

Open Learning And Icts: A Radical Solution To Preparing Teachers To Meet The Universal Basic Education (UBE) Challenge

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There is a global crisis in the supply of educated and well prepared primary teachers. The figures are stark. UNICEF estimates that between 10 and 13 million additional teachers will be required if the millennium targets to achieve UBE are to be reached by 2015 (UNICEF, 2000). In some regions of the world the challenge to expand primary provision is particularly acute. Tony Blair, in announcing the G8's Commission for Africa, talked of the 44 million children in the region of primary school age who are out of school. If they are to be brought within the already strained and burdened education systems, how can teachers be provided?

It is clear that major socio-economic structural issues are impacting on teacher quality and teacher supply. The moves towards a knowledge based economy, although uneven, are now impacting on the industrialised and least industrialised parts of the world. Many who might have traditionally become teachers are attracted to other newly emergent occupations. This is particularly true in rural areas where improved communications of all sorts have created a new pattern of employment opportunities. Alongside these deepening structural changes other social processes are at work. Perhaps the most significant for UBE is the impact of the HIV/Aids epidemic on the composition of the primary teaching force. In some countries of sub-Saharan Africa more teachers are lost to Aids each year than are trained through the teacher training system (Remy, 2002).

In this context it is clear that radical solutions are required if the imperative to provide good teachers for the expanding primary system is to be met. And these need to take account of some crucial factors that apply to all developing continents. These include:

- the inevitability that millions of new and existing primary teachers will be 'unqualified' and many of them will have had only a rudimentary secondary level education, or less

- the equally inevitable scenario that the bricks and mortar institutions of teacher education created to meet the needs of the twentieth century will be insufficient to meet the needs of the present century. Existing such institutions will have a role. But it will change. The emphasis must move to school based rather than college based training solutions: emergency training programmes, in one form or another, urgently need to be put in place.
- This paper will explore the way in which new models of supported open learning, integrated with the latest information and communication technologies, can offer radically new solutions to the teacher supply and education crisis.

TEACHERS AND THE CHALLENGE TO ACHIEVE UNIVERSAL BASIC EDUCATION

The statistics and analyses that inform the UBE agenda make salutary reading. Despite strenuous efforts over the last decade, over 100 million children are without primary schooling and 60% of these are girls. These children are spread across the continents. National statistics in country after country illustrate the global problems. In Thailand, for example, of 16.4 million children and young people aged between three and seventeen, only 12 million attend school (Rangsitpol, 1997). Only 10–15% of children in rural areas have the opportunity to move from primary to secondary schools. In this paper the focus is on Sub-Saharan Africa where, in almost all respects, the challenge of providing UBE is at its greatest.

This region is one of the most educationally challenged parts of the world. A news release from UNESCO's Institute of Statistics (12 April, 2002) indicates that four out of every ten primary-age children in sub-Saharan Africa do not go to school. Of those who do, only a small proportion reach a basic level of skills. The number of primary school-age children in the region grew from over 82 million in 1990 to 106 million by 2000. It is projected to rise to 139 million by 2015 (UNESCO, 2000).

The number of children out of school in Sub-Saharan Africa rose significantly in the 1990s. In almost one third of countries, 60 per cent or more of children were out of school, and in more than half of countries, at least 30 per cent were out of school. Added to this the poor quality of much schooling leads to children leaving school with inadequate skills, and results in repetition and completion rates such that a World Bank evaluation has shown many

countries must devote as much as 50 per cent more resources than others to produce a primary school graduate (World Bank, 2000).

Despite these additional resources teacher training systems have been unable to keep pace with expanding primary teaching numbers. Lewin (2002) in a major research study of teacher education policy and practice in low income countries has demonstrated the growing imbalance between the output of trained teachers and the demands as primary provision is expanded.

Table 1, from a UNESCO report (UNESCO, 2000), provides a breakdown of the number of teachers and their qualifications in eleven eastern and southern African countries.

Table 1
Number of primary teachers 1998

	(in thousands):		Percentage of trained teachers:		
	Total:	Female:	Total:	Male:	Female:
Botswana	11,7	9,5	92	87	93
Kenya	192,3	80,9	97	96	97
Lesotho	14,5	11,6	44	41	45
Malawi	34,4	13,9	54	57	49
Namibia	12,0	8,0	29	29	29
South Africa	223,0	174,2	63	66	62
Swaziland	6,4	4,8	91	89	92
Tanzania	106,3	46,8	44	44	44
Uganda	109,7	35,8	-	-	-
Zambia	34,8	16,5	89	86	92
Zimbabwe	59,9	28,3	-	-	-
Total	805,0	430,3	average 67%	average 66%	average 67%

A third of existing teachers are untrained. Thousands of teachers are being recruited each year to the regions primary schools with inadequate subject knowledge and little or no pedagogic preparation.

Teacher supply, as well, is crucially affected by the impact of the HIV/Aids epidemic. UNICEF estimates that 860,000 children in sub-Saharan Africa lost their teachers to Aids in 1999 (UNICEF, 2000).

A study in Namibia (Melaney, 2000) has shown that where the supply of new teachers remains constant at 1000 the shortfall of teachers with the impact of Aids calculated in will be 7,161 by 2010. But this overall statistic, as in many parts of sub-Saharan Africa, masks acute internal disparities. In Namibia,

particularly high infection rates exist in the northern regions of Ondangwa East and Ondangwa West. These regions also have particularly high pupil teacher ratios. As the study observes, unless the Ministry of Education is able to increase the number of teachers in training from highly affected regions, the impacts of the disease will likely affect its ability to achieve its target pupil–teacher ratios in those areas with resulting effects on access and quality of education.

Predicting the consequences for education systems of the demographic changes consequent on HIV/Aids is a complex task. A World Bank study (World Bank, 2000) looked at a number of national case studies. It was estimated, for example, in Zimbabwe, that 3.2% of the available teacher labour would be lost to Aids morbidity each year over the period 2000–2010.

What is now clear is that the HIV/Aids epidemic is a long wave event. The global HIV epidemic is more than two decades old, but only now is the full impact being appreciated. Experts talk about three phases of the epidemic. Phase 1, HIV infection; Phase 2, AIDS deaths following 7-10 years behind; Phase 3, AIDS orphans and other secondary impacts. The phases overlap. AIDS develops slowly from infection to death. Countries who are only in stage one will not yet have felt the impact of later phases, particularly the deaths related to AIDS-related illnesses and the number of AIDS orphans left behind. The HIV infection wave, it appears, has yet to stabilise or peak (African All Party Parliamentary Group, 2004). Except for a handful of countries (Brazil, Thailand and, in Sub-Saharan Africa, Uganda) all countries continue on an upward curve. Attempts to model the impact on services such as education and key workers such as teachers are still in the preliminary stages with important variables under continuous adjustment. Putting on one side, however, the statistical debate around the number and supply of teachers, it is apparent that the epidemic will significantly contribute to the growth of unqualified teachers in primary classrooms and, as importantly, it will change the social and cultural context of teaching for many years to come. What, for example, is the role of the primary teacher in relation to children who have lost their parents? A joint UNICEF and UNAIDS report, 'Children on the Brink' (UNICEF-UNAIDS, 2002) estimates that by 2010 there will be 40 million orphans in the Sub-Saharan African region.

POLICY STRUCTURES

Sub-Saharan Africa is not the only part of the world where reform and development of teacher education is a major concern. A recent study of the UNESCO European region (Moon, 2003) has shown that government

legislation and regulation of teacher education has significantly increased over the last decade. As education systems become more vital to individual and communal life chances, so social concern about the quality of teachers grows. This is a global phenomena as illustrated by the increasingly strident polemic around teacher quality in South Africa in recent years has demonstrated. The significance of teacher quality for the success of UBE seems uncontroversial. Yet national policy systems have yet to catch up in terms of the basic arithmetic of teacher numbers as the criteria by which teacher quality might be judged (Lewin, 2002). International organisations, including those providing in region development resources, are now beginning to come to grips with understanding the interrelation of the key variables determining teacher supply and quality (these include the status of teaching; the attraction of other occupations among the comparably qualified cohort; the relative draw of urban/rural job location for teachers, the impact of HIV/Aids, the extent of teacher education facilities, ICT accessibility).

What is clear from this analysis is that the institutions of teacher education created in the twentieth century will be unable to cope with the scale and urgency of demand required in the twenty-first (Moon, 2000). These were mostly 'bricks and mortar' institutions, offering a traditional college-based course in the foundations of education and some practical experience. These institutions did, and do, concentrate on pre-service, initial training with only limited involvement in the career-long development of teachers.

It seems inevitable that much teacher education will become school based. The resources just do not exist to take millions of unqualified and underqualified teachers away from their classes.

School based training in some form appears both a need and an entitlement for all teachers. The unqualified and underqualified clearly need training opportunities. The qualified need career-long opportunities, not the least to understand how but to implement the new curriculum policies being pursued by most countries. In the primary sector the increasing emphasis on literacy, numeracy and a range of life skills is making new demands on teachers. And teachers form a key part of the campaign to reduce and eradicate HIV/Aids.

Experience to date suggests that school based training needs to be strongly policy led, conceptualised and planned.

At a policy level the following seem essential to understanding the needs of school based approaches to teacher education:

- the need for a clear articulation of the expected outcomes of training with a clear focus on the improvement of classroom practice;
- school-based support from more experienced educational staff (school inspectors, teacher trainers, experienced teachers working in school clusters are just three examples of where the support can come from);
- clear assessment and quality assurance structures so that the teachers know what they have to do and the system is self-monitoring in terms of effectiveness;
- material resource support that explicitly guides the teachers in trying out and experimenting with improved strategies within the classroom;
- school and Principal guidance to ensure that teacher training contributes not just to individual performance but to school improvement as a whole.

Finally access to new interactive technologies could be of enormous potential in significantly enhancing and enriching the education of teachers. Recent experience in Egypt and South Africa (Leach and Moon, 2002; Leach and Power, 2002; Leach and Moon, 2004) and in other parts of the world is showing how access to resources and access to new forms of discourse and dialogue can be promoted through many of the new interactive technologies becoming available. The evolution of the cell phone, for example, into a multi-purpose, internet accessing device has huge potential for teacher education.

Just as Lewin (2002) has argued that policy structures in relation to teacher education are limited so, evidence indicates, policy systems are only just beginning to grapple with the inevitability of school based approaches, the implication for training models and the significance of new technologies. A number of stumbling blocks impede the development of new types of training.

First there is the erroneous perception that school-based teacher education must be equated with old style distance education (the correspondence courses that provided a cheap means of training across much of the region, and in some respects still do). Supported school-based training using state-of-the-art technologies bears no relation to that old, much-discredited model.

Second, as institutions and countries have moved towards the inevitable acceptance that school-based models must be devised, there has been far too heavy a reliance on the models and structures used in traditional pre-service teacher training courses. It is logistically impossible, for example, to take a ten-credit campus college course and try to translate it into a school-based model. Too often as well, course designers treat unqualified or under-

qualified teachers 'as if' they were new pre-service entrants to training. The prior knowledge of teachers, whatever their qualifications, needs to be given prominence in the planning and production of courses. In this respect national or institutional regulatory guidelines for conventional college or university based courses are too often indiscriminately applied to school-based courses. Teachers, for example, in some instances can be hugely inconvenienced by requests to travel far too frequently to sit examinations at some centre a long distance away. There is more than one qualification upgrading programme where teachers in remote rural schools are obliged to leave their families and travel to the city area to do a 'supervised' teaching practice!

Third, the lock step equation of 'one year's full-time study must equal two years part-time study' is seriously inhibiting the new and urgent forms of school-based training that must be introduced in the coming decade. Upgrading qualifications, for example, from Certificate level are being planned to extend over six, sometimes more, years. It has seriously to be questioned whether teachers with a number of years of classroom experience really need to spend as many years acquiring the competence to successfully teach the primary curriculum. Although there is an increasing acceptance that outcomes rather than input processes should drive teacher education, it remains difficult to shift many in the teacher education community away from an unquestioned belief that teachers in schools must have the same number of hours and years as a campus student. A further consequence of this is the way that resources become extensively tied up in one segment of the teaching force whilst the number of teachers without any access to training continues to expand.

Fourthly, programmes are designed in such a way that large chunks seem irrelevant to the class teacher. Teaching educational theory or subject knowledge without making it meaningful to the daily task of the teacher represents a wasted opportunity. Many qualification upgrading programmes, however, because of the orientation towards the traditional 'educational foundation' curriculum of campus courses give little attention to the teachers' daily task. Some qualification upgrading courses exist, for example, which do not address the literacy and numeracy requirements that the same 'underqualified' teachers are having to implement in their classrooms.

Fifthly, in most countries there is little policy reflection on the balance of time and resources between pre-service training and ongoing continuing professional development. This is not an issue unique to Sub-Saharan Africa. In a context, however, where resources are limited and need expanding rapidly there must be a question mark over continuing with traditional

models. Is it appropriate to give some primary teachers three or four years campus-based training whilst others, sometimes a majority, receive none? Is there not a case for providing an intensive foundation course for greater numbers and linking this to better resourced and strongly conceptualised models of supported school-based training?

Finally, as indicated above, there is the issue of technology. In Sub-Saharan Africa, if you look at the situation at the end of the 1990s connectivity and access is poor. Filip (2000), for example, has produced an analysis that shows that in 1999 only a small proportion of the African population, for example, could afford telephone or Internet services. The average total cost of using a local dial-up Internet account for five hours a month in Africa is about \$60 (including usage fees and telephone time, but not telephone line rental). Internet Service Provider (ISP) charges vary greatly, between \$10 and \$100 a month, reflecting different levels of maturity of the markets, the presence or absence of competition, varying tariff policies, and different national policies on access to international telecommunications bandwidth.

As has been seen elsewhere in the world, however, governmental and commercial changes in telecommunications policies can have a significant impact on access to new technologies. Faiola and Buckley (2000) have shown the significance in Latin America of policy changes. In Brazil competition brought internet rates down from \$40 a month in 1997 to \$10 in 1999. In Chile, government regulations in 1999 forced rates down by 70% with the average cost for 20 hours falling from \$18 to \$15.

In the African region similar processes are underway and it seems essential that policy makers must incorporate ICT into the plans for school-based training. Across the region technological connectivity is expanding. Yet in many countries, and in segments of the international development and donor community, resistance to planning to exploit the potential for technologies is met. New communication technologies have enormous potential for teacher education. Some, however, would have it wait until the last school in the last district has a source of power before seeing this as an option. Questions must be raised about those in the international community who argue that the new technologies are not for much of sub-Saharan Africa 'yet'. Relevant here is the influential analysis of Amartya Sen (2001) which critiques the belief dominant in many policy circles that some forms of human development and progress are a kind of luxury that only rich countries can afford. Since our basic freedoms require knowledge and educational skills, designing the opportunities of these to any group is immediately contrary to the basic conditions of such freedom and implies for such a group an 'unfreedom'. The

question, therefore, is not whether or not to use new forms of communication, but rather how, and how quickly?

IMPROVING PRACTICE

One of the main arguments of this paper is that school based approaches to teacher education are an inevitable outcome of the crisis situation in which teacher education is placed in many Sub-Saharan African countries. Slowly, but inexorably, school based schemes are being constructed. The knowledge and experience base, however, despite the efforts of organisations such as The Commonwealth of Learning, dedicated to open and distance learning models, and The World Bank, committed to school based rather than institutional approaches, remains undeveloped. Again Africa is not unique. Teacher educators with the mix of skills to exploit the new demands on the teaching professions and the new opportunities of new technologies are few in number. But in Africa the need is urgent and pressing.

To this end The World Bank has published this year a 'toolkit' for education policy makers, planners and teacher educators in Sub-Saharan Africa (Moon, Leach and Stevens, 2004) which addresses the crisis in teacher education. In his foreword Burger Fredriksen, Senior Education Adviser, sets out the challenge:

Everyone remembers a good teacher. Good teachers are the key to educational expansion and improvement. In many countries in Sub-Saharan Africa, there is an urgent need to expand the numbers of primary and secondary teachers. In all countries, there is an equally important need to improve the quality of teaching. To achieve this, it is clear that new approaches to teacher education are essential. Existing institutions of teacher education will continue to play an important role but, alone, they are unlikely to suffice for meeting the goals of Education for All (EFA) by 2015.

It is fortunate that, just as the twin needs to improve the quantity and quality of teachers become imperative, so new forms of education and training are becoming available. The world is witnessing a revolution in information and communication technologies (ICTs), which can offer training and support of a type and cost hitherto impossible to consider and which must be fully explored given the scale and urgency of the need. In doing so, however, it will be necessary to build on existing and well-tested strategies, including the best models of open and distance learning.

(p. 6)

Extensive consultation and discussion has surrounded the genesis of the toolkit and its compilation. The context of development set out by the authors reflects this agenda of the paper:

The challenge is formidable. Millions of children remain without schooling. Only six out of ten children of primary school age in sub-Saharan Africa have access to schooling. In some countries less than one in four children of this age are in school. The expansion of primary schooling necessitates the recruitment and training of millions of additional teachers. This pressure is impacting on the scale of demand for initial training, the support needed by the many under qualified or unqualified teachers working schools and the career-long need for professional updating and support of all teachers.

It is clear that the 'bricks and mortar' institutional approaches to teacher education that characterized the provision of teacher education in the twentieth century are insufficient to meet the needs of the present century. That is not to suggest such campus-based institutions do not have a role. It is likely, however, that this will change and develop, particularly as ICTs come to play an increasing role in the professional support of teachers. The Dakar agreement (Goal 8) also anticipated this in arguing for making available the benefits of new technologies, especially information and communications technologies.

Open and distance learning, with new forms of ICT, gives the flexibility for learners to study at a time and place which is convenient to them rather than a timetable or schedule predetermined by institutional organizational requirements. Such an approach is highly appropriate, therefore, in meeting the needs of teachers requiring flexible forms of training and support whilst, for the most part, remaining in school. The most recent research and evidence about school improvement also points to the importance of focusing professional development and activity at the classroom or institutional levels. Well-designed, school-based, open and distance learning programs can do that. In this context there is likely to be a major expansion of flexibly organized programs in the coming years. These will seek to be of high quality, sustainable and cost effective. The potential for teacher education programs to contribute to system-wide school improvement goals is considerable and the planning and implementation strategies need to be as thorough and evidence-based as possible.

(p. 12)

The toolkit then goes on to elaborate in detail three stages which precede the building of school based open and distance learning approaches to teacher education:

- A '**Scoping**' phase that identifies the key questions to be asked about the main purpose of the program and its place in the national teacher education system;
- An '**Initial Development**' phase which revisits and refines many of the questions asked in the 'scoping' phase;
- A '**Program Start up**' period when a project team is in place which identifies the more detailed decisions about issues such as resources and support that need to be made.

Built around key questions that policy makers and planners need to address, the toolkit seeks to contribute to significantly strengthen the foundations on which the hundreds of programmes proliferating across Sub-Saharan Africa are built. Key questions, scenarios (see a sample section from the toolkit in Appendix A) are addressed. Whilst open and distance learning has generated shelves of advice on practical affairs (writing texts, using multimedia) and its fair share of theory, the policy and practice 'hinge' arguably remains underdeveloped. The toolkit, therefore, provides:

- **instruments** that can be used by policy makers in scoping programmes;
- **documents** that provide evidence based case studies around key issues.

The toolkit emphasises the significance of exploiting the 'distributed expertise' that can be brought to bear on projects by the judicious use of local, national and international expertise. In this respect the ideas of the toolkit are being used in The Teacher Education in Sub-Saharan Africa (TESSA) project which brings together a consortium of international organisations such as The Open University (UK), The Commonwealth of Learning, and the BBC World Services Trust to work with African institutions (including Fort Hare University in Eastern Cape, South Africa, and The Open University of Tanzania) to develop in region resources which can be adapted and versioned by the newly emergent programmes in teacher education, particularly those addressing the needs of primary teachers. Many of these, and the numbers will grow, are in effect 'emergency training programmes'. The TESSA project illustrates the way in which in regions and international co-operation can work to improve the planning and practical base for teacher education

reform. Both the toolkit and the TESSA project, along with a growing swell of advocacy, reflect the increasing relevance of new modes of communication technologies can contribute to well thought through, sustainable school based approaches to teacher education.

It is difficult to envisage any teacher education project anywhere in the world that fails to use new technologies in some form or another. As the Digital Education Enhancement Project (DEEP) (see <http://www.open.ac.uk/deep> Leach and Moon, 2004) is showing, the most remote communities can access the very latest forms of on-line multi-media support. At the very least the trainers of trainers should have equipment and connectivity. It seem inevitable, as is being seen daily, that the commercial incentive to exploit the web is expanding connectivity faster than any other technology before. This can only work to the advantage of educational users.

AN ARCHITECTURE FOR TEACHER DEVELOPMENT

This is not the first time that rapid changes in forms of communication have had the potential to significantly impact on ambitions for educational and social progress. The printing press, the telegraph, the telephone all, in an earlier age, changed conceptions of the world. The end of the nineteenth century, for example, was a moment of rapid change. Not only was the world in the nineteenth century coming to be united in a net of steel, telegraph wires, and ideologies of progress, but also, and perhaps more significant, for the first time in history growing numbers of people in societies around the world – societies that differed greatly in structure, cultural practice, and historical experience – were coming to the realisation that their daily experience and the structural conditions of that experience were drifting apart. It was in the nineteenth century that, for the first time, self and society were beginning to be interrelated in a global milieu, one in which people's understanding of themselves and sense of the social world could no longer be identified as exclusively tied to only one place, only one tradition (Erlmann, 1999). Such changes in everyday perceptions of time, place and identity were so sweeping that Robertson (1992) speaks of it as a 'take-off phase' of globalisation in which the globalising tendencies of earlier ages gave way to a single inexorable form. On the ground, however, Erlmann (1999) has suggested that emergence of a singular conception of something called humankind and an increasingly interconnected world, was beyond the conceptual grasp of any one individual living under its sway. In the individual's imagination, wherever they were located, this 'global' system' took a wide range of forms of symbolic meanings. Thus emerged a new form of sociospatial, imagination that inscribed itself in the very syntax of language

itself, the 'intersections of absence and presence' as Giddens (1991) has called them.

Into these new spaces created by rapid changes of technology came, in Pierre Bourdieu's terms, 'new cultural intermediaries' and new roles for intellectuals and thinkers. This is a process that characterises the new revolution in communications today. Within our modern forms of consciousness, however, Erlmann (op. cit.) has pointed to the way in which contemporary changes in turn engender and are expressed in a mirror dance between both Europe and Africa's older images of the 'other', each retaining many of the legacies of the 'global imagination' that developed during the late nineteenth century. Most notable among these is the intertwined, persistence of fantasies of an abused and defenceless Africa and, inextricably, symbiotically linked with these, a certain heroic image of Europe and the individual.

It is possible to detect something of this view of 'otherness' in the way the issue of developing teachers to meet the challenge of providing universal education has been perceived and framed. The new forms of communication and the capacity to reconceptualise traditional divides and new practices, in turn offers an opportunity to think in new, and more realistic ways about what is humanly possible. The situation in Sub-Saharan Africa is too pressing and too urgent to be sidelined into an other 'self-contained' development agenda. Africa needs to come mainstream. If teacher education is a global challenge, it needs a global response. This paper argues:

- that the worldwide challenge of UBE has a concomitant challenge to provide teachers and teacher education to make the experience of schooling meaningful and productive;
- that there is a need to build new, flexible, effective, school based forms of teacher education at a reach hitherto undreamt of (and this involves rethinking the traditional pre-service/in-service and other divides);
- that to do this emergent models of development that exploit new forms of technology, need to be examined, in order that new practices of teacher education might be shared, experienced and evaluated globally.

Across the world, many internationally recognised institutions and groups drive the improvement of teacher education, attracting scholars and ideas from every part of the globe. Few of these are situated in the developing world. Few are driven by the real agendas of the poor and the dispossessed. An essential task for teacher education, in parallel with UBE, is to create a new and imaginative 'architecture' for discourse and debate that is truly international, drawing on wide ranging practices and scholarship, and one

that embraces the challenge set out in this paper. The entitlement to training and education for the millions of new teachers needed to meet the challenge of UBE should be a thoroughly modern one; an education and training that raises the status and dignity of a community's teachers and above all builds self-esteem and identity. The form of that architecture, the roles of individuals in creating and working together in this, as well as its many globally and varied related communities, provides an agenda for everyone concerned with the future of schooling in some of the world's most impoverished regions. Nearly a decade ago, Raj Dhanarajan (1996) argued that 'for the first time we have the means to reach almost every single community on the planet and to create societies of lifelong learners'. There is a long way to go in realising the potential of this opportunity.

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