask people to come to a specific place and time for a discussion then people would expect some incentive.'*

This issue presented the monitoring and evaluation team with a significant dilemma. When teachers expressed their reluctance to participate without financial incentive, the quickest solution would have been simply to allocate cash on the anticipated basis of attending focus group discussions in order to halt the feeling of disenfranchisement surrounding the programme. However, doing this would have been only a quick-fix solution, compromising the methodological integrity of the study and perpetuating an ultimately unsustainable system of dependency.

Confusion regarding expectations of incentives was exacerbated by the ambiguous identity of our research team in Ethiopia. The multi-stakeholder partnership of the team was not necessarily clear to the teachers and they often assumed that the white faces present were indicative of an NGO or solely donor-driven initiative. As Tilahun explained, although we were not strictly an NGO, the teachers would not necessarily consider us as affiliated with the government. Following initial confusion, the association with the MoE ultimately proved beneficial in this instance in bringing definition to our position. Once the teachers stopped categorising the research team as an NGO and understood that they were cooperating with a government partnership then they no longer held the same expectations regarding incentives. This brought clarification to the position of the research team and avoided resentment through unfulfilled expectations of remuneration. However, Tilahun explained that the underlying reason for the clarity was not entirely positive (16/04/08):

> *'If you know the Ministry of Education has some agenda to talk about and they ask them to come to a meeting at a*

weekend then they will be there and they won't expect any
money. They will go because it is directly related to their
work. They will be afraid of being fired and so they will go
because of the pressure and the consequences.'

The varied degree of teacher willingness to engage with the participatory methods also debunked the assumption that stakeholder participation provides access to a single alternative perspective. The research participants held a variety of diverse perspectives and by no means represented a homogenous 'other' (Said 1978). This was demonstrated through a methodological disagreement between various Ethiopian members of the monitoring and evaluation team. As noted in my research diary (17/04/08):

> *'We tend to essentialise and think that local perspectives will*
> *be somehow homogeneous. Whilst a local perspective may*
> *well identify things that an outsider is unlikely to, this does not*
> *mean there is one single insider perspective. By consulting*
> *local people you are not tapping into some pure perspective on*
> *how research should be undertaken. What we have done is*
> *involve a whole load of local people and find that they all*
> *disagree on what is appropriate just as much as we do!'*

In order to be employed effectively, participatory methods in monitoring and evaluation therefore require an acute awareness of socio-cultural and political context, and the multiplicity of interwoven traditions, norms and expectations that shape participant responses (Cousins and Earl 1995). Participatory methods should be viewed realistically, as a vital dimension within effective monitoring and evaluation but not as a panacea in and of themselves (Tacchi and Lennie 2007).

Whilst I have highlighted the dangers of wholly imbibing the participatory rhetoric, it is clear that the overall research process was more participatory in nature than is currently commonly witnessed (for contrasts see Farrell *et al.* 2007, Maclay *et al.* 2005, Kozma *et al.* 2004). As such my research does advocate for increased critical participation throughout monitoring and

evaluation. However, the sustained problematising of participation remains pertinent, especially within the specific context of development initiatives related to ICT. As Heeks (2008 p.30) notes:

> 'Who participates matters – this is often a very small, vocal, elite, minority. How they participate matters – individual and group processes produce different results. Why they participate matters as well – participants often give the answers they think designers want to hear.'

The nature of applied monitoring and evaluation exercises means there will rarely be a situation in which either a solely top-down, deductive and externally imposed or bottom-up, inductive and internally driven process is appropriate. Rather, a combination will exist which reflects both the nuanced nature of operating with real programmes and the specific priorities of the decision makers in each context (Gray 2004, Bamberger 2006). Thus a central issue of contention is where on this continuum the emphasis should fall in each situation, with those who advocate for considerable external input due to the current legislative and high accountability climate (Huberman 1995) in opposition to those who maintain that stakeholders should be primary decision makers regardless of external conditions (Sigsgaard 2002, Fetterman and Wandersman 2004).

Promoting participatory methods with stakeholders is complex and time consuming but is likely to improve both the process and outcomes of monitoring and evaluation and enhance overall programme efficacy. The significance of operating in this way, investing time in building relationships with participants when conducting research activities, was witnessed whilst conducting focus groups with teachers in Rema, Ethiopia (17/04/08). The research team participated in a two hour cultural celebration in the school with all the teachers after the lessons had finished and before the focus groups began. The centre point of this was a ceremony known as 'gursha' that involved the research team being fed a dish called 'injera' by hand from the teachers as a sign of welcome and honour. Being fed by teachers, drinking

coffee and dancing together in a room thick with the smoke of burning myrrh was clearly not an 'efficient' use of two hours valuable research time if assessed through a solely quantitative approach. However, the focus group discussions that took place with the teachers following the celebrations had a considerably richer dialogue than had been encountered previously in any other schools.

Photo 5.3: Being fed in the 'gursha' ceremony

Photo 5.4: Preparation of coffee

Being willing to engage with cultural celebratory activities and be welcomed by research participants on their own terms constitutes a significant practical application of participatory rhetoric. Operating in this way broke down the restrictive barriers that often define monitoring and evaluation exercises. It was also a lot of fun and ultimately provided access to gaining a more substantive and grounded view of programme impact.

5.4.4 Emphasising process

There is substantive conceptual and practical overlap between participatory and process-based approaches to monitoring and evaluation. The two

emphases can serve to reinforce each other (Kozma and Wagner 2005, Commission for Africa 2005) and reduce the divide between stakeholders and those conducting external assessment (Unwin and Day 2005). Although the significance of process-based monitoring and evaluation has been identified previously in other fields within the development arena (Watson 2006), I examine here the context specific implications of adopting this approach to monitoring and evaluation of ICT for education initiatives.

Unless the intrinsic value of the process is emphasised it is easy for monitoring and evaluation to become a dominated, non-participatory approach based solely on outcomes, with an overarching agenda and motivation being the donor obligation to account for their use of resources (Watson 2006). Monitoring and evaluation can therefore easily become an externally imposed activity (Commission for Africa 2005) where the recipient or beneficiary agenda adopts a secondary position. I tried to counter this tendency in my research by ensuring that a process-based approach was intrinsic throughout and was outworked through the primarily inductive methodology. As a result, the research process embraced the potential and expectation for adjusting and reassessing appropriate approaches (Castells 2000) and simultaneously enhanced the potential to become an educational and capacity developing output in its own right (Elkins 2005).

The research was based on the conviction that there is need for a substantive cultural shift regarding the way that monitoring and evaluation is approached in regard to emphasising process. Indeed, lessons applied through this research in the context of ICT for education are also pertinent for development initiatives more broadly. The externally imposed, donor driven nature of much monitoring and evaluation can result in a dominant association with an end product and demonstrable report–based outputs. As a result, implementing a methodology and the associated interactions with stakeholders is viewed primarily as a means by which to reach this goal. This emphasises the need for a distinction between monitoring and evaluation and the way that current donor priorities often lead to an over-emphasis on evaluation. In contrast, developing capacity is more dependent upon the

process of monitoring and this is discussed in detail at the close of this chapter. Process is therefore not only useful in helping reach the end product but also has intrinsic value in and of itself, meaning that monitoring may ultimately be of more significance than evaluation in achieving education objectives (Earl *et al.* 2001, Chapman *et al.* 2004). As noted in my research diary (16/04/08):

> *'We need to promote a change in culture within monitoring and evaluation. Value is seen primarily in terms of end-product, demonstrable measurable outputs, and the process conceived primarily as a means by which to get there. Thus the process only has value when it helps get to the product more quickly. Emphasising a systems-based approach that engages with the process leads to a combination of conventional evaluation with self-monitoring and valuing both process and product.'*

This is determinant upon reassessing the culture of results-based and output driven evaluation and instead drawing also on the previously mentioned systems-based approach (Watson 2006).

Engaging with multiple perspectives was a constant challenge when operating under strict time and budget constraints (Bamberger *et al.* 2006). However, as noted by Unwin and Day (2005 p.121) it was apparent that when people 'have been involved in the process, they are much more likely to be positive about its proposed action plan'. This observation is of critical importance within the sphere of educational assessment, as teachers and other stakeholders are prone to view change as a threatening process (Unwin 2005). This emphasis also resulted in richer dialogue, as recorded in my research diary following group interviews with children in Mwatibu (06/03/08):

> *'It worked really well to start the group interviews with children by mentioning "last time we were with you all, you spoke about..." This is a definite strength, drawing on and*

> *referring back to previous experiences and comments to help*
> *them assess and discuss and become more responsive.'*

There is therefore benefit in ensuring that each stakeholder has ownership of the process taking place (Unwin and Day 2005, Taachi *et al.* 2009a). Alongside this, if such monitoring and evaluation is built in as an essential component within programme development then it becomes a tool for capacity development through mutual learning (Lennie *et al.* 2008).

This recognises the necessity for focusing on training of staff and human capacity development through the process of monitoring and evaluation (Batchelor *et al.* 2003), requiring an acknowledgement that many participants are likely to have 'little experience of such work, and it is crucial that simple but effective schemes are developed to enable them to contribute to, and benefit from, such activities' (Unwin 2005 p.84). This is in contrast to the orthodox 'heavy burdens of reporting' (Commission for Africa 2005 p.147) approach that may detract from the participant's ability to do the very thing that they are being evaluated concerning (Watson 2006).

5.4.5 Sustained probing

The importance of sustained probing within effective monitoring and evaluation became apparent when questioning stakeholders regarding the evaluation of the evaluation process. Within this context it was regularly apparent that teachers and other participants had only a limited grasp of the objective of the study, despite our efforts to inform them about it. This is unsurprising considering the abstract nature of evaluating the process of programme evaluation. The most significant challenge encountered was in helping the teachers reflect critically on what had happened as a result of the evaluation rather than simply providing default answers concerning the positive impact of the programme. This was demonstrated at Ntentera when the teachers were asked to reflect on the methods used. The initial response (07/03/08) was exemplified by one teacher, opting to focus on the programme itself:

> *'Our school is experiencing a positive change in attendance
> and the programme should be introduced more widely.'*

This level of response indicated what might be termed a 'default mindset' that resisted reflection on evaluation of the methodologies and preferred instead to remain simply answering programme questions. Reluctance to challenge the methods exemplified the wider issue regarding the importance of sustained probing and investigation beneath the reality presented by the methods (Cooke and Kothari 2001).

Progressing beyond initial and anticipated responses when in conversation with stakeholders presented a challenge due to the position of participants as personal beneficiaries from the programme. This was combined, especially in Malawi, with a cultural reluctance to acknowledge when the question being asked was unclear or the answer unknown. This was demonstrated in Bango (28/09/07) where teachers would often respond with a straightforward 'yes' when asked if they understood a question or concept, regardless of whether they actually comprehended what was being asked of them. Masperi noted how (07/03/08) cultural perceptions of monitoring and evaluation influenced participant responses:

> *'There is probably quite a strong desire to please and to try
> and meet what they think would be our expectations, which is
> not necessarily what our expectations really are.'*

Building on this issue of assumed expectations and the need to investigate underneath superficial responses was the difficulty many stakeholders faced in engaging with a critical assessment of what was occurring in the methodological approaches employed. Again, as Masperi (07/03/08) reflected:

> *'The concept of positive criticism is not very widespread, that
> is why it was good to talk with the teachers and really provoke
> them. "First time I ask you, you tell me everything is all good –
> but then actually when I dig a little deeper I find out it is not
> all good, so why do you tell me it is all good?'*

Tilahun reflected on the reasons behind the frequent misunderstandings surrounding monitoring and evaluation, emphasising the significant culture clash between the European donors and the Ethiopian recipients. She explained (08/04/08) how the European culture of monitoring and evaluation was anathema to many Ethiopians because of the different emphasis placed on specific assessment:

> 'One thing we think we have in abundance is time. If I am coming ten or 20 minutes later, it doesn't matter - I will still come. How long is Nazret from here? It is near. But to a German [European] you have to plan every single step. Here we are never sure of tomorrow, what will happen. We don't think we have the luxury of knowing where we'll be in ten minutes time or two years time. If it is going well now, then it is going well, we see all these things as relative. We ask, "how far is it to the road?" and the local will say "it is very close" – so we have learnt that if he points with his finger it means it is about two hours walk, but if he points with his stick it is four hours walk. As I said, things are relative – the German comes here and he wants to know what the exact temperature is, what the altitude is, how much it rains: who cares? It is hot, it is cold, it rains – you will need your jacket on or your jacket off – who cares how much it is in numbers?'

This extract reflects a common disjuncture familiar to many people who have engaged in cross-cultural interaction of some form. The significance in this context is in recognising the ways in which the differing mentality can lead to methodological misunderstandings regarding approach to answering questions in interviews and other conversational methods. In the light of this it was necessary to engage in a consultation process in order to construct and design questions in a way that was appropriate for facilitating deeper exploration. Without this, people were prone to responding simply that

things were 'good' or 'bad', without exploring anything of the 'how' and 'why' that lay beneath the response.

Similarly, it was possible to be misled unintentionally regarding the real meaning of quantity-based responses from teachers. As I noted in my research diary in Malawi (03/03/08):

> *'In various interactions with teachers I would ask them to be more specific about something they had said and would suggest that they gave a number to demonstrate more precisely what they meant. This was most telling when collecting data on their enrolment and attendance figures. In several schools the data was not available and so we attempted to retrospectively construct the figures, basically asking them if they remembered what it had been. What struck me was the way they were willing to remember the exact numbers that had been in attendance the previous year, but how it didn't seem to be based on fact. They appeared to be just picking numbers from the air and telling me, for example, "in 2007 we had 116 children attending each day in Standard 3b". It is possible they had incredible memories in every school, but it is more likely they were simply confused by my seemingly bizarre request for quantification and so just felt obliged to say something in response, as if they assumed I thought it was their responsibility to know. It is very unlikely that they knew, or even thought they knew, exactly how many children had been in the class.'*

This interaction suggested that the various players were acting out the roles they anticipated were expected of them during the research methods and interactions. This is a significant observation because formative assertions regarding ICT for education and wider development programmes are made on the basis of figures reported from participants. It is dangerous to assume that such figures given by participants have always been constructed from a Western perspective on quantification.

The limited emphasis on quantifying assessment demonstrated through the extract from Tilahun was again witnessed in the way teachers in both Malawi and Ethiopia struggled to respond to the question 'what is your least favourite?' Prior to the research I had anticipated drawing heavily on the Most Significant Change technique (Dart and Davies 2003) when designing methods for interacting with stakeholders as it appeared to be an effective means through which to ascertain the priority impact in the minds of beneficiaries. However, repeated experiences with teachers demonstrated that it was not suitable in these contexts. I noted this in my research diary (16/04/08) following attempts to adopt this technique in interviewing the Headmaster of Menelik:

> *'It was striking how the MSC questions were irrelevant to the Head. Although to me it seems like a neat tool for expressing something, to him it did not make sense. These are often the questions that I have to rephrase because first time around they are not understood.'*

Assessing an ICT for education intervention requires multiple assumptions regarding the point of causality regarding areas of change (Smutylo 2001). Although such assumptions are unavoidable an awareness of their presence can facilitate more critical reflection regarding the potential factors instigating change. This can be illustrated from the perspective of a rural Malawian school such as Golgota, where digital technology has never been previously utilised. A technological device may be deposited without any educational content installed, the teachers instructed to use it every week and the pupils told the purpose is to enhance their education. Significant educational improvement may occur after a few months of usage but the impact may have been identical if the device had been installed with a suite of carefully designed educational content. The improvement in attainment may be caused as much by the increased enthusiasm of the children and new determination of the teachers because the donation is perceived as being a valuable technology. The expectation of the research team would be that it

was the good quality curriculum based educational content on the device that instigated the change, whereas in fact it may have occurred because of the high status of the technology. The rationale for this is discussed further in Chapter 8, the analysis of aspiration. Without a critical assessment of the methods used and responses given it is easy to arrive at a seemingly reasonable but ultimately incorrect conclusion regarding causality.

The value of critical reflection on the methods used in order to ascertain causality was again demonstrated during the research in Malawi. An analysis of what was occurring revealed the difference between the planned framework for assessing value and the reality the research team engaged with. As noted in my research diary (12/11/07):

> *'We have really underestimated the impact on attendance. It keeps on being repeated by so many teachers and PEAs. This doesn't fit within the framework – it isn't about the pedagogy or anything – it is not about the content, just the fact that it is really exciting for the children because they have never seen anything like it before.'*

However astute and revealing innovative methods may be, there is also need for the simple passing of time in order to determine the causality and longevity of change within such programmes (Shadish *et al.* 2002). Such long-term assessment requires a period of engagement for monitoring and evaluation beyond the parameters of a thesis. It is important to acknowledge that there are certain aspects of evaluation that cannot be reliably assessed within a time period of three or six months. After a longer time period, of for example 18 months, it would become apparent if the espoused impact represents a substantive change in approach to education and associated sustained improvement in attainment or simply a temporary change caused by the aspirational nature of technology.

5.5 Implications for capacity development

The analysis of the methods employed throughout the fieldwork case studies has thus far only implicitly alluded to wider implications for capacity development in adopting such an approach to monitoring and evaluation of ICT for education initiatives (Watson 2006). I now focus on this explicitly, drawing together arguments concerning how the roles of multiple methods, partnership, participation, process and probing create a context where methods employed in monitoring and evaluation can become an opportunity for capacity development, enhancing stakeholder skills and increasing overall chance of programme success. My research diary in Ethiopia captured this emphasis (05/04/08):

> *'The approach adopted has meant there is considerable overlap between the project implementation and the monitoring and evaluation. The two are occurring side by side but there is potential for this to be a symbiotic relationship with both enhancing value for the other. However it does blur the conventional boundaries somewhat and makes it an unorthodox monitoring and evaluation exercise.'*

By operating in this way the research demonstrated the practical implications of what Unwin (2005) identifies as the future trajectory required within monitoring and evaluation of ICT for education. He envisages a context where monitoring and evaluation is conceptualised and practised as: 'A virtuous cycle of quality enhancement, through which all those involved in technology enhanced educational activities can work to improve their organisations and activities by being self-critical' (Unwin 2005 p.78).

Recognising capacity development as a legitimate and intentional outcome from monitoring and evaluation therefore increases opportunity for reflecting on practice and engaging in a shared learning process. Taking time to engage with stakeholders and talk with them about the programme provides opportunity to answer questions, provide clarifications and offer impromptu training to improve overall programme efficacy. As noted again in my research diary in Ethiopia (05/04/08):

'The biggest strength of this approach is that the monitoring and evaluation has potential to build individual and organisational capacity and enhance prospects of the project being a success. This is because it creates an environment in which stakeholders can reflect on the project and advice can be feed back in light of the identified challenges and weaknesses.'

Investing time to seek stakeholder advice regarding future direction and priorities also leads to increased ownership and associated motivation concerning the initiative success. Similarly, providing teachers with opportunities to express their opinion and suggest improvements served to promote a greater level of engagement in the programme and therefore contributed to the chances of improved educational outcomes. The most striking demonstration of the capacity enhancing impact of approaching monitoring and evaluation in this way was from a conversation with Kocsev (15/12/08) at the close of the fieldwork where he spoke about the significance of our early approach in shaping the overall implementation:

'It is fair to say that the focus group that you conducted in April was a significant turning point for the programme. It was a shift from an authoritarian approach to one where we engaged more with the teachers and the schools.'

The use of monitoring and evaluation to promote capacity development was further demonstrated in discussion with teachers from Dzenza (04/03/08) where they explained how the approach adopted had enabled them to improve their use of the technology:

'On your second visit to us you told us where we had made mistakes – so we have improved and solved the problems that you have identified last time around.'

Participatory and process-based methods have potential to facilitate a shift whereby monitoring and evaluation are not primarily perceived as a feared accountability mechanism and instead become an opportunity to learn,

improve and build capacity. Similarly, the potential of monitoring and evaluation as a tool for increasing motivation regarding the programme was demonstrated in conversation with teachers at Mbinzi (15/11/07) where one reported how the expectation of sustained monitoring visits served to increase student attentiveness:

> *'Knowing that you will come again and ask the children more questions will make them more attentive: they will all be listening now. The ones who did not get a chance to talk to you today were not happy.'*

This demonstrates how monitoring and evaluation visits had become an event welcomed by teachers rather than being viewed as an external imposition because they served as an incentive for the children to work harder in class. Instead of simply attempting to 'lighten the load' of monitoring and evaluation for the recipients, monitoring and evaluation can cease to be a burden, however heavy or light, and instead be viewed as a useful tool that assists in facilitating the development of the programme concerned (Alexander 2008).

The intention in highlighting the capacity development aspect of monitoring and evaluation is not to negate the necessary accountability mechanisms that remain central to assessing such development programmes. Nor is it to downplay the frequent challenge of conflicted interest between donor and recipient. Instead it is to demonstrate how, within and alongside the process of programme assessment, it is possible to create a culture where stakeholders welcome external input and assessment exercises are structured so as to leave room for the application of lessons learnt in making appropriate adjustments throughout the process of the programme lifecycle rather than only at its conclusion (Kozma and Wagner 2005, Watson 2006). This is particularly pertinent within contexts such as my field research in Malawi and Ethiopia, where the monitoring and evaluation was conducted in conjunction with the implementation process. In such instances the data collated, alongside being useful for a final report, provided continual feedback to shape and refine the ongoing implementation process. This leads

to a more sustained focus on effective dissemination (Unwin and Day 2005) regarding the implementation of evaluation recommendations (James and Miller 2005). This in turn promotes a realistic engagement with strategic educational goals, recognising the long-term nature of instigating substantive educational reform (Unwin and Day 2005).

Despite the steps taken, implementing the shift in approach towards capacity enhancement was a significant challenge for stakeholders both in Malawi and Ethiopia. Understandings of conventional donor relations meant that many stakeholders, especially teachers and middle-ranking officials with experience of operating with donors, held strong assumptions regarding what should be encompassed within an activity purporting to be monitoring and evaluation. In several focus groups the stakeholders willingly discussed the role of monitoring and evaluation within a programme whilst demonstrating very limited understanding regarding its purpose. In both contexts, certain participants considered it to be a box-ticking exercise and were reluctant to redefine it as something with potentially wider implications. The influence of donor guidance was significant within this, meaning that evaluation was perceived as something that should be considered as a discrete event undertaken after two or three years of programme operation rather than having any process-based element (Unsworth 2003). This demonstrated how participants rarely distinguished between the terms, and that what was commonly referred to as monitoring and evaluation more closely resembled a strictly summative assessment.

Moving beyond this is dependent upon reconceptualising the nature of monitoring and evaluation and building reflection and self monitoring into the evaluation culture of organisations implementing ICT for education programmes (Tacchi and Lennie 2007, Tacchi *et al.* 2009b). In this the potential of both monitoring and evaluation to add value within programmes is recognised, promoting a context in which 'the monitoring and evaluation team takes a much stronger role in agenda setting regarding program content' (Lennie *et al.* 2008 p.7).

These issues allude to the bigger project raised in Chapter 2 that requires a redefinition of development practice more broadly, engaging with the intangibles of lasting impact rather than a fixation with short-term results-based outputs. Chances are slim that a widespread transition will soon occur whereby monitoring and evaluation are redefined and their value is recognised as an integrated, fully funded and systemic component of every project (Wagner *et al.* 2004). In the light of this, the exploration of different kinds of methodologies in this chapter has demonstrated the value in promoting more holistic monitoring and evaluation within the pragmatic constraints of real-world ICT for education programmes. Although the arena is likely to remain somewhat underfunded and marginalised, there are substantive methodological innovations that can improve overall approach, process and outcomes. As demonstrated in both Malawi and Ethiopia, methodologies that promote rigour, participation and process become a means for ensuring that monitoring and evaluation of ICT for education initiatives are a tool not only for proving impact but also for improving practice (Lennie *et al.* 2008).

6. The role of partnerships

6.1 Introduction

The purpose of this chapter is to assess the role and influence of partnerships within ICT for education programmes and focus on their impact in defining monitoring and evaluation processes. The centrality of this theme emerged when stakeholders at the first participatory workshop (eLA 2007) identified their main priorities regarding the monitoring and evaluation of ICT for education initiatives in Africa. Challenges relating to partnership were considered a major constraint to the success of ICT for education initiatives, both generically and regarding the specific role of monitoring and evaluation. Foremost amongst these were the imbalance of power between stakeholders, frequent conflict of interest, and limited consideration of sustainability and creativity. Participants noted that genuine and effective partnership in ICT for education required a foundation of equity, mutual accountability, and clarity of roles (see Appendix Q).

At the second participatory workshop (eLA 2008), '*the shortage of multi-disciplinary research teams that are able to address all facets of the educational venture being evaluated*' was identified as a central challenge in conducting effective ICT for education evaluation (see Appendix R). The workshop feedback and interviews were instrumental in shaping the research and led to an articulation of a second aim for this thesis:

> To analyse the role and influence of partnerships within ICT for education programmes, especially in regard to their impact in defining the nature of monitoring and evaluation processes.

The following analysis is an exploration and outworking of the decision to conduct the research in partnership with a variety of organisations. The specific substance of the analysis is drawn from two main sources. The first is interactions with stakeholders, focusing on their own observations and

responses to questions regarding partnership through case studies in Malawi and Ethiopia, email interviews and online survey. The second is drawn from reflections on the impact of partnership within ICT for education programmes, with particular reference to monitoring and evaluation. Thus, the analysis constitutes both an assessment of doing research in partnership and also of partnership based approaches to monitoring and evaluation of ICT for education. These are considered from my dual position, engaged as one of the partners and simultaneously reflecting on the processes occurring.

The premise of the analysis is that effective partnership in ICT for education is dependent upon effective monitoring and evaluation, and that in turn, effective monitoring and evaluation is dependent upon effective partnership. The interdependence of these relationships is explored throughout this chapter. Adopting a partnership-based approach has wider application, contributing to a more sophisticated understanding of how best to implement ICT for education partnerships (Cassidy 2007, Marriot and Goyder 2009, Unwin 2009b) and also feeding back into discussion concerning effective monitoring and evaluation more broadly.

6.1.1 Structure

This chapter begins with a discussion of partnership in development, engaging with the progression of contrasting themes and perspectives. It builds on this by addressing issues concerning partnerships within ICT for development more specifically, to provide context for the empirical analysis. Following this is a chronology, outlining the development of the research partnerships and noting strengths and challenges, in order to provide context and overview for the subsequent debate. The analysis then considers the motivation for and implications of partnerships, reflecting on how to maximise the benefits and realise the positive consequences of operating in this manner.

6.1.2 Context

The three categories of partnership in the research process were core partners, secondary partners, and peripheral partners. The core partners of Eduvision, EuroTalk, InWEnt and ICWE were those with whom the fieldwork activities were directly designed and undertaken. Secondary partners are defined here as those with whom there was collaboration as a result of their connection to a core partner, such as the Malawi MoEST, ECBP, GTZ, Apposit and Ethiopia MoCB. Peripheral partners were indirectly involved with the research and are included because they contributed to or influenced the partnership in some from, such as Groningen University and OLPC. For the purpose of this analysis, the term partner is used to refer to collaborating institutions or organisations and the individuals operating within them that were involved in implementation (Tennyson 2003). Methodologically, school teachers, children and all participants were considered as partners as they were active stakeholders in the research process. However, their significant role is not the central consideration for the substance of this analytical chapter which focuses on the dynamics of implementation.

6.1.3 Chronology

The following chronology, Figure 6.1, documents the progression of the partnerships throughout the fieldwork, including challenges, constraints and opportunities. It provides an overview and initial context for the analytical themes. The focus is primarily on interaction with EuroTalk and Eduvision, the two main partners for the case study evaluations in Malawi and Ethiopia, whilst also making reference to the other core partners. Partnership issues related to EuroTalk are displayed in blue, partnership issues related to Eduvision are displayed in red, and partnership issues related to other parties are displayed in green.

Month	Activity	Challenges	Strengths	Outcome/comments
07/07	• Workshop - Held monitoring and evaluation workshop in Nairobi at eLearning Africa. • Ugunja Community Resource Centre – Initial contact.	• Logistics and selecting partners for papers. • Communication with project in Kenya and determining monitoring and evaluation outputs of partnership.	• 60 stakeholders and research partners participated from civil society, academia, government, donor and private sector. • Impressive community based organisation with significant potential.	• Much valuable data on partnerships and report of workshop outputs – participants shaping the research agenda. • Deteriorating political situation in Kenya meant that partnership was not feasible.
08/07	• EuroTalk - Initial contact. • GTZ - Initial contact. • TeckiKids - Initial contact.	• Communication of objectives regarding partnership. • Gaining access to the project in Botswana due to fear of outcomes. • The programme to partner with for monitoring and evaluation in South Africa is not fully compatible with my research objectives.	• Enthusiasm regarding engaging with University and potential for partnership. • Interesting proposal and opportunity to collaborate with major international agency. • Good working relationship with partner and enthusiasm for collaboration.	• Agreement to collaborate on monitoring and evaluation of the Malawi programme. • Refused access to programme by GTZ as they considered it 'unsuitable for evaluation'. • Decided not to work in partnership due to diverging objectives.
09/07	• EuroTalk - Field work Malawi stage 1.	• Difficulty of implementing appropriate approach in the field, the need to work quickly and the challenge of participation. • The time required to establish a	• Shared values within partnership team and understanding of concerns. • MoEST keen to collaborate and	• A negotiated compromise – employing something of a rapid participatory approach in each school. • Good quality MoEST personnel

		working partnership with the MoEST and gain their personnel support.	recognise the potential of the initiative.	allocated to us to ensure the implementation and monitoring and evaluation partnership is functional.
11/07	• EuroTalk - Field work Malawi stage 2.	• Stakeholders, especially teachers, often reluctant to honestly engage due to our partnership affiliations and the perceived/feared implications of talking with us.	• Maintaining participatory approach and ensuring confidentiality allows for open conversation.	• The anonymity of the teachers is maintained. An interesting lesson in perceptions of power.
12/07	• Eduvision - Initial contact at Online Educa, Berlin.	• Lack of awareness regarding the monitoring and evaluation process. • The $100 laptop project recognised as being dubious – do I want to partner with an associated organisation?	• Project provides an ideal context for the reflective approach to research. • Although challenging, this is exactly the kind of 'real world' programme that I was looking for - full of complexities and constraints.	• Agreed to discuss further and visit Zurich for initial meetings with the Eduvision team.
01/08	• EuroTalk – Personnel changes within partner organisation	• Key contact considering leaving partner organisation, whole programme is jeopardised and completely out of my control.	• Major commitment to programme completion from departing personnel.	• A compromise is negotiated and the partnership continues albeit at significant emotional and financial cost to departing personnel.
02/08	• InWEnt – workshop in Zschortau. • Eduvision – Initial meetings in Zurich.	• Tight time frame and limited opportunity for structured interaction. • Previously unstructured approach to monitoring and evaluation and difficult to	• Insight regarding partnership based ICT4E programmes and challenges of collaboration. • Good working relationship established and chance to communicate in depth regarding	• Good focus group and interviews and produced report for InWEnt. • Wrote an initial report from the Eduvision findings thus far and agreed to partner on a more

		communicate alternative with appropriate terminology.	approach.	substantive monitoring and evaluation of the Ethiopia programme.
		• Poorly constructed monitoring and evaluation report which required rewriting.	• A good learning process through rewriting the report together in partnership.	• Rectifying the work helped to establish and develop the partnership.
03/08	• EuroTalk – Field work Malawi stage 3.	• Managing partnership with MoEST and planning programme future	• Good meetings between EuroTalk and MoEST.	• Agreement regarding nature of future involvement.
	• EuroTalk – Field work Malawi stage 3.	• Tight time-frame meaning participatory approaches under threat.	• Opportunity to explore the ethos of participatory research when under significant constraints.	• Working compromise allows adequate data collection for report.
04/08	• Eduvision - Field work Ethiopia stage 1 – issue of multiple partners.	• Multiple stakeholders in the partnership requires significant time investment in order to train and ensure unified approach – people within MoCB with low initial skill levels regarding monitoring and evaluation.	• Many different perspectives and an opportunity to build partner capacity through monitoring and evaluation training.	• A more nuanced understanding of the role of monitoring and evaluation across the partnership.
	• Eduvision – Field work Ethiopia stage 1 – issue of conflict within partnership and stakeholders.	• Significant fear surrounding honest communication due to perceived implications.	• Opportunity to adjust approach to engaging with stakeholders in both implementation and approach to monitoring and evaluation.	• Adoption of more inclusive and participatory approach.
	• Eduvision – Fieldwork Ethiopia stage 1 – changes to roll out schedule.	• Schedule for implementation is constantly changing which causes significant logistical challenges for monitoring and evaluation framework.	• Research objectives adjusted and completed, good working relationship established with partners and monitoring mechanisms in place for coming	• Recognised significant problems in the staged implementation programme and recommended a project-wide delay in roll-out of laptops. Conducting partnership

			months.	based monitoring and evaluation helped to prevent a programme disaster.
05/08	• Workshop - Held monitoring and evaluation workshop in Accra at eLearning Africa.	• Logistics of workshop organisation, selection of partners to present work.	• Built on momentum of previous workshop with 45 stakeholders and research partners participated from civil society, academia, government, donor and private sector.	• Sustained relationships with partners and had continued input from participants regarding research priorities and design.
06/08	• EuroTalk – Discussion regarding outputs.	• CEO not happy with our anticipated outputs.	• Implementation team all agreed that we have done as requested and that the brief has been altered.	• Should have signed an MoU and would have avoided a lot of arguments and lengthy meetings with EuroTalk.
		• CEO wants reality to be simpler than it is and asks for straightforward answers to very complex questions.	• Manage some level of communication regarding the intrinsic complexity within this kind of multi-stakeholder ICT4E intervention.	• Partnership still functional but not healthy.
	• Eduvision – Need for clarity regarding partnership.	• Recognised the need for more clarity and commitment regarding partnership outputs as a result of the EuroTalk experience.	• Eduvision happy to sign an MoU and this is constructed between us.	• Signed MoU with Eduvision and have a clear basis for our ongoing partnership.
07/08	• EuroTalk - Delivery of final report.	• Still tension regarding partnership expectations, combined with personnel clashes.	• Report delivered to schedule.	• Agreed to do two further days work to represent the report in a briefer, more accessible format that would be appealing to donors.

		• EuroTalk are keen for the findings to be presented in such a way as to secure future donor funding for the programme.	• Compromise reached regarding how to present the report without it becoming PR material.	
08/08	• Eduvision – ongoing collaboration and distanced-based monitoring of programme. • Eduvision – changing schedule.	• Changing approach to project from other partners meant most of our distance-based monitoring methods were not used. • Delayed rollout meant that the monitoring and evaluation could not be conducted in the timeframe initially planned.	• The partnership remained intact and the rollout did occur. • The monitoring and evaluation timeframe was rearranged to work around the adjusted implementation.	• Rollout did eventually occur and the laptops are available for use from students and teachers. • When schedule is dependent upon multiple partners then flexibility is vital as plans will change.
09/08	• ICWE – Initial contact regarding potential for conducting a survey in partnership.	• Differing priorities on subject area, them desiring research which would enable future funding and me concerned with evaluation – not incompatible but difficult to reconcile in a survey.	• Access to the extensive database of ICWE and their skilled team.	• Agreed to conduct a pan-Africa survey of eLearning issues and produce report from the outputs.
10/08	• Eduvision - CEO in Addis to address partnership difficulties.	• Priority moving more towards scale-back and collection of PR material for website, photos and stories. • Demonstration of value of monitoring and evaluation to new Edvusion CEO in a language that he relates to.	• Major challenges addressed with other partners and Eduvision shortcomings acknowledged. • Communicate effectively by prioritising certain desirable outputs, showing how monitoring and evaluation	• Eduvision (and my own) involvement in the programme is preserved so forthcoming fieldwork can proceed as planned. • Interesting challenge regarding choice of words when partnering between different sectors and therefore different languages.

			findings will assist the company.	
12/08	• Eduvision – Fieldwork Ethiopia stage 2 - Methodological challenges.	• Diaries were not utilised and the baseline is yet to be completed.	• Lessons learnt regarding appropriate methods and challenge of implementation.	• Completed report using data available.
	• Eduvision – Fieldwork Ethiopia stage 2 - discussion of partnership between partners.	• Apposit considered too much emphasis had been placed on partnership and this had constrained project.	• Opportunity to discuss alternative approaches with the partners.	• Approach could be altered for next implementation process.
	• Eduvision – Fieldwork Ethiopia stage 2 - Contrasting bottom lines.	• Clearly contrasting bottom lines between partners with economic for private sector, political for government. Leading to marginalising of education agenda.	• Recognition of partner priorities and the need for transparency in communication.	• For future partnership, conversation at outset regarding priorities of each partner would increase efficiency of the process.
03/09	• Eduvision - Delivery of final report.	• Project no longer priority of Eduvision and delays with completion.	• Valuable data collected and able to offer recommendations to all the partners involved in implementation and monitoring and evaluation.	• Report delivered behind schedule but to complete satisfaction of Eduvision and the other partners.
	• ICWE - Delivery of final report.	• Delays from ICWE with translation of French responses.	• Report has good quality data for analysis.	• Report delivered in time for distribution at eLearning Africa conference as intended.

Figure 6.1: Progression of partnerships

6.2 Why partnership?

The contributory role of partnership within international development agendas is explicitly identified in the eighth MDG to 'develop a global partnership for development' (UN 2000). This is combined with overall recognition of a need for greater emphasis on engaging multiple stakeholders in development work, re-conceptualising development practice beyond the exclusive preserve of the public sector (Pye and Stephenson 2003, Roy 2005) and acknowledging the potential role of the private sector (Commission for Africa 2005). This shift has coincided with and contributed to a rapid rise in the popularity of partnership terminology within development parlance. Indeed, partnership has become something of a ubiquitous term in recent literature and initiatives, emerging through the last decade as the 'new big idea in development aid discourses' (Crawford 2003 p.139). This increasing focus is well demonstrated through the creation of NEPAD (http://www.nepad.org accessed 16/03/09), a pan-African organisation to promote partnership-based development across the continent.

Partnership enthusiasts have claimed that it is a framework of operating that 'enables communities to take charge of their own development needs' (Warner and Sullivan 2004 p.10). However, the enthusiasm for partnership is prone to lead to a situation within development in which 'everybody wants to be a partner with everyone else on everything, everywhere' (Fowler 2003 p.3). This scepticism reflects a degree of disillusionment regarding the notion of partnerships as proposed panacea for development. Crawford (2003) suggests that the partnership emphasis is primarily rhetorical and part of a wider new discourse emphasising agency at the expense of structure being employed to facilitate the sustained imposition of power. He asserts that 'the rhetoric of partnership is part of a trend by international agencies by which their intervention in political and economic reforms in sovereign states is disguised and simultaneously accorded greater legitimacy' (Crawford 2003 p.157). Similarly, partnership can be considered a tool of the private sector that is designed to shape global governance towards its own agenda (Martens

2010, 2007), leading to unhealthy dependency, competition and unrealistic expectations (Hansen and Tarp 2000).

In contrast, Abrahamsen (2004) argues that the partnership discourse does constitute a potential way of improving upon previous models of development because it emphasises the decision-making role of beneficiaries. Whilst this potential may exist, such acclaimed transitions towards empowering beneficiaries on an institutional level contain within them the danger of emphasising agency at the expense of structural concerns. Indeed, the partnership model can serve to preserve the power of the elite, as the new mantra shaping development discourse and maintaining the institutional framework required for economic liberalisation (Martens 2004, 2007, Loftus 2008). The risk of partnerships in development can therefore be usefully conceptualised as potentially operating as a 'terminological Trojan horse' (Fowler 2000 p.7), facilitating the imposition of power and growth agendas through the rhetoric of inclusion and empowerment.

The considerable contestation and ambiguity regarding the substantive value of partnerships in development is due, at least in part, to lack of clarity concerning definitions. Indeed, the ubiquity of partnership terminology has led directly to a spread of 'multiple interpretations' (Crawford 2003 p.142). The fact that different actors may utilise partnership terminology for a variety of meanings and to describe a range of activities serves to somewhat delegitimise any overarching endorsement or universal critique. Crawford (2003 p.140) himself succumbs to this, attempting a universal pronouncement regarding 'whether the notion of partnership introduces a new phase in aid relations characterised by mutual respect and shared objectives, or, alternatively, whether power relations persist.' Such essentialising verdicts on the value of partnerships, be they emancipatory or otherwise, serve to polemicise debate and ignore the multiple interpretations and practices encapsulated within the terminology.

Attempts to progress beyond this have been encountered in the rigorous critique of public-private partnerships both within and beyond development

(Unwin 2005b). The notion of tri-sector partnerships has been suggested as a more useful conception, incorporating government, civil society and private sector parties. Warner and Sullivan (2004 p.17) assert that tri-sector partnerships constitute a new form of strategic alliance where the 'approach can be defined as a voluntary collaboration to promote sustainable development based on the most efficient allocation of complementary resources across corporate business, civil society and government'. However, their suggestion that this new categorisation necessarily facilitates a progression towards voluntary cooperation is a somewhat idealistic oversimplification. More appropriate is the increasingly widespread recognition that delivery of applicable and sustainable development initiatives is dependent upon a variety of different forms of partnership (Unwin 2005b).

6.2.1 My choice of approach

The notion of partnership has thus been utilised to describe a diverse range of practices and approaches (Bratman 1992). There are also various ways in which ICT for education partnerships can be conceptualised, defined and undertaken (Unwin 2005b) The approach adopted in this thesis did not replicate any pre-existing model, being removed from popular cyclical models of partnership (Marriot and Goyder 2009), and operating somewhat outside the boundaries of international and bi-lateral arrangements that frame the majority of partnership related literature (Abrahamsen 2004). The research was not concerned primarily with an evaluation of partnerships but rather an evaluation of doing research in partnerships and the impact of specific forms of partnership, particularly in the context of monitoring and evaluation of ICT for education.

The analysis is situated within an understanding that certain expressions of partnership do, when used with credibility, have potential to redefine relationships and interactions within development (Fowler 2000). Within the various expressions of partnership the central essence remains that of

collaboration towards a shared objective. As Unwin (2005b p.38-39) summarises:

> 'The essence of partnerships is that they bring together organisations and people with differing skills, expertise and resources to enable something to be achieved that either could not otherwise be undertaken, or which would be of lower quality, less efficient or of greater cost without the partnership. They are therefore intended to create situations in which all partners benefit, and where the whole is great than the parts that make it up.'

The impacts of partnership-based interventions are of specific significance regarding collaboration in ICT for education in Africa, a sphere dependent upon cross-sectoral cooperation (Tennyson 2003). Indeed, within this arena, a positive approach to partnership has the potential fundamentally to alter conceptions of how ICT for education initiatives should be approached (Unwin 2005b, Arndt 2000). Despite this potential there is much research required in identifying 'the key success criteria for multi-stakeholder ICT4D partnerships in different contexts' (Unwin 2009a p.367). This chapter contributes in this regard, through the context of the ICT for education case study partnerships in Malawi and Ethiopia.

6.2.2 Justification

As previously noted, significant attention, enthusiasm and scepticism surround the role of partnership in development, especially in the context of educational initiatives (Cassidy 2007) and academic research (Heyman 2000, Gibson 1998). Although pertinent concerns, the legitimising of private sector agendas is not an inevitable consequences of operating in partnership. Maintaining a critically engaged stance is possible and bridging disparate worlds through collaboration does not suggest that value systems and motivations are either homogenous or fully compatible. Neither does my choice of approach imply that I endorse partnership as an overarching solution in development approaches. Rather, the choice was made in order to

assess the efficacy of the partnerships and better understand the challenges and opportunities presented. It is not my intention to dwell on the broader debates surrounding partnerships in development. However the arena of ICT for education and its monitoring and evaluation does provide a pertinent lens through which to speak back to key related themes (Cassidy 2007).

Working in partnership provided many benefits, such as opportunity to collaborate with pre-existing programmes, utilise government relationships, and gain access to stakeholders and provision of research assistants. However, the benefits did not dictate the decision to operate in this manner. Rather, the decision was taken due to a conviction that the issue of effective partnership is central to current debates regarding monitoring and evaluation of ICT for education (Draxler 2008, Unwin 2009). The premise of the argument is therefore that the success of an ICT programme and its monitoring and evaluation is dependent upon effective partnership.

Despite this dependence, the importance and the complexity of partnership in ICT for education are rarely given the attention required to translate into effective implementation (Cassidy 2007). This is exemplified in such prominent global partnerships such as the Global Education Initiative (GEI) where the long term viability and credibility of the initiative is threatened due to 'lack of investment in ongoing monitoring and evaluation, and serious planning for scale-up and sustainability' (Cassidy 2007 p.14). Much academic and policy related literature focuses on the terminology and potential implications of these issues, but comparatively little engages in the practical outworking of real partnerships.

6.3 Motivation for partnership

The primary objectives of any partner will define their approach to monitoring and evaluation of an ICT for education programme. Due to their inter-sectoral nature, many ICT for education programmes in Africa are conducted in some form of multi-stakeholder partnership, often involving both public and private sector, and sometimes also including civil society.

This leads to frequent contrasts in objective or bottom line between partners, with significant implications for how programmes are undertaken. Whilst acknowledging that motivations are diverse and multiple, it is possible to argue that the primary objective of the public sector is usually political in nature and that the primary objective of the private sector is usually economic. Thus, any cross-sectoral ICT for education programme will have three broad driving motivations: political, economic and, hopefully, educational.

In the light of this, the following discussion centres on the dominance of economic and political agendas within ICT for education partnerships. First, the private sector economic rationale for engagement is considered, followed by the public sector political rationale. The intention is to highlight the implications for effective partnership and to redress an imbalance in academic literature tending to concentrate on the exploitative agenda of the private sector within multi-stakeholder partnerships (Martens 2007) and presenting the public sector as a somewhat neutral partner void of agenda. This notion is challenged, asserting that the constraints and opportunities afforded by partnering with a politically motivated public sector are equally as complex and challenging as those from the private sector.

Educational partnerships that involve ICT are often politically attractive and economically lucrative and this can result in a high number of interested parties from a variety of different sectors (Unwin 2009). The potential to make money from the deployment of technology and the promotion of political agendas through promoting technology combine in the sphere of education provision. These factors make the sphere of ICT for education an ideal lens through which to assess the issue of partnership motivation more broadly. The complex and potentially conflicting objectives, exacerbated by the ambiguity of Corporate Social Responsibility agendas (Ford 2009, Blowfield 2005), are not inherently problematic but serve to create an arena within which critical engagement through monitoring and evaluation has a vital contributory role.

6.3.1 Contrasting bottom lines

Partnership advocates (Warner and Sullivan 2004, Tennyson 2003) are quick to identify the different partner attributes that can enrich collaboration. However, they largely fail to explore the important constraints within the structure of each partner affecting their ability to operate collaboratively. Determining creative and collaborative ways to overcome these is dependent upon a self-conscious awareness regarding the contrasting motivation, aspiration and subsequent bottom-line within multi-stakeholder partnerships. The significance of this was highlighted by an anonymous private sector partner from the Ethiopian case study (12/12/08):

> *'When you have partnership between public and private sector there is often a fundamental tension in the contrasting bottom-lines. For one the bottom line is financial and for the other the bottom line is political. This means that when entering partnership, for either implementation or evaluation, it is vital to be fully-conscious of the differences and the implications of these. This doesn't mean you should not have partnership – the issue is one of consciousness and subsequent approach to communication between players. This needs to be built into the monitoring and approach and structure.'*

6.3.2 Market-driven partnership

As previously noted, there is widespread scepticism regarding the role of the private sector within development partnership (Martens 2004). This is due in part to historical failures of partnership and the broad array of practice encompassed within the term. Judgements regarding attribution of causality for the frequent failure of partnerships in the past are often dependent on the ideological perspective of the observer. As Loftus (2008 p.544) notes, 'state interference, market failure or the profit motive itself' are each often suggested as the defining factor. Within this, a regularly articulated danger of multi-stakeholder partnership has been the tendency for the private sector to reap most of the benefit whilst the public sector pays most of the cost (Loftus

2008). Thus, at the extreme, partnerships are considered as primarily constituting a means by which to reach a pre-determined end. If the primary objective of the private sector is accumulation by dispossession (Harvey 2003) with associated shift of communal resources towards investment opportunities (Loftus 2008) then there is substantive reason for scepticism regarding their value within development partnerships.

Conversely, there is currently widespread enthusiasm regarding the potential for market-enhanced development, with partnership as a central tenet of the associated discourse. A strong proponent of market enhanced development is Prahalad (2005), promoting the role of the private sector in poverty alleviation and education in catalysing the poor into consumers, facilitating the opening of previously inaccessible markets and supplying access to products and services. The eminence of economic growth (Raworth *et al.* 2008) as primary driver for development has gained momentum by conceptualising development through a neo-liberal framework, emphasising the role of the entrepreneur (Prahalad 2004, Collier 2008). Alongside this is the renewed emphasis from DFID (2008) for private sector engagement in development, incorporating it within the mainstream of business practice.

Despite the widespread adoption of the neo-liberal rationale it is important that this is not accepted uncritically, as becoming inextricably interwoven into a capitalist system of accumulation cannot be the sum total or objective of development efforts (Loftus 2008). Although a well regulated private market may lead to significant improvements in quality and cost of services and provide increased opportunities and choices (Marker *et al.* 2002), this should not be misrepresented as a panacea for development. Expansion of the market, by its essence, only occurs in the areas of greatest potential profit generation and so solely capital-driven poverty alleviation will always serve to marginalise and exacerbate inequality for some. As Leach (2006 p.42) notes, 'Despite all this dynamism, it is clear that the private sector, even in alliance with innovative new forms of public support, cannot always make technology work for the poor. There will continue to be areas of technology and areas of the world where markets are thin or non-existent.' Indeed, whilst it is positive

to engage with the development potential of responsible private sector activity and Corporate Social Responsibility, 'we should not lose sight of the fundamental fact that such companies engage with developing economies for commercial reasons, not developmental ones' (Blowfield 2005 p.518).

Because of this, private sector bodies may well seek a development or specifically educational agenda through which to construct a legitimising rationale for expanding markets into the developing world (see Fadel and Lemke 2006). As Unwin (2009 p.161) notes, 'global ICT corporations have a real interest in encouraging governments and international organisations to facilitate their penetration into such markets, and one way in which they do this is by engaging actively in programmes that propound the benefits of their technologies for "development"'. There is therefore clear benefit in companies aligning with the notion of development as economic growth through private sector engagement, and positioning themselves as significant contributors and enablers in this regard.

Between these two positions lies the option of pursuing critical engagement, rejecting the discourse of growth as development, whilst still recognising the valuable contribution of the private sector in poverty alleviation. Alongside the complex challenges regarding motivation, objectives and rationale for engagement, the increasing role of the private sector within education in the poorer countries of the world does also lead to significant opportunities. The undoubted tensions are not always insurmountable and should not be perceived as such, as private sector agendas can indeed be reconciled with demonstrable benefits for other stakeholders (Selinger 2007). In order to be of maximum assistance to beneficiaries, multi-stakeholder partnerships should not be founded upon the necessity of embracing free market economics (Mintzberg 2006) as this positions recipients as ideologically cornered with a simple re-branding of PRSP-type economic reform (Cameron 2005).

Whilst the dangers of partnership with the private sector are well recognised due to the associated profit motive, the political motive of the public sector is

subjected to less extensive scrutiny within partnership literature. However, the influence of the political motive within ICT for education partnerships is as significant as the economic motive and the analysis now expands this assertion through observations from the case studies.

6.3.3 Political-driven partnership

The significant challenges of partnering with public sector organisations were demonstrated repeatedly through the monitoring and evaluation research case studies. I begin with two illustrations from Malawi. First, at the outset of the Malawi fieldwork the MoEST informed the partners that they had selected 50 primary schools at random to be included for the monitoring and evaluation exercise. However, a political agenda was evidently apparent throughout the selection process. At Gambula school it became clear on arrival that the school already had a mains electricity supply but the MoEST defended their decision that the school was an appropriate choice for a solar-based intervention on the basis that they were struggling to afford the electricity bill. Although the issue of affording electricity does constitute a significant challenge for connected schools across the country, investing in the installation of a solar charging system in such a context is not a cost effective or appropriate solution.

Second, and more overtly, a senior government official in Malawi had to be dissuaded from his notion that the most appropriate selection process would be to select the 50 participating schools all from the same region so as to reduce logistical challenges of distribution. Unsurprisingly, the region he considered suitable in order to reduce the logistical burden was his own constituency. This well illustrates how an ICT for education initiative can be considered an ideal tool for political leverage. However, what was unexpected was the degree to which the political agenda permeated the entire monitoring and evaluation process. In conversation with the Minister for Education, it was apparent that a primary interest was to secure favours from the donor, again for the benefit of her constituency. This was demonstrated in a personal request for additional computers and gadgets, outside the 50 pilot schools,

that could be distributed specifically to children in her personal orphanage (03/03/08):

> *'Orphans are the most difficult people on earth because they lack everything you have to do anything for them … I want to turn the orphanage into a study skills centre … I don't have computers or anything to start with … Please, leave two computers and ten gadgets in my orphanage, it won't cost you anything.'*

Utilising partnership with a donor programme as a campaign tool for re-election is not unexpected. The significance in this context is in regard to the specific perceived leverage of ICT within an education context in order to help realise a political objective. This issue will be returned to in detail when considering the significance of aspiration in monitoring and evaluating ICT for education initiatives in Chapter 8. The key point to note here, though, is that the actual monitoring and evaluation may not be perceived as being at all important, since the dominant factor for officials and recipients is that a 'gift' has been given to help ensure political support.

In Ethiopia the political motivation, and resulting ancillary position of both the educational and monitoring and evaluation objectives, was again demonstrated in reference to a forthcoming visit from senior GTZ officials to assess the ECBP programme progress. As informed by an anonymous staff member (09/12/08):

> *'The GTZ CEO boss is coming down in the New Year to see it all. So in order to impress him, in Menelik, we are doing rapid training for 2 very good classes, in order to impress him.'*

Such an admission demonstrates the extent to which the educational objectives of the partnership were subsumed within the political criteria and objectives. Indeed, on several occasions, the political motivation had more explicit negative impact on the educational objectives. Foremost amongst these was what happened following the first stage of the Ethiopia fieldwork, when the MoCB decided that the laptops needed to be reclassified as government property and all be recalled from the schools. This resulted in a

significant logistical challenge for the implementation team and also required alteration to the monitoring and evaluation framework. As noted in an interview with an anonymous member of the ECBP team (15/12/08):

> *'The Ministry of Capacity Building got afraid that someone might spread the news that government property is being given out without any control ... The Minister thought it could be the end of his career as a politician. So he made us gather them all back – he said there would be an audit of laptops so it would be necessary to bring them back – but really they were all labelled and identified already. We had to explain to the teachers that it was a government issue and that they had requested the recall.'*

The many genuine logistical challenges experienced in the programme implementation were exacerbated by deliberate political decisions such as that outlined above. The decision by the government Minister to create fictitious delays in order to preserve his political credibility damaged trust with the schools and caused significant setbacks to the wider partnership.

There is also potential for contrasting motivation within different public sector partners, as well as between public and private sector partners. In Ethiopia, this was witnessed in the decision of the MoCB to bypass the MoE entirely throughout the partnership and avoid collaboration with them. It is not unusual for an ICT for education programme to be situated external to the authority of the MoE (Trucano 2005). However this did have deleterious consequences for the partnership in Ethiopia. That it is normal to locate ICT for education initiatives beyond the remit of the MoE reemphasises the frequent position afforded to education, ancillary to the varying motivations of politics and economics (Kraemer *et al.* 2009). The nuanced nature of motivation and various rationales for partnership also influences the decision of private sector partners regarding which public sector department is most appropriate for partnership. Monika Vogt from Avallain, a company specialising in education for development, noted in an online interview (05/08/08) that the existence of contrasting objectives within the public

sector was the most significant challenge for them in conducting effective monitoring and evaluation of ICT for education:

> *'To monitor and evaluate the effectiveness of ICT leads to the question what parameters define 'effectiveness' and 'impact' ... These parameters of 'effectiveness' might change depending on the special perspective: The Ministry for Education might have a different concept of impact than the Ministry for Economic Affairs or the Ministry for Health ... And the examples could be continued.'*

Despite the highlighted complexities of partnership with the private sector, this review of field experiences has demonstrated some of the less acknowledged, but equally important, challenges of engaging with a politically motivated public sector. Indeed, the ambiguous nature of political motivation within ICT for education initiatives means that this constitutes a potentially more complex challenge to maintaining an educational agenda than the explicit economic motivation of the private sector. The most significant danger exists when the reality of contrasting motivations is forgotten, and it is assumed that all partners have educational concerns as their foremost priority. The route towards effective partnership is not through promoting the homogenising of value systems between public sector, private sector and civil society. Productive partnership is possible in the midst of contrasting motivation, dependent upon clear articulation of differences in order to enable effective collaboration (Cassidy 2007, Unwin 2009b). This can only occur within a context of increased transparency, a theme returned to later in this chapter.

6.4 The implications of partnership

Having outlined the contrasting motivations for partnership, some additional implications are now explored. As previously highlighted, the choice to conduct research in partnership was not due to a conviction that it constitutes an overall ideal approach to research, but rather as a conscious decision to be immersed in the complex reality of these specific partnerships

in order to assess the consequences. Whilst presenting rare opportunities and avenues for applied study, the choice to operate in partnership with external organisations also placed significant constraints on the approach, to a greater degree than anticipated. These constraints are now considered, focusing on power and fear, incentives, participation, recipient engagement, methods, outputs and logistics.

6.4.1 Power and fear

Engaging in collaborative work as part of a multi-stakeholder partnership has profound implications regarding assumptions concerning power. I begin here by assessing the implications for an academic in being associated with private sector and government. I focus on the potential for fear and disillusionment in the mind of participants and then link this to the subsequent expectation to receive incentives or gifts as a reward in recognition of participation.

Partnerships in the case studies were repeatedly influenced by the interplay of power structures and relationships between stakeholders (Hansen and Tarp, Crawford 2003, Martens 2007). This was evidenced both through what participants were willing to communicate and through what they anticipated receiving as a result. An encounter in a Malawian primary school six months after the programme launch served to demonstrate this. On arrival at this rural school it became apparent that only three of the teachers in the school were still engaged in using the ICT in their lessons. These three remained enthusiastic but were having to cover extra classes to ensure all the pupils had opportunity still to use the technology. There were various reasons for this particular situation but the implications of partnership with the MoEST were demonstrated in the anonymous response of one male teacher to my enquiry about improving the situation (04/03/08):

> *'I don't want to reveal what is happening or an official may find out and come and shout at me ... teachers can always be betrayed. We don't say anything, we remain silent. because we know that if we say something we will lose our job and then who will be there for us?'*

My suggestion that I might speak with the headmaster in order to clarify the situation was met with a similar response (04/03/08):

> *'If you speak to the headmaster and tell him this then when you leave we will be in trouble ... they will tell me 'you are no longer a teacher here'. In every school you visit you will face the same problem but they just won't tell you – it is just that we are open here.'*

The teacher insisted that in every school there existed an invisible fear of authority, both governmental and within the school hierarchy, preventing people from communicating honestly about how the ICT was being used in the classroom. Our association with government meant that participants were very conscious of what they could or could not communicate with us. From the surface this was invisible and so it would have been simple to ignore, choosing to believe that people were being honest in their responses. However, the critical perspective developed through investing time engaging and interacting with the teachers demonstrated a different reality. The combination of partnership with government and the association with provision of ICT therefore constituted significant barriers to effective monitoring and evaluation, requiring sustained effort to keep investigating beyond the initial responses that people gave to our questions.

The affiliation with power had a stronger negative impact than anticipated and served to problematise any verbal guarantees for participant confidentiality. If the teacher quoted above was correct, then regardless of explanation concerning my independence and role, my link to a mistrusted government caused them to limit their responses to questions. This indicates potential for the abuse of power privilege within a monitoring and evaluation exercise conducted in partnership. Association with government may facilitate rapid progress and open doors rarely available to a researcher but it also has potential to make one an unwitting participant in coercion. Tilahun noted this in reflecting on an initial focus group with teachers in Ethiopia (16/04/08):

'One teacher said 'we are not even happy to be here now, we are here because we are forced to be'. He was under pressure, from the headmaster … He [the head] didn't do it directly … But you know, it is just the way it is communicated – because of his title they will automatically say Yes and be there – he would think they are volunteers but they are doing it because he is the school master. It is directly related to their work – so they will be afraid of being fired. They would go because of the pressure and the consequences.'

In contrast to this perception of forced attendance, the aforementioned headmaster presented a more positive interpretation of the teacher perspective. When asked if the teachers welcomed the programme or viewed it as an additional burden, he responded in an assured manner (16/04/08):

'They are welcoming it. They are very interested with this program. They told us also that this training is very interesting than the others [sic]. Previously when we arrange trainings they were not eager to take the training but now everybody is eager to take it.'

The headmaster was either oblivious to the perception of his teachers concerning the initiative, or he felt obliged to give positive feedback on the programme, regardless of how his teachers felt. Assuming the latter, the association with power, in this instance the government as his employer, undermined attempts to adopt an egalitarian approach to the monitoring and evaluation. This reflected the substantial challenge encountered in maintaining collegial partnerships rather than defaulting into operating through anticipated hierarchical relationships (Chambers 1994, Coldevin 2003, Cassidy 2007, Catley *et al.* 2008). A superficial approach would simply require interacting with the headmaster without talking to the teachers, believing his account of the programme. Having avoided this, the second option would be to listen to the teachers and blame the headmaster for his dishonesty. However, both of these options fail to recognise that the responses are symptomatic of underlying power dynamics. The most valuable

approach is found in assessing the implications of these dynamics and I return to this in section 6.5 regarding appropriate responses to such challenges.

6.4.2 Incentives

The consequences of association with power were also witnessed from within government, where it was anticipated that incentives would be received as a result of engaging in partnership with donors. This was exemplified through interaction with the Malawi Minister of Education during which, as previously noted, it became clear that she intended to benefit personally from the programme being conducted in partnership with her department. Masperi asked a generic question about computer usage and the Minister responded with a direct request (03/03/08):

> *'I am struggling now ... I think I need a small computer [laptop] Paola. If anything, that is the gift that I would like. I spend most of the time out in the field – most of the time I am not in Lilongwe and so I cannot practice. That is something I would ask as a special favour from you.'*

It would be an overstatement to suggest that strategically seeking a gift was the primary objective for the Minister in partnering with the project. The point of note is that she considered it a reasonable request within the context of the partnership. The assumption that incentives would be received for participation was witnessed on numerous occasions in both Malawi and Ethiopia. Teachers regularly requested incentives for participation in training sessions and additionally when engaging with monitoring and evaluation activities such as focus group discussions. Partnership ambiguity was a contributing factor in Ethiopia, as some participants believed it to be primarily a NGO project. The working assumption was that an NGO project would be accompanied by a 'per diem', received for participating in training, whereas in a project from the MoEST, cooperation is required as part of one's employment. This reflects broader challenges encountered regarding expectations and perceptions of participation (Cooke and Kothari 2001).

6.4.3 Participation

The intention throughout the monitoring and evaluation process was to interact with stakeholders in a participatory manner. However, this participation took place from within a framework where the actual structure of the partnership was not negotiable because the objectives were pre-determined. The primarily pre-determined nature of the objectives would, within Brohman's (1996) categorisation, position the approach as limited to instrumental rather than genuine participation. This does not invalidate the approach but rather confirms it as pragmatic and contextually applicable.

Collecting useful data for monitoring and evaluation through utilising appropriate participatory methods is complicated due to different partner objectives. In Malawi this was relatively straightforward because EuroTalk were sole funders and, with myself and the MoEST, constituted a simple three-actor partnership. In contrast, the Ethiopia partnership had a multiplicity of agendas and ideas that influenced the degree to which participation was prioritised. As noted in my research diary (06/04/08):

> *'The delicate balance, politics and persuasion of trying to make things happen in what you consider to be the most appropriate and methodologically rigorous way … it is a very interesting challenge when ultimately you are in a position of very little power.'*

The value of participation in effective monitoring and evaluation thus became a central point of negotiation within the partnership, as was expanded more fully through the methodological analysis (Chapter 5). Developing the issue of participation is the topic of recipient engagement, the way it was affected by the partnership and the impact this had upon the research process.

6.4.4 Recipient engagement

Regular reflection on issues of partnership, power, participation and subsequent implications for recipient engagement was a defining aspect of

the fieldwork. The effect of the observer on the observed is a well-documented research phenomenon, requiring a self-aware reflexivity and being conscious of the way in which ones presence alters observed reality (Rose 1997). Despite being aware of this, the partnership nature of the research team clearly exacerbated the negative influence of our presence within schools. The primary reason for this was a close association with the MoEST in Malawi and the MoCB in Ethiopia, and the visible collaboration with them both.

Advance warning was given to each participating school in Malawi that the research team would be visiting. Providing them with three days notice honoured the schools and served to uphold the integrity of the interaction. However, as previously noted in section 5.3.4, the decision simultaneously served negatively to influence and somewhat undermine the research. As documented in an extract from my research diary (06/03/08):

> *'We work in partnerships but the reality is that we are turning up in our 4x4, all the children are flocking around, teachers are coming out from their classes, the PEA is involved, the MoEST is present. The school knows we are coming, are able to prepare and present an ideal looking situation for us – where they can control what we see, the children are prepared and we get shown a sanitised version of reality.'*

The sanitised version of reality being presented to the research team became increasingly apparent when interacting with individual children. On a school visit, six months after implementation, one child told Paola that they had not used the technology for a long time but had been prepared the previous day when the teachers were warned we were coming. The ability to conduct effective lesson observations was similarly somewhat compromised due to the high-profile nature of the partnership. On observing a lesson using the devices in Malawi it was clear that the situation had been staged, primarily due to the presence of the MoEST. As noted in my diary (06/03/08):

'The higher the perceived profile of the visitors, the more difficult it becomes to genuinely observe what is happening ... It was a lot easier to get a sense of what happened on a day-to-day basis when I was just perceived as a 'student' and no one cared about impressing me ... Now, because of the associations, it is much more tricky.'

6.4.5 Methods

Exploring innovative methodological approaches to monitoring and evaluation of ICT for education initiatives was a central objective of the research, and this was both facilitated and constrained by operating in partnership. The target audience for the outputs, combined with the significant financial consequences of deviating too far from the anticipated format of a conventional evaluation, meant that it was necessary to provide the partner with established research methods to complement the more innovative approaches. Understanding that the partner required a certain format of evaluation that fitted within their criteria of impact in order for it to be useful for their purposes provided a valuable lesson (Morgan 2004). Within this negotiated position there remained a vital and regularly utilised role within the partnership for the academic in promoting innovation and a thorough research approach that would ultimately serve to enhance credibility through rigorous engagement.

The necessity of this engagement was demonstrated through discussion between partners surrounding the suitability of questions within the monitoring and evaluation interviews and focus groups. On several occasions it was necessary to alter proposed questions because they were deemed too politically contentious by public sector partners. This was particularly apparent when investigating the value of laptops in Ethiopia, where the research team was prevented from asking two questions that were considered too explicit. The first of these was 'is the laptop the most appropriate use of money?' And the second was 'if you had the choice to spend this amount of money on anything for your school, would you spend it on laptops?'

(13/04/08). Although prevented from asking these questions, it was possible to innovate in the interviews and pose the questions unofficially. On occasions the political aversion to intrusive questions became more explicit, including a strict instruction from a government official in Ethiopia that I should 'back off' from interviewing junior government staff because the questions could prompt them to become overly critical of the programme (09/12/08).

6.4.6 Outputs

The methods deemed suitable for monitoring and evaluation are directly determined by the desired outputs of the partners which may be diverse and with a vested interest in securing a certain predetermined outcome (Wilson 1992). There is therefore a significant challenge regarding how to operate in partnership with other parties whilst avoiding it becoming an intellectually obsolete exercise in public relations. It is not inherently problematic that different partners will have different requirements, objectives and intended outputs in undertaking monitoring and evaluation. Ensuring that these differences can become complementary rather than antagonising requires emphasising process and participation (Stoll and Menou 2002) and ensuring that educational objectives are centrally located within the monitoring and evaluation process (Unwin 2009). This is a pertinent challenge when a partner is conducting monitoring and evaluation with the stated objective of securing additional funding for the initiative from international donors, as was the case with EuroTalk in Malawi.

The desire for additional funding and subsequent need for demonstrable impact required adopting the position of critical friend and learning how to operate within the corporate culture of quantifiable value and return on investment as discussed throughout Chapter 2. As anticipated, this resulted in significant clash of values with a participatory approach. Wallace and Chapman (2004 p.45) assert that 'the current obsession with almost instant, demonstrable impact is distorting and needs challenging at every level'. Throughout the research I pursued this challenge by prioritising engaging

with and listening to participants, regardless of perceived time constraints (Cameron 2005). The luxury of detached critique would have been a more simple position to operate from in this regard but would have resulted in missing opportunities to shape the initiatives through engagement and promote credible alternative approaches (Taylor and Soal 2004).

6.4.7 Logistics

The commitment to partnership also subjected the research process to significant logistical constraints. This was particularly evident within the Ethiopian case study where the multi-stakeholder nature of both the implementation and monitoring and evaluation teams caused significant tests to the programme durability. As noted in interview by one senior official from ECBP mid-way through the implementation (09/12/08):

> *'The timetable for implementation is getting screwed virtually every day because of all the stakeholders.'*

The monitoring and evaluation schedule in Ethiopia was dependent upon multiple organisations and individuals each maintaining their projected implementation plans. Inability to do this resulted in significant alterations to the schedule, due to the interdependence of all partners. As demonstrated in the chronology, the time frame for project rollout was scheduled for April then May, June and finally occurred in September 2008. This substantial delay required that the monitoring and evaluation approach be adjusted repeatedly, with flexibility built into the process. It also caused interesting logistical issues actually in the preparation of this thesis.

There was a close relationship between the number of partners and the increasing complexity experienced. In reflecting upon the evaluation process with the partners, several of them noted how communication was a recurring point of tension, as demonstrated by an anonymous respondent in Ethiopia (12/12/08):

> *'We should have worked more closely – the communication had challenges. Both Apposit and ECBP have been blind-sided by some things. Towards the end ECBP did get frustrated by that. It was especially difficult because the implementation plans changed so much – the starting dates kept changing.'*

Within a consideration of logistical implications is the specific issue of how partners operate at different speeds. As Unwin (2005b p.46) notes, 'the private sector has many advantages, not least its ability to make something happen swiftly and effectively'. As is often the case, this strength has an associated significant weakness. The ability to make things happen quickly and effectively is formed from an economic necessity to do so. When engaging in cross-sectoral, partnership-based development work the anticipated speed of task completion can both energise and cause conflict. An anonymous educational specialist in an international IT company confirmed this, explaining (12/12/08):

> *'My work in [country A] and [country B] revealed that short term gains were needed to keep industry partners happy as the funding was so dependent on 'quick wins' and the private sector doesn't understand education change takes a long time.'*

The private sector disposition towards immediate and demonstrable impact provoked regular tension within the complex dynamics of programme progression. This was frequently exhibited in an unwillingness to acknowledge that educational impacts may have longer maturation periods than an initial monitoring and evaluation exercise allows for (Simon 2003).

This series of illustrations demonstrates the significant levels of complexity encountered in partnership-based research (Farrell *et al.* 2007) and the challenges of maintaining rigorous research principles whilst working collaboratively (Simon 2003). The pertinent issue spanning all themes is an identification of the need for self-reflection, introspection and critical analysis of what occurs within monitoring and evaluation in partnership. Had I ignored the underlying issues and not taken this conscious choice then the

outcomes of the monitoring and evaluation exercises would have been altered considerably.

6.5 Research in effective partnership

Having identified the challenging implications of partnership, the analysis now concentrates on practical lessons for undertaking research effectively within partnership approaches to monitoring and evaluation of ICT for education initiatives. The discussion begins by considering the need to offer demonstrable value to the partners, focusing on the place of effective communication. It then considers the issue of desired outputs and emphasises the foundation of trust, transparency and flexibility. Finally it emphases the challenge of communicating the complex nature of development interactions effectively to partners.

6.5.1 Adding demonstrable value

The combinations of words that individuals and organisations utilise in order to describe and explain their practices vary significantly across different sectors. Contrasting use of language is unproblematic when each sector operates in isolation and with an internally shared set of assumptions regarding meaning and appropriate usage. However, the interaction of different sectors, especially through partnership, provokes potential for confusing language, meaning and subsequent ambiguity (Tennyson 2003). Appropriate use of language and clarification of meaning were therefore significant considerations in conducting effective partnership based monitoring and evaluation.

This is illustrated through the example of Eduvision in Ethiopia, for whom the rationale for sustained investment was framed in corporate language so that they could recognise the value of the monitoring and evaluation process (James and Miller 2005). This became of critical significance prior to the second stage of the Ethiopian research because Eduvision were unconvinced that they should maintain their investment in the monitoring and evaluation

since the language being used failed to communicate value in a manner they were familiar with in the private sector. A collapse of the partnership was avoided through reframing terminology that enabled them to recognise the value of sustained engagement within the framework of their own objectives. As Everts reflected (21/04/08):

> *'It is not just how you do monitoring and evaluation but how you explain it to people coming from different worlds. You need to show in clear terms what a company is going to get out of doing monitoring and evaluation. There has to be a demonstrable benefit for them in non-ambiguous language. It is so important that Eduvision really understand what we're doing and the value of it. We framed the benefits in terms of increased company exposure, product feedback, genuine partnership, increased accountability, showing how it has potential to change the whole nature and culture of the company. Eduvision needs a better product, monitoring and evaluation completes the feedback loop, it is closely related to Research and Development, it promotes and demonstrates integrity and is attractive to funders.'*

In the light of this, phrases such as 'capacity development' and 'empowerment', although staple terminology within the development world, were substituted when communicating value in favour of emphasising 'product feedback', 'research and development' and 'return on investment'.

6.5.2 Communicating effectively

On a related note, initial interactions with ECBP demonstrated that the terminology specific to monitoring and evaluation was also unfamiliar to certain partners and that this resulted in an exclusive environment. Midway through the initial outlining of methodological approaches to one partner, the project lead from ECBP interjected with the question, 'what do you mean by a focus group?' This highlighted the extent to which language used with the objective of communicating aims and objectives actually marginalised a number of partners. He went on to say (14/04/08):

'You are throwing terms around as if they are everyday language but it is not, people will not understand it. You have worked on the topic for years – you need to consider that when you talk to us.'

Through this encounter I learnt that effective partnership based monitoring and evaluation requires an intentional decision to employ accessible language that does not ostracise those from a non-specialist background. This results in slower initial progress but a greater chance of overall sustained commitment from partners. Deciding to operate in this manner led to a gradual change in culture across the partnership with various partners increasingly recognising the value of monitoring and evaluation and adopting it into their individual approach. This issue is returned to in detail through the subsequent discussion regarding capacity development in section 6.6.

Alongside oral clarity, the challenge of effective communication also affects the written dimension of monitoring and evaluation exercises. This requires presenting outputs of the research in a form that the audience deems to be credible and dependable (Baxter and Eyles 1997). This is a prerequisite for any effective writing but was exacerbated in this context by the distinct and different written communication cultures of each partner. It was therefore a requirement of the cross-sectoral reports to express findings in such a way as each could recognise value and utilise the lessons learnt.

Having established both an oral and written communication style conducive for effective partnership, there remained a challenge regarding what information from the monitoring and evaluation was appropriate for disseminating to a wider audience. Tensions existed between partners regarding how the lessons learnt could be shared honestly and potentially critically without undermining the partners and still strengthening collaboration for the future. Alongside this were significant partner concerns in both Malawi and Ethiopia regarding the implications of an associated academic maintaining the prerogative to publish potentially critical reports. The private sector partner concern regarding public relations was

demonstrated in an interview with Everts regarding the perspective of the Eduvision CEO (12/06/08):

> *'What he wants to know is if this doesn't have good results, is it going to go into the press and sink Eduvision ... Would he be able to say I don't want it written ... He is very concerned about the outcomes – not the process.'*

6.5.3 Understanding desired outputs

Through the partnership in Ethiopia it became increasingly apparent that an Eduvision priority was for the monitoring and evaluation to be used as a public relations tool in order to increase market exposure. This meant that there were contrasting opinions regarding an appropriate dissemination of the monitoring and evaluation findings (James and Miller 2005). The pragmatic decision taken in the light of this was to produce three separate outputs: a selection of anecdotes and pictures for public relations, an internal monitoring and evaluation report documenting the lessons learnt, and an academic article for wider publication (Hollow 2009a).

The tension surrounding sector priorities in outputs was also demonstrated in deciding an appropriate length for the monitoring and evaluation report in Malawi. The MoEST expressed clearly that their priority was for a comprehensive report with context, illustrations, charts and tables, and provided the team with a 150 page report to utilise as a template. In contrast, EuroTalk initially rejected the 45 page draft report that was prepared, stating that it was too substantial and would be unattractive to donors. It was clear that the various types of ethos amongst the partners led to contrasting requirements and priorities regarding outputs. It therefore became increasingly apparent throughout the fieldwork that effective partnership is dependent upon a formalisation at the outset regarding potentially contentious issues surrounding both what can be written and in what manner it should be communicated externally (Wilson 1992). In addition, shared understanding of clear goals in the partnership promotes clarity and in turn

serves to facilitate a more effective approach to implementation (Trucano 2005).

6.5.4 Trust, transparency and flexibility

Maximising the potential of partnership is dependent upon establishing a framework from within which effective collaboration can occur (Marriot and Goyder 2009). The case studies in Malawi and Ethiopia demonstrated the significance of trust, transparency, equity and flexibility as a foundation for achieving this.

A degree of trust between the associated actors is intrinsic to the success of the partnership (Unwin 2009a). This principle also applies more broadly, as George (2008 p.27) notes, 'a radical application of the principle of trust' may be the most effective way in which to instigate genuine development. However, establishing trust within a partnership can be a highly time-consuming process (Unwin 2005b) that requires substantiating and supporting in order to remain effective within a context of potentially conflicting agendas.

The collaboration with one particular partner organisation demonstrated the need to provide a framework within which a foundation of trust can flourish. The partnership was highly dependent on a trust-based relationship with one individual within the company and, as a result, when the professional relationship between the individual and the company deteriorated there was considerable potential for the partnership to collapse. In addition, following the completion of the monitoring and evaluation exercise, the CEO of the organisation exerted pressure for outputs to be produced that were not initially part of the partnership agreement. He emphasised the need for a fully independent report in order that it could be presented to potential donors, maintaining there could therefore be no link to a current or former employee. Producing the report as a sole author, as he suggested was necessary, would have involved presenting the work as my own. This would not have been honest, and the offer was therefore refused. Following lengthy

discussions and various unsuccessful attempts at emotional blackmail, the CEO conceded that the report could be co-authored.

The pertinent issue within this scenario is the oral nature of the partnership agreement. When the conditions of operating with this partner became contested it was immediately apparent that signing an MoU at the outset, rather than relying on informal and personal trust, would have averted many of the difficulties regarding expectations and outputs. As noted in my research diary (09/06/08):

> *'Because we did not have a shared understanding of the desired outputs then there was quite a bit of conflict surrounding expectations ... So a big lesson for me was that it is always best to define things at the beginning, regardless of how well you get on with people because situations change. The CEO had different expectations and because we had never written down what we would do it was impossible to point him back to something as a pre-existing agreement.'*

The necessity of a MoU is widely recognised within partnership literature regarding organisational collaboration. Tennyson (2003 p.15) warns, that however informal a partnership, some form of written agreement 'is always necessary to avoid later misunderstandings and conflict'. Following the experience of this partnership it became clear that such agreements are also of paramount importance for an individual operating collaboratively with an organisation.

In addition to enhancing clarity, signing a MoU increased the probability of ensuring equity within the partnership (Simon 2007). Other partnerships also developed complexities at certain points in the research process, but having the pre-existing framework of a MoU this time enabled an effective resolution to be reached. The presence of a MoU increases the chance of an ideal state of partnership within development being realised, where 'the term presupposes an equitable sharing of power' (George 2008 p.24). Building on

this aspiration towards an equitable sharing of power, the promotion and maintaining of transparency is a key factor in sustaining cooperative activity and partnership (Bratman 1992).

The notion of fully shared values between partners is often identified as being one of the foremost prerequisites for collaboration (Tennyson 2003). Although this is undoubtedly of some significance, the experience of the fieldwork would suggest, in contrast, that the issue of transparency is the primary requirement for effective partnership (Unwin 2005b). Once this was in place via the formulation of a MoU it provided a foundation for effective future collaboration. This constitutes a more pragmatic foundation for partnership and the challenges likely to be faced than the notion of values, which one cannot realistically expect to be fully shared, especially when operating across different sectors (section 6.3). Indeed, transparency can be the foundation that enables those with fundamentally different values to engage and collaborate effectively. Whilst this is true, engineering a transparent partnership is a difficult task and the challenge should not be underestimated. Ensuring that transparent partnership can operate in the midst of contrasting value systems is dependent on effective monitoring and evaluation. Communication regarding rationale and objectives is of central importance and helps facilitate a context where the mutual distrust between sectors can be deconstructed, promoting an understanding of difference and pursuing increased transparency.

The promotion of transparency allows partners to be explicit in communicating what they hope to gain from participation in a partnership (Unwin 2009). Once the foundation of transparency is established and all parties are clear regarding anticipated outcomes, then it should be ensured that that each party has 'intentions in favour of the efficacy of the intentions of the other' (Bratman 1992 p.335). This promotes the place of sustained flexibility and mutual responsiveness throughout the course of the partnership. Indeed, the need to embrace diversity and spontaneous deviations from the planned partnership progression was a recurring characteristic of the field research. In contrast to the orthodox cyclical model

of partnership (Marriot and Goyder 2009, Tennyson 2003), the experiences in Malawi and Ethiopia demonstrated a need for responsiveness and a degree of innovation not accounted for in such models. The notion that a predetermined trajectory can be followed suggests a mentality of shared programme implementation rather than partnership, and fails to account for the power dynamics and partner interplay too complicated for diagrammatic expression.

6.5.5 Complex engagement

Multi-sector ICT for education partnerships require effective cooperation with actors who, whilst experts in either ICT or education, may be unfamiliar with undertaking effective work in a developing context. This links back to effective communication and involves building a shared understanding between partners concerning the complexities of the processes taking place. The research required considerable innovation in this regard, as the naïve optimism regarding the potential of ICT for education programmes in Africa is often magnified when working collaboratively with partners newly engaged in the field. The EuroTalk CEO, a charismatic figure, exemplified this by persistently framing the value of the programme with the single question: 'is this the solution for Africa?' The conviction that his organisation held a comprehensive solution for African education was apparent in his pronouncement regarding ICT for education programmes (16/06/08):

> *'Our UPB is that we can teach someone who cannot read and cannot write, in their own language and in a place with no power supply. We need to recognise that software is our strength and concentrate on that. Gordon Brown has said he has the money, £8 billion for education in Africa, and we are saying great – we have the solution.'*

This indicates a limited understanding regarding the complex reality of development interventions, exemplified in the conviction that they hold 'the solution' and are therefore unmoved by the suggestion that diverse approaches are necessary. Within such an environment a detached critique

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would have been considerably simpler than sustained partnership. However, opting for engagement through partnership facilitated the opportunity to gradually shape and shift their perspective, promoting the validity of alternative approaches, challenging naïve behaviour and demonstrating potential for a more integrated approach.

6.6 Emphasising capacity development

Discussion now turns to the overall lack of capacity development that exists within the arena of effective monitoring and evaluation of ICT for education in Africa and exemplifies wider issues pertaining to capacity development and governance across the continent (Commission for Africa 2005). As Tennyson (2003 p.19) notes, the lack of capability and capacity has potential to be addressed through partnership, offering 'opportunity for individuals to develop their skills and to build their own capacities'. In specific relation to ICT for education, Unwin (2005 p.84) identifies the need to build human capacity as 'many of those involved in monitoring and evaluation, particularly in poor countries, have little experience of such work, and it is crucial that simple but effective schemes are developed to enable them to contribute to, and benefit from, such activities'.

The following analysis explores the capacity enhancing potential of operating in partnership, suggesting that capacity development is intrinsic and often a pre-requisite to effective partnership-based monitoring and evaluation (Unwin 2005, Guida and Crow 2009). Although terminology surrounding capacity is notoriously difficult to define and in need of problematising (Harrow 2001), 'the concept has gained increasing acceptance as being of fundamental importance to the delivery of development objectives' (Unwin 2005). For the purpose of this discussion capacity development is understood as generic human resource development, within which skills-based education and training constitute significant parts. The lack of institutional capacity for monitoring and evaluation of education programmes was encountered in both case studies, and is illustrated through the reflections of Ostar Chagamba, an official from the Malawi MoEST (05/03/08):

"When we think of monitoring such activities it becomes a problem because you realise that the same people who are meant to be monitoring are also doing other jobs. Some of them are sent outside the country – others are focussed on developing the curriculum … one person cannot do a number of jobs at the same time.'

The lack of capacity for effective monitoring and evaluation as identified in the Malawi case study led to the decision to structure the approach in Ethiopia in such a way that training in effective monitoring and evaluation would be actively incorporated throughout the programme implementation. The objective was to change stakeholder mentality so that monitoring and evaluation was understood as a systemic component of successful implementation rather than primarily perceived as a distraction (James and Miller 2005, Wagner *et al.* 2004). In doing this, the approach contrasted with much mainstream partnership literature, where scarce attention is given to issues concerning structured feedback mechanisms (see Tennyson 2003) in part due to an overemphasis on post-test evaluation rather than the monitoring process. The intention in adopting an alternative approach was to incorporate monitoring and evaluation throughout the project, and assess the resulting complexities and opportunities.

In the Ethiopian case study, the partnership began operating within a context where the value of monitoring and evaluation was not universally recognised. Indeed, where recognised, there was still considerable disparity regarding what the terms entailed and how the process should best be undertaken. Rolf demonstrated the dominant ECBP conception of monitoring and evaluation in an initial partnership meeting (07/04/08):

'We will just collect as much data as possible and decide what to do with it later. Because if we just collect what we know we need at the moment then a new need may arise in the future which we have not covered. We will give the data to whoever wants it – and they can analyse it.'

This comment and the wider associated exchange exemplified the warning from James and Miller (2005) that there is often an emphasis on simply collecting information without considering what will be done with the data once gathered. Regarding data collection as an end in and of itself demonstrates a lack of understanding surrounding the process-based nature of monitoring and evaluation, revealing the working assumption that they are activities best left until after project completion (James and Miller 2005). This mentality reflects the notion that valuable data constitutes that which can be observed, measured and quantified, and that monitoring and evaluation are solely data collection mechanisms from which programme trends can be extrapolated when resources became available.

It was a considerable challenge to help the partners adjust their thinking towards a more holistic conception of monitoring and evaluation as a systems-based process which could influence both current and future decisions (Watson 2006). However this was achieved through a series of meetings and informal conversations, combined with initial methodological experimentation and demonstration. Explaining and demonstrating the benefits of a systemic and process-based approach required a considerable investment of time and became a primary focus of the first stage of the research, alongside the clarifying of objectives and terminology. It also involved creating a table of methods, with rationale and objective for the partners. (Appendix T).

Unwin (2005 p.78) notes that 'the relationships between *monitoring and evaluation* and *capacity building and management* are crucial for the successful implementation of technology enhanced learning programmes ... monitoring and evaluation have a direct impact on capacity building and management'. He goes on to suggest that through effective monitoring and evaluation, those involved have opportunity to improve their educational practices. Thus, conceptualising monitoring and evaluation as tools to improve practice and build capacity has significant implications for the project implementation approach. Kocsev reflected with hindsight regarding

the impact on ECBP from spending time engaging the partners to build capacity for effective monitoring and evaluation (09/12/08):

> *'Before the current focus on monitoring and evaluation we figured things out and we did them in the field but it was not in an organised manner. Having set out the monitoring and evaluation system before deployment meant that we had a goal to reach. Before that it was just about deploying computers and struggling with support. Having got the monitoring and evaluation programme in place in April the team then started to undertake monitoring and evaluation – if we had only started with monitoring and evaluation now then the impact on the existing educational system as such would have been rather negative.'*

The increased emphasis within the Ethiopian partnership on an integrated and process-based approach to monitoring and evaluation towards the end of the programme was primarily due to the aforementioned collaborative capacity development exercises undertaken at the outset of the partnership. These exercises enabled the partners to appreciate the benefits and incentives of devoting attention to monitoring and evaluation throughout the programme cycle (Watson 2006, Morgan 2004). In addition, the process of skills training and partner participation allowed the monitoring and evaluation methods employed to be repeatedly refined. Operating in isolation would have enabled faster initial results and the illusion of progress but would likely have had less significant sustained impact.

There were substantive and unforeseen challenges in maintaining this partnership-based approach. As Cassidy (2007 p.22) notes regarding effective partnerships for education, 'considerably more attention, effort and time must be devoted to managing, communicating, involving and servicing partners than was originally anticipated'. In Ethiopia the considerable time invested in capacity development for monitoring and evaluation had significant impact on the outcome of the programme. Indeed, reflecting after

the final stage of the monitoring and evaluation exercise, Everts expressed how the decision to focus on capacity development constituted a major strength of the overall approach (17/12/08):

'The massive benefit of doing monitoring and evaluation in partnership is that the partners gain the lessons from the monitoring and evaluation – as well as getting capacity building through participating. If we had done it fully externally then you wouldn't have built capacity.'

Similarly, Kocsev highlighted the impact that monitoring and evaluation, through one specific focus group, had on the overall programme (09/12/08):

'It is fair to say that the focus group you conducted in April was a significant turning point for the programme. It was a shift from an authoritarian approach to one where we engaged more with the teachers and the schools.'

The shift in implementation approach and increased capacity for monitoring and evaluation allowed ECBP to take an increasingly clear lead role within the programme (Morgan 2004, Tennyson 2003). Identifying and affirming ECBP as the lead partner also proved to be an important dimension of undertaking successful collaborative work (Bratman 1992, Unwin 2005b).

There are limited examples of partnership based monitoring and evaluation of ICT for education programmes in Africa being conducted in a manner which is consciously structured to enhance capacity. However, a notable exception was encountered with NOLNet, the Namibian Open Learning Network Trust, operating in partnership with InWEnt (section 4.5.5). Due to the nature of the donor organisation and participatory ethos of the InWEnt project lead, it was ensured that capacity development was incorporated as an aim throughout the monitoring and evaluation process. As Maggie Beukes-Amiss, the project lead from NOLNet explained in a focus group (20/02/08):

> *'It has to do with the history of InWent being a capacity building organisation that guided along these lines – that was where they would like to focus the evaluation on capacity building and networking - since this was the area that InWent excelled in.'*

Likewise, despite the challenges encountered, focusing on capacity development was a significant priority for the stakeholders in both Malawi and Ethiopia. The reason for engaging in this politically and economically motivated arena was clear, to ensure the future health and sustainability of the programme. As Kocsev explained (09/12/08):

> *'If we want to promote ownership of the programme then we have to go with this multi-stakeholder partnership approach. If we did it on our own then it would be over as soon as ECBP is over. The strength of partnership is that it leads to local ownership and builds capacity in schools, educational bureaus, the team here – so it fits our concept [capacity development] and makes it sustainable.'*

The research experience demonstrated that capacity development as a result of undertaking monitoring and evaluation in partnership should not be considered as a fortunate unintended impact but as a core objective which is structured into the programme implementation approach.

6.7 Partnership conclusions

In drawing together the analytical themes surrounding partnerships, five closing issues can be highlighted: the real world application and implications, the potential to redefine practice, the need to embrace variety in partnership, the need to be conscious of difference, and the need to prioritise educational objectives throughout.

6.7.1 Real world application

Conducting monitoring and evaluation in partnership meant that the research had real-world constraints and consequences that influenced the programme implementation (Bamgerger 2006, Gray 2004). Had the Ethiopian partnership not prioritised monitoring and evaluation, ECBP would not have had the opportunity to learn vital lessons surrounding appropriate implementation and training. The output of stage one of the Ethiopian research was a recommendation to delay the rollout of the laptops by three months in order that the required framework for training could be established. This was a very clear example where the research contributed significantly to the enhancement of one of the partnership programmes. Adopting the process based approach allowed findings to be fed back into the overall approach to programme implementation. The consequences of this were challenging from a personal perspective, as recorded in my research diary following the decision to recommend a delay in rollout (25/04/08):

> *'It is ironic how the outcome of my time here spent talking to people and devising the best possible methods for assessing the educational impact of the programme has been that Bjorn and I suggest that we don't implement the programme now ... The delayed roll-out has huge impact on monitoring and evaluation and my thesis as a whole. But I couldn't have recommended anything else with integrity.'*

The real-world consequence of the partnership approach was a point of regular internal reflection and tension throughout the fieldwork. As noted one night in Ethiopia (07/04/08):

> *'I feel really challenged here, the issues are tricky because the stakes feel so much higher than in Malawi. I might be contributing to a potential global educational disaster – they are considering spending $2.5 billion on it in Ethiopia and I might have a role in making that more likely, legitimising it through my involvement. I hope not.'*

6.7.2 Potential to redefine practice

Operating in real-world partnerships, with the associated constraints and consequences led to significant tension in ensuring that the research remained rigorous. The intention of working with mutual accountability, participation, dialogue and engagement was simple to verbalise but challenging to actualise. As Morgan (2004 p.49) states, 'much development cooperation is now bound by the rules of the performance, measurement and audit culture that has developed in high-income countries over the last two decades'. There were numerous challenges of operating within a context that prioritised quantification of value and was focused on political and/or economic success or the ensuring of future funding. This required a constant decision to promote participation and two-way accountability as integral to effective evaluation (Wallace and Chapman 2004).

Alongside this tension, there was significant opportunity to redefine understandings of monitoring and evaluation within the partnerships. In Ethiopia, focus shifted from a perception of monitoring and evaluation as a negative and controlling aspect of collaboration to the point where it was viewed as a transparent, capacity enhancing process. In doing this, the overall emphasis began to be shifted so that the intended beneficiaries played an increasingly central role (Unwin 2005b).

6.7.3 Embracing difference

Shared ideological foundations are not necessarily a prerequisite for effective partnership. Instead, the priority is ensuring that linkages operate to the level required and are relevant in the specific context (Bratman 1992). Contrasting motivation is not an insurmountable problem, although the limitations of both economic and politically driven agendas should be consciously acknowledged. However, ideological clashes may limit the degree of partnership that is plausible and this should be discussed between partners at the outset of any collaboration as one aspect of the transparency agenda. Thus, effective multi-stakeholder cooperation within ICT for education requires consensus when defining what the most appropriate role for each

sector will be (Guislain *et al.* 2006). Sustaining a mutually beneficial partnership is not always plausible and, in certain circumstances, the level of ideological and practical contestation between partners will preclude them from effective collaboration, meaning that partnership would result in confused or counterproductive activity (Lewis 1998, Fowler 1998).

6.7.4 Consciousness

Cross-sector partnerships provide opportunity actively to promote the collaboration of thoughtful practitioners and engaged scholars (Wilson 2006). There is copious material regarding the ICT for education agenda and the role of partnership within it (Cassidy 2007, Draxler 2008). Academic involvement in the field should focus in part on addressing the question of whether a partnership is simply serving to enhance the legitimacy of an economically or politically driven agenda or is actually contributing to development objectives (Unwin 2005b). The potential for the former is recognised clearly by a number of stakeholders, usually unspoken but occasionally as an explicitly stated objective of partnership. As the CEO of one partner organisation suggested, before the nature of the partnership was defined (06/07/07):

> *'It would be very helpful to us to have some kind of academic backing to legitimise to people what we are doing.'*

In the early stages of the partnership, the CEO considered the value of my involvement to be as a legitimising voice for their activity, supporting their aspirations to expand the project. Engaging in ICT for education partnerships therefore requires a degree of consciousness regarding the varied objectives of stakeholders, and an ability to keep prioritising the education agenda within them.

6.7.5 Prioritising education

The tendency for people operating in ICT for education to place technology before education is, as Trucano (2005) suggests, the enduring problem that plagues the sector. It has been demonstrated here how partnership-based

monitoring and evaluation can provide a significant tool in ensuring that educational agendas become less marginalised. Despite the cross-sectoral nature of ICT for education initiatives (Trucano 2005) this requires an intentional shift towards grounding programmes within Education Ministries, to avoid communicating 'the symbolically wrong message about the ultimate objectives of these initiatives' (Cassidy 2007 p.15). A foundation in education, alongside transparent objectives, assists in avoiding the 'Trojan horse' effect (Fowler 2000) where partnership can be used to legitimise a pre-determined set of objectives.

Emphasising the educational motivation of partnership is dependent on a clear articulation of how ICT can actually enhance the ability of a student to learn. This is in turn dependent upon developing a conscious pedagogy for effective use of ICT for education, and this is the focal concern of Chapter 7.

7. Pedagogy and learning outcomes

7.1 Introduction

7.1.1 Story of a classroom

My fieldwork in Malawi involved visits to 25 primary schools. On one occasion (28/09/07) we visited a rural school and spent the afternoon talking with the teachers. After the children had finished classes the teachers led us to a suite of newly constructed classrooms. Inside each new classroom, instead of the normal small wooden desks, there were four large square tables with benches around them: all made from concrete and built into the floor (Photos 7.1 and 7.2).

Photo 7.1: Classroom funded by DFID

Photo 7.2: Desks and benches in classroom funded by DFID

Standing in the classroom I was immediately impressed: this would help the children work together instead of focussing on the blackboard all the time, giving them opportunity to interact, share ideas and learn from one another. I asked a teacher who it was that had decided the classroom should be constructed like this. He told me it was a project from DFID and that they had made the tables like this because they wanted the children to work in groups. I commented that the tables looked good and asked whether he and the other teachers were enjoying the new classrooms. At this he laughed, looked at me with surprise, and replied (28/09/07):

> *'No, they are not good – because now the children cannot see*
> *the blackboard.'*

The probable DFID rationale is not difficult to guess: a simple infrastructural addition to the classroom in order to facilitate a change in approach to teaching and promote a more learner-centred environment. However, although a laudable objective, what I had also initially viewed as a

constructive idea had fallen short of instigating a change in approach to teaching and was actually just frustrating the teachers.

This experience demonstrates the important lesson that it is considerably more complex to change the pedagogical culture of a classroom than it is to adjust its physical infrastructure. If the latter occurs without addressing the former then teachers will continue to teach rote-based and blackboard focused in the manner to which they are accustomed. Likewise, children will keep learning in the manner they have become accustomed to, reciting and memorising what is written on the blackboard. The only substantive change that occurred because of the DFID initiative is that half of the children could no longer see what was being written on the blackboard because they are forced to sit facing away from the teacher.

7.1.2 Rationale

This anecdote illustrates the core issues that this chapter addresses, providing a critique of the place of pedagogy within ICT for education programmes and exploring the rationale underlying current emphases, especially in regard to educational outcomes and definitions of impact. It demonstrates how providing new educational structures is simpler than engaging with underlying pedagogical practices. It identifies the gap between theory and practice, and between donor and teacher, provoking questions regarding the imposition of change. An understanding of each of these is vital if the monitoring and evaluation of ICT for education is to be undertaken in an effective manner.

During the workshop I organised at eLearning Africa in May 2007, participants identified 'impact on learning' as one of the three most significant challenges facing monitoring and evaluation of ICT for education initiatives. I therefore selected this theme as the focus for a breakout workshop where participants could share their experiences and dilemmas. The resulting discussion identified widespread frustration in regard to measuring the impact of ICT on learning as part of the broader challenge of

quantifying educational outputs. It also highlighted the pedagogical struggle that teachers face regarding how to make appropriate use of ICT so that it has a positive impact on learning.

In the light of this, my field research was structured so that the monitoring and evaluation exercises would provide opportunities to engage practically with the issues highlighted in the workshop. The double reflective approach of the methodology provided ample opportunity both to engage with stakeholders regarding the issues of learning outcomes and pedagogy and also to reflect on the implications of the perspectives expressed.

7.1.3 Structure

This chapter focuses on pedagogy and learning outcomes within ICT for education initiatives in Africa in order to provide insights regarding the effective undertaking of monitoring, evaluation and impact assessment. I begin with a discussion of the overall context and then focus on four themes revealed as critical through my research but currently marginalised from mainstream debate: training, deployment, content and integration. These issues demonstrate how the ICT for education arena is often disconnected from the realities of educational situations within Africa, and to exemplify this I focus on the issues of attendance, quality, teacher training, capacity and approach. In the second half of this chapter I demonstrate how these factors combine to provide a context within which private sector-driven constructivism has become a widely adopted, idealised and yet problematic pedagogy. Following this, the discussion focuses on guided discovery as a realistic pedagogical alternative to the current orthodoxy, promoting the role of critical thinking in progressive education. This leads into a consideration of the implications for effective monitoring and evaluation and impact assessment, alongside an illustration regarding the potential of educational transformation through technology. In closing, I offer three observations regarding the current ICT for education context, highlighting the need for education to replace technology as the central defining factor, viewing the introduction of technology as one aspect within a broader shift in education,

and suggesting a readjustment regarding the appropriate stage for the introduction of ICT into schools in Africa.

7.2 Overall context

The DFID decision to promote an alternative classroom design in Malawi may have been provoked by a conviction regarding the nature of effective education, based on the view that a significant aspect of child learning occurs when collaborating together through exploration (Mayer 2004, Henson 2003). The notion that education is most effective when engaging with pupils rather than viewing them as passive recipients has gained momentum across the developed world throughout the 20th century. Key influencers in this trajectory, each with their different emphases, can be traced through Dewey's (1938) promotion of discovery based learning, Piaget's theory of cognitive development (1962), and Vygotsky's development of a constructivist learning theory (1978).

This shift has also affected education in Africa although school-based formal education has remained largely didactic and rote-based. In discussion with teachers during the fieldwork in Malawi and Ethiopia it became apparent that significant tensions exist between the new active learning methodologies promoted in teacher training colleges and the reality of functioning effectively in under-resourced schools with over-crowded classrooms. Pedagogical challenges are not limited to the sphere of ICT. Indeed, in analysing the state of education in Africa more broadly, Alexander (2008 p.22) asserts that it is pedagogy that is 'so palpably the missing ingredient in the international debate about educational quality'.

Over the last thirty years the trend towards learner-centred approaches has become interwoven with the rise of technology enhanced education. This is due to the basic premise that technology can enable learners to engage with one another and their environment and access information and educational materials that will enhance their understanding (Hodgkinson-Williams 2006). More recently there has been increased enthusiasm regarding the role

of technology within education in Africa, thereby bringing the debate into the development arena. Alongside the considerable advances made regarding appropriate use of technology in education in Africa, much practice and associated literature remains grounded in an overly simplistic analysis of the situation, identifying the primary 'problem' with education as the enduring rote-based approach and proposing an adoption of technology-enabled constructivism as a comprehensive solution (Selinger 2009, Negroponte 2008, Kort and Reilly 2001). This idealised focus on constructivism contributes to the ongoing and unhelpful polarised debate between 'teacher-centred' and 'student-centred' approaches, and neglects the need to progress beyond the various incarnations of such an uncritically assumed dichotomy (Alexander 2008).

Linked to this is the way in which widespread enthusiasm for technology can promote a technologically determinist approach to educational improvement (see Keats and Schmidt 2007). As I discuss throughout Chapter 8, the tendency is to employ digital technology, and especially computers, in schools without giving significant thought to what is happening beyond the device (Leonel *et al.* 2005). This has negative implications for pedagogy and learning outcomes. The basic problem is one of misplaced attribution amongst ICT enthusiasts (see Tinio 2003) with the implicit suggestion that educational change occurs due to the adoption of ICT rather than acknowledging the primary contribution of pedagogical shift, supported by appropriate ICT usage.

Educational psychologists, even ardent technology enthusiasts, have long agreed that the simple imposition of computers into educational contexts will not instigate any change in learning (Papert 1980). Despite this, the misplaced assumption remains implicit in much of the ICT and education discourse and is linked to a common form of technological determinism. This view is exemplified well by Kellner (2002 p.164) who states that, 'the new technologies and cultural spaces require us to rethink education in its entirety, ranging from the role of the teacher, teacher-student relations, classroom instruction, grading and testing, the value and limitations of

books, multimedia, and other teaching material, and the goals of education itself.'

The explicit message is that technology can and should be the force driving a redefinition of education. Castells (1996) expresses a similar sentiment in asserting that the current technological revolution constitutes the most significant shift in education since the transition from oral to print-based teaching. Kellner (2002) concurs, emphasising that technological advancement 'renders necessary' an entire restructuring of education. Such arguments position technology as the causal change factor and add significant weight to the flawed notion that constantly increasing the use of technology constitutes a key to educational progress (Keats and Schmidt 2007).

Encounters with stakeholders throughout my fieldwork did demonstrate the appeal of these perspectives, with a widespread expectation among respondents that the introduction of technology would necessarily instigate an improvement in education. A teacher in Mwatibu in Malawi predicted (01/10/07) that the introduction of technology would help children to:

> 'Remember what they have learnt ... and be attentive.'

Alongside this, the headmaster of Atse Noad in Ethiopia (17/04/08) noted that laptops would be:

> 'A good way of transmitting learning ... the quality of education will improve ... when you have an improvement in inputs like this then it is natural that an improvement in outcomes will follow.'

However, although educational approaches should be influenced by technological advancements this should not be confused with promoting an approach to learning that is driven by technology. The implications of this trajectory are exemplified through the way that a recent UNESCO (2008 p.9) publication engages with the issue of technology and innovation in pedagogy and emphasises the necessity of technology for ensuring educational progress, stating that 'new technologies require new teacher roles, new

pedagogies, and new approaches to teacher training'. This demonstrates the way technological advancement is shaping an agenda to which education must adjust and adapt. There are elements of truth contained within this argument, but the basic premise that education can be dictated to by the progression of technology represents a dangerous fallacy. Indeed, this is not a passive process and is influenced by economic, political and ideological forces, as discussed throughout section 6.3.

The consequences of this determinist mentality were clearly apparent within the OLPC project in Ethiopia. An anonymous advisor to the MoE in Ethiopia (28/04/08) explained the underlying rationale for the programme:

> *'There is a subconscious assumption that it must be a good thing because it is technology. There is no critical thought regarding the actual educational impact – it is just an assumption that says this is technology stuff, we don't have it, it is good, so we want it.'*

Similarly, Everts reflected on the project mindset (17/12/08):

> *'The initiative is based on the assumption that if they use the computers there is some kind of causality and they will somehow end up in a good job somewhere.'*

The underlying assumption that technology is an inherent good can easily progress into a belief that it therefore presents an all-encompassing solution for the challenges facing education. This is a foundational ideology that drives a significant portion of the ICT for education agenda in Africa, the practical implications of which are seen in the subsequent common laissez-faire approach regarding programme implementation. Indeed, the literature is replete with examples of uncritical synopses of the impact of technology in improving learning (e.g. Schacter 1999, Fadel and Lemke 2006), which are consolidated by the popular notion that humanity is at an historical 'tipping point' regarding technology and education in Africa (Keats and Schmidt 2007 no pagination). In order to engage critically with the issue of monitoring, evaluation and impact assessment within the context of pedagogy and learning outcomes it is necessary to be conscious of how this perspective

shapes both theory and practical decision making. This requires deconstructing the notion that poor quality education can somehow be 'fixed' through technology (Cuban 2001), recognising that no substantive educational problem can be addressed through the simple implanting of a technological device. As Haddad (2007 p.7) asserts regarding the misplaced emphasis on technology within educational practice, 'if we are going in the wrong direction, technology will only get us there faster'.

7.3 Skewed priorities

The notion that more advanced technology will 'naturally' lead to more progressive teaching means that ICT for education initiatives are rarely fully contextualised or grounded in strong pedagogical principles (Leach 2005). The danger in this is clear, as 'without proper resources, pedagogy and educational practices, technology might be a burden or barrier to genuine learning' (Kellner 2002 p.156). This is particularly pertinent in Africa where limited resources, combined with the largely externally driven and top down nature of many ICT for education programmes, increase the likelihood of such initiatives becoming a handicap to genuine learning.

My research in Malawi and Ethiopia has identified four key issues which are currently marginalised within implementation of ICT for education initiatives due to the lack of understanding regarding the realities of education in Africa: training and teacher incentives, manner of deployment, educational content, and classroom integration. Each of these issues needs to be addressed if the potential learning benefits of ICT for education programmes are to be realised. In addition, the effective monitoring and evaluation of such initiatives is dependent on a more rigorous critique regarding how the four issues are approached.

7.3.1 Training

The pan-Africa survey of 147 eLearning practitioners asked respondents what they considered to be the current priorities for action within the arena of

eLearning in Africa. Training was highlighted by respondents as the most significant issue, with 35% selecting it as their first choice and an additional 42% as either their second or third choice. Many respondents particularly emphasised the lack of teacher training available regarding how to make effective use of ICT in the classroom. This issue is well documented, with Unwin (2005a, 2009), Selinger (2009) and Gaible and Burns (2005) each emphasising the need for increased focus on teacher training if ICT for education initiatives are to succeed in Africa. Meetings with teachers and headmasters in Malawi and Ethiopia confirmed that the necessary training requires a dual focus addressing both technical skills and issues of appropriate pedagogy.

The dominant complaint from teachers in Ethiopia was that the training regarding how to use the XO laptops had not been sufficiently thorough. Although familiar with the basic functionalities of the machine, the teachers recognised that this was different from feeling confident to integrate the laptops into the classroom. This is recognised by Slay *et al.* (2008 p.1333) who note that incorporating ICT into teaching without confidence, training and required competence 'can actually detract from the learning experience'. As a Grade 4 teacher explained during a focus group in Menelik (11/12/08):

> *'What is lacking is that we don't have the experience of using this technology – so our problem is that we are afraid of how we are going to use the [digital] textbooks in the classroom – we have only had initial training. The main point we would like to make is that we need training to make this effective.'*

The Headmaster of Menelik (11/12/08) emphasised this again by explaining that the lack of training had resulted in more of the children using the laptops at home rather than at school:

> *'We need to train the teachers more about how to actually make use of it in the classroom. We haven't had this and need additional training for them.'*

Training regarding how to utilise the new laptops in the classroom was not given the attention that it required due to a combination of limited capacity

within ECBP, pressure from the government for rapid implementation, and underlying scepticism from OLPC regarding the value of training and curriculum integration. In addition, the speed with which teachers were able to grasp how to make appropriate use of the technology was much slower than had been anticipated by ECBP who were dictating the training schedule. In addition, the initial training to achieve personal competence with the basic functions of the device was far removed from the ECBP vision of confident laptop-based teaching with a classroom full of students. There were two main complexities encountered in Ethiopia regarding the widespread desire from teachers for more training. The first of these related to the training itself, and the second to incentives for participation.

First, Everts reflected on the cultural complexities of facilitating an interactive training environment following an initial session with teachers regarding use of the XO laptops. A significant factor shaping the training session was what he perceived as the teachers' desire to please the trainer and provide a 'correct' answer to the questions posed (08/02/08):

> *'They felt that they had to give the right answer and so you got very limited responses. There was a very clear feeling from teachers that there was a right answer and that they would lose face if they didn't give the right answer.'*

As a result, rather than participating in a knowledge sharing exercise, the teachers were reticent and unwilling to contribute unless certain that they knew the 'correct' answer. This was exacerbated by the prevalent culture which assumes that once the teacher has said something and it has been repeated back by the student then the learning process is complete, as discussed in section 5.4.5. As Everts explained (08/02/08), challenging this expectation caused tension within the training environment:

> *'Sometimes the fact that we did more than provide fleeting explanations felt like we were being condescending. The old men would say "yes I've got it" when really they didn't have it. We would want to demonstrate – but they said "no, we've got it" – when we knew they didn't.'*

Second, alongside the enthusiasm many teachers showed for receiving training there was also a significant number who had no desire to participate. The first reason for this was discussed in section 5.4.3: although training took place after school hours, attendance was perceived as compulsory because of the expectations of the headmaster. The second is linked to this and involves the lack of incentives received by the teachers for their participation.

As also discussed in section 5.4.3, teachers anticipated remuneration for participation because they were required to stay in school beyond their normal working hours. Although this was widely anticipated it was rarely articulated by the teachers, and so detecting it was dependent upon interpreting behaviour and indirect reports. It is understandable that the presence of additional incentives for participation is not considered a priority in the mind of those providing the training because of the assumption that teachers will value digital skills acquisition as ample reward. However, effective ICT for education training requires programme implementers to be conscious of the fact that attendance does not necessarily indicate enthusiasm for the programme. Some teachers will be present due to personal enthusiasm, others due to pressure from a headmaster, and others because of anticipated remuneration. Recognising this concealed motivation for training should warn against presenting increased emphasis on teacher training as a simple route to ensuring success in ICT in education.

7.3.2 Deployment

The second issue that came to the fore was deployment and the overall manner in which technology is introduced into schools. The significance of this was highlighted through conversation with a teacher in Menelik who suggested starkly (16/04/08) that in future with the XO programme:

> *'You should plan how you are going to deploy it.'*

In Ethiopia, concerns regarding deployment related to issues of choice and imposition, appropriate timing and varied ethos and each of these are discussed below in brief.

Introducing any ICT for education programme technology should involve technology being 'offered to, but not imposed upon the teachers' (Slay *et al.* 2008 p.1339). Despite the commonsense nature of the observation, many initiatives ignore this advice and are structured without any element of choice, with teachers forced to engage with the new programme as dictated by outsiders. The absence of teacher choice is usually due to pressure imposed, either externally or from within the school hierarchy. This is compounded by the issue of appropriate timing in deployment which has significant effect on overall programme motivation. Decisions regarding timing of deployment in Ethiopia were driven more by technological availability than by suitable timing within the school calendar. In addition, the technology also needs to be accompanied by appropriate teaching aids at the point of deployment. An example of this from Ethiopia was the repeated request from the teachers for a manual that could remind them how they should use the laptops.

These factors are influenced by the dynamics of partnership and the contrasting ethos between different stakeholders within the deployment process. The tension was expressed by Kocsev (15/12/08) in reflecting on the OLPC approach:

> *'The OLPC educational concept is right, theory-wise. But they have no clue about deployment – how to do it step by step. OLPC think that once the kids have the laptops in their hands then the miracle will happen. They see that as the miracle, they don't recognise that is not the challenge. They think that if they deploy the laptops in the classroom then they will be used in an educational context. This is something, in Ethiopia, that will not happen.'*

The choice to focus on technology deployment rather than any learning that might follow is compounded by the political agendas that often marginalise educational objectives. As explained in section 6.4.7, deployment challenges

in Ethiopia meant that the monitoring and evaluation team recommended that the rollout be delayed by three months in order to ensure maximum educational benefit. However the recommendations were over-ruled and the rationale fed back to the team in confidence by a staff member (25/04/08):

> *'They will not like the idea of putting back the roll out and it will be hard to convince them on the basis of disruption to the exams. Now we are so far down this path. No one is thinking about the specific educational impact of the laptops – not about the subject specific implications. Instead they are thinking let's just implement. The way people understand education is different here. People understand the impact to be in the giving of the laptop, the thinking is that that will solve the problems – they are not thinking what it will mean in the class and for the teachers.'*

Where such mentalities were dominant, success is perceived merely as putting the laptops into the hands of the children. At best this is because of the constructivist conviction that exploratory learning is then facilitated. At worst it is because the requisite 'young smiling child with laptop' photo can then be taken in order to appease donors and ensure continued funding. Whatever the underlying rationale, physical deployment of the laptops into schools is considered to be the overarching priority within programme implementation (Kozma 2007a) and therefore all associated issues outlined above which are necessary for effective deployment are marginalised (Kraemer *et al.* 2009). Central amongst these is the limited importance placed upon monitoring, evaluation and all long term and process based activities that seek to assess, learn and improve future programme efficacy (Wagner *et al.* 2005).

7.3.3 Content

Effective use of ICT in the classroom is dependent upon the substantial challenge of determining what constitutes appropriate educational content. The monitoring and evaluation teams in Malawi and Ethiopia invested

considerable time discussing with teachers and students regarding what they considered to be relevant educational content for the technology (Unwin 2008). The most frequent response to these conversations was a request for content that was directly linked to the curriculum. The deputy-head of Atse Noad noted (17/12/08) that the laptops needed more reference books, especially for humanities subjects such as History and Geography. The children in the focus group at Atse Noad concurred (17/12/08), requesting more information to assist them with specific subjects:

> *'If we could have anything on the XO I would like to have a Physics dictionary ... also an English to Amharic dictionary ... If we have dictionaries about English and Social Studies and videos about it then this will help me to study more and then it will improve my performance.'*

In addition, the teachers requested content that would provide a visual demonstration of the concepts that they were teaching the students. The deputy-head of Atse Noad provided the following example (17/12/08):

> *'If Kilimanjaro is mentioned in the text then they should be able to see a picture of it, and maps should be included too. This is important because it makes us teach more effectively and the children will understand more easily.'*

In the light of this, the teachers commented that it was better to have the learning resources on Akili than in .pdf format since it enabled a more interactive environment. As noted by one Grade 6 teacher from Atse Noad (17/12/08):

> *'We prefer [Akili] because we can do more things on it, with the .pdfs all we can do is just read but with Akili we can write and do exercises so that helps the children to develop their skills.'*

The benefits of interactive, curriculum-based content were also recognised by the project manager for ECBP, Eskinder Andualem, (10/12/08) who noted:

> *'Akili has big potential – because it is interactive not static …*
> *When you are growing up you are focussed on just reading*
> *what the teachers give you to read in the textbook, you are not*
> *used to exploring for yourself. So Akili can help the children to*
> *learn to explore information for themselves more … But it*
> *should be based on the national curriculum.'*

An anonymous member of the ECBP team (15/12/08) concurred regarding the need to ground the content provided in the national curriculum:

> *'In my view, there is little on the XOs that can be used for*
> *education. Without educational content it does not make*
> *sense, it is just a nice toy. It will help the children to be creative*
> *… but in an educational context it doesn't make sense without*
> *the curriculum.'*

As the process based monitoring and evaluation of the fieldwork progressed, the implementation team in Ethiopia began to engage seriously with the challenge of providing appropriate educational content. This issue is returned to in section 7.5 when considering the implications of a constructivist approach to ICT for education.

7.3.4 Integration

Effective integration is linked to overall implementation and the challenge of what to do once deployment has occurred. My initial feelings following deployment in Ethiopia were recorded in my research diary (11/12/08):

> *'It's great to see so many kids running around Menelik with*
> *laptops in their hand – lying in the grass and showing each*
> *other how to use them, taking photos and laughing. It is easy*
> *to forget that this is the easy part – not the completion of the*
> *job. The massive challenge that we've only just begun to*
> *engage with is the issue of actual classroom use. The teachers*
> *and headmaster all told us they feel completely unprepared*
> *and requested more training to be able to integrate the*
> *laptops with the subjects taught in the classroom.'*

In observing the teacher training sessions in Ethiopia it became apparent that operating the different functions of the laptop was prioritised over learning how to integrate them into the classroom. This was reflected in feedback from students three months after initial deployment where they commented that they did not view the laptop as an integrated part of their education. A girl from Grade 3 encapsulated this, explaining (17/12/08) that although she did use the laptop a lot at home:

> *'I don't use it so much in school – there is not time because we are just having classes.'*

Another girl from Grade 8 expressed a similar view (17/12/08):

> *'The laptop does not disturb my studies because I don't use the laptop on weekdays – my parents have scheduled it for the weekend only – they have made that rule. Games is the thing that I use the laptop for most. The bad thing about the laptop is that I am afraid that it will conflict with my studies.'*

The reports of laptops being restricted to home use indicated the extent of the challenges encountered. Some children were allowed to bring the laptops to school but when talking about how they made use of them in the classroom it became apparent that there was a significant disparity between their behaviour and the proposed OLPC learning methodology (Negroponte 2008). A girl from Grade 8 explained (17/12/08):

> *'We send messages on the laptops to each other in the class – some people use it for education, some people use it for just talking – but most of the messages being sent in the classroom are not educational. My parents are happy that I have the laptop – but now they say that we spend too much time on it and are studying less.'*

Teachers in Menelik said that the presence of the laptops in the classroom had resulted in the behaviour of the children being so disruptive that they had even tried to ban the children from bringing them into school. One female teacher from Grade 3 expressed her frustration (11/12/08):

'The main problem we are facing is the students are using the laptops in the classroom and are not listening to the teachers. We forbid them from bringing them into the classroom but they are still bringing them and they are disrupting things.'

This demonstrates how the challenge of classroom integration is more complicated and time-consuming than initially anticipated by those introducing the programme. However, the team responsible for laptop implementation were acutely aware of the need to address the issue of integration following initial deployment. Andualem (10/12/08) thus noted:

'At rollout there was not a focus on classroom integration, it was the kids trying to explore by themselves. The integration has not yet started, the laptops are not really being used in the classroom – the main task now is to do that.'

Playing with laptops in the classroom or at home is useful for letting the children learn about the functions of the device and may serve as a foundation for subsequent learning. However, this approach sustains the problematic emphasis placed on providing children with ICT skills rather than recognising the potential opportunities within the new technologies to enhance and transform learning experiences (Unwin 2008). Indeed, the current situation reflects that highlighted by Leonel *et al.* (2005) who suggest that often the only substantive outcome from technology in education initiatives is learning how to use the technology. Although ECBP, the implementing agency, have a strategy for integrating the laptops into the wider learning environment, the teachers maintained that the most effective approach was to introduce ICT as a discrete subject and limit use of the laptop to that period. Teachers were reluctant regarding the notion of integrating laptop usage into all curriculum-based lessons. Attempting to address this reluctance would require a significant allocation of time and resources (Schware and Jaramillo 1998) and may still ultimately prove an insurmountable barrier.

7.4 Disconnection from educational realities

The marginalising of training, deployment, content and integration within ICT for education initiatives is exacerbated by a reality gap regarding African educational contexts. Alongside the assumed inherent good of technology, within the research case studies I regularly encountered naïve optimism that teachers will be eager to utilise technology and that this will lead to children exploring and educational outcomes improving (Negroponte 2008, Drake 2009, Drake 2008). This can influence the mindset of decision makers and programme implementers in ICT for education initiatives and is especially demonstrated in the assumption that ICT for education initiatives are likely to succeed at scale when having worked effectively in a well resourced pilot project. This reveals either a lack of awareness regarding the complexity of introducing large scale usage of ICT in education, or an awareness of the complexity involved combined with recognition that widespread acceptance of the notion of unproblematic scaling-up will assist in their cause. The first of these categories applies generally to governments and NGOs influenced by political and ideological aspiration, and the second to the private sector, acutely aware of the challenges but holding a vested interest in perpetuating the myth of straightforward scalability.

The first category is exemplified by examining a particular instance where an OLPC representative named Daniel Drake worked in Ethiopia for six weeks. Drake is a 23 year old from the United Kingdom who has worked with OLPC in various countries as an enthusiastic intern. He arrived in Addis Ababa with the assumption that it was his role to reorganise the approach to implementation and structure it as he would do in the USA. Rolf (9/12/08) explained the problems which ensued:

> *'He did not understand that it is a process, an Ethiopian based process. No one understood him; they just thought he was a crazy white man running around.'*

Rolf noted that considerable damage could have been avoided if Drake had been properly trained before being allowed to engage with teachers. Instead, the residing memory of his involvement was what Rolf termed his 'neo-

colonial approach' (09/12/08) to interacting with stakeholders combined with his assumption that a large scale deployment could occur rapidly and smoothly. The intention here is not to highlight his naïvety but to reflect on what it reveals of the underlying OLPC mentality and their decision to have him represent them in Ethiopia due to his technical competence and not his cultural awareness.

The tendency to overemphasise technical issues results in a lack of engagement with local educational and cultural contexts. This indicates the mission-based mindset, exemplified in the behaviour of Drake (2008), which often accompanies aspiration and is addressed throughout Chapter 8. In considering the ideology legitimising this, there is value in examining a particular pedagogical perspective regarding Africa that is popular amongst certain technologists in the USA. This is illustrated aptly by a publication from the MIT Media Lab regarding education and technology in Africa, where Kort and Reilly (2001 p.7) pronounce:

> 'We stand at the gates of an opportunity that seldom presents itself. This opportunity is to do great things for large numbers of people. Specifically we can not only reinvent education, but for the developing nations we can invent it, we can facilitate its effective implementation into schools, we can impact the children who will soon be the adults of the 21st century by providing them an education that will prepare them to learn how to learn, which is an essential skill and will enable these adults to compete in the world economy.'

This extract is included in order to reflect upon the implications of such a perspective rather than to undermine the undoubtedly well-intentioned enthusiasm of the authors. Casually constructing unsubstantiated yet prescriptive meta-models for education in Africa suggests that the authors consider the continent as a playground for their experimentation. The extent of this is revealed in the belief that their role is to 'invent education' for Africa through the imposition of technology. This indicates both limited awareness

of cultural diversity and local specificities and also dismisses the long-standing rich educational heritage of the continent (Nyamnjoh 2004). Whilst this view is not a universal perspective amongst educational technologists engaging in Africa, it is significant due to the prominence it holds within this particular arena. This mindset is widespread and influential amongst US and European technologists who are engaged, often from a distance, in African education and policy making and as such it exacerbates the tendency towards superficial approaches to monitoring, evaluation and assessment of impact.

It is therefore clear that a lack of cultural awareness combined with naïve optimism helps to ensure that proponents of ICT for education can ignore key themes regarding the realities of education in Africa when designing, implementing and assessing programmes. African governments are prone also to ignore the realities of their own education systems in this respect, but for different reasons of political motivation and aspiration. Having demonstrated this, I now focus on specific implications, considering two arenas within which there is a significant disconnection between assumption and reality regarding decision making in ICT for education in Africa. The first of these focuses on attendance and quality within primary education and the second on teacher training, capacity and approach to teaching.

7.4.1 Attendance and quality

Enthusiasm for the potential of technology to redefine education frequently results in proponents paying inadequate attention to the sustained challenges of attendance and quality in many African schools. The reason for this is an incorrect assumption that both these challenges have nearly been overcome, or will be bypassed through the anticipated paradigm shift of new technology (Keats and Schmidt 2007). I argue from the practical experiences of the fieldwork that, in order to be effective, ICT for education initiatives need to be repositioned within an understanding that both attendance and quality remain sustained and significant challenges (Sperling 2008, EFA 2010).

The aim of providing free and universal primary education has been pursued in various forms in Africa since the 1970s (Oketch and Rolleston 2007). However the EFA targets (EFA 2000, EFA 2004, EFA 2005, EFA 2006, EFA 2007, EFA 2008, EFA 2009, EFA 2010) combined with the emergence of multi-party democracies in many countries, has given fresh impetus to the agenda and made it subject to considerable current attention (Tomasevski 2006). The basic challenges of attaining UPE in Malawi were repeatedly encountered in the fieldwork through conversations with teachers and observation of school record sheets showing enrolment and attendance figures. The World Bank (2004) provides an official estimate that 40% of children complete primary education in Malawi. Although they identify this figure as a major cause for concern, the reality is that it constitutes a grossly optimistic estimate.

The extent of the disparity between the number of students enrolling in Standard 1 and the number still enrolled in Standard 8, the final year of primary, became apparent on visiting Golgota school (04/03/08). The enrolment figures demonstrated that there were 10 times as many children enrolled in Standard 1 as in Standard 8. In conversation with the headmaster it became clear that this was due to dropouts rather than school expansion, meaning that only 10% of the children that enrolled in Standard 1 still attend school in Standard 8 (Photo 7.3). This is compounded by the low pass rate for Standard 8 exams of below 50% in many schools, indicating (pers. comm. Mike Chithonje 28/09/07) the probability that less than 5% of children complete primary education in some rural regions of Malawi.

Photo 7.3: Enrolment rates in Golgota primary school

The focus of international policy making is now centred on the improvement of quality as well as securing UPE (EFA 2005). However, it should not be forgotten that the challenges of access and sustained attendance both remain acute (Bown 2008, Tomasevski 2006). Alongside sustained attendance, rapidly increasing enrolment rates across Malawi are causing significant strain on teachers and school infrastructure (Photo 7.4).

Photo 7.4: Lessons in Malawi conducted under a tree

I noted in my research diary whilst observing a lesson at Bango Catholic Mission School (28/09/07):

> *'We're here in a Standard 4 class, one teacher alone with 167 children. I can't help but think that crowd control is all that can realistically be expected of her. The technology will only increase her workload … It is clear that there are a lot of factors working against any attempt she makes to step outside the didactic model of teaching.'*

Having 167 children supervised by one teacher is not an exceptional case and an unsurprising consequence of such large classes is that many pupils become disengaged from the learning process. The extent of the challenge in Malawi became clear whilst completing the baseline testing in Mwatibu (01/10/07) where, despite having attended school for four years, a significant proportion of the children were unable to write their own name. It should not be assumed that simply because a child is attending school they are acquiring the anticipated skills. The phenomenon of silent exclusion is therefore

widespread across the country, where children are present in school but do not participate and despite their attendance cannot be said to be receiving a functional education (Alexander 2008).

Experiences in rural Ethiopia were similar to the challenges encountered in Malawi. In Rema (21/04/08) it was clear that however many resources were invested into the conventional schooling system, there would always be children unable to participate fully (Unwin 2008). Primary education in Ethiopia is currently structured around a half-day timetable but the government is proposing to introduce a full-day timetable. Whilst many donors and government officials consider this shift to be indicative of progress, teachers in Rema explained that compulsory full time education would be counterproductive in their rural region. The majority of families are farmers and herding goats is a key aspect of their livelihood strategy for which children are responsible. Even families that prioritise education cannot afford to have their children away from herding the goats and so the half day teaching schedule allows children both to work and study (Photos 7.5 and 7.6). The official rationale for imposing a full day teaching schedule is that children will learn twice as much, but the likely consequence is that many children will instead be prevented by their parents from attending school at all. Simply instigating full time education will not remove the underlying, systemic poverty that causes child labour to remain a necessity.

Photo 7.5: Girls in Rema herding goats before going to school

Photo 7.6: Boys in Rema herding goats before going to school

7.4.2 Teacher training, capacity and approach

The second theme addresses the need for greater realism regarding teacher training, teacher capacity and approach to teaching, and the way in which each of these issues affect what educational progress may be anticipated. As previously noted, the lack of teachers and subsequent large class sizes significantly prohibits the promotion of good quality education. Indeed, as primary enrolment figures increase across the continent 'the supply of more teachers to primary school is also critical to maintain quality learning' (Inoue and Oketch 2008 p.58). More specifically, the high number of untrained

teachers working in primary schools hampers efforts to increase quality of learning (EFA 2010, Patrinos and Kagia 2007, Herz and Sperling 2004). The introduction of free primary education in Malawi resulted in a significant demand for more teachers but there was neither the capacity to train them or the budget allocated for appropriate remuneration (Inoue and Oketch 2008). The surge in demand for teachers, combined with the low pay and low status of the job, has created a context within which there are low entry requirements for teaching and consequently those attracted are often amongst the least competent professionals (Ostar Chagamba, Coordinating PEA for Zomba *pers. comm.* 05/03/08).

In recent years the tendency to recruit primary school teachers with limited capacity has been exacerbated by an intervention to promote the status of healthcare professionals. Chagamba explained (05/03/08) that healthcare provision has been identified as a national development priority and has therefore received a sizable increase in donor funding (Chagamba *pers. comm.* 05/03/08). Subsequently, entry level healthcare workers in Malawi are reported to receive twice the salary of entry level primary school teachers. This means that healthcare is the first choice sector of employment when entering the job market with only those not selected considering a career in primary school teaching (EFA 2005).

A similar trend was witnessed in Ethiopia, with an advisor to the MoE explaining (28/04/08):

> *'Becoming a primary school teacher here in Ethiopia is the last career choice for people who get to Grade 10 because of the pay and the social status. They did not often intend to be teachers. Basically, the average teacher is not very capable.'*

He went on clarify that for the donor community this is considered as a long-term challenge requiring incremental steps of improvement. He emphasised the complex nature of making adjustments to educational infrastructure, recognising that current issues are exacerbated by rapid expansion and so require a systemic capacity enhancing approach. This mentality is in sharp

contrast to the notion of immediate, widespread change achieved through the imposition of new technology.

An additional reason why substantive change can only occur gradually is that of educational heritage. The ability of a teacher to adapt to change in the classroom is significantly affected by the way they have been taught themselves both in school and teacher training college. Reflecting on the dominance of the rote-based approach, Andualem (10/12/08) noted:

> *'This is the way they were taught when they were in class and when they were in college and when they were training to be teachers, so this is how they teach. It has been a long time like this so it takes a lot of effort to challenge the teaching methodology.'*

The outworking of this heritage was encountered during the initial teacher training and sample classroom lessons in Ethiopia. Everts noted (08/02/08) that despite the introduction of the new technology, the repetition-based approach to learning had not been altered:

> *'As long as the students were able to repeat what the teachers had been told in the training then the teachers were happy ... the students got to the point where they could replicate the teacher's actions but not to the point where they would be able to connect ideas or two parts of a concept to produce an outcome.'*

Teachers engaged with students in a manner that enabled them to repeat exactly what was demonstrated without necessarily facilitating an increase in understanding. The significant challenge to translate child-centred training into child-centred practice in the classroom is closely related to the personal educational history of a teacher (Robeyns 2005). As Gladwell (2008 p.59) notes, for teachers these histories can 'act as personal conversion factors that inhibit their ability to convert training in child-centred, participative approaches into day-to-day classroom practice'. Certain teachers may therefore find it impossible to implement this shift within the classroom even if they have received extensive training.

Teachers in Rema (22/04/08) gave a variety of responses when asked about their perspective on student centred learning. Some preferred it whilst others said that it provoked children to misbehave. One teacher suggested that the primary purpose of student centred learning was to provide the teacher with a break when weary from the conventional didactic approach. What became apparent was that student centred learning was not viewed as an overall approach to teaching but rather as a discrete item to be added on to the end of a lesson in some form after the serious learning had been completed (Gladwell 2008). The outworking of this perspective is often apparent when technology is introduced into a classroom and requires innovation of some form. Slay *et al.* (2008) note that teachers were reluctant to innovate with new technology in South Africa and instead used it in the manner they assumed was expected of them. The associated evaluation of this programme found that 'in most cases, the teachers' pedagogical strategies were not able to cope with such a jump' (Slay *et al.* 2008 p.1339) following the introduction of new technology.

This wider context demonstrates the issues that tend to be invisible or ignored in many technology-related initiatives. The primary lesson is that when engaging with ICT for education in Africa, it is easy to adopt an optimistic approach driven by economic, political and ideological aspirations that does not reflect reality. If this occurs then ICT for education policy recommendations and programmes will also be designed on the flawed assumption that they are correct. As knowledge regarding the nature of education and the associated challenges across Africa becomes more widespread then there will be a greater chance of new initiatives succeeding. This requires realism regarding the observation that many classes are so large that teachers cannot teach effectively, that teaching is often regarded as low status, that training is so limited that many teachers are lacking in basic skills, and that the way teachers were taught can hinder them from adjusting the way they now teach.

These observations are well documented in other educational contexts (EFA 2005, EFA 2007, EFA 2010). The objective here is to highlight their relevance within the arena of ICT for education, an environment where, whilst recognised by some (Unwin 2005a), they are still all too often ignored or unknown. Increased awareness of these issues is vital in designing appropriate ICT interventions and ensuring strategic allocation of resources. This in turn is dependent upon integrated monitoring and evaluation that prioritises learning from educationalists, engaging with historical experience, and investing significant time observing classroom activity to assess what is taking place.

7.5 Constructivism deconstructed

Having demonstrated the problematic consequences of practice being defined by limited educational understanding, I now examine the way that pedagogical models have an effect on the monitoring and evaluation of ICT for education in Africa. Children in Ethiopia provided a wide variety of feedback regarding their usage of the laptops. A review of the data demonstrates how the convictions held regarding the nature of effective pedagogy could cause the comments of participants to be interpreted in entirely different ways. The following extracts from two students in Ethiopia, from Grade 8 in Menelik (11/12/08) and Atse Noad (17/12/08) respectively, exemplify this possibility:

> *'To begin with my parents were very happy that I had a laptop. But now because they don't know how it works they think I am just playing games on it – so they ask me why I am spending all my time on it.'*

> *'At first my parents liked me having the laptop – but now they are complaining because we are spending too much time on the laptops – the laptop is new for us and so we are suing it all the time and not studying as much as we used to.'*

Depending upon the pedagogical ideology of the reader, these accounts may demonstrate evidence of radically progressive learning or an educational

disaster. The contrasting potential interpretations demonstrate the complexity in data analysis and the necessity for a clear rationale regarding any pedagogical approach adopted.

This issue can be understood more clearly by examining the topic of constructivism in greater detail. It is clear that aspects of constructivist theory have a useful contribution to make in the continual shaping of pedagogy across Africa. However, my critique focuses on the assumption that ICT-enhanced constructivism constitutes a panacea for education across the continent (Negroponte 2008, Selinger 2009). The previous analysis provides a contextual back drop for this by outlining major omissions from current debates. The first is the assumption that education needs to change because of new technology; this is a problem of causality and misplaced determinism. The second is the notion that education in Africa is a blank slate to operate from; this is a problem of lacking historical and cultural awareness. The third is the associated naïvety surrounding the current educational context in Africa; this is a problem of limited knowledge, research and exposure. These three factors combine to provide a legitimising environment for the misconception that a technology driven shift towards constructivist-based schooling is an effective intervention for education in Africa. Having established this, I now build on section 2.2.4 and explore the complex forces moulding pedagogy (Alexander 2008), demonstrating in more detail the limitations of constructivism and focusing on the potential alternatives within guided discovery approaches.

The economic rationale behind ICT for education in the developed world provides suitable context to debates pertinent within Africa. Hamilton and Feenberg (2005) identify the private sector interests in promoting ICT in education and suggest that, alongside constituting a pedagogic tool, eLearning is also promoted because of its economic potential. Snyder (2002) affirms this in reflecting on the educational tension between innovation and tradition. He suggests that technology is often promoted on the basis of the former because, 'by commodifying education as product, marketeers have a vested interest in promoting technological innovation as an appealing selling

point' (Snyder 2002 p.8). Awareness of the propensity for ICT in education to be propelled by private sector agendas provides critics with ample reason to disparage technology enhanced education. As Hamilton and Feenberg (2005 p.108) note, it can easily be viewed as 'a commodified pedagogy of information delivery' with an economic logic that ultimately serves to reduce education to a form of e-commerce. They postulate that the advance of ICT may have facilitated the integration and transformation of education, 'a site of social practice previously independent of markets and economic production' (Hamilton and Feenberg 2005 p.105), into a powerful market tool. However they go on to note that rather than accept this as an inevitable consequence, the assumed negative outcomes of ICT enhanced education 'must be understood as contingent outcomes whose realisation depends on a particular configuration of the technology and a particular set of pedagogical choices' (Hamilton and Feenberg 2005 p.113). This is an applied outworking of the philosophical stance outlined in the theoretical context promoting critical engagement with technology in the light of the broader nature of development within the modern capitalist system.

This demonstrates the importance of avoiding an uncritical acceptance of the established discourse regarding the advantages of ICT for education when considering its applicability and promotion within Africa due to the economic, political and ideological drivers at work (Kraemer *et al.* 2009). In order to sustain a market for the hardware and software associated with ICT in education the private sector needs to develop and promulgate a technology dependent pedagogy both to legitimise and necessitate the considerable financial outlay required. This is the primary reason why constructivism has risen to such prominence within the arena without substantive proof regarding its educational effectiveness. It has been allowed to remain in this position due to the widespread marginalising of monitoring and evaluation across the sector.

The uncritical promotion of constructivism within ICT for education has been aided by an under-emphasis on ontological and epistemological frameworks for the use of ICT in African learning environments (Hodgkinson-Williams

2006). This is demonstrated by the sustained financial and social investment in technology for education in the developing world that continues despite the sparse evidence that, as currently employed, it has positive impact on the way that students learn (Leinonen 2008). Within this context, void of conceptual critique, anecdotal records of successful constructivist learning (Dangwal *et al.* 2006, Negroponte 2008) rise to iconic status within the ICT for education community and are presented as indicative of what can and should become prescriptive educational policy.

Most of the critique surrounding constructivism is written within a developed country context and targeted at educational theory more generally (Kirshner *et al.* 2006, Mayer 2004). However the lessons are still applicable and in cases have added pertinence within the context of ICT for education in Africa (Krstic 2008, Kipp 2009). The central point is that despite its long history, constructivism has remained a somewhat ethereal ideal and has avoided being 'formulated as a clearly stated theory with testable predictions' (Mayer 2004 p.18). Unsurprisingly, the lack of testable predictions leads to a situation where it becomes difficult either to substantiate or refute various aspects of the theory when applied within a specific context. As Cromer (1997 p.1) asserts, it is possible that 'today's de-emphasis on teaching pupils necessary facts and principles, far from empowering them, makes them slaves of their own subjective opinions'. Thus an overly experiential approach to education may have the opposite of its intended impact and serve to trap students rather than promote effective learning.

Models of education based on constructivism have recurred with new names in a variety of forms over previous decades. Kirschner *et al.* (2006 p.79) note that this trajectory 'produced discovery learning, which gave way to experiential learning, which gave way to problem-based and inquiry learning, which now gives way to constructivist instructional techniques'. This suggests cyclical ignorance amongst those who advocate for solely exploratory approaches, 'either unaware of or uninterested in previous evidence that unguided approaches had not been validated' (Kirschner *et al.* 2006 p.79). This is expressed by Mayer (2004 p.17) as a recurring cycle where such

approaches constitute a metaphorical 'zombie that keeps returning from its grave'. Constructivism, especially within the context of ICT for education in Africa, should therefore be considered as the latest iteration of a frequently recurring educational fad, defined by Paul and Elder (2007a p.4) as 'a short-lived emphasis on a seemingly wonderful new idea that will transform teaching and learning without much effort on anyone's part'. Recognising this does not equate to a complete dismissal of the contribution of constructivism but does both reframe and remove it from a position of assumed incontrovertibility.

Despite the incompatibility with understanding of human cognitive architecture and lack of proven positive impact there are still ardent advocates for constructivism or minimally guided approaches (Selinger 2009, Mitra 2003, Dangwal *et al.* 2006). Within the context of ICT for education, and specifically within the current African context, a significant reason for this is the role of constructivism as a valuable legitimising tool for the expansion agenda of the private sector. This exists in combination with the mission minded ideological naïvety of certain educational technologists as previously discussed and further exemplified through OLPC (section 8.4).

7.6 Guided discovery through technology

The factors outlined above mean that pedagogical debate within ICT for education in Africa is sometimes presented in polarised terms, with those who recognise the limitations of rote-learning necessarily assumed to be proponents of constructivism (see Selinger 2009). However, this dichotomising demonstrates a limited awareness regarding the diverse reality of education across the continent. Developing an understanding of potentially appropriate usages of technology within education in Africa (Kellner 2002) requires a more nuanced approach, acknowledging that these constitute two extreme positions within a continuum of educational experience (Dewey 1938).

Indeed, between these two extremes lies guided discovery (Kirschner *et al.* 2006, Shulman and Keisler 1966), the overarching term for a pedagogical approach that may more accurately reflect the conceptual and practical shift required regarding education in Africa, recognising the need for innovation, flexibility and increased student centred learning, without promoting solely autonomous discovery. Mayer's (2004) synthesis of different trials demonstrates that guided discovery can be more effective than pure discovery-based learning and he argues that 'children seem to learn better when they are active and when a teacher helps guide their activity in productive directions' (Mayer 2004 p.16).

The basic premise for guided discovery is that effective education is dependent upon instruction and exploration with the emphasis on each shifting through different stages of the educational process. In developing the capacity to think for themselves, students should engage in guided learning tasks, some of which may be repetition-based, to provide a framework for subsequent exploratory learning. This is known as the scaffolding effect and is based on the premise that 'discovery learning is successful only when students have prerequisite knowledge and undergo some prior structured experiences' (Kirschner *et al.* 2006 p.82). Within this framework of guided discovery, there is potential for the appropriate use of technology to promote significant educational reform. Aspects of this were demonstrated in the case study research with the potential for life skills acquisition in Malawi and the significance of games for learning in Ethiopia.

My research in Malawi provided examples of the potential for guided discovery learning through ICT with children gaining knowledge relating to life skills. There was widespread feedback that children found the introduction of technology helpful in keeping them focussed and learning about culturally sensitive subjects. A teacher in Chingombe (13/11/07) explained how the content on the technology assisted them:

> *'It is easier to explain things like sexual abuse, the real things on the ground, through letting the children use the gadgets rather than just the teacher talking, because sometimes that is*

> *difficult for the teacher. Life skills is difficult because culturally we feel we are doing the wrong thing to tell them in detail – but we know that as teachers we must and it is good for our culture – but it is uncomfortable.'*

Children in Standard 3 from Mbinzi (15/11/07) and Dzenza (16/11/07) gave specific examples of how guided discovery learning with technology had improved their understanding regarding a variety of significant life-skills topics such as malaria, HIV and conservation:

> *'It showed me how to use mosquito nets ... We didn't have nets so after the malaria lesson I went home and told my parents and they bought nets for everyone.'*

> *'I enjoyed the lesson on HIV, I learnt how to protect myself from AIDS. I have learnt that AIDS is dangerous and does not have a cure.'*

> *'We need to plant trees in order to avoid soil erosion. Listening to the lesson was the first time I have learnt this. It is important to know these things ... Now I have planted two trees at my home.'*

Likewise, teachers and children in Ethiopia highlighted the importance of games within educational technology. The teachers were keen to highlight that although the games on the laptops were distracting when used out of context, they should not be removed entirely. As a teacher from Grade 3 in Menelik (11/12/08) explained:

> *'You cannot take off all the games - if it was only subject matter there then they will very easily feel bored. The games and record function are very important – they have to play. But we have to train them how to use it and how to relate it to their studies.'*

The students were also enthusiastic regarding the discovery-based tools on the laptop. A Grade 3 student from Atse Noad (17/12/08) reported:

> *'I use the laptop a lot at home for reading books, paint for drawing and eToys – and TamTam as well. With eToys I play the piano and play games and watch the animation … It improves my knowledge on lots of things.'*

The point of significance here is that a critique of constructivism within ICT for education does not equate to a complete rejection of every aspect of the approach. The appropriate usage of educational games as one discovery-based element within a balanced learning environment can contribute to student enthusiasm and potentially also to improved learning outcomes. Both the advance of technology and the insights of constructivism provide opportunities to improve the way in which education is undertaken in Africa. The challenge is therefore to reject the uncritical, deterministic adoption of technology and constructivism in education whilst still engaging with the potential benefits they may bring as part of a complex, multi-faceted solution.

7.7 The contribution of critical thinking

The previous discussion demonstrated the nuanced nature of the educational situation in Africa and provided a critique of the economically driven and ideologically flawed adoption of constructivism. Having briefly explored an alternative option through the example of guided discovery, I develop this through a consideration of the underlying liberal rationale for education and focus specifically on the potential contribution of critical pedagogy and critical thinking more broadly.

A guided discovery alternative to constructivism can be developed by engaging with critical pedagogy, an aspect of educational theory that is often considerably removed from mainstream ICT for education debates. Aspects of critical pedagogy do overlap with constructivist ideology but the two should not be mistaken for being synonymous (McLaren 2000). Critical or Freirian pedagogy is distinct, and useful in this context, because it reinserts a dimension of social critique into debates surrounding appropriate student centred learning (Freire 1970). This may remind educationalists of the

potential for pedagogy as a tool for addressing inequality and structural injustice rather than simply facilitating economic growth (Unwin 2009).

Critical pedagogy promotes teaching in a way that challenges domination and structures of power and resists oppression (McLaren 2000). The objective of teaching in this way is to enable students to engage in society with a critical consciousness. Paolo Freire (1973, 1970) is the most famous proponent of critical or liberatory pedagogy, with the humanising of society the ultimate goal of effective pedagogy (Steiner *et al.* 2000). This objective is dependent upon viewing educational change as one significant catalyst within a wider accompanying change 'in the social and political structure within which education takes place' (McLaren 2000 p.6) with particular emphasis on developing a critical consciousness amongst the poor.

Whilst maintaining a less explicit transformative agenda, critical thinking (Paul and Elder 2007) is linked to critical pedagogy in that it aims to inculcate the same form of consciousness and critical processing within students. This encapsulates what is perhaps the most significant negative consequence of a rote-based orthodoxy in African education and a wider cultural resistance to enquiry from children. The mantra that 'children are to be seen and not heard' is deeply ingrained in many African cultures (Nyamnjoh 2004) and as a result in certain contexts it is rare for children to be asked for their opinion by an adult on any topic. The significant implications of this cultural resistance to child enquiry became apparent whilst conducting the field research in Malawi and asking children between 7 and 13 years old to explain why they answered the questions they were asked in the way that they did. As noted in my research diary (25/02/08):

> *'I realised that the extent of the struggle the children had with my questions indicated that they may never have previously been asked a question from an adult that required them to answer 'why'. The result of this, simply, is a widespread stifling of critical thinking in education.'*

Critical thinking constitutes a significant tool in serving both the interests of individuals and those of society at large, giving 'the freest play to reason, by encouraging people to come to their own conclusions by developing their own rational faculties' and creating a context within which people can learn to think for themselves (Paul and Elder 2005 p.14). For this to occur, a shift is required so that critical thinking becomes an active objective placed at the heart of a curriculum, where teachers provoke students to develop ideas and autonomous thinking progressively through their years of schooling. Promoting critical faculties and the ability to identify resources that are useful for learning is particularly pertinent for the ICT for education debate in Africa within a networked environment of potentially sharply increased access to learning resources. Without considerable information literacy, students are unable critically to assess what information, of all that is available, is useful for their needs and what should be rejected. This has added pertinence when considering the introduction of ICT in education in Africa, where it is less likely that children will have had prior exposure to utilising digital technology than in the developed world. Indeed, it is within this context of 'accelerating change, intensifying complexity, escalating interdependence, and increasing danger' that critical thinking becomes increasingly significant (Paul and Elder 2007 p.10).

Thus, raising the quality of education is based on a progressive promotion of in-depth thinking amongst students, and ICT has a role to play in achieving this more substantive concept of education. However, in order for its potential to be realised there is need for a higher level of consciousness amongst teachers and critical thinking amongst programme implementers so that they are able to perceive when the use of technology will actually serve the desired educational ends and when it will not (Selinger 2009). This leads discussion back to the constraints surrounding educational capacity, highlighting the need for critical thinking more widely within African education and the contributory role of promoting a culture of self reflection, monitoring and evaluation.

7.8 Monitoring and evaluation implications

The impacts of non-curricula behavioural change, learning through gaming, life skills and critical thinking are each notoriously difficult to quantify and may be somewhat anathema to the dominant ethos of quantifying definable learning outcomes. These aspects of education therefore present considerable challenges in the realms of monitoring and evaluation, demonstrating a distinct omission from the current status quo and dominant emphases. This can cause tension when conducting practical monitoring and evaluation exercises. This predilection for quantifiable indicators was apparent in conversation with Rolf (07/04/08) when he explained his reasoning for pursuing a quantitative framework for educational monitoring and evaluation:

> *'I was wanting to avoid the soft factors because of the fact that educationalists will say it is not valid. So, because of this, we said, let's get objective indicators and use them ... The more we can measure the better – we will put it all in a database and can include both hard and soft data.'*

This leads into considering what constitutes appropriate indicators for assessing educational programmes. As indicated by Rolf's comment above, there is a widespread tendency to resist engaging with anything that cannot be quantified and therefore presented to donors as having had a demonstrably beneficial impact (section 2.4). His fear resonates with observations from the literature, with Alexander (2008) noting that a significant factor driving the teaching establishment in Africa and elsewhere is the devising of tests which can more effectively prove a change in attainment. This contributes to the climate of absolute accountability in which educators are required to 'produce a smoking gun: clear, irrefutable, scientific evidence' (Roblyer 2005 p.196) to justify their choice of intervention (Boissiere 2004, DFID 2010). Although understandable when considering the economic and political pressures shaping education, the reluctance to engage with unquantifiable factors reveals a partial

misconception regarding the nature of effective educational assessment (World Bank Institute 2003, DFID 2008a).

A model of assessment based solely on numerical scores creates its own set of complexities relating to the quantification of pedagogy and the potential situation of pedagogy being made to fit the 'available measures rather than the measures fit the pedagogy' (Alexander 2008 p.7). Viewing pedagogy as a controllable and quantifiable practice leads to a reductionist vision where the unique dynamism of each classroom is disregarded and the large numbers of variables that are essential for effective learning are discouraged rather than embraced (Roblyer 2005). Recognising the problem of focussing solely on test-score based assessments, whilst acknowledging the need for more than anecdotal evidence of behavioural change indicators, demonstrates the need for rigorous yet culturally appropriate measures of assessing impact in education. This will always be a somewhat messy affair but focusing on changing the culture of educational assessment may be more productive than the elusive pursuit of a comprehensive framework that attempts to quantify the unquantifiable. However, the economic, political and ideological forces shaping education attempt to bypass the inconvenient truth that what matters most within teaching and learning involves operating in the 'realm of the non-measurable' (Alexander 2008 p.37). Indeed, most significant impacts are 'by their very nature, messy conditions to assess ... characterised by the ambiguous, the intangible and the longer-term' (Morgan 2004 p.53).

Recognising the messiness of educational assessment would help decrease the pressure that Rolf felt to produce quantifiable proof of impact and instead facilitate an environment where the complexity of genuine educational impacts is embraced. This does not equate to lowering standards and rejecting notions of appropriate accountability, but redefining them to engage more with the progressive promotion of high end skills (Tacchi 2009). Thus rearticulating the nature of effective assessment requires a conscious rejection of both the donor predilection for solely quantifiable impact and the private sector promulgation of anecdotal success stories.

Achieving this reframing requires the gradual promotion of high end skills such as critical thinking when considering the practical application of monitoring and evaluation that engages with process and recognises the need for self-driven accountability as well as that which is externally imposed. Such thinking, introduced progressively through the education process, facilitates the development of self monitoring, in direct contrast to much current educational orthodoxy where 'top-down accountability procedures tend to weigh heaviest on those at the bottom of the heap, and to absolve most readily those at the top, whether or not those at the bottom are most culpable and those at the top most innocent' (Alexander 2008 p.16).

However, there are difficulties in attempting to promote two-way accountability and assess dimensions of education that are difficult to quantify such as critical thinking and capacity development (Alsop *et al.* 2005, Watson 2006). This difficulty is a clear reason why the marginalising of high-end processes continues within current educational evaluation (Cassady 2002). In looking for practical tools for assessing ICT for education beyond input and attainment tests it is useful to consider Haddad's (2007a) comparison of Bloom's (1956) original and Anderson's (2001) revised taxonomies of educational objectives (Figure 7.1). Although Bloom's taxonomy is criticised (Paul and Elder 2007a) for over-emphasising discrete steps in learning rather than viewing them as stages along a continual process, the comparison with Anderson's (2001) taxonomy remains useful for categorising thinking relating to impact assessment of high-end skills. To its detriment, current monitoring and evaluation of ICT for education is primarily focused on stages one and two of the taxonomies, measuring impact on 'knowledge/remembering' and 'comprehension/understanding', because of the leaning towards quantification.

Bloom's Original Taxonomy (1956)	Anderson's Revised Taxonomy (2001)
Knowledge	Remembering
Comprehension	Understanding
Application	Applying
Analysis	Analysing
Synthesis	Evaluating
Evaluation	Creating

Figure 7.1: Comparison of Bloom and Anderson taxonomies

There is value both in developing models that can assess impact at the level of 'evaluation/creating' and also in identifying ICT initiatives which assist in facilitating a shift towards education more concentrated on these goals. Anderson's (2001) positioning of 'creating' as the highest taxonomical stage is one aspect of critical thinking. Monitoring and evaluation energy could usefully be focused at this level of re-conceptualising and re-creation (Haddad 2007a). This could demonstrate potential for the use of ICT as a tool for introducing monitoring and evaluation as part of critical thinking, creating, independent enquiry and reflection within education.

7.9 The potential for transformation

Having demonstrated the challenge of different educational ideologies and how these can cause tension and potentially insurmountable challenges within ICT for education, I now focus on one way in which the presence of technology provides an unanticipated opportunity for educational transformation and promotion of critical thinking. Conscious awareness of such indirect potential implications of ICT is valuable when considering effective impact assessment. Donors, governments, private sector and recipients each have different educational values, and technology has the potential to enable progressive pedagogy within conventionally conservative systems, even in spite of the dominant actors. The basic tension encountered

in this regard in the fieldwork is demonstrated through an extract from my research diary (27/04/08) regarding the research partnership in Ethiopia:

> *'My methods have been designed on the basis of promoting autonomy, freedom and critical thinking but the reality is that they are very different from the educational ideals of the system within which I am working. The government would be horrified at the idea of education leading to these things. In fact, it is exactly the opposite of their desire for education that leads to productive, obedient citizens who will fuel the economy: not surprising for a repressive regime.'*

Iginio Gagliardone, an academic conducting research in Ethiopia (25/04/08), highlighted in an interview with me the significance of the clash in educational philosophy between OLPC and the MoCB. He noted that the OLPC educational philosophy is based on technology driven constructivism and a mission-based misconception of education in Africa. Conversely, the technology centred approach of the MoCB is maintained due to the aspiration for modernity and the assumed causal link to economic growth and development. Neither of these approaches represents the holistic rationale for education that the team responsible for monitoring and evaluation were working to promote. However, the point of the observation is that the presence of ICT in education may provide a useful tool for achieving objectives that are different from those of the primary stakeholders, in this instance OLPC and the MoCB. Gagliardone again emphasised how the presence of the technology and the associated aspiration enabled the clash in educational ideology to go undetected (25/04/08):

> *'There is a clash in educational philosophy between OLPC and the Ministry of Capacity Building but this was hidden by the technology. The supposed pedagogy is lost on the Ministry, they see it as a technology thing not an education thing.'*

The presence of the laptop meant that the programme was perceived as technological rather than educational, despite the claims of those promoting the OLPC as an educational initiative. Whilst there were significant

associated negative consequences to this, here I highlight another potential positive unintended impact.

The challenging contrast in values, agendas and objectives that define many multi-stakeholder education partnerships may become more pronounced due to the presence of technology that might obscure, or encourage actors to ignore, underlying conflict regarding visions of appropriate pedagogy. Whilst unidentified, the underlying tension may cause an insurmountable challenge to programme viability. However, if identified then there is potential to utilise the aspirational status of the technology in order to facilitate progressive change (section 8.2).

The Ethiopian national educational objective to 'develop good citizens' (MoE 2002) is in itself a relatively innocuous statement, but it serves to demonstrate the intent of the government. Developing good citizens is an alternative articulation of the intent to use education as a tool to develop economically productive yet politically docile citizens who do not interfere with the power structures of the nation. In Ethiopia this is expressed in a government predilection for pupils learning maths and hard sciences rather than humanities and social sciences. Rolf (07/04/08) acknowledged this and explained why our monitoring and evaluation exercise would need to focus on assessing impact in maths and hard sciences in order to be deemed credible by the government:

> *'Maths is seen as very important – because they all want a generation of young engineers – not people who will join the opposition ... so political science is not what they want.'*

The driving force behind educational practice is often more focused on political expediency than social change (Steiner *et al.* 2000). Indeed, the Ethiopian objective of education shaping pupils into future obedient and productive economic servants makes it unsurprising that critical thinking is marginalised. An anonymous member of the donor community expressed

(28/04/08) the view that there is little opportunity for reform due to the direct political control over education:

> *'There is definitely an emphasis on control within education in Ethiopia. The most obvious example is the subject of civics – it is a political tool and only conveys a certain version of the truth ... The government is about control.'*

More broadly, government actively restricts public access to information and limits the ability to communicate, linking back to the issues of discovery and critical thinking in education and society in general. The government are also working to pass a law that prohibits NGOs from engaging in any form of advocacy work within Ethiopia (Gagliardone *pers. comm.* 25/04/08). The intention is to repress the growing civil society activism and this is also witnessed through the regular bans on text messaging during periods of political sensitivity. This political backdrop demonstrates the power of the aspirational status of technology in superseding the desire for control within education in Ethiopia in the OLPC programme. There is potential for the presence of technology in education to facilitate and legitimise a more progressive pedagogy within conservative and often repressive educational contexts. The status of technology within the Ethiopian government psyche means that educational reform may occur in ways that would not normally be possible. The guided discovery learning beginning to be facilitated by Akili, the educational software on the XO laptops, is unlikely to have been be tolerated by the government without the associated aspiration for the technology. They would not allow such a different model of education to be promoted were it not 'wrapped up' with the technology that they were strongly in favour of.

As a result, access to politically sensitive information that is normally prohibited may unwittingly be facilitated through the spread of laptops. This unintended consequence has potential to be exploited for substantive change and promotion of a more liberal approach to education. Within the context of OLPC and Ethiopia this potential has not been fully realised because of the

adherence to a flawed promotion of constructivism. However, it remains apparent that the presence of technology means that political constraints can be bypassed, acting as a catalyst for the introduction of more progressive pedagogy (Mayer 2004). This is most likely to be realised when use of technology in education is taken beyond the simple digitising of content to replace or supplement textbooks (Selinger 2009). Indeed, the primary attribution of value should be rooted in the catalytic potential of the technology to enable that which was previously marginalised in education (Trucano 2005, Unwin 2009), utilising ICT to promote 'creativity, interactivity, collaborative learning, critical thinking and problem-solving' (UNESCO 2003 p.8).

7.10 Pedagogical conclusions

In drawing together the themes of this chapter, I return to the DFID funded classrooms in Malawi described in the introduction. Building concrete tables into the floor in an attempt to catalyse a more learner-centred approach to teaching demonstrated the issue of imposed change: forcing a structural shift whilst negating underlying cultural issues. The choice to build tables into the floor provides apt illustration of the approach often adopted when introducing technology into schools. It is easier to 'impose' laptops and assume that it will lead to progressive educational reform, whilst simultaneously providing a convenient legitimiser for increased market penetration, than it is to address underlying issues of ingrained pedagogical practice. It is relatively easy to supply the infrastructure to support donor educational ideals, and these may even be given concrete foundations so that no one can adjust them, but without addressing pedagogy little substantive long-term change can occur.

Once it is acknowledged that pedagogy should constitute a central issue within debates regarding the monitoring and evaluation of ICT for education then there is need to identify what pedagogy is the most appropriate. Having rejected the application of constructivist logic in this context, primarily because it is economically driven, politically appealing and ideologically naïve

(Krstic 2008, Kipp 2009, Kraemer *et al.* 2009, Unwin 2010), I have focused on guided discovery and the promotion of critical thinking as central aspects of a potential alternative (Mayer 2004, Kirschner *et al.* 2006, Paul and Elder 2007). In addition, renewed emphasis on rigorous and innovative monitoring, evaluation and impact assessment is important in addressing the negative effects of technological determinism, inappropriate pedagogy, disconnected thinking, assumptions of universal applicability and irresponsible educational experimentation.

In closing, I now address three additional factors which must be considered in order to facilitate the spread of alternative approaches to pedagogy within assessing ICT for education initiatives in Africa: repositioning education as the central factor, providing an incentive for change towards alternative teaching approaches, and focusing on secondary education as the most appropriate point for deployment of digital technology.

First, positioning control of an ICT for education programme with a MoIT (Ministry of Information Technology), or an equivalent, rather than with the MoE may exacerbate the tendency for technological considerations to be considered in preference to pedagogical ones (Selinger 2009). Kocsev (15/12/08) was keenly aware of the negative consequences this had for effective monitoring and evaluation in Ethiopia. He noted how the lack of educational grounding was a significant hurdle:

> *'That is exactly the problem: it is seen as an ICT programme. It is as if now the laptops are distributed we are part of the digital age... It is understood at all levels in terms of an ICT literacy project – not an ICT for education project. Even when talking to teacher training colleges – they understand it as an ICT literacy project. Getting beyond this is really hard.'*

Similarly, the headmaster of Menelik (11/12/08) expressed his ongoing frustration at the technological focus:

> *'We are not interested with the technology but very interested with the things that can help the teaching and learning process. In order to begin with this, you need to understand the technology, but after that it is about the education.'*

Although undoubtedly aware of the prestige associated with the laptops, the stated priority for this headmaster was to ensure that the laptops were utilised in a manner that would improve learning outcomes. He demonstrated an acute awareness that although his school was the beneficiary of a high profile programme, without a successful integration plan then the introduction of technology would do nothing towards achieving the desired learning outcomes. ICTs should be viewed as a potentially useful tool in attaining the desired improvement in education rather than as a substantive end in themselves (Cassidy 2007, Unwin 2005, Roblyer 2005, Steinmueller 2001).

Second, a pedagogical shift towards a guided discovery approach to learning that promotes critical thinking through technology must be accompanied by an associated change in the way that examinations and assessment are conducted. Tilahun noted how Ethiopian students from primary through to tertiary education are aware that the most significant requirement for scoring well in exams is the memorisation of the requisite facts. Exams are often based on one textbook and high marks are secured through regurgitating this text (Lasonen *et al.* 2005, Negash 2006). Therefore, even if more exploratory-based learning is introduced into the curriculum there is very limited incentive to utilise it. As she explained:

> *'The exam structure does not encourage free thinking, it just tests your memorising so the children know how to get good marks – memorise, not give creative thought. In exams you are never asked why, they do not ask for your opinion.'*

Without clear incentives and demonstrable rewards for innovation there will be limited sustained engagement of students in programmes that promote an alternative approach to learning. There is little purpose in introducing a new technology unless it is one aspect of a holistic revitalising of education that

includes the restricting of examination procedures. This has substantive implications for the way in which monitoring, evaluation and impact assessment is conducted, demonstrating the need for interconnected thinking beyond the confines of the immediate programme when assessing the potential for genuine and sustained change.

Third, effective guided discovery in education is dependent upon an awareness regarding the appropriate introduction point for technology. The role of exploration in education can best be utilised when introduced onto a foundation or scaffolding of pre-existing knowledge (Kirschner *et al.* 2006). In the light of this it is worth adjusting the focus of ICT within education in Africa to secondary rather than primary level. Numerous studies indicate that use of ICT at secondary, higher and tertiary education is more feasible than in primary (Trucano 2005) but despite this, a focus on primary schools persists. This is due in significant part to the justified donor preoccupation with securing universal access to good quality primary education (DFID 2010, EFA 2010). However, an additional driving factor is the flawed notion that acquiring 21st century skills is a universal requirement for African children. Combined with this is a misinterpretation of child psychology promoting the determinist idea that technology must become intrinsic to education prior to the establishing of a learning framework (Oppenheimer 2004). As noted in section 7.3.2, this tendency is then further exacerbated by the donor and NGO predilection for the stories and photo opportunities afforded from young children using digital technology (see http://www.laptop.org accessed 15/02/10).

The case for the proposed shift in focus towards secondary education is strengthened by considering the issues of scalability and associated financial constraints. Across sub-Saharan Africa only one in four children of secondary age are enrolled in school (UNICEF 2007). It is clear that achieving long term development objectives is dependent upon increased attention being paid to developing the capacity of secondary and indeed tertiary education across the continent. As previously noted, there are areas of Malawi where less than 5% of children are completing primary education. For these children who are

failing to complete primary education, equipping them with basic literacy and numeracy skills is a more urgent priority than attempting to provide all of them with 21st century skills needed for work in the global economy. Teaching these skills should instead be focused on the one quarter of children who attend secondary school and will be the primary drivers of future national development. This argument can also be made in regard to prioritising ICT in Higher Education and teacher training colleges for the same reason (Unwin 2005a).

8. Aspirations and conceptions of modernity

8.1 Introduction

> *'If they don't learn when they are young they will never be able to catch up with anything. Computers are important for education because we are in a global village ... The world speaks the computer language of information technology, it is high time we switch to the global village. Children should be educated and nowadays you cannot talk of being educated without use of the computer.'*

(Olive Masansa, Malawi Minister for Education Science and Technology *pers. comm.* 03/03/08.)

My interview with Malawi's Minister of Education Science and Technology (03/03/08) reflects an almost ubiquitous desire expressed across Africa, to ensure that children do not miss out on the opportunity to learn how to use technology which might prepare them for life in an increasingly globalised economy where digital literacy is perceived as a prerequisite for success. The purpose of this chapter is to explore arenas within which mindset and aspiration affect perceptions of technology within education initiatives, disconnecting from their direct educational use-value and influencing approaches to monitoring, evaluation and impact assessment.

The suggestion that technology has significant value as a symbol or emblem of development and progress is not an observation restricted to a development context. Identifying oneself through association with ownership and display of commodities is a widespread human tendency (Wenning 2002). Here, my objective is to assess the implications of aspiration towards technology, and its associated connotations of self-betterment, within the context of education and development. The place and significance of aspiration as a factor within education practice is often acknowledged but rarely focused upon. Although the implication of aspiration amongst the poor

has received some attention (Narayan *et al.* 1999) this has not previously been within the explicit context of digital technology for education. An understanding of how programme beneficiaries view digital technology and what it signifies is vital in effectively monitoring and evaluating ICT for education in Africa.

8.1.1 Rationale

Unlike the chapters concerning partnerships and pedagogy, this analysis of the role of aspiration in development through technology was not determined by outputs from the participatory workshops or online questionnaire. Indeed, it was striking how rarely the topic of aspiration arose in these contexts, and thus one purpose of focusing on aspiration in this analysis is to explore the likely reasons for its absence. Although rarely acknowledged, aspiration constitutes a significant formative issue in shaping ICT for education programmes and, subsequently, the way they are assessed, monitored and evaluated. Further evidence regarding the underlying significance of aspiration emerged through interacting with stakeholders in focus group discussions during my fieldwork in Malawi. Despite no explicit mention of the word, aspiration emerged as a formative theme or motivation in all of the focus groups held with teachers (15 of 15) and 80% of focus groups with students (12 of 15) in Malawi.

The term aspiration is intended to describe a variety of connected ideas incorporating, at different scales, what people want, hope for, identify with, desire and work towards, and thus consider valuable and demonstrative of progress and the good life. This builds on the definition of Kuriyan and Kitner (2009 p.22) who explain aspirations as 'part of a system of ideas that is located within a larger set of beliefs and social relations about self advancement'. Such ideas vary widely between different communities across the globe, and amongst individuals within these communities but are 'to do with wants, preferences, choices and calculations' (Appadurai 2004 p.67) and part of a 'system of ideas which locates them in a larger map of local ideas and beliefs' (Appadurai 2004 p.68). They also translate into more local,

personally defined aspirations worked out through specific situations, scenarios and desires, and are often linked to notions of what people consider will ensure a better future for their children (Kuriyan and Kitner 2009).

Within this discussion, particular emphasis is placed on the increasingly globalised nature of aspiration, conceptions of the good life and its associated links to accessing technology. As Simon (2003 p.22) notes, 'the global sphere is steadily assuming greater importance for particular communities and their development aspirations'. This analysis therefore builds on the argument outlined in section 2.6 regarding the nature of development and the tendency towards conceptions of capitalist modernity being viewed as inherently progressive (Goulet 1983). Within a global context where technology is increasingly viewed as emblematic of this progress, there is widespread aspiration for ownership of, or association with, related status symbols (Parkinson 2005). The overarching issue is articulated in Pippin's (1995 p.51) question 'what might be the implications of the changing social status of technology'? As previously discussed, these implications may be positive, as ICT can enable people to have greater access to information and thereby facilitate the fulfilling of a vital development objective (Green 2008). However, this rarely occurs without significant complexities.

The problems arising from an uncritical aspiration for digital technology in the developed world within society are well documented and form part of a wider critique on consumerism (Bauman 2007). This has also been widely applied within the specific context of education in the developed world (Cuban 2001, Oppenheimer 2003). However, my contribution is in addressing Pippin's question within the context of the developing world, through the lens of formal, primary education. Heidegger (1966 p.56) describes the progression of technology and how its appeal serves to 'captivate, bewitch, dazzle and beguile man'. This ability to 'dazzle and beguile' is magnified within a developing context, and affects conceptions of progress resulting in widespread uncritical aspiration.

The traditional dominant narrative regarding technology within philosophy is the societal pursuit of ever increasing efficiency (Dreyfus 1995). Whilst this is clearly a primary thread, there is another associated but independent issue at work in the context of ICT within education. Fully to appreciate the nuances of aspiration for technology and it's outworking within education, it must be approached as a question of efficiency, economic productivity, but also cultural aspiration (Floridi 2002).

Although aspiration may emerge as a significant factor within a variety of development interventions, the high profile and visibility of ICT for education projects in Africa cause the associated issues to be amplified within this setting. Thus, the place of technology as a symbol both of modernity and overall notions of success provides a particularly pertinent lens through which to explore the implications of aspiration. The aim here is not to position aspiration as either an inherently positive or negative influence within development, but instead to reflect back upon the specific context of ICT for education initiatives in Africa, showing how an understanding of aspiration is needed in order to undertake effective monitoring, evaluation and impact assessment.

8.1.2 Overview

This chapter now reviews the benefits of aspiration, with analysis from the fieldwork focusing on its potential to inspire children, increase attendance and raise the perceived value of education. It then focuses on the more complex implications of aspiration through one story from Zimbabwe, two case studies from Ethiopia and a series of reflections regarding the short lived impact, assumed value, inherent worth of technology, and different levels at which aspiration affects perceptions of technology. Following this is a case study of OLPC, exploring the way the behaviour of the organisation is shaped by an aspiration dominated worldview. The focus then shifts to assessing the implications for monitoring and evaluation of ICT for education within Africa in regard to participatory approaches, demand-led development, the private sector role and the widespread vision of modernity as progress. In closing, I

argue for an increasingly critical approach to ICT for education and its monitoring and evaluation, revisiting the potential role of effective pedagogy in instigating change.

8.2 Benefits of aspiration

The introduction of technology has clear potential to inspire both children and teachers, with associated positive implications for attendance, perceptions of education amongst the community, and shifting power relations (Hawkins 2002). Indeed, 'in strengthening the capacity to aspire, conceived as a cultural capacity, especially among the poor, the future-oriented logic of development could find a natural ally' (Appadurai 2004, p.59). The following analysis focuses on the implications of aspiration, highlighting examples from Malawi and Ethiopia regarding the positive impact of introducing technology as a result of its aspirational value.

8.2.1 Inspiring children

The children involved in the interventions in both Malawi and Ethiopia had an overall perception that it was important for them to understand how technology worked. As a result, introducing technology into their schools served to inspire them both specifically in their education and also regarding their worldview and future career aspirations. This was exemplified through recurring comments during focus groups, as recorded below from two students in Grade 7 in Menelik in Ethiopia (11/12/08):

> *'The world is really growing very fast. If we start using the computers now then when we grow up we won't have any trouble adjusting to the new technology.'*

> *'The laptops will help us in our future life to know what a computer looks like and how we can make it work with our hands. If I have to work on a big computer in the future then I know where to put my hands and how to type.'*

Children reported that they felt more inspired about school and were motivated by the introduction of the technology-based initiative (Zucker 2009). One teacher from Dzenza in Malawi noted in interview that, due to the widespread poverty in the area where the school was located, many of the children were not familiar with radio, television or any associated technology. Because of this, the introduction of the gadgets motivated the children (16/11/07):

> *'They were very excited, there were pupils from other classes who were trying to join my class, so that made my students very proud. Some of the Standard 5 pupils really wanted to go back to Standard 4 so that they could use the gadgets.'*

This sentiment was reiterated by the headmaster of Golgota in Malawi. He noted the impact that the proposed initiative had on the rural and marginalised school even prior to the introduction of the technology (28/09/07):

> *'Even now before the equipment is here we have many more children coming to school because they have heard that some technology is coming ... We will make very good use of it. We are a remote school – something like this initiative motivates the children.'*

Students in Malawi provided similar feedback confirming this perspective. In an initial focus group in Dzenza (03/10/07) one student from Standard 4 noted that the most significant difference caused by the gadgets was an increase in attentiveness:

> *'The gadgets are attractive to us – we have never seen them before and they will help us to be very attentive.'*

A Standard 3 student in Mtentera reported telling his parents, siblings and friends enthusiastically about the introduction of the gadgets (14/11/07):

> *'Yes I told my parents and they said thank you to those bringing the gadgets. We told our friends from other schools and they were admiring us for using something new. I also told my sister in secondary school and she wanted them!'*

Having observed the frequency with which participants anticipated that the introduction of technology would improve education, I questioned a variety of beneficiaries regarding the reasons why they thought technology inspires the children to such a degree and whether anything else would have had a similar effect on the children regardless of the educational content. The overarching response identified the primary motivating force as the 'newness' of the initiative and the fact that the children had not previously seen, touched or utilised such equipment. Alongside this was an indication that awareness of the longer term use-value of the devices also increased motivation. Students perceived technical literacy as significant for their future anticipated careers, noting the necessity of computing skills if they wanted to work abroad. Indeed, many future aspirations of the children were closely correlated in their mind with an ability to use the computer. This demonstrated the iconic status of the device, representing notions of progress and being emblematic of access to development. As three Grade 7 students in a focus group at Menelik responded (16/04/08):

> *'When I will be a teacher, I can use computer to get information.'*

> *'I think computer is useful to examine patients.'*

> *'To be a secretary I should learn computer.'*

In addition to the 'newness' appeal and general desire for technological literacy, children also commented on the specific benefits of the technology for their current education. This was exemplified in the response of one Standard 7 student in Malawi who, when asked what difference the technology might make to his life, responded (16/04/08):

> *'We want to be somebody in the future – these gadgets will help us because we will learn more lessons, we will learn more about AIDS and malaria.'*

The expectation that technology would improve education was not limited to the students only. Teachers also responded that the introduction of the technology had inspired them and increased their motivation. One teacher

from Golgota eagerly affirmed this, stating that the real significance for him in the initiative was the fact that (28/09/07):

> *'No one has given us this attention before.'*

Whilst it had been anticipated that the students would respond in this way, it was unexpected that the attention brought by the initiative would also constitute a motivating factor for the teachers. Numerous teachers in rural Malawian schools commented that that they were de-motivated, primarily because they felt isolated and did not receive visits from their PEA. The introduction of the technology brought focus onto the school and thus served also to validate the teachers in their efforts. Thus it may be that the attention given to the teachers through a new initiative is more valuable than the actual ICT, with what it represents and facilitates more significant than its substance (Wenning 2002, Simon 2003).

8.2.2 Increase school attendance

A specific consequence of increased motivation from the introduction of technology was a significant increase in school attendance. In Malawi this was most visible in the rural, marginalised regions and became less significant in the schools closer to urban centres (EFA 2010). Prior to the introduction of the technology, the headmaster of Gambula predicted this as a likely impact (28/09/08):

> *'This intervention will help with stopping absenteeism – the children will come to school now because they are enthusiastic.'*

Once the programme was more established, the prediction of the headmaster was confirmed by students and teachers. One Standard 4 student from Dzenza attributed his return to school to the introduction of the gadgets (04/03/08):

> *'Before the gadgets more pupils were absenting themselves from classes but now we encourage our fellow pupils to come to school and tell them, today if you absent yourself, you will*

> *miss using the gadgets. I used to absent myself 50% of the time*
> *before the gadgets came, now I come to school every day.'*

This was confirmed by a teacher from Mwatibu who noted that children from Standard 3 and 4 were previously often absent from school because they preferred playing, whereas now they attended school on the days they knew they would have opportunity to use the devices. Although the teachers welcomed this change, they also noted that the increased class sizes created new challenges (Oketch and Rolleston 2007, EFA 2005) (12/11/07):

> *'The number of pupils have increased. They were lazy and*
> *uninterested without the gadgets ... In Standard 4 there are*
> *now an extra 15 children attending and in Standard 3 there*
> *are an extra 40 attending. We are very happy that they have*
> *come back ... but it does make it more difficult for us because*
> *there are even more children.'*

It was impossible to quantify the exact increase in attendance in the Malawi test schools due to the incomplete school records. Despite this, teachers were keen to estimate the changes in their attendance figures. A Standard 3 teacher from Dzenza (16/11/07) explained:

> *'In my class there are 79 students enrolled, but every day*
> *[before the gadgets] there was about 25-35 students attending.*
> *Now it has gone up to 66-65 every day and we know it is due*
> *to these gadgets.'*

The same was reported in Standard 4, where teachers noted that in one class with 114 students enrolled, the initiative had caused daily attendance to rise from 70 to 105 students. This was also confirmed in generic observations from other schools, such as in Mbinzi, where the teachers estimated that daily attendance had increased from 70% to 90% (15/11/07).

The same sentiment was expressed from within the MoEST in Malawi regarding the effect of the programme in countering absenteeism. In the final stage of the fieldwork Matilda Gladson Kabuye, an official from the MoEST, explained the reason for the disparity between attendance rates in Standard 1

and 2 compared to Standard 3 and 4. When a child is the age for Standard 1 and 2 (25/02/08):

> *'The child is a nuisance at home and so they get sent to school – so the enrolment is high. But by the time the child is Standard 4 then they have become useful at home and so the parents say, you should stay at home and do some chores, go to school tomorrow, today you can draw some water... So that is why dropout rates go up a lot ... But these gadgets help kids to stay on at the end of the day – because they want to.'*

8.2.3 Parent and community perceptions

The rise in student attendance at the project schools was linked by many participants to the way that the introduction of technology altered the perception of school-based education amongst the parents and wider community. The impact that the technology had on increasing the perceived value of education within these two groups was witnessed in both Malawi and Ethiopia. A reason for this was explained by an anonymous member of the research team in Ethiopia, following focus groups in Rema (22/04/08):

> *'Parents will be happy if the children are using the laptops, even if they don't know what they are doing. Involvement of the parents in the education of their kids will be increased ... Having the laptop will encourage the family to send the children to school – it is seen as a good way of getting knowledge. The parents hope that they will get more new things in the future. Their future will be brighter.'*

As a result, parents persuaded their children to attend school more than they had prior to the introduction of the technology. One Standard 4 student from Dzenza in Malawi explained that her parents had instructed her (04/03/08):

> *'You have to work hard and make sure you do not run away from lessons when you are using the computer.'*

The same student noted that whereas previously her parents kept her at home to assist with domestic chores, since the introduction of the technology they had encouraged her to attend school every day. This indicated a shift in the parental mindset: due to the introduction of the technology they prioritised sending their children to school in preference to completing household chores. This shift was reiterated at a national level by Kabuye who noted in an interview that (15/11/07):

> 'To begin with it wasn't easy to see how ICT could help in a situation where we didn't have teachers. But the gadgets mean that the parents are happier for their children to come to school. The priority of the Ministry of Education is raising awareness of the importance of education – it is currently low across the country and this initiative helps to raise it.'

In examining the reasons behind this, it is significant to note the perspective of teachers regarding the parental shift. Whereas previously the parents would be happy to allow their child to play, visit the market or run tasks and errands, a teacher from Dzenza observed that they were now compelled to send them to school because (04/03/08):

> 'Not one parent can allow their child to be behind now we have the gadgets – technology has reached us here.'

Technology increased the value placed on education because it symbolised the future children and parents aspired to and was perceived as a key tool for ensuring they realised it. Alongside this the participants saw the technology as an indication that the community was now participating, through this initiative, in what was considered to constitute the developed world (Pal *et al.* 2008).

8.3 Implications of aspiration

Having considered these three positive effects of aspiration within ICT for education programmes, I now turn to focus on the more complex and challenging implications. This begins with a short story from Zimbabwe and

two case studies from Ethiopia. It then deals with the issues of short-lived impact, assumed value, and inherent worth of such initiatives before reflecting on the different levels at which technology affects aspiration.

8.3.1 Computers in the village

At the InWent workshop for eLearning in Zschortau, Unami Mpofu, a consultant and trainer, recounted the following story regarding the way in which introducing computers into schools affected community relationships in her home country of Zimbabwe (19/02/08):

> *'It is like this with my people in Zimbabwe ... All the women from the village go down to the river to collect water – one mother says to the others "my child is learning with a computer at school". Suddenly, because that child is the only one, the other mothers do not know how to respond and it kills the community spirit. Or if you have a rural cooperative for a vegetable garden in which the women all work together - one mother says "my child is working on a computer at school" and again you kill the community spirit. The thing is that it kills the community spirit – but no one will be able to recognise what has killed it. But the issue is that one child is getting better education ... The answer is not therefore less computers – it is more – but it needs to be done with a broad based approach – it needs to be looked at through the community leaders.'*

Mpofu went on to explain how such initiatives revolve around perceptions of progress. Parents assume that their child will be better educated if they get access to technology, giving them an advantage over other children. Similarly, the introduction of technology serves to improve the reputation of the school, meaning that the following year enrolment rates will be higher and all the parents in the local community will want their children to attend that school because it has a computer.

8.3.2 Plasma teachers

The Ethiopia SchoolNet programme is one component within a plan to develop the digital infrastructure of the country through the national telecom operator, the Ethiopian Telecommunications Corporation *(The Guardian* 4 August 2005). It forms a central part of the Ethiopian National E-education Initiative (ENEDI) which is 'aimed at facilitating the deployment and the exploitation of ICTs to facilitate, teaching and learning processes within the Ethiopian school system' (MoCB 2006 p.185).

The aim of this programme, as previously mentioned in section 4.3.3, is to provide education through televisions for each secondary school in the country. As Hare (2007 p.5) explains, 'classrooms in schools are equipped with plasma screens and receive lessons via video broadcast for eight hours a day by satellite TV with content from the Educational Media Agency'. The decision to broadcast lessons directly into the classrooms was taken in the light of the challenges many schools faced in relation to teacher quality and class sizes. The programme operates as a satellite based network designed to link schools together and access the Internet through a download-only VSAT satellite connection (EICTDA 2005).

Despite the impetus surrounding deployment, the programme has encountered widespread criticism since its introduction in 2005. Indeed, senior advisors from some bilateral donors had been highly critical of the programme even before its introduction (Unwin *pers. comm.* 2009). The sustained criticism surrounding the programme forced Cisco Systems, previously a significant contractor for Ethiopian Telecommunications Corporation, to withdraw, leaving Chinese companies to fill the gap. The government insisted that a pilot project for the introduction of the plasma screens was unnecessary and its insistence on an immediate national role out was, according to an anonymous source (25/04/08), the point at which the World Bank also pulled out from the programme:

> *'I spoke with a man from the World Bank regarding the reason SchoolNet was rushed out so quickly. He said that it was because of the forthcoming election [in 2005]. It was seen*

as a good way to communicate with people all around the country – especially through the civics lesson ... It was propaganda. One of the stated aims of the education system is to "Develop Good Citizens". It is unusual for this to be an explicit goal within a national education mandate – other countries would frame it differently. There is a political angle.'

This political angle alluded to by the anonymous source was not financial motivation but rather cultural force. He considered that the driving force behind the initiative was the national self-perception of being an un-colonised country that served as an example for Africa to follow. Linked to this is the government aspiration for political control, with the promotion of government endorsed civics lessons through ICT an ideal opportunity to gain political support (Gagliardone 2005). The same source noted that utilising technology for the purposes of gaining political control is not uncommon in Ethiopia (25/04/08):

'We talk a lot about educational philosophy but that is not what they were thinking about ... There is a long tradition of communication and technology being associated with control in Ethiopia. In 1893 Menelik introduced the first telephone line – with the aim of having been information regarding his empire and thus greater control over it.'

The plasma screen case study demonstrates one way in which an ICT for education programme can become blurred with a more politically driven agenda. As stated in *The Guardian* (4 August 2005 p.1) 'Ethiopia's IT programme is an extreme example of the aspiration of several African countries to leap out of their quagmire of decaying public services with the help of IT'. Recognition of the position of ICT as both a political and economic tool is significant in enabling effective monitoring and evaluation to take place, as explored in section 6.3 regarding motivation for partnership. The educational outcomes that a researcher anticipates as the primary measure of programme success may in fact be superseded by political aspirations, sometimes explicit and other times imperceptible without

rigorous investigation. As demonstrated through the example of the Ethiopian SchoolNet, large-scale ICT for education programmes are rarely motivated solely by educational objectives (Krstic 2008, Kraemer *et al.* 2009). Recent experience in my own fieldwork, combined with the stories of other programmes in Africa (Farrell *et al.* 2007), would suggest that some form of political agenda is a ubiquitous underlying motivation in such large-scale ICT for education programmes.

8.3.3 Unfulfilled delivery

Rema is a rural primary school situated 300km from Addis Ababa, selected as one of the five to receive laptops in the initial stage of the XO 5000 programme. Our research team visited the school in April 2008 spending time training teachers and talking with students, teachers and the headmaster. The headmaster was asked how he felt when the school was selected (21/04/08):

> *'Personally I felt happiness. The laptop has many advantages for both the teachers and students. Teachers are very excited because they are going to be included in this new ICT program. Children like new things by nature so this will motivate them.'*

He also noted that parents were happy at the prospect of the new programme and were positive about learning with technology. There was widespread scepticism expressed in the school regarding the likelihood of the laptops ever being deployed, but a unanimous verdict that if they were, it would be a good opportunity for the children and would motivate the whole community.

During the initial visit the ECBP team promised the headmaster that they would receive one thousand laptops for the children of the school. However, following this promise to the school there was a series of complications that resulted in Rema becoming increasingly marginalised from the programme. The primary reason for this marginalisation was the appointment of a new senior politician with overall responsibility for the XO 5000 programme in Ethiopia. Over a period of six months after the initial visit it became

increasingly apparent that Rema was unlikely in fact to receive any laptops because the political objectives of the programme had altered. The consignment of 1000 XOs was reallocated to another more politically strategic school in a region where the politician responsible had explicit personal interests. The aspiration surrounding the expectation of the technology had a temporary positive motivational impact on the school. However, this was countered and overridden by the aspiration of the politician who, having noted the potential personal benefit to be gained from the laptop distribution, diverted them to a more strategically positioned school. Now two years after the proposed deployment the story remains unfinished: there may be renewed potential for Rema to receive laptops, but deployment yet to be confirmed.

8.3.4 Short lived impact

The probable short-lived nature of the aspiration-induced increase in attendance from the introduction of the technology was demonstrated in interactions with stakeholders in the schools in both Malawi and Ethiopia. The complexity of temporary enthusiasm resulting from introducing technology is a long recognised issue and 'the enthusiasm generated by the project may be the first challenge schools will have to deal with' (Schware and Jaramillo 1998 p.31). This was demonstrated in Malawi soon after the initiative began with teachers reporting a spike in attendance on those days when the children knew they would be using the devices. As a teacher from Chingombe school (13/11/07) commented:

> *'Since the children heard that you were coming to school tomorrow and we would be using the gadgets, more children have come. 9 children who have not come to school for a week are here today because we are using the gadgets and showing you.'*

This probable sporadic and short-lived nature of the impact from technology was also reflected in the teacher perspective. This was particularly apparent in the shift from what people perceived and imagined the technology to signify at the introduction of the initiative, and how they perceived it after six

months. Thus the aspiration towards the idea of the technology does not necessarily translate into sustained eagerness to use technology: the rhetoric is somewhat removed from the reality.

8.3.5 Assumed value of technology

The default, although not universal, mindset encountered was that technology was something previously unattainable that is intrinsically good and thus should be desired enthusiastically (Battelle 2005, Sunstein 2006). This perspective defines much ICT for education activity and is in direct contrast to dominant Western philosophical perspectives on the role of technology within the development of society (section 2.3.3) (Feenberg 1999, Vogel 1995). Indeed, warnings surrounding the technological society and its associated breakdowns (Marcuse 1964, McLuhan 1964, Ellul 1964) would be considered anathema within the mindset of most ICT for education programme beneficiaries.

The practical outworking of this mentality was demonstrated through comments from the two Standard 4 students in Dzenza (16/11/07) who reported to the research team what their parents had told them regarding the devices:

> *'I told my mother and she said you must use these gadgets because these things are good and important.'*
>
> *'I told my father and he said you have to use them and follow what it says.'*

The perspective of the parents in Malawi as reported by their children links to an observation in Kuriyan and Kitner's study (2009 p.7), where they noted similarly that whilst participants 'couldn't necessarily articulate what the benefit of computers brings to them' they still clearly 'associated it with modernity and advancement'.

An anonymous a member of the ECBP team explained how the widespread positive attitude contributed to the marginalising of monitoring and

evaluation and sustained an overly optimistic perception of the programme (08/04/08):

> *'We want the kids to have new stuff – so don't mind if there is not any educational benefit. Those in the private schools have a chance already – I want the poor children to have a fair chance. This programme is a window for them – we have to come up with good ideas for them to have a chance.'*

It was emphasised that providing laptops to financially disadvantaged students communicates to them that they have value, building their self-esteem because people demonstrate faith in their ability to take care of the devices.

8.3.6 Inherent worth of technology

The perceived inherent good of technology (Pal 2008) was again demonstrated through conversations at the Zschortau workshop with ICT for education specialists from Tanzania and Kenya. Dennis Mazali explained how this mentality contributed to the marginalising of monitoring and evaluation within ICT for education (18/02/08):

> *'Computers are a syndrome … you start talking about ICT and people just ask, how many computers are you going to give us? These things marginalise evaluation and focus people on hardware – this takes people away from the real issues. Talking to you is actually the first time I have heard of people wanting to evaluate ICT for education … People are starting lots of projects at the moment and do not have the time to think about evaluation.'*

This was reiterated in conversation with Esther Wachira, Senior Programme Officer for GeSCI in Kenya as she reflected on the reasons why monitoring and evaluation within ICT for education receive inadequate attention (18/02/08):

> *'What we're doing is exciting, there are so many positives and enthusiasm that you overshadow the negatives, you don't take*

time to figure out what we are missing, what we could have done differently. So we don't think too much about the why – we don't think about objectives.'

The two quotations demonstrate how the widespread focus on hardware and generic enthusiasm for technology combine to marginalise monitoring, evaluation and introspection. The devices represent a connection to a world previously inaccessible that people desire to be part of. The widespread assumption was that 'of course' this intervention constitutes a positive initiative because it is synonymous with progress (Pal 2008).

8.3.7 Multi-layered implications of aspiration

Ostar Chagamba, coordinating PEA for Zomba, accompanied me to a school in Malawi where the gadgets had recently been introduced. On our departure I enquired why technology serves to motivate people so much. His response demonstrated how the enthusiasm for technology affects both the individual and national mentality (05/03/08):

'Here in Malawi we are always after new things, new technology – nobody would like to remain behind, we always like to see new things, to be told about new things, everybody likes to develop – so when we see new things coming in we are much interested because we know we will learn from these things … In our country, people always want to develop and not always remain at the same place – people want to go higher and higher … In this part of the world we copy from the Western people.'

This demonstrates an awareness of difference, a desire to connect, and the perception that technology constitutes the bridge to a desired future. Linked to this is the potential for increased social status as a result of the access to technology. In Malawi there was a widespread notion that the gadgets represented progress and that this progress was more important than any educational benefit that they might have. It was considered that they were a

symbol of something good that Malawi had not had access to previously but was now keen to embrace (Pal *et al.* 2008).

This mindset was apparent not just with local programme beneficiaries but also within the political sphere as part of a national consciousness. The Malawi 2020 Vision Statement notes that the nation aspires to be a 'technologically driven middle income country' (Government of Malawi 2006 p.1). If the populous of a nation have a shared aspiration for a more technological society then it is highly likely that the realisation of this becomes a key political objective. This was apparent during the fieldwork in Malawi, where a general election was due to be held in the following year. Various Members of Parliament were keen to receive the devices from us in order to distribute them to one of the schools within their constituency. There was strong association in the minds of the incumbent Members of Parliament between distributing technology to schools and their improved chances of re-election (section 6.3.3).

Technology also has political impact at a more profound level than simply the re-election aspirations of individual politicians. There is an overarching aspiration towards the realisation of an increasingly technological society, as indicator of success, significance and as a perceived catalyst in pursuit of economic growth (Wainwright 2008). Indeed, this focus on digital technology represents something of a shared psyche amongst many current leading African politicians. As Mutume (2006 p.14) states, 'while Africa's post-independence leaders dreamed of linking their countries through road and rail networks, today's leaders are on the cusp of making their own dream come true – connecting African countries with each other and the rest of the world through a high-speed telecommunications cable'. The point of interest is the way in which the pursuit of digital technology is presented as the modern equivalent of previous large-scale aspirational development programmes, using the aspirational nature of ICT within education as a political tool for achieving what the electorate consider to constitute progress (Simon 2007).

Identifying the power and politics within technology and the impact of aspiration within technology is therefore of central importance. Indeed, 'whether by virtue of their presence or their absence – or indeed the specific nature of the presence – ICTs have a "politics" and these politics affect everyone' (Mansell 2005 p.84). The pertinent challenge is therefore to 'understand the politics of today's ICTs' (Mansell 2005 p.85), recognising their position within a global narrative heavily influenced by conceptions of modernity, capitalism and consumption as all indicative of development (Wainwright 2008).

There are ideological and practical parallels between the current optimism surrounding ICT for education and previous enthusiasm for the large, infrastructure-based, development programmes of the 1960s and 1970s. Indeed, the bold approach to development that provoked such a backlash through the rise of critical development theory (Simon 2006, Simon 2007, Wainwright 2008) is the same ethos that is often witnessed in ICT for education initiatives today. It is not unlikely that some current, large scale technology in education projects will be assessed in hindsight to have been the industrial 'large dam' equivalent of the early 21st century. Simon (2003) notes that at their heyday, modernisation-as-development projects such as large dams, power stations, hard industry, airports and harbours were constructed with little regard for their impacts on human and environmental well being. One can see substantive similarities with the uncritical nature of current major digital technology programmes, such as OLPC or the NEPAD eSchools initiative, exhibiting familiar traits large-scale donor funding and political backing, alongside limited foresight and prospect for sustainability. There have been critical voices expressing such sentiments since the inception of the projects (Unwin 2009), however they continue regardless, often due to the underlying financial, political and ideological drivers.

In the light of this, Appadurai's (2004) assertion that the ability to aspire is an inherent good because it is synonymous with the ability to make things happen seems to be misplaced. Aspiration does not necessarily translate into an increased ability to instigate change. In fact, within the context of ICT, the

aspiration could be viewed as potentially delusional because the symbol enables people to believe that they are connecting with the development they desire, without necessarily understanding the underlying substance that sustains it.

8.4 OLPC: a case study in the impact of aspiration

8.4.1 Introduction

Having explained the issues surrounding aspiration, I now ground my analysis in a detailed examination of the implementation of OLPC in Ethiopia. The ethos of OLPC provides a lens through which to assess the effect that aspiration may have on the worldview, self-perception and practical engagement of an organisation. The purpose of the example is to demonstrate how aspiration towards an objective, combined with confidence in its attainability, can lead swiftly to marginalising reflection, self-criticism and ultimately monitoring and evaluation.

OLPC is the non-profit association that develops, promotes and distributes the XO laptop, also commonly and somewhat misleadingly termed the $100 laptop (http://www.laptop.org accessed 25/06/09). Significant levels of media attention surrounded the launch and subsequent development of the XO, due both to the innovative nature of the concept and the effective global publicising from Nicholas Negroponte, founder of OLPC and founder and Chairman Emeritus of the Media Lab at MIT (Krstic 2008, Vota 2009, Madden 2009). Despite a failure to reach initial projected sale targets, the programme has been credited with catalysing the proliferation of low-cost computing options for the developing world (Pal *et al.* 2009) and is the most famous of the many similar options now available (Trucano 2008). The machine is currently being deployed in a variety of countries including Uruguay, the first country to embark upon a national roll-out (Flores and Hourcade 2009, Nugroho and Lonsdale 2009), Nepal, Peru, Rwanda and Ethiopia (Hollow 2009a).

8.4.2 The OLPC approach

Negroponte's aspirational vision for a globally applicable technology solution for education has prompted optimistic projections for XO deployment. In a public lecture in December 2007 he expressed the anticipated global growth rate for 2008 (Negroponte 2007), stating that:

> *'By next year [2008] we hope to hit a million a month ... world production today, everyone combined is 5 million a month ... I'm standing here telling you that sometime next year we are going to make 20% of world production – if we do that there are going to be a lot of lucky kids out there.'*

Within the arena of technology for education, especially when projecting 20% of world production, there is a significant and clear potential for economic and political motivation. However, as Negroponte (2008) stated in the lecture, OLPC are somewhat removed from this as 'when you're a non profit, you look at children as a mission, not as a market'. However, whilst obviating oneself from some of the complexities of the market, through conceptualising 'children as a mission' OLPC are adopting an ideology which may be an equally problematic foundation (Kraemer *et al.* 2009). For this organisation, an assurance regarding the motivational purity of their concept, combined with confidence in the power of technological innovation, leads naturally to reluctance to engage with constructive criticism and more specifically any form of independent monitoring, evaluation and impact assessment (Unwin 2010). This is the issue I now turn to within the context of OLPC and Ethiopia.

8.4.3 Interaction with OLPC

Following my fieldwork in Ethiopia, I presented a paper at the Africa Gathering (http://www.africagathering.org accessed 25/06/09) regarding the successes and challenges facing the XO 5000 programme (video and comments available from http://www.olpcnews.com/countries/ethiopia/xo_laptop_banned_from_class.html accessed 25/06/09). At the same event, I gave an interview to a

journalist whose article was published in various online magazines and the Ethiopian press (http://www.scidev.net/en/news/study-criticises-laptops-for-children-scheme.html accessed 25/06/09).

The dialogue that occurred in response to this presentation and publication was indicative of an aspiration-driven mindset. This was first demonstrated by a Harvard professor of International Development, coincidentally also a board member of OLPC, who emailed Nicolas Negroponte in response to my critique. I received his email indirectly following a string of correspondence including OLPC, the Harvard professor, the World Bank and the Government of Ethiopia. He stated (07/06/09):

> *'This is coming from the UK, the heartland of technological obscurantism when it comes to development. They seem to have a congenital desire to see the perpetuation of technological inequity as amply shown in their crusade to suppress the use transgenic crops in African agriculture. I tell Nicholas Negroponte to listen more to Sibelius: Pay no attention to critics; no statue has ever been erected in honor of a critic.'*

Following this, an email was received directly from OLPC (12/06/09) suggesting corruption on my part and insinuating that I had been remunerated as reward for my negative comments made to the journalist. The point of interest is the way the aspiration or mission-based mindset caused the dialogue to be framed within certain parameters. The argument centred on my supposed attempts to 'jeopardize the efforts' of OLPC in order actively to prevent them from obtaining additional World Bank funding. As I was informed by Matt Keller, OLPC Director of Europe, Middle East and Africa (12/06/09):

> *'Presumably there will be other studies that get at the root of what OLPC really is that will balance what its critics say. In the meantime, we will continue to work for a world where children – no matter how poor or remote - will use technology to construct and create, to access the world's body of*

> *knowledge, connect with children from places previously*
> *unknown, and engage in education in such a way that will*
> *carry their interest in learning throughout the entirety of their*
> *lives.'*

In assuming the position of advocate for the 'poor African child', it is natural to dismiss anyone who suggests an alternative perspective. Within such an idealised narrative, any critique is considered a hurdle or barrier that must be overcome in order to remain faithful to the initial quest (Krstic 2008). Rather than engage with critical reflection and research that could form a valuable addition to constructive dialogue surrounding this complex initiative, such contributions are simply dismissed as undermining the mission. Such responses demonstrate the overall initiative ethos and translate into practical decisions taken in three deployment countries of Ethiopia, Rwanda and Uruguay.

8.4.4 OLPC in Ethiopia

The OLPC ethos translates into practical decisions regarding appropriate deployment. This was exemplified by the XO 5000 programme in Ethiopia, when OLPC advised that 1 laptop be reserved for every 100 deployed, totalling 50 back-up machines for the programme, in case there were any that were faulty and needed replacing. This suggests somewhat naïve confidence in the quality of the XO (Krstic 2008), especially considering the 25% failure rate over a three month period in one early trial in Ethiopia (Everts *et al.* 2008). The confident optimism promoted by OLPC resonates with the aspirations of prospective government clients and is palatable for leaders eager to buy into the rhetoric of progress and high visibility technological advancement (Simon 2003, Wainwright 2008).

I spoke to an advisor within the MoE regarding his perspective on the rationale for the initiative (28/04/08). He explained:

> *'With OLPC the emphasis is definitely on the technology rather*
> *than the education. It is the same as happened with the*
> *plasmas. It looks good, it is sexy and it makes us look good*

and powerful if we have OLPC here in Ethiopia. Of course there is no opportunity cost that has been thought through or anything like that. No critical thinking as to whether it is the best use of resources.'

Again, this demonstrates an emphasis on aspiration, power and political agendas rather than a critical assessment of educational sustainability. Figure 8.1 is constructed from the IMF World Economic Outlook (2008), CIA World Fact Book (2009) and EFA Global Monitoring Report (2009) and demonstrates comparative figures from Ethiopia, Rwanda and Uruguay. It is important to note that the figures for cost of laptop as proportion of GDP per capita should not be calculated on the basis of purchasing power parity, as is common, but as a direct figure because the laptops are a fixed-price import.

Country	GDP Total ($ US billion)	GDP per capita (Int. dollar) based on PPP	GDP per capita ($ US)	Pop. (million)	% of pop. Living on less than $ US 1 per day	% of pop. Living on less than $ US 2 per day	Number of primary school age children	Net Enrol. Rate (%)	Spend on Ed. (all sectors) as % of GDP	Total spend on Ed. ($ US million)	Cost of 1 XO laptop ($170) as % of GDP per capita
Ethiopia	25.1	871.1	316.8	79.2	23	78	13,142,000	71	6	1500	53.7
Rwanda	4	953.9	419.9	9.6	60	88	1,443,000	79	3.8	152	40.5
Uruguay	28.4	12,707.2	8,859.7	3.2	0	6	318,000	100	2.9	824	1.9

Figure 8.1: Comparative figures: Ethiopia, Rwanda and Uruguay

If every child in Ethiopia who is enrolled in primary education received a laptop the total basic cost across the country would be $1,586,239,400 (column 7 x column 8 x 170). This is the cost of one device per primary school child without associated costs of distribution, training and maintenance. Once incorporated, this would increase the total cost of ownership by a minimum of 50%, bringing the initial investment to $2,379,359,100. My calculated cost is comparable with the $2,500,000,000 that ECBP estimate would be required for a national one-per-child deployment (ECBP 2008). If each child were to return the laptop on either completing or dropping out from primary school, and assuming, although naïvely ambitious in this environment, that the anticipated XO lifespan of five years is accurate, then this would require a repeated annual investment, assuming all variables remain constant, after five years and then every year subsequently, of $297,419,888 (TCO of each laptop multiplied by 1/8th of national enrolment). It should also be noted that these figures would again increase considerably if the 3.7 million children of primary school age who are currently out of school were also included (EFA 2010).

These broad brush calculations indicate that to provide every primary school child currently enrolled in school with a laptop would cost, in the first year, 159% ($2,379,359,100 as a percentage of $1,500,500,000) of the total national education budget. This would, of course, require all budgetary allocations to secondary and tertiary education to be ignored for the year. The primary education budget for Ethiopia is $1,025,000,000, so purchasing laptops would constitute 214% of this total. In order to provide a laptop for every child in primary school it would be necessary to spend no money on teacher salaries, textbooks, electricity, infrastructure or any other educational resources for 26 months.

Proponents of OLPC downplay the significance of such figures by explaining that the intention is not to siphon money from an allocated budget but to apply for external, additional funds (Rolf *pers. comm.* 09/12/08). However, this is unlikely to materialise as many donors are suspicious of the

programme efficacy (Anon, advisor to MoE *pers. comm.* 28/04/08) and are already committed to contributing approximately $1,000,000,000 to primary education in Ethiopia over the next six years. Were such considerable additional funds available then they could have more efficient impact upon education by being utilised elsewhere. In order to illustrate this and explain his scepticism regarding the laptops, the advisor to the MoE constructed a comparison with textbook provision (28/04/08):

> *'At present the average textbook in Ethiopia costs 4-5 Birr (50 cents). 12.6 million children are currently enrolled in primary school (Grade 1-8) and these children study 6 subjects. Taking the unit price of a textbook to be 5 Birr, it would cost $37.8 million to provide every child in Ethiopia enrolled in primary school with a new textbook in every subject that they take. Assuming, for simplicity, that textbooks last for 2.5 years and given that the laptops will need to be replaced every 5 years, providing textbooks over a 5 year period would cost $128.4 million ... This is an important point since Thomas Rolf told me that within 5 years the investment in OLPC would be cheaper than textbooks.'*

This calculation demonstrates that providing every child in primary school with a textbook for every subject would require 2.9% of the total required for every child to be presented with a laptop.

8.4.5 Rwanda and Uruguay

Considering the example of XO laptops in other countries provides context for the overall programme rationale. In examining OLPC in Rwanda one becomes aware of the tension between the visionary rhetoric of the President, Paul Kagame, concerning OLPC, and the reality of the national economic and educational context. The government in Rwanda are aware of the difficulty in funding a national roll-out to the 1.1 million children enrolled in primary school and so have announced that some parents will be expected to contribute 50% towards the cost of each laptop. This is the proposed strategy for funding deployment in a nation where an estimated 88% of the

population live on less than \$2 per day and there is one of the highest birth rates in Africa with each woman bearing an average of 5.4 children (UNDP 2009a). The dependency of the initiative upon parental funding within a context of large families and widespread relative poverty demonstrates the extent of the disparity between the aspiration and the reality of OLPC. The suggestion for significant parental contributions to finance this experiment may result in the initiative constituting not only a poor allocation of resources but also a contributory factor towards the anti-development of the nation (Unwin 2010).

Likewise, in considering the case of Uruguay, it is apparent how the technophile vision of OLPC workers, funders and general proponents propels their desire for global deployment and causes them to promote anecdotal success stories regarding the XO. These anecdotes are used to justify anticipated outcomes on the assumption that what works with children in one country will be transferrable and universally replicable. However, scant regard is given to the different economic, socio-cultural, political and historical contexts within which the laptops are being introduced (Kraemer *et al.* 2009).

It becomes easier to understand the damaging implications of OLPC assuming the transferability of their deployment and implementation models between different countries by examining background statistics in Uruguay and comparing them with Rwanda and Ethiopia. First, Uruguay is a middle income country, with a GDP per capita of \$8,859 (Figure 8.1). The basic \$170 cost of each XO amounts to 1.9% of GDP per capita, compared with 53.7% in Ethiopia and 40.5% in Rwanda. In addition to the contrasting economic conditions, widespread electricity infrastructure and wireless broadband enable the XOs to be utilised more effectively. The capacity of Uruguay to utilise the laptops effectively is enhanced by the presence of a national network of volunteers who conduct training and maintenance (http://www.olpcnews.com/countries/uruguay accessed 30/06/09). These factors combine to make the educational potential of laptops in Uruguay far removed from that of Ethiopia or Rwanda. Despite this, once again, the

overriding aspiration for global applicability enables proponents to ignore the stark differences between countries and assume that what is feasible in one location is feasible and indeed desirable everywhere (Kipp 2009).

8.4.6 OLPC aspiration

Within an innovative sector of development work such as ICT for education it is possible to find meaning in the belief that one is on the verge of a paradigm shift, a revolutionary moment that will redefine the nature of education provision. A conviction regarding the need for reform is not inherently negative and may indeed be a significant motivating factor for a positive intervention. However, this becomes problematic when translated into a conviction that a 'magic bullet' has been discovered which legitimises a marginalising of critique and dismissal of alternative approaches (Krstic 2008). Final verdict on the efficacy of the OLPC initiative will become clearer in the future, with hindsight allowing a more holistic assessment of its impact (Wagner *et al.* 2005). It is irresponsible to promote blindly a new, enticing, and yet unproven programme if that requires significant budgetary reallocation, taking money away from teacher salaries and classroom construction (Unwin 2005a, 2010).

In certain arenas the technology-centred enthusiasm displayed by OLPC would be relatively harmless but within the context of a global initiative that is promoted in regions of extreme poverty this cannot be the case. Despite the ambiguity surrounding future outcomes, confident claims from proponents continue unabated, persuading governments to divert resources into a costly and unproven concept. It is the self assurance and presumed exemption of OLPC from established accountability mechanisms that is of greatest concern. The positive belief in innovation and creative change would be better harnessed if pursued within a framework of collaboration, engagement and recognition of the nuanced nature of education, where monitoring and evaluation was welcomed as part of enhancing critical reflection, and the initiative was incorporated within pre-existing government policies and programmes (Kozma 2007a, Nugroho and Lonsdale 2009, Leaning 2010).

However, as is now explored, the very reason why monitoring and evaluation are important is the same as that which causes them to be often marginalised in the areas where needed most.

8.5 Conscious reflection

In the light of the issues above, I now turn to the implications of these observations, case studies and field research experiences for monitoring and evaluation. The purpose is to assess the central issues that require conscious engagement and potential reconsideration as a result of the recognised significance of aspiration. This begins by reassessing conventional participatory research agendas, then addresses the role of the private sector and considers what happens when people buy into the dream of technology as progress, demonstrated through a case study of Kafulo school. Finally, it brings balance to the notion of homogenous aspiration, through examples of mixed responses to technology in education encountered in my fieldwork.

8.5.1 Participation and demand-led development

This section reflects upon how the pervasive nature of aspiration for technology requires us to rethink conceptions of what constitutes effective interventions and research in monitoring and evaluation of ICT for education. This involves recognising the limitations of promoting interventions that are largely, or indeed solely, demand-led and involve simplistic participatory approaches (see Mayes and de Freitas 2007). It should be noted at the outset that the following argument is as yet only tentative in the context of current ICT for education programmes in Africa. Most initiatives are yet to engage with the issue that I highlight as constituting a problematic solution. Indeed, a shift towards increasingly demand-led initiatives would constitute significant improvement on the current orthodoxy of supply-led and donor-driven agendas across the continent (Unwin 2009, Wagner 2009). The intention here is to identify some of the complexities stemming from a demand-led, participatory-based approach to monitoring and evaluation of ICT in education.

When working with a participatory, demand-led framework in ICT for education in a developing country context it is usual to ask a stakeholder what it is that they want for their project. They define their own needs and very often give answers such as 'we want computers'. Within the context of technological development, the computer has become a symbol of progress and aspiration (Pal 2008). The researcher may disagree with the needs assessment of the stakeholder and is therefore faced with the question of what is the appropriate response.

This issue was encountered repeatedly when operating in a participatory manner during my field research, and I anticipate that the conflicts experienced will become commonplace as the academic development community, with its associated participatory ethos, becomes increasingly engaged in the arena of monitoring and evaluating ICT for education. In bringing the challenges to light pre-emptively it may be possible to avoid some future negative excesses of pursuing a solely demand-led approach.

Alongside this, the observation is also significant in speaking against the current trend within much of the literature advocating for a transition beyond needs-based development on the grounds of its paternalistic nature. This problematic trend is exemplified by Heeks (2008 p.33), who suggests that it is more appropriate to 'think about wants – what the poor themselves actually demand and how their communities would use digital technologies if left to their own devices'. Despite the appeal of his suggestion, Karnani (2009 p.78) notes in contrast that the vulnerability of poverty and other associated factors means that it is not always 'appropriate to assume that the expressed preferences are truly in the self-interest of the poor'. Karnani (2009 p.80) demonstrates the inconsistency of promoting a solely wants-based approach to development through the example of alcohol, and the lessons can be transposed when considering ICT:

> 'Should the poor have the right to consume, and even abuse
> alcohol? Yes. Is it in their self interest to do so? Undoubtedly,
> no – at least at the levels many drink. Should companies have

the right to profit from sale of alcohol to the poor? Yes, but even in rich, capitalist economies the governments put some constraints on this right, such as 'sin taxes', restrictions on advertising, and sale to minors. Yet, in many developing countries, such constraints are sometimes missing; even when they do exist, they are poorly enforced, especially in the context of marketing alcohol to the poor.'

The pertinent point is the way a solely wants-based approach naïvely focuses overly on agency and ignores all external factors and influences. The implications of this are clear when considering the uninhibited advertising of technology in the developing world, enticing people to spend their disposable income on products which signify their status. This is falsely legitimised in the development arena through promoting increased consumption as a central facet of empowerment and, ultimately, development itself (Collier 2008, Prahalad 2004). It is difficult to ignore the clear corporate agenda in promoting such a notion.

The peculiar nature of ICT and the aspiration associated with it make the challenges of participatory research (Mohan 1999, Cooke and Kothari 2001) more acute and reveal some interesting limitations. The primary focus here is an exploration of the research and policy implications of conflicting aspirations, rather than issues of cultural awareness, local specificity, and cultural traditions as are often emphasised (Cousins and Earl 1995, Chambers 2005). Specifically, this involves utilising ICT as a lens through which to explore the challenges in conducting participatory research when there is a conflict in values and conceptions of progress between the participant and the researcher, the beneficiary and implementer.

Goulet (1983 p.618), writing in a previous generation, makes a striking observation regarding demand-driven initiatives, identifying 'a paradoxical fact: namely, that poor and powerless people often do not know exactly what they need'. Although some paternalistic outworkings of such sentiments are rightly criticised by more recent empowerment-based literature (Cooke and

Kothari 2001, Watson 2006, Wainwright 2008), it is worth noting that sometimes people are indeed not aware of their needs. Indeed, consumption patterns amongst the economic elite of the developed world indicate that increased resources do not necessarily equate to increased enlightenment regarding the nature of development and progress. Therefore, in contrast to Goulet (1983), I suggest that the defining issue is not the level of poverty or affluence but rather it is more closely linked to a lack of awareness, or a false consciousness (Marx 1867). Rather than noting that people are very often unaware of what they need, the pertinent point is to highlight the lack of awareness surrounding the consequences of pursuing those perceived needs.

Engaging with stakeholders, utilising indigenous knowledge, and listening to beneficiaries' hopes and desires does not become somehow less significant in the light of these observations. Instead, it is recognising that effective ICT for education initiatives cannot be based solely on these factors. They require an additional external perspective that can highlight wider technological debates, and the implications and limitations of alternative choices. On occasion, people do not entirely know what they want and if they do know what they want, then getting this may not actually help them get where they want to be going. Indeed, the actual use value of the device may be overlooked because it is considered valuable because of what it symbolises rather than what it enables.

My suggestion that promotes external guidance as a complement for local demand is unorthodox within the current academic development ethos based strongly around broadly positive post-colonial notions of self-determination (Mercer *et al.* 2003, Sen 1999). Observations from Malawi led me to conclude that, within the context of ICT for education, there are occasions when the intended beneficiaries are not in the best position to determine what constitutes an appropriate intervention, primarily because of the distorting impact of aspiration. In order to engage with this effectively it is necessary to dwell on the private sector interest in the sphere, which results in a wide range of ICT-based development 'products' being marketed intensively, driven by the desire to 'make progress', both individually and as a nation.

8.5.2 Private sector needs creation

The private sector has clear interest in expanding the use of ICT in all sectors across the developing world, including the provision of education. Indeed, as Unwin (2009 p.32) asserts, 'the dramatic expansion in the use of ICTs in the latter part of the 20th century was driven primarily by the technical interests of global capital, eager to expand both its labour productivity and its markets'. Although the primary focus of this chapter is beneficiary aspiration, it is important to note the close correlation between this and the market-based economic growth objectives of the private sector. Marketing of ICT is a significant factor in shaping the aspiration of individuals across both the developing and developed world, based upon a dual assumption. First is the assumption that investment in ICT is the most effective way to ensure economic growth and prosperity. Second, is the assumption that technology equates to progress and development. Consequently, rather than being viewed as one option amongst many, the role of technology in development becomes 'falsely understood as necessary' and adopts the position of ideological hegemony (Pippin 1995 p.46). This can permeate all aspects of society and the education sector is not immune, where the integration of ICT is promoted as the most effective way to ensure effective, progressive education and competitiveness within the knowledge economy.

In order effectively to monitor, evaluate and assess the impact of ICT for education initiatives it is therefore necessary to be conscious of the underlying private sector agendas seeking to shape individual and national aspiration towards technology. There is a long history of presenting technology as synonymous with progress and as a necessity for effective education, with Leinonen (2008 p.2) asserting that 'the hype around eLearning is a kind of classical example of creating needs'. However, there has been limited critique in this vein, with many commentators failing to problematise the role of the market within ICT for education, simply describing its role and thereby implicitly legitimising its activity (see Roy 2005, Heeks 2008). Such approaches exacerbate the effects of aspiration and

confuse the focus of the academic role which should not be on facilitating the spread of technology but rather ensuring that its distribution is more equitable. Central to this objective is offering effective assessment of ICT for education programmes. This requires conscious consideration of the agendas that seek to create needs and how they have impact upon individuals, their priorities and aspirations.

The potential complexities of private sector involvement in African ICT for education projects are exemplified by the much heralded NEPAD eSchools initiative (Farrell *et al.* 2007). This project required significant investment in a small number of pilot schools utilised as show cases for demonstrating the educational potential of technology. High visibility pilot studies of this nature can have a distorting influence on expectations of what is feasible because they usually consist of a small number of highly motivated and well resourced schools (Wagner *et al.* 2004). The motivation is to provide an attractive vision of what it is possible to achieve in optimum conditions and then promote the assumption that in addition to being technologically possible, the vision demonstrated is also beneficial and pedagogically necessary. As a result NEPAD eSchools is now being rolled out in several countries as a prescriptive model associated with progress and development which other schools are intended to aspire towards, and finance in the process of 'going to scale'.

Such initiatives constitute practical examples of the broader capitalist project which is dependent on constant market expansion and the perpetuating of consumerist logic (Bauman 2007) to promote an ideological hegemony (Fukuyama 2002). The extent of this hegemony and association with progress and modernity mean that products or commodities can easily become confused and even synonymous with development in ICT for education or any other sector. The conception in the mind of many beneficiaries that development and increased access to technology constitute one and the same thing is a significant achievement of those promoting the necessary uptake of digital technology. Once widespread aspiration exists for achieving a certain vision of technological progress then education becomes

merely another context within which this is pursued. Once again, effective monitoring, evaluation and impact assessment of ICT for education programmes within Africa is acutely dependent upon recognising the pervasive nature of this agenda. This highlights the necessity for promoting alternative uses for technology in education, demonstrating the liberal benefits from increased access to knowledge and thereby providing a critique of the inevitability of the current hegemony.

8.5.3 The dream of technology as progress

Aspiration for technology cannot be attributed solely to the influence of the private sector. The societal aspiration for technology is wider than simply the market and so in considering the issue of wider influences I begin by highlighting a disconnection between theory and practice.

There is considerable emphasis in the literature concerning the income generation potential from the rapid proliferation of mobile phones across regions of the developing world (Brewer 2005, Heeks 2008). However, despite a proliferation of anecdotes, it is conveniently ignored that, for the majority, use of technology is primarily provoked and driven by the desire for social connection and symbolic demonstration of an aspirational lifestyle rather than for catalysing micro-enterprise and economic growth. This is not inherently negative, but it should be acknowledged that the most significant impact of ICTs often relates to a desire for status symbols and the ability to connect (Parkinson 2005) rather than the economic catalyst that proponents would suggest. This demonstrates a disconnection between the analysts who assume that technology is a catalyst for local economic development, in contrast to the owners of the technology for whom its value is social and symbolic. Related outworking of this can be seen in any number of different contexts: street boys in Nairobi with headphones in their ears, not connected to any device which plays music but providing status through the appearance of technology; farmers in rural Malawi with mobile phones proudly displayed on a cord around their neck, rarely having credit to make a phone call but feeling that the symbol joins them to the modern world.

These examples make sense when framed within a wider development narrative. For many years, development interventions propagated a modernist approach (Simon 2003) and unsurprisingly this has had significant impact in shaping current widespread aspiration. As Ferguson (1999 p.14) acknowledges, 'the myth of modernisation (no less than any other myth) gives form to an understanding of the world, providing a set of categories and premises that continue to shape people's experiences and interpretations of their lives'. As a result, the vision of development as a linear track towards modernity, and its associated symbols of technology, becomes commonplace. Although development professionals may now be promoting an alternative logic (Wagner *et al.* 2004), that technology is valuable for what it facilitates rather than what it represents, the result of previous sustained interventions combined with private sector marketing ensures that the modernist logic is deeply engrained. Indeed, although some academics and NGOs may highlight alternative uses of technology (Hamilton and Feenberg 2003, Vogel 1995), the majority of financial power lies with those who actively seek, or implicitly subscribe to, the perpetuation of the current orthodoxy. Simon (2007 p.206) encountered this in Nigeria, where he notes that young people resent NGO-type interventions because they impede 'their own vision of local development, which is western-style modernisation ... what the youths claim to want is more modernisation-as-development, not less.'

The aspiration for modernisation is a primary motivation for many beneficiaries when engaging with ICT for development (Mercer 2006) and can be outworked through a mindset that Heeks (1999) terms 'technology fetishism'. In considering this, it is useful to draw on Marx's system of class-based subjugation, in which value is defined by categories of use or exchange (Wenning 2002). The use of technology fetishism is not a direct comparison with commodity fetishism because there is not the same direct attachment to labour (Marx 1867). Indeed, aspiration could be viewed as a third category in addition to use and exchange value. Even if without direct use or exchange value, an object may still be valued, or aspired to, as a representative symbol.

Commodity fetishism through aspiration for technology is therefore not inherently negative, but rather it marginalises the place of critical analysis, removing the possibility of imagining alternatives and thereby contributing to a false consciousness. Put simply, the acceptance of the capitalism-as-development vision represents a widespread illusion, or false consciousness, actively perpetuated by both internal and external influences (Easterly 2006, Wainwright 2008) and legitimising the avoidance of conventional accountability mechanisms, evaluation and good governance.

8.5.4 Case study: undercover computers in Kafulo

Effective monitoring and evaluating is dependent on conscious engagement with the factors identified above. This may lead to a significant disparity between what different parties consider to constitute an effective and appropriate development intervention. The visit of the research team in Malawi to Kafulo primary school served to demonstrate this issue in practice.

On arrival at the school (13/11/07) the research team were proudly directed to the designated computer lab: a former classroom containing ten desktop computers. The head teacher informed us that the computers had been donated by the Hunter Foundation six months ago, but that no-one had yet returned to train the teachers. One teacher directed me to one of the machines and explained that they could not make it work. Turning the computer around, I noticed that the cable to the monitor had fallen out, so I plugged it back in and began using the computer as normal. This initial incident served to demonstrate the futility of donating technology without providing the requisite basic training.

Photo 8.1: Computer lab at Kafulo primary school

On exploring the newly functioning computer and others in the lab, it became apparent that they had not been refurbished to the standards advised from established groups such as Computer Aid (http://www.computeraid.org/TechnicalSpecs.htm accessed 01/07/09). Indeed, nothing had been altered since they had departed from whatever company had previously owned them in Glasgow, with the machines virtually obsolete and without any appropriate educational content or software installed. The evidence in the lab demonstrated a reality somewhat removed from the stated philosophy of the Hunter Foundation, committing to invest 'capital and intellect into tackling the root causes of societal problems through holistic and systemic interventions' (http://www.thehunterfoundation.co.uk accessed 01/07/09). Indeed, this situation more closely represented the antithesis of a holistic and systemic intervention, conducted without evidence of appropriate foresight or any consequential thinking.

The absurdity of the situation was compounded by the fact that the defunct computer lab occupied a valuable learning space within an overcrowded school. The best classroom in the school had been commandeered in order to house the computers and thus all the children were barred from entering it. Whilst sitting in the computer lab reflecting on these things, I watched out of the window where new classrooms were being constructed nearby in order to deal with the lack of teaching space. I recorded my feelings in my research diary (13/11/07):

> *'We are in a country where the problem of the shortage of classrooms is only topped by the problem of idolising technology. So a valuable teaching space is left vacant to house these useless machines whilst 20 meters away there is a big school building project going on and I'm told that it is DFID funding new classrooms because the existing ones are too crowded!'*

This is one example from numerous similar situations repeated across the continent of computers being donated to schools without the necessary teacher training, both at college and in-service, being provided to support them (Unwin 2005a, Unwin 2009). Technological enthusiasts are keen to dismiss the necessity of teacher training, suggesting that it somehow misses the point (Negroponte 2008). They insist that official training serves to inhibit child-centred, discovery-based learning. There is some value in reassessing notions of effective training, as has been demonstrated through various innovative, non-formal schooling projects (Mitra 2003). However, despite the appealing anecdotes (Dangwal *et al.* 2006), a spontaneous journey towards technological literacy is the exception rather than the norm (Day and Greenwood 2009). Proponents are understandably keen to promulgate stories of how quickly certain teachers adapt to using technology but this is too often overstated. Many teachers, including those in Kafulo, had never touched a computer prior to the donation and were simply too frightened to begin exploring solely through their own initiative, independent of introductory training (Parkinson 2005).

The second observation from Kafulo relates to aspiration. My abiding memory from the school is the way in which, on arrival, the teachers guided us to the computer lab with considerable pride. Although they were unable to make use of any of the donated technology, and indeed were keeping it covered and assuming it was broken, they retained a clear sense of pride that the school in which they taught had a computer lab. This demonstrates the significance in the disparity between an imagined vision and the reality of use value. For these teachers the computer lab was a symbol of aspiration and a demonstration of their connection to development and modernity. Although the computer lab had none of the 'use value' anticipated by the donors, it was presented with pride because it represented something, enhancing self-worth for them their school and community (Pal 2009). The presence of a universal symbol of progress within their school enabled the teachers to feel connected to the developed world and thereby to the future. As noted by one teacher in Dzenza (04/03/08):

> *'Now we have the gadgets – technology has reached us here.'*

Undertaking effective monitoring, evaluation and impact assessment within such a context requires an awareness of the way in which such invisible motivations and mindsets influence participant perspectives on what is considered a worthwhile initiative.

8.5.5 Diverse perceptions of technology

It would be possible to interpret, from the discussion of this chapter thus far, that I encountered a homogenous aspiration for technology from participants. However, communities are rarely unified in their perspectives and although an aspiration for technology in education as emblematic of progress, development and modernity was encountered repeatedly through the fieldwork in Malawi and Ethiopia, it was by no means universal. This was exemplified well through a heated exchange between teachers in Atse Noad in Ethiopia (17/04/08) when asked, at the introduction of the initiative, if buying laptops constituted the most appropriate use of resources. The first teacher stated:

> *'As we are a part of globalization we have to use the product of new technology. So it is right that the laptop issue is given precedence than problem we are facing in the school.'*

But the second teacher contested this, suggesting that the school was facing more urgent priorities:

> *'I think we should take this chance and alleviate the problem of toilet in the school.'*

On the return visit eight months later, the deputy-headmaster at the same school was asked to consider what he would do if he could spend the money for the laptops on anything he could choose for the school (17/12/08):

> *'In my personal opinion, I would have used the money for building classrooms and especially more offices for the teachers and the administrative staff. This is more important than having laptops. And we need a gathering hall for the students. We have lots of clubs, 18 of them running here, and we need a place for them – the HIV club, the counselling club.'*

Alongside the occasionally expressed opinion that the resources could be used more effectively elsewhere was the variety of ways different generations of teachers responded to the technology. Prior to the introduction of the laptops, the headmaster of Aste Noad predicted that this would be the case (17/04/08):

> *'Some of the older teachers see it as extra work – they are not interested in new technology. But the younger ones are happy ... Most of the old teachers are fed up because of their long service, they have been working for many years and they are not interested in any programme.'*

Similarly, certain mature teachers in Malawi showed limited interest in the programme, commenting that they were fearful of using the technology and were reluctant to let the children use it independently (Pal *et al.* 2008).

It is equally important to recognise that the aspiration for technology as a symbol of modernity is not experienced in the same ways in the very different

contexts of Malawi and Ethiopia. Whilst there was overlap and recurring themes, significant difference also existed between the two countries, and between different regions within the same country. Most striking in this regard was between responses given in rural Malawi and urban Ethiopia. In rural Malawi, amongst communities that had minimal exposure to any form of digital technology, the aspiration of children and staff was demonstrated in a somewhat naïve and awestruck manner. In contrast the schools situated in urban Ethiopia, in the midst of an international city with widespread experience of digital technology, demonstrated their aspiration in a more nuanced manner, enquiring into alternative uses of the laptops and foreseeing potential problems in advance. This highlights the need to avoid the tendency to pursue essentialising arguments. Engaging consciously with the impact of aspiration is a vital aspect of monitoring and evaluation but it occurs in a variety of forms and should not be assumed to be a universally experienced phenomenon.

8.6 A critical approach

Individual aspiration for technology is reinforced and exacerbated by popular literature which is naïvely optimistic regarding the potential of new technologies within the contemporary world and the inevitability of positive change (see Battelle 2005, Sunstein 2006). Within the context of ICT for education this is also witnessed through widespread talk of leapfrogging and other idealised notions (see Steinmueller 2001, Brewer 2005). Although this naïve optimism is widespread, its inherent flaw is encapsulated well by Green (2008 p.55), who notes that whilst technology 'holds out the allure of a fast and apparently painless track to development', it requires a more rigorous problematising, because 'despite the gee-whizz enthusiasm of optimists, technology is dogged by issues of power and politics that severely hamper its ability to help poor people build their capabilities'.

Thus, in drawing together the themes and challenges of this chapter, this section offers an approach of critical engagement with technology, countering notions of ICT as panacea for education but utilising the positive implications

of aspiration. Engaging effectively with the reality of aspiration in all its positive, complex and explicitly negative facets requires being conscious of its influence in order to consider how to harness its potential. This involves helping stakeholders adopt a critical perspective on technology, recognising its malleability and the plurality of potential avenues for development (Vogel 1995). It requires communicating this philosophy, also expounded by Feenberg (1995), in everyday language, for the purpose of raising consciousness regarding technology in education in Africa, rather than accepting the undemocratic hegemony of technology as progress (Dreyfus 1995). This objective may appear somewhat detached from the everyday, lived realities of poor people. However, it remains of significant benefit in serving to widen the think-space of development and education agencies, donors, governments and society.

The question remains, therefore, of how to instigate change that brings about more of the transformative potential of technology in development without imposing an alternative worldview. The critical consciousness that arises from an explicit focus on reflection through monitoring and evaluation constitutes one important way to achieve this. The limitations of a solely market-led approach to development have been demonstrated. Whilst the market plays a vital role, it will always seek to shape, craft and capitalise on aspiration and perceived needs. Relying solely on a public-sector led agenda will be equally problematic, with political aspirations often taking precedence over educational agendas. Similarly the challenges of a solely demand-led, participatory approach have been outlined, alongside the limitations of naïve ideologies. It has also been seen how choices made can serve to increase dependence on modernist views of progress, perpetuating the very system which requires challenging. There is thus considerable momentum behind the overarching uncritical discourse regarding the spread of technology. The optimistic alternative response seeks to engage with these issues, building upon the emancipatory potential of technology (Feenberg 1999), promoting critical thinking, and facilitating a transition towards technology being less fetishised and instead re-imagined as a tool for realising a various humanising objectives, educational and otherwise.

This is dependent upon recognising that aspiration is not inherently fixed but can be shaped and influenced and alternatives can be pursued (Crawford 2003). This involves developing capabilities within the context of ICT for education to equip people with tools through which to make informed choices. This process of gradual empowerment for pursuing alternative choices (Alsop and Heinsohn 2005) facilitates enhanced capacity for people to make informed decisions regarding all aspects of development aspiration, necessity and desire. In this way, a critical approach to ICT within education that emphasises monitoring and evaluation promotes freedom and self-determination, with these constituting both the end and the principal means of development (Sen 1999).

8.7 Aspiration conclusions

I conclude this chapter with two observations. First, the uncritical desire for digital technology was a widespread but not universal theme amongst the research participants. It would have been easier to write about widespread reformation, creative thinking and critical engagement occurring as a result of ICT in education. Although one could always choose to promote the anecdotes that affirm this view, they would not reflect the reality of the dominant themes encountered. Of course, I had hoped to find more of the success stories, self-taught usage and personal and community transformation that proponents wax lyrical about (Mitra 2003), but I did not. This does not in any way suggest that the research participants were intrinsically lacking in capability or creativity. The pertinent observation is in regard to the peculiar power of digital technology that, due to its position as an aspirational symbol of our age, inhibits rational engagement and critique.

Second, in exploring a more optimistic angle, I return to the issue of attribution analysis. Whilst introducing laptops and other digital devices into classrooms in Africa may do little to achieve educational objectives in the manner intended, they may yet prove indirectly effective. The macro-level existential critique regarding technology, ontology and the nature of progress

(Ellul 1964) does delegitimize uncritical investing of technology into schools in Africa. However, due to economic, political and ideological forces combined with popular visions of progress it is likely that this investment will continue unabated for the foreseeable future. Whilst not wanting to legitimise this trajectory, there is pragmatic value in highlighting significant unanticipated positive outcomes. The symbolic status of technology means that its donation into a school often serves to motivate teachers and students alike and raise the profile of education within the community. As a result, more students attend school than would do so without the technology present. Utilising the aspiration for technology and the impact of its presence as leverage for achieving more substantive educational objectives is therefore a distinct possibility. This raises the question of how such indirect benefits should be measured in monitoring and evaluation, as 'in the absence of actual educational improvements, how do we evaluate such changes in aspirations and self-awareness?' (Kuriyan and Kitner 2009 p.27). Although providing something that may contribute to eventual macro-level disempowerment through subordination to visions of technological progress, technology is simultaneously serving to achieve practical and valuable social and educational objectives.

9. Conclusions

9.1 Introduction and summary

This thesis has provided a lens through which to explore significant themes within the complex processes of education in Africa. The focus has been on monitoring and evaluation of ICT for education: developing a critique of current practices, assessing underlying constraints and exploring viable and creative alternative approaches. In doing so, it has addressed the underlying questions: 'how can the impact that ICT is having on education in Africa best be assessed?' and 'why is monitoring and evaluation not more centrally positioned in ICT for education initiatives in Africa?' Each analytical theme within the thesis emerged through the cyclical research process undertaken in response to these questions.

First, in Chapter 5, I focused on reconceptualising conventional methodological approaches to monitoring, evaluation and impact assessment of ICT for education. A range of methodological approaches were explored through a process of cyclical case study research as outlined in section 3.1.2. Within this I assessed the benefits of utilising multiple and mixed methods in monitoring and evaluation to help stakeholders to engage in participatory, process-based conscious reflection (Fetterman 1996, Watson 2006). The methodological implications of working in partnership were also considered, demonstrating both the benefits and limitations of such an approach. The chapter closed by focusing on how to utilise methods within a monitoring and evaluation exercise so that the potential for capacity development and empowerment is fully realised (Chapman *et al.* 2004).

Following this, in Chapter 6, I assessed the role and influence of multi-stakeholder partnerships within ICT for education programmes (Marriot and Goyder 2009, Draxler 2008, Cassidy 2007) through the case study research with EuroTalk in Malawi and Eduvision in Ethiopia. I emphasised the importance of conscious engagement with the varying economic and political

motivations for partnership. The implications of each were considered, focusing on the constraints encountered and opportunities presented. Following this, I highlighted the way in which partnership is often associated with unequal power relationships, stakeholder fear, and assumed incentives for engagement. I then assessed how best to engage with the challenges of conducting effective research in partnership, emphasising the place of communication, transparency, trust and the benefits of maintaining a focus on capacity development.

In Chapter 7, I developed a critique of the place of pedagogy within ICT for education programmes (Leach 2005, Kellner 2002). This required analysing the ways in which priorities within ICT initiatives can be skewed and disconnected from educational realities (Keats and Schmidt 2007, Kort and Reilly 2001). I explained how increased emphasis on training, a more considered approach to deployment, greater focus on educational content, and strategic integration with classroom practice would each improve the pedagogical efficacy of ICT for education programmes (Unwin 2005a, Unwin 2009, Slay *et al.* 2008, Leonel *et al.* 2005). Following this I engaged with the implications and limitations of constructivism (Kirshner *et al.* 2006), deconstructing its identity as an assumed panacea for the educational challenges faced across Africa (Selinger 2009. Dangwal *et al.* 2006) and demonstrating the association between this approach and the economic, political and ideological drivers of ICT in education (Kraemer *et al.* 2009). Following this, guided discovery (Mayer 2004) and critical thinking (Paul and Elder 2007) were explored as progressive alternative emphases that may facilitate a more nuanced and transformative approach to monitoring and evaluation.

Finally, in Chapter 8, I explored the significance that an aspiration for digital technology across Africa has within ICT for education initiatives and the way that they are monitored and evaluated (Appadurai 2004, Kuriyan and Kitner 2009). This involved acknowledging the place of digital technology as a significant symbol and emblem of development and progress (Pippin 1995, Simon 2003) and engaging with the subsequent implications of aspiration.

The benefits identified through the case study research included inspiring children to attend school more regularly and causing parental and community perspectives regarding the value of education to improve. The negative implications (Mansell 2005, Pal 2008) included the potential short term nature of that impact, and the way that the assumption of technology being synonymous with development (Wainwright 2008) ultimately distracted attention from educational objectives. The chapter closed with a case study of OLPC that focused on the consequences of their particular form of aspiration (Negroponte 2008). This led to me highlighting the importance of conscious, critical engagement within effective monitoring and evaluation, maintaining an awareness of the negative consequences of uncritically conflating technology with development.

The essence of effective monitoring and evaluation is the ability to develop and implement methodological approaches that equip the researcher, and participants, to assess a given situation and drill beneath the superficial presented reality in order to establish what is taking place, and the reasons why it is taking place. In any arena of development work this is a complicated pursuit. In the context of ICT for education the complexity is increased for many reasons, foremost amongst them being challenges concerning the three themes of partnership, pedagogy and aspiration. It therefore follows that equipping theorists and practitioners alike to engage more intelligently, critically, and reflectively with the monitoring, evaluation and impact assessment of ICT for education in Africa is dependent upon prioritising conscious engagement with these themes.

The next section focuses on the main contributions of the thesis, theoretically, methodologically, and empirically. Following this is a final case study of the OLPC programme and Nicolas Negroponte's perspective on impact assessment, included to demonstrate the timely contribution of this thesis in influencing current debates within ICT for education. I then consider the practical recommendations and policy implications emerging from the thesis and highlight potential avenues for future research. In closing, I contextualise the thesis once again within the broader context of

educational challenges and opportunities across Africa. In this I demonstrate that utilising monitoring and evaluating of ICT for education initiatives in a manner that instigates positive educational change is dependent upon a conscious recognition that technology is the means by which to reach the desired end; it is not the end in itself.

9.2 The contribution of the thesis

This thesis has sought to contribute to debates pertaining to ICT for education in Africa theoretically, methodologically and empirically. In each of these spheres the focus has been on monitoring, evaluation and impact assessment but the analysis also has wider applicability in contributing to the overarching themes of development, education and technology in Africa.

9.2.1 Theoretical contribution

The spectrum of research currently being undertaken in the field of ICT for education is developing rapidly (Unwin 2009, Heeks 2008, Kozma 2005, Wagner *et al.* 2005). As was outlined in section 2.6.3, a considerable proportion of the related research conducted through the last decade has been driven by the private sector and enthusiasts who are intent on propagating the use of technology in education (Dangwal 2006, Keats and Schmidt 2007, Mitra 2003, Kort and Reilly 2001). The theoretical foundations of this thesis have specific relevance in the context of exploring monitoring, evaluation and impact assessment but also contribute across the broader topic of ICT for education.

The primary theoretical contribution of the thesis developed out of the decision to situate the subsequent empirical research on three foundational building blocks. The first of these is the exploration of the nature of, and rationale for, education (section 2.2), the second is an exploration of the role and perceptions of technology within society (section 2.3), and the third is an exploration of the quantification of impact (section 2.4). This decision was valuable because of the context of the content rather than the content itself.

Indeed, much has been written about the place of education within development and the various economic, liberal and radical rationales for pursuing it (Selinger 2009, Brighouse 2006, Mayer 2004, Freire 1970, Dewey 1938). Likewise, it is not particularly innovative to assess the progression of philosophies of technology (Floridi 2002, Feenberg 1999, Ellul 1964) or the quantification of impact (Elkins 2005, Clark and Sartorius 2004, Winner 1995, Borgmann 1984). The intended contribution of this thesis has been to choose three themes as the foundation for a study regarding the monitoring, evaluation and impact assessment of ICT for education in Africa. The reasons for this are outlined further below.

Much monitoring, evaluation and impact assessment of ICT for education (for example Farrell *et al.* 2007) is undertaken without sufficiently questioning or contesting certain assumed truths. In brief, these assumed truths are that the primary rationale for education is economic (OECD 2010), that there is an inevitable progression of society through the increased adoption of technology (Sunstein 2006), and that impact should be quantifiable (World Bank Institute 2003). The significant factors driving this are the private sector expansion agenda, donor preoccupation with quantifiable targets and impact, and the aspiration for symbols of modernity. From the outset, through exploring the changing perceptions of education, technology and impact, this thesis has demonstrated that there are viable alternatives to the current dominant rationale for ICT for education, which is constructed upon a temporary set of assumptions, ideologies, priorities and aspirations.

If the temporary nature of the current orthodoxy is not recognised then the parameters for monitoring, evaluation and impact assessment become increasingly narrow. As a consequence, innovative methodological alternatives are delegitimized or simply considered unnecessary. However, if it is recognised then a fresh conceptual space is created from within which it is possible to develop more critical, creative and nuanced approaches to monitoring, evaluation and impact assessment (Wagner *et al.* 2005, Watson 2006, Tacchi and Lennie 2007). This fresh space, contributed to through my

choice of theoretical foundation, was necessary in order to engage in the forms of monitoring, evaluation and impact assessment required for the subsequent empirical research.

9.2.2 Methodological contribution

As highlighted in section 3.1, the methodological approach adopted was chosen having first considered a range of potential alternative means through which to explore the research objectives. There was a simple rationale for choosing a methodology that was based on cyclical reflection on case studies undertaken in real world partnerships (Bamberger 2006). This rationale was my recognition that a traditional more detached and independent deconstruction of current conventional approaches to monitoring and evaluation of ICT for education initiatives in Africa would be relatively straightforward in undertaking, but of limited applicable value. Indeed, although categorised here as a methodological contribution, the approach adopted meant that the methodological analysis also constituted a central tenet of the empirical contribution.

Choosing to operate in applied partnerships demonstrated an innovative way to engage with the constraints and opportunities afforded by real programmes actually being implemented currently on the ground. Engaging in constant monitoring and evaluating of the actual monitoring and evaluation process gave me opportunity to make detailed reflections regarding what constituted the most appropriate methods in each context (Baxter and Eyles 1997) and why this was the case, as documented in section 5.3. As a result, both the selection of methods used and the analysis regarding their effectiveness (Chapters 5 and 6), are intended to be useful for wider dissemination. Indeed in Ethiopia the methodological toolkit designed has already demonstrated its ongoing value. The ECBP team recognised that adopting the methods into their ongoing implementation strategy would allow them to sustain rigorous yet cost effective monitoring and evaluation throughout the programme lifecycle (Watson 2006).

Adopting this methodological approach demonstrated four consequences of choosing to conduct academic research in partnership (Unwin 2009b). First, it allowed access to a range and calibre of stakeholders that would have been impossible if acting independently. Second, it subjected me to external timeframes and schedules, requiring constant negotiation and on occasion constraining my research ambitions. Third, it revealed research themes, most strikingly in regard to political and economic motivations, that it is unlikely I would have been able to pursue if acting as an autonomous outsider. Fourth, it provided opportunity to have potential positive impact from the research. These observations may be useful considerations for any researcher planning to undertake partnership based research, ensuring that they are more fully aware of the potential implications of their decision.

The methodological lessons are also of value beyond their potential to assist those aspiring to conduct similar research. Indeed, more importantly, the methodological approach adopted is intended to contribute to a comprehensive shift regarding what is perceived to constitute appropriate ways to undertake monitoring and evaluation, within the arena of ICT for education and also more broadly. The approach demonstrated an alternative to the conventional dichotomies that split the observer from the observed and the theoretical from the practical. It demonstrated that there are indeed viable alternatives to approaches that use solely quantitative methods for assessing impact. It demonstrated the potential of utilising multiple methods and adopting participatory, process based approaches (Wagner *et al.* 2005, Tacchi and Lennie 2007). In addition, it demonstrated the efficacy and credibility of this alternative to mainstream methodological practice (Taylor and Soal 2004), whilst operating from within the confines of limited time and financial resources (Bamberger 2006). Finally, it demonstrated the transformative potential of monitoring, evaluation and impact assessment processes (Watson 2006), as discussed in section 5.5, where using the methods in the case studies led to a substantive shift in the overall approach to programme implementation.

It is therefore my hope that the methodologies explored in this thesis may assist in creating space for future innovation and promote an environment in which a more holistic, nuanced and embedded approach to monitoring and evaluation is given credence. This requires increased integration with implementation processes, greater emphasis on participant freedom (George 2008, Sen 1999), and a focus on monitoring and evaluation as a tool for empowerment, as well as a tool for assessment.

9.2.3 Overview of empirical contribution

This section of the conclusion focuses on three specific themes that cut across the analysis, each of which refers specifically to monitoring and evaluation, but is also pertinent in thinking more broadly about education and technology in Africa. Few ICT for education projects in Malawi and Ethiopia have yet been subjected to rigorous monitoring and evaluation. At one level therefore, a main empirical contribution of this thesis has been to provide a rigorous review of such programmes in these two countries. However it has also contributed to three broader themes and these are outlined below.

9.2.4 ICT and ideology

The introduction of ICT in education in Africa is often driven by the private sector need to expand its market (Hamilton and Feenberg 2005). This is a significant recognition that is worth asserting due to the fact that it is forgotten by many of those seeking to utilise ICT for development purposes (Heeks 2008, Brewer 2005). The private sector should not be criticised for promoting the use of technology in education as it constitutes a legitimate avenue through which to expand access to market. However, this research has demonstrated the problematic consequences of private sector driven initiatives that aim to penetrate emerging markets and inculcate technological dependency being somehow mistaken for initiatives that are primarily concerned with development and education.

Private sector initiatives normally maintain a dual concern with both increased market access and education improvement. A mixed motivation is not intrinsically problematic and such programmes may be powerful levers for positive change; an educational product that works effectively and enhances learning is clearly a more effective tool for increasing market penetration than an educational product which does not work. However, the private sector aspiration to expand the use of technology in developing regions through the medium of education is clearly dependent upon propagating the notion that technology provides something unique which will facilitate an educational breakthrough unattainable via any other means (Kort and Reilly 2001). In order to be credible, the vision of ICT-dependency for educational progress requires an accompanying pedagogy and, as has been demonstrated, constructivism is the tool which has been adopted most widely for this purpose (Selinger 2009). Indeed, constructivism is not the pedagogical preserve of only the private sector. Section 8.4 thus highlights how the OLPC initiative is utilising constructivism as an effective means through which to propagate its own vision of technology dependent learning (Negroponte 2008).

As the research has emphasised, the pertinent issue is to ensure that those engaging with multi-stakeholder partnerships in ICT for education are fully conscious of, and explicit regarding, the various motivations and agendas prioritised by different actors, and the tools that they use in seeking to legitimise their approaches. Indeed, traditional, solely quantitative, approaches to monitoring and evaluation have been one such tool. Maintaining a critically engaged stance is thus vital in order to avoid gradually imbibing the private sector narrative of development as being synonymous with the capitalist project (Wainwright 2008). The research has shown that prioritising this critical engagement, through monitoring and evaluation is invaluable in ensuring the arena of ICT for education in Africa avoids gradually developing into nothing more than a Trojan horse for the ambitions of the private sector, government or mission-driven organisations as exemplified in OLPC.

9.2.5 Ongoing potential for transformation

Despite the varying economic, political and mission-driven agendas seeking to influence the ICT for education arena, this thesis has demonstrated that there remains a distinct potential for transformation through the use of technology in education in Africa. In both Malawi and Ethiopia the positive educational implications of aspiration for digital technology were very evident (section 8.2). Indeed, the introduction of digital technology into education systems may assist considerably in incentivising children to participate in school and inculcate the 'desire to go on learning', what Dewey (1938 p.49) considered to be the most important role of any educational experience. However there remains need for further research to assess whether a similar non-technological investment in education into these contexts could engender a similarly positive effect.

Similarly, this research has shown that even when an ICT for education initiative is being driven by political, economic, or mission-minded agendas, there remains potential to achieve unintended positive educational objectives. The overarching aspiration for using digital technology (Pal 2008) means that progressive educational aims of transformation (Freire 1973) and critical thinking (Paul and Elder 2007) may be accomplished even if they are not anticipated by those advocating for the use of ICT.

9.2.6 Rhetoric and reality

Having recognised the potential transformative potential of ICT in education in Africa, the thesis has also demonstrated the danger that the current enthusiasm for technology in education may promote a context in which there is limited demand for the rigour of monitoring, evaluation and impact assessment. Instead, simple quantitative measures are used as tools to demonstrate 'successes' defined in narrow terms. This leads into discussion of another of the intended contributions of my research. It would be difficult to overstate the significance of the gap between the rhetoric and the reality, or the promise and the delivery, regarding the positive impact of present ICT for education initiatives in Africa. The clearest example of this is seen in the

disparity between implementation, delivery of the technology into the classroom, and integration, embedding this technology within effective learning and teaching practices (section 7.3.4).

The transition from implementation to integration was regularly identified as a substantive challenge facing the programmes in both Malawi and Ethiopia (Zucker 2009). It is laudable that stakeholders managed to identify the challenge; indeed the need to address integration was a frequent topic of discussion amongst those engaged with the programmes. Despite this, not once did I encounter any realistic strategy or compelling explanation of how this might be achieved.

It has been seen repeatedly through this thesis, as well as in numerous other research examples (Zucker 2009, Farrell *et al.* 2007, Slay *et al.* 2008) that, with sufficient effort, expertise and determination to overcome logistical challenges, implementing technology into schools in Africa can be achieved. However, although it is a popular buzzword and the focus of much energy, implementation is ultimately an expensive but useless educational achievement if there is no subsequent strategy for ensuring appropriate integration. The frequent tendency is that, once deposited into a recipient school, ICT is positioned by the teachers as an interesting discrete addition to the curriculum that mainly serves to incentivise the children and improve the status of the school. In contrast, those propelling ICT for education are on the whole technology enthusiasts who believe the technology in itself will instigate change and naturally integrate into all aspects of the school environment (Negroponte 2008). My research experiences suggest that this is unlikely to occur unless other factors are in place. Successful integration requires a shift in emphasis and direction of energy expenditure towards appropriate content, teacher training (Unwin 2005a) and classroom usage strategies.

Effective education is essential for promoting sustainable development, and digital technology is an increasingly significant feature within global society. It is therefore unsurprising that the two are increasingly intertwined and will

undoubtedly become more so in the future. As this thesis has demonstrated, there is need for monitoring and evaluation that can influence the manner in which they become intertwined. An intentional focus on monitoring and evaluation is the primary means by which to ensure that, despite the varied agendas and often conflicting priorities of the different stakeholders, the gap between rhetoric and reality is reduced and the challenge of integration is adequately addressed.

9.3 The OLPC view of impact assessment

To illustrate the conceptual and practical importance of these contributions, this section returns for a final time to the issues raised by my experiences of engagement with the OLPC initiative. The damaging consequences of the OLPC mentality, driven by and magnified in the personality of Negroponte himself, have been explored previously in section 8.4. Here I focus specifically on one interview where he offers his verdict on the subject of this thesis: dismissing it as entirely void of value. The intention here is not to attack Negroponte, nor to suggest that his mentality is widespread amongst those engaged within ICT for education in Africa. However, it is highly pertinent since he provides an ideal caricature and embodies so much of what this thesis has sought to counter.

At a presentation regarding the future of the XO, Negroponte (2009 no pagination) began by explaining how impact assessment constitutes an entirely pointless exercise. He makes clear his position regarding sceptics who suggest the XO laptop initiatives should be subjected to monitoring, evaluation and impact assessment:

> *'The fact that somebody in the room would say the impact is unclear is to me amazing - unbelievably amazing. There's not a person in this room who hasn't bought a laptop for their child, if they could afford it. You don't know somebody who hasn't done it if they can afford it. So there's only one question on the table and that's how to afford it? That's the only question. There is no other question - it's just the economics.'*

Having delegitimized all questions aside from those relating to ensuring the availability of sufficient funds, he proceeds to substantiate his argument by sharing an anecdote with his audience. The location he chose in order to demonstrate the inevitability of positive impact when introducing laptops into a classroom was Ethiopia. He speaks about what is taking place in the schools: the same schools where I was conducting research with the Eduvision team (Hollow and Everts 2009). Negroponte (2009) asserts:

> *'There is an interesting result - this happens to be Ethiopia - their connections are not good. They don't have great internet connections. Guess what happened. Most of the kids learned how to write programs in Squeak. This is a pretty sophisticated language and they became pretty good programmers, and as time passes, more and more would be connected.'*

The notion that *'most of the kids learned how to write programs in Squeak … and they became pretty good programmers'* (Negroponte 2009 no pagination) is simply not true. The research experiences documented throughout the thesis were not congruent with the notion that the majority of children could undertake sophisticated programming at the time he was speaking. There is a significant disconnection between the compelling rhetoric of Negroponte and the lived reality of OLPC recipients in Ethiopia.

Negroponte either believes that what he says is true or decides to propagate it as truth for the benefit of the OLPC mission. Whatever the reason, the consequence is that the myth of children in Ethiopia enjoying advanced and autonomous XO-based learning is sustained, perpetuated, and becomes increasingly powerful.

Choosing to recognise the reality of the methodological and empirical contributions of this thesis would require OLPC and Negroponte radically to reassess both their ideological foundations and practical approach. The technophile fantasy that Negroponte and others insist on propagating with such vigour provides clear demonstration of the value and timeliness of the

research undertaken for this thesis. Rigorous monitoring, evaluation and impact assessment is so important precisely because the validity of its very existence is so often contested.

9.4 Recommendations and policy implications

Having outlined the contribution of the thesis and illustrated the ongoing need for the lessons from these contributions to be prioritised within ICT for education debates and programmes, I now offer five practical recommendations and policy implications that emerge from the research. Each of them has already been alluded to, but they are encapsulated here in brief to reemphasise their importance.

First, effective monitoring, evaluation and impact assessment of a multi-stakeholder ICT for education initiative requires prioritising active engagement with educational partners. In regard to monitoring and evaluation methodologies it requires obtaining advice regarding the suitability of assessment methods and priorities of educational outcomes. Again, more broadly, realising educational objectives through ICT requires engaging with appropriate educationalists, including teachers and administrators, throughout design and implementation. When considering appropriate partnership with government this should require intentionally targeting the Ministry of Education rather than adopting the common strategy of marginalising them and aligning the initiative with the Ministry of Information Technology or some such equivalent.

Second, the purposes of monitoring and evaluation are easily misunderstood and require clear and regular articulation in educational programmes. They are too often either assumed to be synonymous, or entirely divorced and detached from one another. Monitoring and evaluation should remain conceptually distinct from one another, as outlined in section 2.4.6, but they should together inform and facilitate an integrated approach to programme assessment. Similarly, they should not be viewed as detached from programme implementation but rather recognised as cyclical processes that

feed into the implementation and enable the identification of priority areas of attention and concern.

Third, the question of the most appropriate level at which to introduce ICT into education in Africa needs to be examined. This thesis has focused on primary education and has not undertaken any form of comparative study to assess the most effective level and context for ICT in education. Despite this, as alluded to in section 7.10, my research experiences suggest that utilising ICT in secondary, tertiary and teacher training colleges (Unwin 2005a) would be a more appropriate and effective use of limited resources than the current focus on primary education. The potential for instigating positive educational change through technology would be enhanced by focusing on smaller numbers of children at the more advanced stages of their education, where guided discovery becomes an increasingly effective pedagogical approach.

Fourth, if ICT for education initiatives are to operate effectively and sustainably in Africa then the teacher must be recognised as central to the learning process rather than as an obstacle to be bypassed (Kort and Reilly 2001). This requires a comprehensive departure from technology-enhanced constructivism as the primary pedagogical model used in promoting ICT in education. Emphasis should instead be placed on utilising technology to enhance teacher capacity. In addition, if teachers are required to work additional hours in order to utilise the new technology then they should be remunerated accordingly.

Fifth, the various efforts to undertake monitoring, evaluation and impact assessment of ICT for education in Africa would be enriched by the development of a comprehensive toolkit. Operationalising the findings of the thesis research through compiling such a toolkit to educate and equip practitioners is one potential future output from the study. Such a toolkit would offer guidance on contextually appropriate multi-method approaches, provide different monitoring and evaluation options according to budgetary and time constraints, and include good practice guidelines regarding participation, processes, partnership and capacity development.

9.5 Education: a final word

The thesis began by considering the nature of education, how it is undertaken and why it is important. Throughout, the importance of education has provided the backdrop, context, and underlying rationale for the research undertaken. In short, the final objective of using ICT in education in Africa must be to improve the state of education across that continent. In turn, the final objective of emphasising monitoring, evaluation and impact assessment should be to increase the effectiveness of that ICT in enhancing the state of education. Effective monitoring, evaluation and impact assessment of ICT for education in Africa should therefore be undertaken with education as the primary concern, superseding any political, economic, ideological or technological motivation. In the light of this, the thesis closes by focusing explicitly on education once again.

Across sub-Saharan Africa there are 32 million children of primary school age who never go to school (EFA 2010), and it is projected that by 2015 this number will have increased (EFA 2010a). As discussed in section 2.2.4, efforts to provide effective education across the region are faced with multiple challenges. Large class sizes, limited teacher training (Bennell and Akyeampong 2007, UNESCO 2006a), high drop-out rates (EFA 2009), poor quality learning environments, gender inequality (Save The Children 2005, Herz and Sperling 2004), regional disparities (Mulkeen 2009), and low overall attainment (EFA 2010, 2005) each inhibit the provision of good quality education.

The national education contexts within which my research was undertaken illustrate these challenges with even greater clarity. Malawi has an average of 67 pupils per teacher in primary school, 13% of children never go to school and less than 18% of children complete their primary education (EFA 2010). In Ethiopia there are 3.7 million children who have never attended school and only 50% of young people (age 15-24) are literate (EFA 2010). In the most educationally marginalised regions of Ethiopia, only 16% of children have ever been to school (EFA DME 2010). These figures serve as a provocative reminder, and they illustrate the overall context within which any

endeavour to monitor, evaluation and assess the viability and benefit of using technology in education in Africa must be undertaken.

Throughout the thesis I have demonstrated the ironic and unfortunate reality that it is educational concerns that are often marginalised the most within ICT for education initiatives. All too often it is the technology that becomes the focus of attention. A radical realigning of priorities is required if the transformative potential of ICT in education is ever to be realised more fully across Africa.

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Appendices

Appendix A: Results of online survey conducted with ICWE

Date: 10/20/2008 2:37 AM PST
Responses: Completes
Filter: No filter applied

table tbody tr td table tbody tr td table tbody tr td font b { display:none; } textarea {font-family: Arial; }') // --> Following the recent successful eLearning Africa meeting in Accra, we are undertaking a survey about eLearning in education, current needs as well as the challenges regarding effective monitoring, evaluation and impact assessment. We would be very grateful if you could provide your responses to the questions listed below. The collated responses will be distributed in a report published by ICWE and also utilised in related doctoral research with the ICT4D Collective at Royal Holloway, University of London.

1. Importance of eLearning

2. b.) What is the most significant positive change that has occurred in your institution (organisation or area of work) as a result of introducing eLearning? (Please select one box only)

Student attainment has improved		20	17%
Student attendance is higher		5	4%
Student motivation is better		30	26%
Teacher motivation is higher		9	8%
Community values education more		11	9%
There are better facilities		11	9%
Costs are lower		12	10%
Other, please specify		19	16%
	Total	117	100%

3. c.) What is the most significant negative change that has occurred in your institution (or area of work) as a result of introducing eLearning? (Please select one box only)

Student attainment has got worse		0	0%
Student attendance is lower		7	6%
Student motivation has got worse		0	0%
Teacher motivation is lower		8	7%
Community values education less		3	3%
Equipment is stolen more		10	9%
Costs are higher		43	38%
Other, please specify		42	37%
	Total	113	100%

5. e.) What is the main way that eLearning is delivered in the projects/programmes you are personally involved with? (please select one box only)

Video supportGame-		2	2%

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based learning			
Mobile (phone, PDA)		2	2%
Audio support		3	3%
Chat rooms		1	1%
Discussion groups		7	6%
Blogs		2	2%
Learning Management System/Virtual Learning Environment		42	35%
Delivered in a variety of different ways		41	34%
Other (please specify)		19	16%
	Total	119	100%

6. a.) What is the highest priority for improving eLearning in the projects/programmes you are personally involved with? (Please select one box.)

Hardware		5	4%
Software		4	3%
Training		39	33%
Management		6	5%
Bandwidth		23	19%
Electricity supply		8	7%
Donor funding (*)		23	19%
Other (please specify)		11	9%
	Total	119	100%

9. b.) What is the second highest priority for improving eLearning in the projects/programmes you are personally involved with? (Please tick one box.)

Hardware		19	16%
Software		14	12%
Training		23	20%
Management		14	12%
Bandwidth		22	19%
Electricity supply		10	9%
Donor funding (*)		8	7%
Other (please specify)		7	6%
	Total	117	100%

12. c.) What is the highest priority for improving eLearning across Africa as a whole? (Please select one boxe.)

Hardware		7	6%

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Software		4	3%
Training		27	23%
Management		9	8%
Bandwidth		28	24%
Electricity supply		14	12%
Donor funding (*)		17	14%
Other (please specify)		12	10%
	Total	118	100%

15. d.) What is the second highest priority for improving eLearning across Africa as a whole? (Please tick one box.)

Hardware		9	8%
Software		7	6%
Training		30	27%
Management		14	12%
Bandwidth		15	13%
Electricity supply		15	13%
Donor funding (*)		14	12%
Other (please specify)		9	8%
	Total	113	100%

3. Monitoring, evaluation and impact assessment

21. d.) Which factor do you consider to be the most significant limiting the implementation of effective monitoring, evaluation and impact assessment in the project/programmes you are personally involved in? (please tick one box only)

Pressure from donors to meet their agenda		9	8%
Lack of internal organisational capacity		44	39%
Considered too difficult, time-consuming and expensive		13	11%
Conducted without stakeholder participation		14	12%
Pressure to give positive results in order to gain more funding		13	11%
Other, please specify		21	18%
	Total	114	100%

4. Your profile So that we can analyse the results, we would be very grateful if you could tell us a little about yourself:

24. b.) Which one of these categories best describes your work? (please tick one box only)

		2	2%

Donor			
Government		15	13%
Non Governmental Organisation (NGO)		23	20%
Private sector		15	13%
School		5	4%
University		45	39%
Other, please specify		10	9%
	Total	115	100%

25. c.) What is the main environment in which you are using eLearning?

Urban		41	36%
Rural		14	12%
Both urban and rural		58	51%
	Total	113	100%

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Appendix B: Email conversations with exhibitors at eLA 2008

Dear [name],

I attended the recent eLearning Africa conference in Accra, Ghana and intended to come and talk with you at the exhibition area. Unfortunately I got ill on the second day of the conference and was unable to do much from then on. I am currently in the latter stages of conducting PhD research at the University of London regarding the monitoring and evaluation of ICT for education in Africa. As we were unable to talk face to face I was hoping you would be willing to answer a couple of simple questions for me on behalf of [company name].

- *Does [company name] conduct monitoring, evaluation and impact assessment of its ICT for education activities in Africa? If No, please explain why you do not. If Yes, please explain what you do and why you do it.*
- *What do you consider to be the most significant challenge faced in conducting effective monitoring, evaluation and impact assessment of ICT for education in Africa? (Please also explain why you think this is a significant challenge and how you think it can best be overcome.)*

Receiving your response to these two questions will really help to inform and shape my research. My apologies that I was not able to ask you in person and have to resort to email. Of course, anything you write will be treated in confidence and anonymity maintained. Thank you very much for your time, and I look forward to hopefully meeting you in person at eLearning Africa next year.

Best wishes,

David Hollow

Interviewee name	Company and Role	Details of Response
Dr Siro Masinde	Aluka, Regional Coordinator for Africa	Lengthy email response regarding online digital resources across Africa, capacity building activities, monitoring and evaluation and the challenges of bandwidth.
Mor Seck	Association of African Distance Learning Centres	Detailed response regarding approach to monitoring and evaluation and impact assessment. Emphasising challenges faced in previous monitoring and evaluation experiences in education.
Monika Vogt	Avallain	Detailed reflection on monitoring and evaluation regarding the nature of effectiveness and impact, and the challenge of contrasting government priorities.
Eric Broug	Emerald Group Publishing Limited	Brief email response followed up with phone call regarding the work of the company in Africa and challenges faced in the education sector.
Seth Baloyi	Experiential Technologies	Brief response explaining their approach to impact assessment.
Kirsti Rogne	Fronter	Email response, limited information as newly operating in Africa.
Gillian Duncan	Gatlin Education	Lengthy email response detailing procedures for monitoring and evaluation through an Learning Management System, feedback and standard questionnaires. Explained the challenges of incentivising people to participate in monitoring and evaluation activities.
Mark Bryant	GCFLearnF	Brief email response regarding approach to

	ree.org	evaluation and infrastructural constraints.
Nathaniel Calhoun	Icouldbe.org	Detailed emailed reflection on monitoring and evaluation practices, working with academics to assess impact through usage surveys.
Parthy Chetty	Intel	Very detailed response regarding the Intel procedures for monitoring and evaluation, including key indicators, qualitative and quantitative and different phases of operation.
Kirston Greenop	Mindset Network	Detailed email response regarding the challenges of conducting monitoring and evaluation for funding organisations requirements. Details of holistic, long term impact indicators that engage with qualitative and quantitative aspects of programme impact.
John Holden	RDI Ltd	Very detailed response regarding their initial work – limited experience in specifics of monitoring and evaluation – but lots of challenges regarding infrastructure, bandwidth, staff retention.
Rubby A Agyagbo	UK Trade & Investment	Email response, no direct involvement but work through in-country sector reports – these are generic and some have reference to education. Information regarding lack of training, capacity, local language content, and partnership.
Nyasha Mutsekwa	Oracle	Brief response and request for phone conversation.
Ifee Kojo	HP Nigeria	Brief response and request for phone conversation.
Jay Son	Ncomputing	Brief response.

	UK Ltd	
John Connell	Cisco	Brief response.
Sylvia T. Lupembe	Tanzania Education Authority	Initial response but no details given.
Theresa Sackey	e-Toys	No response.
Hector Etomi	BT Education Services Limited	No response.
Hirotaka Sakamoto	Panasonic	No response.
Mark Reeves	Promethean	No response.
J Elliot	Interwrite Learning	No response.
Daniel Nettey	Accra Institute of Technology	No response.
Cecile Duperray	Agence de Medecine Preventive (AMP)	No response.
Rahim Habib	Smart Technologies	No response.
Tim Cruise	SMSWEB	No response.
Matthew Ayegba	Omatek	No response.
Megan Holt	Microsoft	No response.
Louise Welch	Google	No response.
Theresa Stanton	IICD	No response.

Rev Dadebo	MoESS – Ghana	No response.

Appendix C: Sample of Malawi individual interview framework

Interviewee: Mr Ostar Chagamba, Coordinating Provincial Education Advisor for Zomba

Date of Interview: 05/03/08

Duration: 50 minutes

Approach: A semi-structured interview during which I adapted the order of my questions in order to facilitate a flowing conversation.

Please can you explain your role to me?

    [Chagamba explains role]

Do any of the schools you oversee have computers?

    [linking back to a previous conversation with Chagamba]

You mentioned that there is a need for more resources - could you explain that to me some more?

Following from that, is the biggest issue the inadequate training or is there a problem with the curriculum in itself?

I have seen DFID working in many schools – have they built any classrooms in your area of responsibility?

    [Chagamba explains the problem with DFID approach]

That is interesting – how do you think that DFID should change their approach?

    [Chagamba talks about the challenge of needs assessment and monitoring]

What are the main problems in regard to monitoring education programmes?

[Chagamba gives brief response]

Please tell me some more about the issues with monitoring these programmes...

[Chagamba discusses NGOs]

We spoke previously about the difficultly of NGOs handing projects over to the government – can you tell me some more about this?

What is the bigger problem - government unwillingness or lack of staff?

If the Ministry of Education were responsible for monitoring this programme do you think there would be difficulties?

[Chagamba explains the challenges of maintaining a centralised approach]

So why do they not decentralise – what is stopping them from doing that?

[Chagamba talks about officials being afraid of losing their position]

So people in the Ministry central office like to have to travel because then they get given an allowance?

[Chagamba agrees]

Would the system improve if there were no incentives?

[Chagamba suggests incentives must remain]

So in a project such as this how do you think we should best go forward with monitoring and talk with the Ministry and discuss how to evaluate and monitor with them?

[Chagamba talks about the need for monitoring]

Tell me, when you see a school like this, do you think it benefits from an initiative like this or do you just think it is a distraction for the learners?

    [Chagamba emphasises the need for the initiative and benefits for the school]

Why do you think it motivates them?

For me coming from the outside it is interesting to see how much the technology motivates people – why do you think that is?

    [Chagamba talks about the Malawian desire for new technology]

So it is very much part of the culture to want to pursue knowledge and gaining new ideas and skills...

If you were in charge of everything that happened in the schools – would you spend money on technology like this or do you think that other things are more important?

    [Chagamba talks positively about the programme]

What do you think are the potential weaknesses of the project?

    [Chagamba provides some brief feedback]

It has been difficult to get negative feedback on the programme from teachers but I think that may be due to cultural factors rather than the absence of any problems - what do you think?

If you were conducting this baseline how would you improve it?

    [Chagamba suggests the baseline is appropriate and suggests some improvements]

Should we have more questions or is it the right amount?

    [Chagamba suggests the need for a greater volume of questions]

Do you think it is good to have 50/50 questions?

> *[Chagamba responds positively]*

Are there any additional questions you would have used?

How else would you evaluate the pilot to see how effective it is being?

> *[Chagamba suggests ideas]*

What do you think are the best methods to use in assessing the impact on the whole life of the child and their ability to make good decisions?

> *[Chagamba talks about the need for regular visits]*

Is there anything else you would like to talk about?

> *[Chagamba talks about the need for the project to grow because it has a positive contribution to make to education provision in Malawi]*

Appendix D: Sample of Ethiopia student group interview framework

> **Aim**
>
> *The purpose of conducting these group interviews in Atse Noad and in Menelik is to gain a detailed understanding of the impact of the programme from the perspective of participating students in Grade 7. The specific intention is to hear the stories that the children want to share with us about their experiences, both positive and negative.*
>
> *We want to create a relaxed environment. Focus needs to be on asking **why** and **how** as much as possible – moving beyond description and just **what** questions. There are a large number of questions listed below but the idea of the method is that it will be flexible and responsive – if the participants want to then they should be free to guide the conversation on to other topics as well. The format is similar to the focus groups but is more structured – it will require a more direct lead from the facilitator to cover the questions with each of the children.*

Introduction: setting the context

Outline of introductory questions	Purpose
Group facilitator to spend time introducing themselves and explaining where they are coming from. **Example:** *My name is ***, I am from *** and am working with ECBP to find out more about the computers and Akili. I am interested in finding out what effect it has on your life as a student.*	Establish my position and reason for the interview.
Explanation of what we are doing. During the following hour we will ask you some questions to which we want you to give your honest opinions. Your opinions are very important to us, however you should not be afraid to say	Provides a context for the group interview and lets them know why they have been chosen to participate.

anything that comes to your mind.	
Do you mind if we record the discussion? It helps us because it means we don't have to write things down at the same time as we are talking. Also we can remember what we all said and then learn from it later on.	Set the atmosphere of open and honest questions and answers
It is important that you know that this is not a test and that there are no right or wrong answers. None of your teachers or your parents will know about what you have said during this time. The more honest you are the happier we will be because our job will be easer.	Make it clear that they can be as honest as they chose to be and that they are not required to give answers that they think we want to hear.
Are there any questions you would like to ask me to begin with?	Check everyone understands what we will be doing

General questions about school

Main questions, purpose and topic area	Additional questions
General perception of school? Encourage them to be as honest as possible, If needed you could give them examples of things you did not enjoy about school!	• *What do you like the most about coming to school? (and why)* • *What do you like the least about coming to school? (and why)* • *What is your favourite subject? (and why)*
What is their general perception regarding the impact of the computer? If necessary, provide a scenario based example such as 'imagine using a computer to write a story in English	• *Does using a computer will make school more or less enjoyable?* • *Does using a computer will make school harder or easier?*

classes'. For final question prompt if necessary regarding potential for theft or possible increased social status etc.	• *Does using a computer will make school more work or less work?* • *What difference does having the computer make to your life at school?* • *What difference does having the computer make to your life outside of school?*

Akili	
Preferred content (It should be made clear that the books do not need to be about a school related subject.)	• *What do you like to read? (and why)* • *How often do you read books on the computer?* • *What do you read on the computer?* • *What other things would you like to read about on the computer?*
Would extra information be helpful for your learning? (please ask all questions)	• *What do you think about having a book on a computer?* • *What are the main subjects that you use the books for?* • *When you are revising for your tests, do you use anything other than your textbooks?* • *Do you think that having extra materials would help you to get higher marks on*

	your tests?
	• *When a teacher gives you homework, do you ever use anything other than your textbook?*
	• *If you had more books would you have time to read them?*

Attendance	
Effect of laptop on attendance (Emphasise that they will not get in trouble for the answers they give!)	• *Do you ever absent yourself from school?* • *What are some of the reasons you don't come to school?* • *Does having a computer change the amount you attend school?*

Parents	
Parent occupation	• *What do your parents do as a job?*
Effect of computer on parents (if any students suggest that their parents will be more interested in their education as a result of using laptops then please ask them to elaborate and find out why this might be)	• *What do your parents think about you having a computer and using it at school?* • *Who do you share the computer with?* • *Do you parents want to learn how to use the computer as well?*

Children Information	
Information from the children	*What is your name?* *How old are you?* *What do your parents do as a job?* *What jobs do you do?* *What would you like to do as a job when you are older? (what is the challenge facing you?)* *What do you like to do when you are not in school and not doing jobs?* *Who is your hero? (and why)* *If you could have two wishes, what would they be?*

Feedback	
Asking the children how they have found it talking to us and getting their feedback	*Do you have anything else you would like to tell me?* *Are there any questions you would like to ask me?* *Would you be happy to talk to me again or would you rather not?* *What questions would you like me to ask you next time we talk?*

Appendix E: Sample of InWEnt workshop interview framework

Below is a sample semi-structured interview format from stakeholders at the InWEnt workshop.

Please begin by telling me about the background to the project you are working with.

- *What are some of the opportunities and challenges that you are facing?*

Let's talk about the role of monitoring and evaluation within the programme.

- *Tell me about how you are evaluating your programme?*
- *How do you plan to monitor and evaluate in the future? Why?*
- *Will you be prioritising internal or external involvement? Why?*
- *What are the biggest challenges you are facing in regard to monitoring and evaluation? Why?*
- *How have overall approaches to monitoring and evaluation developed since you were first involved with ICT for education? What do you think has been the reason for this?*
- *Why do you think that monitoring and evaluation is often marginalised within ICT for education?*

Appendix F: Sample of Malawi focus group framework

The sample focus group below is from those conducted with teachers in Malawi following six weeks of using the devices in the classroom.

Please tell us about your overall perspective on the introduction of these gadgets to your school.
- *What were your first impressions of the gadgets?*
- *How often do you use the gadgets? Why?*
- *How long do you use them for?*
- *How many lesson have you used?*
- *Which lessons do you use the most? Why?*

Have you found it easy or difficult to use the gadgets in your lessons?
- *What has been difficult? Why?*
- *What has been easy? Why?*
- *Have you managed to incorporate using the gadgets into your lesson plans?*
- *Can you explain to us how you choose what lesson you are going to use?*
- *What changes and improvements do you think should be made to the gadgets?*

Has the introduction of the gadgets made any difference to student learning in the school? Please explain what the change has been and the reasons for it.

Has the introduction of the gadgets made any difference to teaching in the school? Please explain what the change has been and the reasons for it.

What has the impact on the school been?

- *What has been the best change because of the gadgets?*
- *What has been the worst change because of the gadgets?*

What challenges do you foresee for the programme?
- *How do you think these challenges can be best overcome?*
- *Have the gadgets been a distraction for the children?*
- *Have many of the gadgets broken?*
- *What are the other problems with the gadgets?*

Can you think of any important lessons that we should add to the gadgets?
- *Why is it these lessons that you want more information about?*

How do you think we can improve the programme in the future?

How has the programme been for the new teachers who have arrived at the school after the training?

Are all the teachers using the gadgets or have some of them stopped? Why?

Is the community involved in the project in any way?
- *What do they think of the programme?*

Do you have any other comments you would like to add or things you would like to tell us about?

Appendix G: Sample of Ethiopia teachers focus group framework

A detailed set of guidelines was produced for the focus groups with teachers in Ethiopia. The rationale for providing a prescriptive outline such as the one documented below was so that those facilitating the focus groups in Amharic would have a clear understanding of the emphases that were required. The example below is from a set of focus groups conducted after three months of laptop usage.

Aim and format

The purpose of conducting these focus groups is to gain a detailed understanding of the impact of the programme from the perspective of participating teachers. Ideally the focus groups will be conducted with between 6-8 teachers present. It is anticipated that each focus group will last for approximately 60 minutes. The focus group suitability will be assessed by local stakeholders and piloted with a test group of teachers to ensure than the format is effective, the language understood and the questions relevant.

*We want to create a relaxed environment in which participants are free to share their experiences, both positive and negative. Focus needs to be on asking **why** and **how** as much as possible – moving beyond description and just **what** questions. There are a large number of suggested questions listed below – but the idea of the method is that it will be flexible and responsive – **if the participants want to then they should be free to guide the conversation on to other education and laptop related topics as well.***

The aim is to encourage discussion amongst the participants as much as possible rather than them taking it in turns to answer questions from the facilitator one at a time. If they argue then that is not a bad thing, we want to give them opportunity to challenge one another and have different

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opinions. Remember that the role of the facilitator is not always to talk very much, but to guide the discussion through the key questions, pausing the discussion on interesting points and drawing out the quieter members of the group so that everyone can contribute.

Note to facilitator: *After completion of the focus group please record which questions produced useful feedback and which did not. Also note any problems encountered with understanding the questions*

Setting the context	
Outline of introductory questions (10 minutes)	**Purpose**
Focus group facilitator to spend time introducing themselves and explaining where they are coming from. ***Example:*** *My name is *** and I am working for ECBP to find out more about the XO programme. I am interested in finding out what effect it has on your job as a teacher – and also how the children and wider community find the programme. Please know that nothing you say here will have any effect on your performance and will not be used to assess you. You are free to say whatever you like to us.*	*Establish my position and reason for the focus group.*
The people who have designed the XO programme want to find out how they can improve it and make it even more useful for helping you with educating the children.	*Demonstrate that their answers will shape the programme, they have the opportunity to give input – emphasise*

	responsibility of being a pilot school.
Now that you have all been trained on how to use the laptops and had them in the classroom for three months, I would like to find out some of your thoughts. I would like it if we could begin with you telling me about your experiences as a teacher, what you enjoy about your job and what is difficult. Once we have done this there are some topics I would like to talk to you about and find out your opinion.	*Summarise the core aims and key anticipated areas of discussion.*
I would like to find out what you really think about things. Please don't feel like there are certain answers that you need to give – I would like to listen to your opinions so that I can find out what you think. So please feel free to be honest and say whatever you like – there are no right or wrong answers and you will not be in trouble if you want to say negative things.	*Set the atmosphere of open and honest dialogue as core purpose of the focus group. There are no right or wrong answers!*
Do you mind if we record the discussion? It helps me because it means I don't have to write things down at the same time as we are talking. Also we can remember what we all said and then learn from it later on. I'll make sure no one else finds out who said what.	*Introduce the recording of the session, demonstrate the recording equipment. Establish confidentiality and ask if they are happy to be mentioned in the report.*
Are there any questions you would like to ask me to begin with?	*Check everyone understands what we*

	will be doing.

Core questions for focus group	
Main questions, purpose and topic area (50 minutes)	**Additional questions**
General teaching environment?	*Can you explain to us some of the main challenges you face in your daily work as a teacher?*
How are you using the laptops?	*Prompts:* • *For how much time do you use the laptops each day?* • *Which subjects do the laptops help you most with? (and why)* • *Which subjects do the laptops help you least with? (and why)*
How have the children responded to the introduction of the laptops?	*Prompts:* • *Do they enjoy using them or not? (and why)* • *What is the most important content on the laptops for the children?* • *What function do they enjoy the most and least? (and why)* • *What subject does it help them the most with? (and why)*
Use of Akili.	• *How much time do the children spend using the books on the computer each day?* • *Which subjects do they use the books for?* • *Do they enjoy using the books or not? (and why)* • *What is the biggest challenge with using the books on the computer?*
What changes does the	*Prompts:*

laptop make to the lives of the children?	• *What is the most significant positive change to the lives of the children since they started using the laptops in the classroom?* • *What is the most significant negative change?*
How do you think the laptops will be used out of school time?	• *Do the children use the laptops when they are not in school? (and why)* • *What do they use the laptops for out of school?* • *Do you know how parents and people in the wider neighbourhood are viewing the laptops?*
What do you think works well and what does not work well in the **design** of the laptops? (explain the difference between this and the content of the laptops)	*Prompts:* • *Do you find it easy or difficult to use the laptops? (and why)* • *What changes would you make to the design of the laptop? (and why)* • *Do the laptops break down much or are they reliable?* • *What kind of additional training would you like to have on the laptops?*
What works well and what does not work well in regard to the **content** of the laptops? (especially Akili)	*Prompts:* • *What is your favourite feature? (and why)* • *If we had to remove one feature from the laptop, which one should it be? (What is the least important feature?)* • *What changes should be made to the features?* • *What kind of information should we add to the laptop?*
What difference does the laptop make?	• *What has changed in the way you teach the children? (and why)* • *What has changed in the way the children*

	learn? (and why) • *Has anything changed about the way you feel about being a teacher? (and why)* • *Has anything changed in the way the children feel about school? (and why)* • *Do the children come to school more or less now that they are using laptops? (and why)* • *Has anything changed in the attitude of the parents towards after school activities? (and why)* • *Do you think the children will score better or worse marks in their tests now they are using the laptops? (and why)*
How do you feel about the introduction of the laptop project overall?	*Prompts:* • *Do you think the programme is a good thing or a bad thing? (and why)* • *Does it make more work for you or less work? (and why)* • *Does it will make your job as a teacher easier or more difficult? (and why)* • *What has been the most significant change for your life as a teacher due to the introduction of these laptops?* • *Do you think introducing laptops for children in Ethiopia is the best use of available resources? (or would it be better to spend the money available on books and pencils and other equipment for the classroom instead?)*
Can you give us some feedback on how the project has been implemented?	*In what ways would you change the project if it was done again?* • *How was the training you received?* • *How was the timing of the implementation?* • *How was the rollout managed?*

	• *What would you change next time?*
How have you found this discussion? Opportunity for feedback and reflection	*Prompts:* • *Have you enjoyed this discussion or found it boring? (and why)* • *Have you had opportunity to say what you really think?* • *Are you happy to answer these questions or would you prefer we did not do it again?* • *What do you think we should improve the next time we talk to a group of teachers?* • *What other things do you think we should do to find out about this programme and how effective it is being?*
Concluding thanks and opportunity for any additional ideas	*Thank you very much for your help.* *Is there anything else you would like to tell me about the laptop programme before we finish?*

Appendix H: Sample questions and scoring guide for Octagon

THE INTERACTIVE LEARNING OCTAGON

Student Attendance/Absenteism

Technological Effectiveness solar charging solution

Student Enthusiasm/Motivation

Technological Effectiveness Gadgets

Student Attainment Curriculum

Teacher Enjoyment Enthusiasm

Student Attainment Lifeskills

Teacher Workload
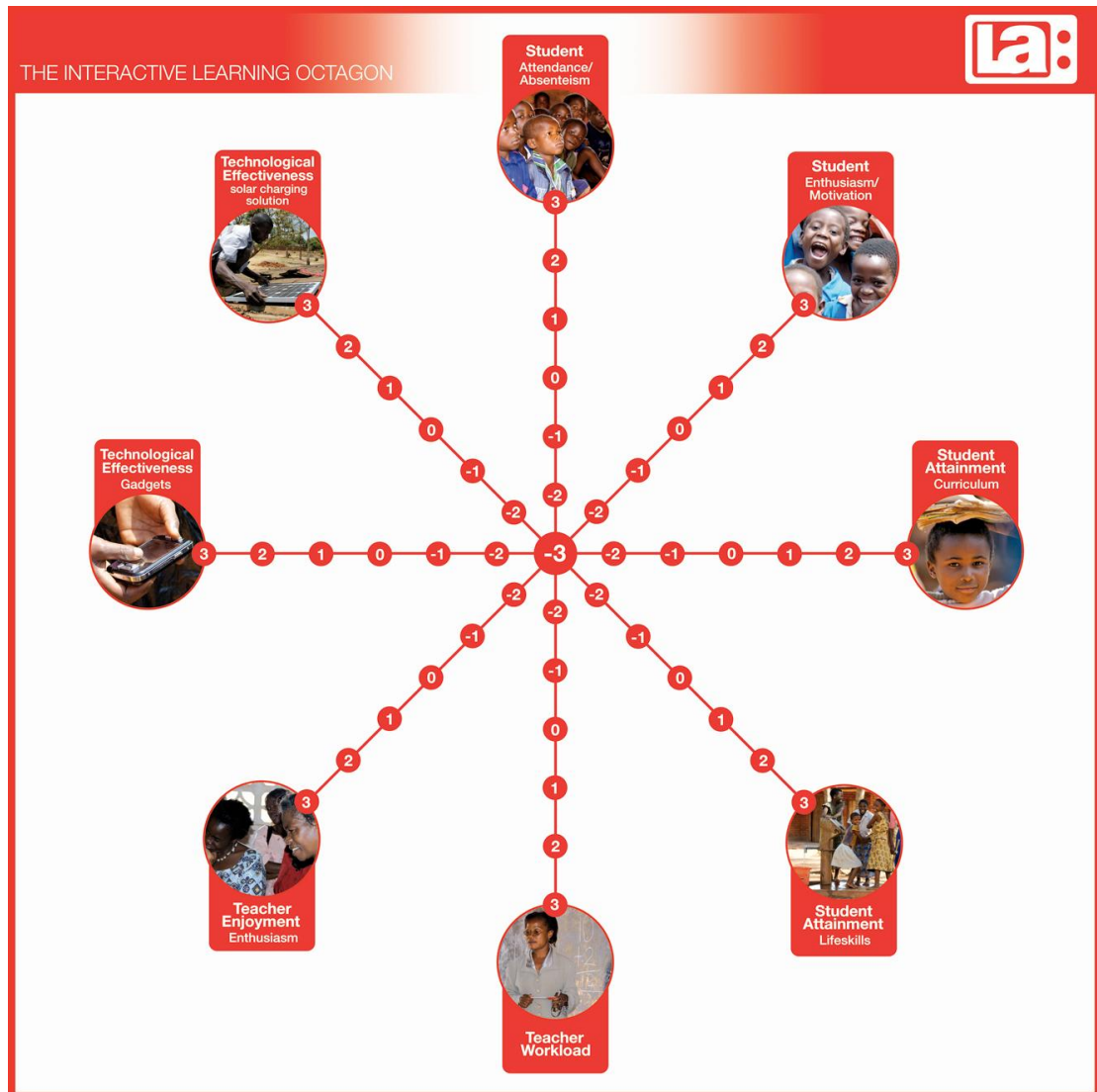
A group of between six and eight teachers were asked to decide upon an agreed score for each of eight categories of potential change. Scores were between -3 and +3, with -3 signifying a strongly negative change, 0 no change, and +3 a strongly positive change. There was no strict questionnaire-style responses for each score, instead the participants together (with the assistance of the facilitator) came to consensus regarding what an appropriate score would be, using a mixture of quantitative data and qualitative (often story-telling based) considerations. In order to

demonstrate, the eight questions and potential responses for two sample change categories are included below in detail with each of the questions.

1. Student Attendance/Absenteeism

What effect has the introduction of the gadgets had on the attendance/absenteeism of the students?

Score	Meaning of score
-3	The attendance has dropped very significantly
-2	The attendance has dropped significantly
-1	The attendance has dropped slightly
0	There has been no change in attendance
1	The attendance has increased slightly
2	The attendance has increased significantly
3	The attendance has increased very significantly

2. Student Enthusiasm/Motivation

What effect has the introduction of the gadgets had on the enthusiasm/motivation of the students?

3. Student Attainment: Curriculum

What effect has the introduction of the gadgets had on the curriculum-based understanding and attainment of the students?

4. Student Attainment: Life Skills

What effect has the introduction of the gadgets had on the life-skills-based understanding and attainment of the students?

5. Teacher Workload

What effect has the introduction of the gadgets has on the work load of the teachers?

6. Teacher Enjoyment/Enthusiasm

What effect has the introduction of the gadgets had on the enthusiasm and enjoyment of the teachers?

7. Technological Effectiveness: Gadgets

How effective have the gadgets been?

Score	Meaning of score
-3	They have been completely ineffective – we cannot use the gadgets at all
-2	They have been almost completely ineffective – we can only use very few of the gadgets
-1	They have been relatively ineffective – we can use some of the gadgets but a good number are not working
0	An equal number are broken and still working
1	They have been relatively effective – we can still use most of the gadgets but some are not working
2	They have been almost completely effective – we can still use almost all of the gadgets
3	They have been completely effective – we can still use all of the gadgets

8. Technological Effectiveness: Solar Panels

How effective have the solar panels been?

Each of the eight potential change categories constituted a line of the octagon, extending from a central point and with the numbers -3 to 3 positioned equidistantly along the line, with -3 at the centre and 3 at the edge. The responses were marked by circling a number on each line and then each circled number was connected to the one on the adjacent line. Thus an irregular octagon was formed which demonstrated the areas of most pronounced change, both positive and negative, as a result of the initiative.

The primary objectives of this method was to create an environment in which the participants could reflect and dialogue together regarding the impacts of

the technology solution and initiative as a whole. The process of coming to consensus regarding an appropriate score also highlighted the different experiences of the teachers within the group. Providing a pictorial representation of the thoughts of the participants was also found to facilitate a more responsive and interactive atmosphere for considering the subsequent 'why-based' questions of the focus group. This process catalysed a more detailed approach to the questions than would otherwise have been possible. For example, if the teachers decided upon a score of 2 regarding the effect on their workload, the facilitator would ask them to explain further why they chose this number and why it had been the case and would make a record of their reasons.

Appendix I: Sample story from Ethiopia

Betelehem Derebew is a 13 year old girl studying in Grade 8b at Atse Noad school in Addis Ababa. I listened to her story on 17/12/08.

I like playing with my friends. On weekdays I don't help my parents, I just study. But at the weekends I help my parents with jobs. Our parents all believe in our education and so they give us time to study. I like to read books and participate in clubs – I am part of the HIV club too. I would like to be a doctor and help sick people. I would also like to be an archaeologist because there is no famous Ethiopian archaeologist – I want to be the first. Or an astronomer – to go to the planets – I would focus on Jupiter because up to now people are focusing on Mars.

I like the teachers – they advise us on many things and help us to understand. But the toilets in school are bad and there is a water shortage – and also we are afraid of drinking the water here because we may get sick.

I like the laptop but I am having problems using eToys – I can't use it properly – we were trying to do animation work but it is difficult. I am also having problems with typing in Amharic – it doesn't work properly. Also there are problems with the touch pad – it is moving too fast. Also the laptop gets stuck when we are using it – it just happens randomly.

We would like to have children's movies that we can watch on the laptop – animation movies. When we send messages to each other in the class mostly we ware using it not for education – we send pictures to each other – we have been sending Obama's picture to each other. Someone has a flash disk with a picture of Obama on it and so now we all have the photo.

The laptop does not disturb my studies because I don't use the laptop on weekdays – my parents have scheduled it for the weekend only – they have

made that rule. At the weekend I play games with my father on the laptop. Games is the thing that I use the laptop for most.

The bad thing about the laptop is that I am afraid that it will conflict with my studies. Also there are students trying to replace my battery – if someone has no charge then they swap it with ours and I don't like this. I prefer using paper books rather than the laptops because the text on the laptop is too small for me and it is difficult to read. I have also heard that the laptop can damage our eyes. At times I am worried – when the text is too small and when I am playing games. I am more used to working with a paper book. I do read books on the laptops but I feel really good and prefer reading on the paper books. It would be easier to read on the laptops if it had a bigger screen and if it worked faster. I prefer answering questions and doing exercises on paper rather than on the laptop because I don't know how to type. But if I could type then I would prefer using the laptop.

Appendix J: Diary text used with teachers in Malawi

The text below was included on the first page of the diary in order to remind the teachers the kind of things we wanted them to write about and to emphasise that they should feel free to include any information that they chose to.

> *Dear Teacher,*
>
> *Thank you for agreeing to complete this teacher diary. We would be very grateful if you could write your thoughts on the following pages of the diary at least once per week (or more if you want to) between now and the end of the term. At the end of the term we will come back to your school to talk with you some more and collect the diary.*
>
> *We really want to know what you think of the gadgets and what impact they are having on both your teaching and the learning of the children. Because this is a diary there are no specific questions for you to answer each week. We would just like you to write whatever you choose about the new gadgets and life in your school.*
>
> *If you would like to, you can use these ideas to help you as you begin to write.*
>
> - *Have you used the gadgets within the classroom this week?*
> - *Are there any particular problems you have experienced with the gadgets this week?*
> - *Are there any aspects which have worked particularly well with the gadgets this week?*
> - *Have the gadgets helped you to teach more effectively this week? If yes, why? If not, why?*
> - *Have the gadgets helped your students to learn more effectively this week? If yes, why? If not, why?*

When you are writing the diary please feel free to be completely honest and write about both positive and negative experiences. There are no right or wrong things to write – we just want to find out what you think about the gadgets and the difference they can make to education in your school. We are in the pilot stage of the initiative, so we hope to be able to use what you write in the diary to improve things for the future.

Please write the date at the beginning every time you write. If you would prefer to write in Chichewa, then please do so.

Thank you again for your assistance,

The Interactive Learning Program Team on behalf of the MOEST

Appendix K: Diary text used with teachers in Ethiopia

The text below was included on the first page of the diary in order to remind the teachers the kind of things we wanted them to write about and to emphasise that they should feel free to include any information that they chose to.

> *Dear Teacher,*
>
> *Thank you for agreeing to complete the teacher diary. We would like it if you could write in the diary at least once per week between now and the end of the term. Please feel free to write in it more than once per week if you would like to.*
>
> *We really want to know what you think of the laptops and Akili and what impact they have on your teaching and the learning of the children. This is a diary and so there are no specific questions to answer each week. We would just like you to write down whatever you want to tell us about the laptops and Akili.*
>
> *When you are writing please be completely honest and tell us about the negative things as well as the positive things. There are no right or wrong things to write. We just want to find out what you think about the laptops and Akili and the difference they can make to education in your school.*
>
> *It is very important for us to know what you think about this programme and we will use your opinion to improve things for the future.*
>
> *Here are a few ideas of things you might want to write about each week – but feel free to write about anything at all.*
>
> - *Please tell us about any positive or negative experiences you have had from using the laptops and Akili this week.*

- *Do you think the laptops and Akili have made it easier or harder for you to teach this week?*
- *What effect have the laptops and Akili had on the way in which the children have learnt this week?*
- *In what ways have the laptops and Akili changed the way you have taught lessons this week?*

Thank you again for agreeing to complete this diary

ECBP

Appendix L: Questionnaire to head teachers in Malawi

Dear Head Teacher,

Thank you for taking the time to complete this questionnaire. This trial will help us ensure the best lessons and equipment are provided in the future for schools in Malawi. Please use the back of this paper for any further comments

Name of teacher..

School...

Period...

.

How many children are there in your school in total?..

How many children are enrolled in Standard 3?..

How many boys?.............................. How many girls?..............................

How many children are enrolled in Standard 4?..

How many boys?.............................. How many girls?..............................

How many children have used the lessons in English?..

How many children have used the lessons in Chichewa?....................................

Approximately how many lessons has each child

done?.....................................

Approximately how many of the children have achieved a gold star?................................. (10 out of 10 in the quiz)

What kind of problems have there been?

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What is good about the equipment and what needs improving?

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What successes and positive outcomes (even unexpected ones) have there been?

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What suggestions do you have for the future?

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What new lessons would you like for the future?

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Did you notice an improvement in school attendance since the project started?

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Did you notice an improvement in student attainment since the project started?

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Has the project improved education?

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Would the children learn more if they had one device each?

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Did children discuss the project with their families and in their communities, and if so was it well received?

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Did all Standard 3 and 4 children get the chance to use the lessons?

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Did teachers find the lessons useful?

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Appendix M: Baseline test in Malawi

Curriculum based questions	Number of correct answers	% of correct answers

1. What is the capital city of Malawi?
    a. **Lilongwe**
    b. Blantyre		

2. What covers most of the earth?
    a. **Water**
    b. Land		

3. Which is the higher number?
    a. 34
    b. **43**		

4. What does your heart do?
    a. It is the part of the body that thinks
    b. **It is the part of the body that pumps blood**		

5. How many toes do you have?
    a. **10**
    b. 20		

6. How long does it take for the earth to spin around once?
    a. **One day**
    b. One year		

7. Which is biggest?
    a. **The sun**
    b. The earth		

8. Where does Nelson Mandela come from?
    a. England
    b. **Africa**		

9. What is the opposite of Tall?		

a. **Short**		
b. Young		
10. What is 4+3?		
a. 8		
b. 7		
11. Which animal is the tallest?		
a. **Giraffe**		
b. Lion		
12. How many people live in Malawi?		
a. 12 thousand		
b. **12 million**		
13. What is 56 + 73?		
a. **129**		
b. 131		
14. What is 105 ÷ 15?		
a. 9		
b. 7		

Life-skills based questions	**Number of correct answers**	**% of correct answers**
1. Is it possible to see germs on your hands?		
a. Yes		
b. **No**		
2. Can clear water contain harmful germs?		
a. **Yes**		
b. No		
3. Can drinking too much alcohol shorten your life?		
a. **Yes**		
b. No		
4. Can you get HIV by touching someone who has		

HIV?
   a. Yes
   *b. **No***
		483

5. Are there medicines that can help you if you have HIV?
   *a. **Yes***
   b. No		

6. Why is it important to use a bed-net at night?
   *a. **Because they protect you from mosquitoes***
   b. Because they keep you warm		

7. What causes diarrhoea?
   a. Mosquitoes
   *b. **Germs that are swallowed***		

8. Can using glue and drugs kill you?
   *a. **Yes***
   b. No		

9. Which is more healthy for you?
   *a. **Fruit***
   b. Coca Cola		

10. How often should you brush your teeth?
   a. When they look dirty
   *b. **Everyday***		

11. If two people are going to have sex, should they use a condom?
   *a. **Yes***
   b. No		

12. Is it important to keep your water store covered?
   *a. **Yes***
   b. No		

Appendix N: Baseline test in Ethiopia

Explanatory text for Baseline test – Grade 6

The purpose of this baseline is to test the educational attainment of the children at two stages – before they start using the laptops (beginning of September 2008) and once they have been using the laptops for three months (December 2008). This is done in order to see what difference the introduction of the laptops has had on the educational ability and attainment of the children tested.

The baseline test will be conducted in six schools:

- 4 test schools (Menelik, Aste Noad, Rema, Oromea)
- 1 control with XO and no Akili
- 1 control with no XO and no Akili (conventional education)

The reason for the first 'control' school is because we want to know what difference it makes when the children have the XO laptops but do not have Akili on them. The theory is that the children will be able to learn more effectively if they have both an XO and Akili rather than just an XO – this test will enable us to see if the hypothesis is true. The reason for the second 'control' school is so we can compare the change in education when using XO and Akili with a conventional education.

The baseline test has been designed for use with children who are in Grade 6. We will test 50 children from Grade 6 in each school – giving a total of 300 tests. We really need to test the same children both times (September and December) and so it is really important that at the top of the page the **name, age and gender** of each child is recorded. If there are approximately 50 children in the class then please test them all – if there are more then please select 50 children through random sampling (please do not let the teachers select the children as they will probably select those that are likely to get the highest scores). If the school has more than one class of Grade 6 children then please select at random the class to be tested.

It is important that the test is conducted as fairly as possible and that no school has an advantage over the other. Because of this, please do not tell the teachers in the school that we will be coming back in December to test the children again – and **please do not leave any question papers with the teachers in the school**. This is very important because it would give the teachers the opportunity to prepare for the test the next time around.

There is one test that the children need to complete and it is split into two different sections. The purpose of the first section is to test the **attainment** of the children on different subjects. The purpose of the second section (titled 'worldview') is to find out the children's **opinion** on various topics The first section is a conventional test. Please make it very clear to the children that the **second section is not an exam or a test** – we just want the children to write their opinion in response to the questions.

Checklist of key issues for Baseline test

Please ensure the following things before you begin the test:

- Explain to the children that no one in the school will read what they have written, they can be honest and will not get in trouble for what they answer.
- Make sure that the children understand that the first section (regarding their opinion) is not a test and there are no right and wrong answers.
- Make sure that the children do not have opportunity to copy from one another (spread the children out around the room and ensure they cannot see what each other are writing).
- Do not allow the teachers to assist the children as they complete the baselines. If any of the children have a question, please address it yourself and give the same level of assistance in each school.
- Make sure that the students know how much time they have to complete the test and that they are given the same amount of time in each school.
- Make sure that the baseline tests are conducted at the same time of the

day in each school (probably afternoon is best when the classrooms are empty and so the children can spread out)

- Ensure that the children are each given a question paper and a pen to write their answers
- Make sure that we have a record of the **name, age and gender** of each child – make sure the information is filled in on each sheet.

Additional issues for follow-up in December

The same tests will be implemented again in December. It is very important that it is the same children that complete the tests in December because we need to be able to compare their results and so cannot have different children. If some children are not present then please do all you can to find them (give advance warning to the teachers and get them to locate the children if possible) and then continue the test with those children who are available. When the children complete the test for a second time in December, please make sure that they understand that they **do not need to try and remember** what they wrote last time – we are trying to measure is how much they have changed – not how much they can remember.

If you have any additional questions then please contact Bjorn and David and we will assist you.
Thank you.

Literacy

Good teachers

Good teachers are good models for their students. Their job is not only to teach subjects related to school. They can also teach many other important things. What are these things teachers can teach their students? In the paragraph below we will list some of the other important things that a good teacher can teach to a student.

Teachers can teach students how to be honest. They teach students how to respect people and support the old. They also teach their students not to do harmful things to themselves and others. Good teachers tell their students to work hard and help their family. One of the ways a teacher can help students to understand these things is to use examples. Teachers can use examples of the life history of famous persons like Hale Gebresilassie and Nelson Mandela. By understanding their life history students can chose to follow the example of such famous people.

Answer questions 1 and 2 after you have read the passage above.

1.   List 3 important things that a good teacher can teach a student other than school subjects.

2.   Haile and Mandela are examples of _____.

    A. Best athletes   C. Good teachers
    B. Famous people   D. Good parents

3.   Choose the correct answer and write the letter in the blank space.

a.   How many _____does Tebebe _____?

    A.   sheeps ... has   C.   sheeps ... have
    B.   sheep ... have   D.   sheep ... had

b.   The Nile is ___ river in the world.

A. longer   C. the longer

B. long   D. the longest

c.   The horse cannot carry two persons at the same time. Eskinder ____ Adam can use a cart.

A. or   B. and   C. but   D. as well as

4.   Write the English sentence bellow in **Amharic**

"The little boy can run much faster than the old man"

5.   Write the Amharic phrase below in **English**

[insert appropriate Amharic phrase]

Maths

1.   What is the LCM of 5, 10 and 15? _____

2.   2/3 + 5/6 − ½ = _____

3.   A container holds 20 L of oil. If there is a need to put it in bottles that contain 4/5 L, how many bottles are needed? _____

4.   100.235 /100 = _____

5.   Circle the numbers below that are divisible by 9.

    54   21   73   192   83

Geography

1.   What are the main things that Ethiopia sells to other countries? (please   circle two things from the list)

Oil	Flowers	Cars
Coffee	Bananas	Computers

2.   Please match the list of capital cities with the country they are found in (draw lines between the capital city and the country it is found in).

Nairobi	Ethiopia
Addis Ababa	Sudan
Cairo	Ghana
Khartoum	Kenya
Accra	Egypt

3.   Please list as many countries as you can which border Ethiopia

```
┌─────────────────────────────────────────────────────┐
│                                                       │
│                                                       │
│                                                       │
│                                                       │
└─────────────────────────────────────────────────────┘
```

4.   What is the population of Ethiopia? (Please tick one answer)

20 million   45 million
75 million   90 million

Civics

1.   Who is the Prime Minister of Ethiopia?

```
┌─────────────────────────────────────────────────────┐
│                                                       │
│                                                       │
│                                                       │
└─────────────────────────────────────────────────────┘
```

2.   What is the role of the Prime Minister?

```
┌─────────────────────────────────────────────────────┐
│                                                       │
│                                                       │
│                                                       │
└─────────────────────────────────────────────────────┘
```

3.   Please explain what happened at the battle of Adwar. (You can use the other side of the page if you run out of room to write.)

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┌─────────────────────────────────────────────────────┐
│                                                       │
│                                                       │
│                                                       │
└─────────────────────────────────────────────────────┘
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Health

Please explain how you can contract HIV?

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Opinion

In these questions we would just like to know your opinion about the questions, there is no right or wrong answer and you will not be graded on what you write.

1.   What job would you like to do when you grow up?

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- Please explain why you would like to do that job.

```

```

2.   If you could have two wishes what would you wish for?

3.   What do you think is the most important thing about school?

4.   What do you think are the best countries in the world?

- Please explain why you think these are the best countries.

5.   What do you think are the most dangerous countries in the world?

- Please explain why you think these are the most dangerous countries.

End of test

4. ከዚህ በ ፝ የተሰጠውን የ ግሊዝኛ ዐ.ነገር ወደ አማርኛ ቀይሩ፡፡
"The little boy can run much faster than the old man."

5. ከዚህ በ ፝ የተሰጠውን የአማርኛ ዐ.ነገር ወደ ግሊዝኛ ቀይሩ፡፡
"ንበዝ ተማሪ ቤተሰቡን በስራ ይረዳል፡"

2) ሒሳብ

1. የ5 10 ፝ 15 ትልቁ አከፋይ ማን ነው? ———————

2. 2/3 + 5/6 – 1/2 = ----------

3. አንድ ጋን 20ሊትር ዘይት ይዟዋል፡፡ ይህንን ዘይት ወደ 4/5 ሊትር የመያዝ አቅም ወዳላቸው ጠርሙሶች ማከፋፈል ብንፈልግ ምን ያህል ጠርሙሶች ያስፈልጉናል?

4. 100.235 / 100 = ———————

5. ከሚከተሉት ቁጥሮች የ9 ተካፋይ የሆኑትን አክብቡ

54   21   73   192

3) ጂኦግራፊ

1. ከሚከተሉት ኢትዮጲያ ወደውጭ ለንግድ የም ፝ ቀርባቸውን ውጤቶን አክብብ፡፡
   ሀ. ዘይት   መ. ቡና
   ለ. አበባ   ወ. ሙዝ
   ሐ. መኪና   ረ. ኮምፒዩተር

2. የሚከተሉትን አገሮች ከዋና ከተማቸው ጋር አዛምዱ፡፡

   ሀ. ናይሮቢ   1. ኢትዮጵያ
   ለ. አዲስ አባባ   2. ሱዳን
   ሐ. ካይሮ   3. ጋና
   መ. ካርቱም   4. ኬንያ
   ወ. አክራ   5. ግብጽ

3. ከዚህ በ ፝ በተሰጠው ክፍት ቦ ፝ ፤ትዮጲያን የሚያዋስኑዋትን አገሮች ዘር ዝሩ፡፡

494

4. ከዚህ በ፟ች የተሰጠውን የ፟ንግሊዝኛ ዐ.ነገር ወደ አማርኛ ቀይሩ::
   "The little boy can run much faster than the old man."

5. ከዚህ በ፟ች የተሰጠውን የአማርኛ ዐ.ነገር ወደ ፟ንግሊዝኛ ቀይሩ::
   "ነበዝ ተማሪ ቤተሰቡን በስራ ይረዳል:'

2) ሒሳብ

1. የ5 10 ፕ 15 ትልቁ አከፋይ ማን ነው? —————

2. 2/3 + 5/6 – 1/2 = -----------

3. አንድ ጋን 20ሊትር ዘይት ይዞዋል:: ይህንን ዘይት ወደ 4/5 ሊትር የመያዝ
   አቅም ወዳላቸው ጠርሙሶች ማከፋፈል ብንፈልግ ምን ያህል ጠርሙሶች
   ያስፈልጉናል?
4. 100.235 / 100 = —————

5. ከሚከተሉት ቁጥሮች የ9 ተካፋይ የሆኑትን አክብቡ

   54   21   73   192

3) ጂኦግራፊ

1. ከሚከተሉት ኢትዮጲያ ወደውጭ ለንግድ የም ፟ ቀርባቸውን ውጤቶች
   አክብብ::
   ሀ. ዘይት   መ. ቡና
   ለ. አበባ   ሠ. ሙዝ
   ሐ. መኪና   ረ. ኮምፒዩተር

2. የሚከተሉትን አገሮች ከዋና ከተማቸው ጋር አዛምዱ::

   ሀ. ናይሮቢ   1. ኢትዮጵያ
   ለ. አዲስ አባባ   2. ሱዳን
   ሐ. ካይሮ   3. ጋና
   መ. ካርቱም   4. ኬንያ
   ሠ. አክራ   5. ግብጽ

3. ከዚህ በ፟ች በተሰጠው ክፍት ቦ ፟ ፟ትዮጲያን የሚያዋስኑ-ዋትን አገሮች ዘር
   ዝሩ::

Appendix O: Sample of questions from longitudinal interviews

An example of the type of questions asked through the recurring longitudinal interviews with key stakeholders. These interviews took the form of guided conversation that occurred throughout the research period, repeatedly discussing key themes. Below is an example of the questions asked during one such interview with Paola Masperi (07/03/08).

The conversation began with an overview of each of the methods used in monitoring and evaluating the programme.

- *Please give a brief comment on your perspective on each of the methods, what you consider to be the strengths and weaknesses – primarily reflecting on the process of what has happened for the purposes of the PhD and how we could improve things.*

This led into follow-up questions concerning particular methods.

- *Do you think they understood what we meant by a baseline?*
- *Why do you think the teachers were often curious that we wanted to test the same children again - what do you think was going on there?*
- *So what did you think about the lesson observation?*
- *Did you think the group interviews were worth while?*
- *What do you think of the diary – the idea of getting themselves to monitor themselves throughout the process, did it add much value or not?*

I then drilled down into specific methods to ask more detailed questions.

- *When we often asked them 'what is your worst lesson' they often answered again what is their favourite lesson. Where do you think was the breakdown in communication?*
- *Maybe we should have asked what was your worst lesson?*
- *Do you think there is any other way we could have engaged with the children slightly more creatively to get more out of them?*

- *In wanting to do the best evaluation possible - How do you think we could make what we did more realistic, more life-like and less altered by our presence?*

I then identified a series of key words that were pertinent at that particular point in the research and asked for reflections on each of them.

- *Critical Thinking – monitoring and evaluation is pretty dependent upon people answering the question 'why' and that is proving to be quite difficult, why do you think that might be?*
- *Creativity - we wanted to try and evaluate something beyond simply their attainment and we did that quite well - but in an ideal world, if we believe that education is about critical thinking, creativity autonomy, freedom, ability to make good decisions - do you think we even scratched the surface, do you think it is important, because the donors don't care about it so the report doesn't need it.*
- *Constraints – we've mentioned the lack of time that was available – if we had more time do you think it really would have really given us better results and more useful data?*
- *Pedagogy – would it really have made any difference if we had put bad content on the devices?*
- *Culture – how do you think local culture has influenced and affected what people perceive of evaluation, in terms of what people think and understanding what the terms mean, what is expected of them?*
- *Partnership – throughout the whole process we have worked in partnership with the Ministry of Education – what are some of the implications of this choice?*

Appendix P: Letter to participants prior to eLA workshop 2007

This half-day workshop was titled 'Monitoring and evaluation of ICT4E initiatives' and was held on 28/05/07. It was facilitated by Tim Unwin and David Hollow on behalf of the ICT4D Collective and UNESCO Centre for ICT4D, Royal Holloway, University of London.

Dear Colleague,

Your booking has been confirmed for the eLearning Africa pre-conference workshop on 'The Monitoring and Evaluation of ICT4E initiatives in Africa'. We are delighted that you are able to participate, and are anticipating a stimulating discussion through which we can further enhance shared understandings and capabilities effectively to monitor and evaluate the rapidly developing field of ICT for education (ICT4E).

As you will see from the programme at the end of this letter, we have invited four keynote presenters from a variety of backgrounds to help catalyse our breakout sessions. The same theme will run through both sessions. For each theme the first session will focus on current problems/weaknesses and the second session will focus on solutions/strengths related to the effective monitoring and evaluation of ICT for education initiatives. The groups will remain the same for both sessions so as to ensure continuity in the progression of discussion from the focus on problems to solutions.

Our intention is to facilitate a shared learning environment within which we can together help shape the agenda for discussion. In the light of this, please complete three short tasks prior to the workshop.

Please indicate from the list below in which breakout theme you want to participate (please indicate your first and second choice – the most popular three topics will be chosen).

- *Baselines (inc. retrospective construction)*

- *Indicators (inc. externally/internally driven)*

- *Qualitative or quantitative monitoring and evaluation?*

- *Donors (inc. pressures and conflicting agendas)*

- *Budgets (inc. financial, temporal and personnel constraints)*

- *Technological determinism*

- *Culturally and contextually appropriate monitoring and evaluation*

- *Monitoring and evaluation of non computer-based ICT4E programmes*

- *Dissemination of results*

- *Monitoring and evaluation to assess direct impact on student learning*

Please send me (d.m.hollow@rhul.ac.uk) two monitoring and evaluation of ICT4E reports of your choosing – one of which demonstrates good monitoring and evaluation and one of which demonstrates poor monitoring and evaluation (these will be used to create an open-access database of good practice that can be learnt from; in sending them, please indicate that you grant permission for us to post them on the workshop site).

In the space below (and returning this document to d.m.hollow@rhul.ac.uk), please provide an initial and brief response to the following questions:

'What is the current most significant problem with monitoring and evaluation of ICT4E within your field of expertise?

...and how do you think this can best be addressed?

We are seeking rapporteurs for the various sessions, and if you would like to help us by participating in this capacity, please let me know in advance of the workshop.

The outputs of the workshop will be available to all participants through the ICT4D website www.ict4d.org.uk. These will include:

- *Reports from each of the themed breakout sessions*
- *Overall report of workshop proceedings*
- *A resource list of good practice ICT4E monitoring and evaluation reports*
- *A web forum for ongoing interaction between participants*

Thank you very much for taking the time to complete these tasks in advance. If you have any further questions please do not hesitate to get in touch - d.m.hollow@rhul.ac.uk

We look forward to working with you in Nairobi.

Kind Regards,

David Hollow
(on behalf of the ICT4D collective
and UNESCO Centre for ICT4D)

Appendix Q: Report from eLA workshop 2007

Below is the report distributed to all participants following the half-day workshop held at eLearning Africa in Nairobi, 2007. The report was also available for public viewing through the ICT4D Collective Moodle environment.

Workshop aims

The workshop was designed to explore key issues in designing and delivering effective monitoring and evaluation of ICT4E (ICT for education) initiatives in Africa. Participants formed three groups for the breakout sessions on baselines, impact on learning and donors. The sessions were each split into two sections – the first discussion regarding identification of the key problems pertaining to the topic, and the second discussion regarding potential solutions to the identified problems.

The reports from each session are included below, together with an additional list of comments regarding effective monitoring and evaluation of ICT for education.

Breakout workshop 1 – Baselines

Problems and challenges identified

- Ensuring adequate access to information is difficult – especially when attempting to collect data from government organisations and people who do not want to disclose information for political or financial reasons.
- Conducting an effective baseline survey is costly. Implementers are often reluctant to commit the required money due to limited project funds.
- The methodological approach employed is often not appropriate – for example, a questionnaire may not be the best way to gather information from a low literate community.

- Gathering information from a community without involving gate keepers can prove problematic as they may seek to thwart the efforts of the researcher.
- Those from whom data is being collected may be unwilling to participate without some form of incentive. (An example was cited where one of the people being sampled asked the interviewer if he was paid to do the baseline - when the interviewer answered in the affirmative he asked why he should not then be paid for providing information.)
- It is difficult to check the validity of the responses given. (Cases were mentioned where people provided wrong information for their own purposes. The answers they gave were contrary to the realities on ground.)
- The baseline data collection can be limited by the structure of the project evaluation framework.
- The monitoring and evaluation plan is often not put in place at the beginning of the project but is added as an afterthought – potentially in order to justify the project and satisfy donors.
- Baselines can be manipulated to suit different agendas – especially where the pressure to maintain funding affects the objectivity of the implementers.
- There is an overemphasis on quantitative methods when constructing baselines – this leads to a one-sided perspective on reality.

Possible solutions
- Projects should be based on a concrete baseline. If the design of a project is founded on baseline outputs then it is more likely to be successful.
- A baseline is to monitoring and evaluation what a foundation is to a house. A strong foundation will determine strength and durability and it should therefore be accepted policy to have the baseline well defined before funding is received.

- Incorporating more qualitative methods into data gathering for baseline would provide a richer picture of the situation.

- Researchers should employ innovative approaches when gathering data – establishing ways to gather information from respondents without pre-empting their answers.

- Significant background research should be conducted before carrying out a baseline. Establishing the background of the community, previous research conducted and available literature all combine to provide a stronger base for the survey.

- Increased consideration should be given to the ethical dimensions of conducting a baseline survey.

- All stakeholders should be informed of the purpose for the baseline and should give informed consent for this.

- The findings of the baseline should always be disclosed to the stakeholders.

- Gate keepers/ respected individuals within the target community are a useful source for gathering information for the baseline.

- Validity is increased through ensuring that the sample for the baseline is truly representative of the target audience for a project.

- The widely accepted 'bottom-up' approach to a programme should also be adopted when considering and constructing the baseline.

- Sustained cooperation of the respondents in gathering baseline data may require motivation or appropriate incentives.

Breakout workshop 2 – Impact on learning

Problems and challenges identified
- There is considerable frustration in measuring the direct impact of ICT of learning – much impact will be seen only after the intervention in the future. With education you invest today and harvest in 15 years.
- Teachers themselves are confused as to the impact on learning from ICT and so are unlikely to make maximum use of the benefit.

- It is impossible to assess impact on learning based only on measuring in the classroom – many things are missed by doing this because ICT is a 21st century learning skill that goes far beyond the classroom.

- It is difficult to define impact of ICT on learning with quantifiable measurements – can be in the changing of mindsets and introduction of new approaches of thinking.

- It is expensive to assess impact on learning – people are unwilling to make this expense because of the lack of strong evidence that there is an impact.

- There is difficultly in quantifying return on investment/value for money when considering impact on learning.

Possible solutions

- The objective of the intervention must be very clear in order to know what to measure in ascertaining impact.

- Impact on learning should be viewed long term. (Example of building a bridge that lasts for 15 years – additional benefits come only once it is constructed.)

- Any project must begin by identifying the problem with the learning and only then considering how to use ICT to solve the problem.

- There is great potential benefit in utilising quantitative data that has already been collected – such as from governments or international bodies.

- When considering impact on learning it is important to be prepared for unexpected outcomes – both within and beyond the project.

- The focus must be on impact of learning – not input-based impact of technology.

- It is important to use broad definitions of learning that include outside the classroom and student capacity development. This is dependent on developing appropriate indicators for 21st century skills.

- Having a broader conception of how impact on learning is measured would benefit projects – most current measurement instruments do not facilitate this.

Breakout workshop 3 – Donors

Problems and challenges identified
- There is an unequal balance of power within many projects – the current norm is for the donor to dictate the rules and then impose them on the recipient.
- A conflict of interest often exists between donor and recipient in regard to project objectives, implementation and impact.
- It is often not clarified by the donor how much of the budget is allocated for monitoring and evaluation.
- Having a limited project lifespan is not always in the best interests of sustainability.
- Working within an imposed project management framework can hamper project effectiveness.
- Sustainability is not normally conceived in terms of human capacity development.
- Creativity and innovation are often overlooked in favour of focusing on infrastructural issues.

Possible solutions
- There should be genuine partnership between donor and recipient with equal ownership of terms of reference and a template on mutual accountability.
- Donors should take increased account of local conditions as they can have significant impact upon the required equipment specification.
- All monitoring and evaluation exercises should have a clearly agreed and predetermined budget.
- There should be clear agreement regarding power issues – ie 'who decides what'.
- There should be agreed understanding of when a project actually ends.
- Demand-driven projects should be encouraged by donors.
- Counterpart contributions (on the part of the recipient) should be valued and their monetary value should be quantified in some way

- There should be greater adherence to the Paris declaration of OECD countries for recipients.
- The donors should be valued not just for their financial contribution but also for the valuable experience that they offer.
- Projects can be more effective with the appointment of an independent monitoring and evaluation consultant.

General observations regarding effective monitoring and evaluating of ICT for education

- The use of ICT in education has brought lots of new challenges to teachers – they are not all ICT experts and just want to get on with teaching and monitoring and evaluation must take account of this.
- Many students have more advanced ICT ability than their teachers. Often teachers are not fully aware of what students are doing with ICT in their school.
- Monitoring and evaluation of ICT is a very broad topic – it is important to clarify what particular technologies we are talking about in each instance.
- All interventions must be led by an educational focus – not a technology based agenda.
- The monitoring and evaluation exercise itself can be greatly assisted by ICT. Internet based research makes people easy to track and reduces travel costs, and data can be collated and disseminated easily to stakeholders.
- Who owns the monitoring and evaluation process and report – donor or recipient?
- Who decides what are the key outcomes for measurement - donor or recipient?
- The lack of money for monitoring and evaluation means that many reports are unfinished because the funds run out before completion.
- Dissemination of monitoring and evaluation findings to all stakeholders is often neglected.
- We must differentiate between internal and external evaluation.

- It is difficult to ensure the objectivity of the measurements in monitoring and evaluation.
- There is a tendency to only publish monitoring and evaluation of good projects – those that fail are rarely written about or given attention.
- We need to decide what is 'good enough' in the midst of financial constraints – monitoring and evaluation only constitutes a small percentage of the budget.
- Data from monitoring and evaluation is not valid indefinitely – what is the 'expiry date' of your measurements?
- Attention should be given to forward thinking in project planning – thinking more long term about monitoring and evaluation.
- Sometimes there is no money within the budget available for monitoring and evaluation.

Appendix R: Report from eLA workshop 2008

Below is the report distributed to all participants following the half-day workshop held on 28/05/08 at eLearning Africa in Accra 2008 titled 'The effective evaluation of ICT for education initiatives'. The report was also available for public viewing through the ICT4D Collective Moodle environment.

Summary

The workshop formed the second in a three-part eLearning Africa series on effective evaluation of ICT for education in Africa. The first workshop was held in Nairobi in 2007 where the presentations and discussion focussed on the issues of forming baselines, assessing impact on learning and dealing with donors. The 2008 workshop aimed to focus discussion around three key questions which were considered through individual reflection, group discussion, presentations and plenary session. The three questions were:

- What do you consider to be the most significant challenge in conducting effective evaluation of ICT for education in your specific context?
- Why do you consider this to be the most significant challenge?
- How do you think this can be addressed in the best way?

The workshop started with a ten minute introductory thought-piece from David Hollow. It began by considering some of the reasons that the evaluation of ICT for education is such a contentious issue, highlighting the varied priorities, perspectives and definitions of different stakeholders within the field. Following this, it focused on the reasons behind the challenge, combining the conventional evaluation difficulties of time, budget, data and political constraints with the specific challenge of assessing education and assessing ICT. It was argued that the difficulty encountered at the point of confluence between these spheres explains the marginalising and trivialising of evaluation of ICT for education initiatives, leading to a view of evaluation which consists primarily of a retrospective box-ticking exercise in order to

appease donors and secure future funding. As a result of this it was suggested that an intentional focus on the assessing of educational impact is very rare. Having acknowledged the varied perspectives and priorities of different stakeholders the attention then turned to the remaining significant question, regarding whether the initiative in question is actually working in bringing positive educational change to the lives of the intended beneficiaries. It was suggested that this focus on wide-ranging educational outcomes must be at the heart of such effective evaluation.

In light of these issues, the aim of the workshop was both to mainstream and reconceptualise the place of evaluation within all the related ICT for education work that is taking place across Africa. The introduction ended by highlighting four 'P's' as key areas to consider in undertaking such work; stakeholder participation, strong partnership, plurality of methods and a basis on process.

Following the introduction, participants were given a short period of time to write down their personal responses to the three key questions before discussing their answers in groups and feeding back to the group.

Synopsis of individual responses

What is the most significant challenge in conducting effective evaluation of ICT4E?	Why do you consider this to be the most significant challenge?	How do you think this challenge can best be addressed?
The shortage of multi-disciplinary research teams that are able to address all	Because evaluation of this kind is effective when it is multi-disciplinary and multi-	By encouraging and developing evaluation teams at the institutional, national,

facets of the educational venture being evaluated. Often the technologists are divorced from the educationalists and vice versa. Other players who are required to input into the process may also be in short supply or ill-prepared for the task.	faceted. However, owing to the short history of ICT for education, there are not many individuals who have sufficiently developed skills to constitute viable evaluation teams.	regional and international levels.
The learner wants assurance that the online programme they buy is of good quality and has been properly evaluated before launch in a range of different aspects. Otherwise, money is wasted and making a complaint is difficult. The learner has a poor experience and may drop out from the course. This means that desired outcomes are not achieved.	Frequently the learner is not involved in evaluation exercises or given feedback about the results of evaluation.	Through a build up and sharing of knowledge and insights regarding evaluation. A potential avenue of a website as a knowledge base?
That evaluation is usually used as a way	Because not enough focus is put on the	Firstly, transparency should be encouraged

to demonstrate that something works and should therefore be funded again.	importance of learning from what does not work, from the challenges encountered. As a result, outsiders can never tell if something is actually working.	at all levels as it leads to collective learning. Secondly, expectations need to change – there is no perfect situations anywhere so 'negative' evaluations can help increase the overall quality of a programme.
The limited capacity of those saddled with the responsibility of managing ICT evaluations. There is a lack of fundamental knowledge regarding ICT.	Because a gulf exists between their skills set and the desired outputs. Those who are supposed to evaluate do not have sufficient grasp of ICT knowledge, so what will they be evaluating?	More emphasis on process and a standards-based certification within evaluation.
Most of the time the content is not readily available. It often has to be developed by students. Also, often programmes are not finished and so only a few are actually available for evaluation	Because most African Higher Education Institutions have narrow band-width and this limits the ability to do projects.	
Lots of individuals and departments operate independently.	Because it leads to a lack of coordination in evaluation.	By focussing on multi-disciplinary evaluation that is conducted as a team effort, both in process

		and outputs.
Programmes (such as ICT related teacher training programmes) are often introduced without a feasibility study.	Because often it is not actually realistic to implement the technology proposed in the specific locality.	

Synopsis of group responses

What do you consider to be the best way to address the identified challenges?

- Funders, policy makers and donors need to be more committed to driving for the results of evaluation.
- Further funding for a project needs to be tied to a proper evaluation report as this increases accountability.
- Evaluation needs to be conducted as a joint exercise between funders and providers and this is especially the case concerning summative evaluation.
- A process-based approach should be given more emphasis within evaluation.
- The point of view of the learners should be a focal point in conducting evaluation.
- Evaluation should be built into the programme from the planning phase.
- Effective evaluation is dependent upon effective monitoring.
- Monitoring must be realistic and take account of circumstances on the ground.
- The evaluation process must be given 'teeth' and the outputs made to matter.
- The evaluation should have consequences and be tied to funding and promotion.
- Cultivating a desire to improve should be integral to the evaluation.

- Insights regarding effective evaluation practices should be collated and shared widely.

Presentations

Each of the workshop presenters have kindly agreed to make available their power-point presentations. The content of the slides is closely aligned to published material so please ensure that you reference the author should you make use of any of the information in your own work.

- **Case study: Ethiopia XO 5000**
  Bjorn Everts, Education Manager, Eduvision Ltd

- **Capacity building in e-Learning: intended and unintended impacts**
  Dr Til Schoenherr, InWent

- **Projects with Kenyan teachers and farmers: what we can learn and how we can learn it**
  Dr John Traxler, University of Wolverhampton

- **Evaluation of e-Learning initiatives**
  Dr Marilynne Hebert, University of Calgary

Closing session

The final half hour of the workshop gave participants an opportunity to ask questions to the panel of presenters. In closing the workshop, Prof Tim Unwin collated many of the different discussion threads in the form of a mind-map.

Additional resources

Several people expressed frustration regarding the difficulties faced in accessing 'tool-kits' for effective evaluation. Anyone wishing to access such resources will find the following handbook useful:

Wagner, D. *et al.,* 2005. *Monitoring and Evaluation of ICT in Education Projects – A Handbook for Developing Countries*. InfoDev.

For further practical reading regarding the evaluation of ICT in education:

Bamberger, M., Rugh, J. and Mabry, L., 2006. *Real World Evaluation. Working under budget, time, data and political constraints*. London: Sage.

Cousins, J. and Earl, L., (eds) 1995. *Participatory Evaluation in Education. Studies in Evaluation use and organisational learning*. London: Routledge.

Earle, L., (ed) 2004. *Creativity and Constraint: Grassroots Monitoring and Evaluation and the International Aid Arena*. INTRAC Policy Series (18).

Earl, S., Carden, F., and Smutylo, T., 2001. *Outcome Mapping. Building learning and reflection into development programs*. Ottawa: IDRC.

Appendix S: Data table from Malawi baseline test

Analysis of curriculum based questions

Question number	% of correct answers Test 1		% of correct answers Test 2		% change in answers		Comparison of change in % (difference)
	Test School	Control School	Test School	Control School	Test School	Control School	
1.	80	72	72	77	-8	5	-13
2.	72	77	56	77	-16	0	-16
3.	85	80	92	95	7	15	-8
4.	18	26	36	26	18	0	+18
5.	87	92	90	92	3	0	+3
6.	28	31	13	21	-15	-10	-5
7.	36	15	46	28	10	13	-3
8.	62	46	51	41	-11	-5	-6
9.	62	77	64	80	2	3	-1
10.	92	85	87	90	-5	5	-10
11.	74	85	80	87	6	2	+4
12.	82	80	92	92	10	12	-2
13.	62	59	69	56	7	-3	+10
14.	23	14	33	31	10	17	-7
					1.5%		

Analysis of Life skills based questions

Question number	% of correct answers Test 1		% of correct answers Test 2		% change in answers		Comparison of change in %
	Test School	Control School	Test School	Control School	Test School	Control School	
1.	67	62	77	74	10	12	-2
2.	39	33	51	51	12	18	-6
3.	67	67	64	80	-3	13	-16
4.	59	54	67	49	8	-5	+13
5.	36	39	21	51	-15	12	-27

6.	87	85	82	90	-5	5	-10
7.	77	80	80	97	3	17	-14
8.	49	67	59	72	10	5	+5
9.	74	77	80	90	6	13	-7
10.	82	87	85	92	3	5	-2
11.	80	95	82	95	2	0	+2
12.	82	92	87	95	5	3	+2
					3%		

The baseline demonstrated no overall significant change (a 3% increase in correct answers with life skills questions and a 1.5% increase in correct answers with curriculum questions). This is likely due to the design of the test (covering all content) combined with the method of classroom usage (students only used 20% of the content).

Noticeable changes in curriculum attainment in test schools.

There was an indication that the students did increase knowledge regarding the lessons they had watched most regularly.

- An 18% increase in correct answers regarding the question 'What does your heart do?'

  It is the part of the body that thinks
  It is the part of the body that pumps blood

- A 10% increase in correct answers regarding the question 'Which is biggest – the sun or the earth?'

- A 10% increase in correct answers regarding the question 'How many people live in Malawi – 12 thousand or 12 million?'

- An 8.5% increase in correct answers regarding complex mathematics.

- A 10% increase in correct answers regarding the question 'Is it possible to see germs on your hands?'

- A 12% increase in correct answers regarding the question 'Can clear water contain harmful germs?'

- A 10% increase in correct answers regarding the question 'Can using glue and drugs kill you?'

Appendix T: Methodological rationale for partners in Ethiopia

Table distributed to Eduvision, ECBP and Apposit explaining rationale and objective of proposed methods (13/04/08).

Research Method	Description	Number	Time	Issues, constraints and action points
Focus group with teachers	• One hour group discussion with 8-10 teachers regarding their opinion of the programme and the impact on education and their role as teachers	• One focus group per test school (comprising mainly Grade 6 teachers) at each stage of monitoring and evaluation.	• Prior to implementation • After one month of usage • After six months of usage	• Select and contact teachers • Arrange appropriate timing with head of school • Check wording suitability
Focus group with children	• One hour group discussion with 8-10 children regarding their opinion of the programme and the impact on education and their lives as students	• One focus group per test school (comprising mainly Grade 6 students) at each stage of monitoring and evaluation.	• Prior to implementation • After one month of usage • After six months of usage	• Select and contact teachers • Arrange appropriate timing with head of school • Check wording suitability • Translate to Amharic
Lesson observation forms	• Detailed forms which document classroom activity from set of key indicators including 'on-task' behaviour.	• Each Grade 6 class in each test school to be observed once per week.	• From implementation throughout programme	• Agree key indicators • Ensure observers are fully trained
Interview	• Semi-structured interview to	• Head of every test school	• Prior to implementation	• Establish contact with

with head	gain overall perspective on the programme		• After one month of usage • After long break • After six months of usage	head and get appointment for interview
Diaries with teachers	• Opportunity for teachers to reflect upon programme and tell us what they want us to know. Unstructured but with prompts to assist in completion	• Each Grade 6 teacher in every test school (estimated 5 per school)	• From implementation until end of term (once per week or more)	• Ensure participants are willing • Check wording suitability • Print diaries
Diaries with children	• Opportunity for children to reflect upon programme and tell us what they want us to know. Unstructured but with prompts to assist in completion	• 8-10 children from Grade 6 in every test school (selected by teachers)	• From implementation until end of term (once per week or more) • Potential for continuation throughout long break	• Ensure participants are willing • Check wording suitability • Translate to Amharic • Print diaries
Baseline test	• Comparison of impact on child attainment between 4 schools. Menelik, Rema, Control 1 (xo and Melepo) and Control 2 (no xo, no Melepo)	• Every Grade 6 child in each school (random post-test sampling if numbers are uneven)	• Prior to implementation • After six months of usage	• Define priority test content • Design appropriate test • Collaborate with pre-existing school test • Identify control school • Provide laptops for control • Print tests