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**Building new modes of teacher education: research analyses for the
Teacher in Education in Sub Saharan Africa programme**

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Introduction

“Teacher development is a key priority of government in the conviction that “no education system can rise above the quality of its teacher”

Nigerian Government Report to E9 conference 2008

Teachers are central to the challenge of achieving Education for All (EFA). In particular teachers are crucial to ensuring high standards of pupil and achievement and meeting the aim of ‘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’. (UNESCO 2005). National education systems, in all parts of the world, face significant challenges in developing stable and high quality teaching forces to meet this goal. Many of these challenges exist irrespective of social and economic conditions but are particularly acute in countries of Sub Saharan Africa. The EFA Global Monitoring Report 2008 estimates that, despite increases in teacher numbers and primary enrolment since 2000, ‘ the world will need more than 18 million new primary education teachers by 2015’ and that ‘ Sub Saharan Africa, East Asia and the Pacific and South and West Asia will each require nearly four million new primary school teachers’ (UNESCO 2008).

These latest predictions build on successive UNESCO monitoring reports which have expressed concern not just over the numbers of teachers but in addition teacher quality and the training they receive. The 2005 EFA Global Monitoring Report suggested that ‘the view that emphasis on access to education has led to inadequate attention being paid to quality, and that improving the quality of existing schools should now be a planning priority, is gaining ground’ (p. 107). ‘Teacher and teacher quality’, the report continues, ‘have been identified as the most important organisational factors associated with student achievement’ (p. 108). And the report quotes research evidence (Lewin, 1999) to suggest that large proportions of primary school teachers lack adequate academic qualifications, training and content knowledge indicating that much pre-service training may be ineffective.

The EFA Global Monitoring Report the following year drew attention to the way in which low average levels of teacher qualification and training leaves much scope for unequal distribution of qualified teachers within, as well as between, countries. The report goes on to state very clearly that teacher numbers are generally low and pupil teacher ratios generally too high in the countries furthest from attaining the EFA goal. The report quotes research to indicate that major teacher shortages are looming (Motivans, 2005). And it reiterates the concerns of the 2005 report about teacher training and conditions of service (p. 87). Although pointing to some improvements in the preparation of teachers being trained, the report concluded that

‘ More than 20% of primary school teachers lack training in more than half the countries in sub-Saharan Africa...’

(Govinda and Biswal, 2005).

The 2006 EFA report also begins to address a number of themes that had begun to appear in the literature on teachers and teacher education, a key issue for Sub Saharan

Africa is the impact of HIV/Aids on teachers, both on their own health and on that of their pupils and parents / carers.

The 2007 EFA Monitoring Report returned to the theme that teachers were a crucial element in the EFA agenda. The report pointed to a 'growing concern that existing incentives (both monetary and non-monetary) are seriously inadequate both to recruit teachers and to keep teachers fully committed to their work in the regions with the greatest EFA challenges' (p. 79). The report highlights a number of further issues that characterize the 'quality' debate, viz. grade repetition, school completion rates and gender disparities. All, it suggests, link directly to the number and quality of teachers. Other commentators have made similar observations. Dembélé and Lefoke (2007) talk of the importance of pedagogic renewal in many developing country contexts. They argue that the quality of teaching is the strongest school-level determinant of pupil achievement. They suggest that in Sub Saharan Africa, in particular, the influence of teaching and learning is greater than in high income countries.

The 2007 Global Monitoring Report also picks up a theme, identified in the 2005 report, around the reform of teacher training; 'Training models for teachers should be reconsidered in many countries to strengthen the school-based pre-and in-service training rather than rely on lengthy traditional, institutional pre-service training' (UNESCO, 2005 p3). The report draws on findings (Dembélé, 2004) that showed that teachers graduating from foreshortened programmes were as effective as those graduating from the longer programmes.

The most recent 2008 monitoring report devotes extensive coverage to teacher issues. Teacher shortages are observed in many countries and these, it is suggested, are compounded by low percentages of trained teachers (pp. 31/40). In many countries the supply of teachers has not kept pace with the increase in enrolment (p. 114).

These reports and the wider literature make the case for rethinking policies towards attracting and retaining teachers. They also argue for new thinking about the forms and length of training. Continuing professional development is recognised as needing significant strengthening. Increasingly new modes of open and distance learning, including new information and communication technology application are seen as vital to new approaches to training provision on a large scale.

Perspectives on Teacher Education

In most countries of the region little robust data exists in respect of entry to training, subsequent entry to employment, or retention within the profession. Such limited data on the number of teachers entering training is in part explained by the large number and variety of teacher education institutions within countries, and to the considerable level of regional autonomy in some countries.

However it is clear that across Sub Saharan Africa some countries have seen an increase in the number of qualified teachers. Nigeria, for example, has raised the percentage of teachers with the minimum National Certificate of Education qualification from 35.7% in 1996 to 91.6% in 2004, given the context of high population the number of teachers involved is considerable. And in many instances this increasing number of qualified teachers is linked to new structures of

certification and frameworks of professional standards or competences. But in some countries, the numbers of teachers still unqualified or under qualified remains formidable (UNESCO, 2008).

However across the region a number of reports suggest the need to review and modernise the training curriculum with a broadening of the view of the teacher education curriculum: increasing emphasis on skills in analysis and reflection and greater articulation between theory and practice. Three issues in particular are commonly highlighted: (i) the need to give greater value and relevance to the school practicum and the need for support during this activity (ii) a more competency based approach to training and assessment of quality (iii) experimentation with more diversified types of training for different locations and career stages. We note a shift in emphasis in preparation for pedagogic practice; the perspective on education is shifting from rote-based transmitting of information with increased use of distance education models. (Welch and Gultig, 2002; Aguti, 2006; Mattison, 2006; Yates, 2007)

A recent report from the Nigerian government encapsulates many of these elements:

The goals of teacher education as enshrined in the national policy are to:

(i) produce highly motivated, conscientious and efficient classroom teachers for all levels of our educational system;

(ii) encourage further the spirit of enquiry and creativity in teachers;

(iii) help teachers to fit into the social life of the community and the society at large and enhance their commitment to national goals;

(iv) provide teachers with the intellectual and professional background adequate for their assignment and make them adaptable to changing situations; and enhance teachers' commitment to the teaching profession. (,E9report Chapter 2, 2008)

The Use of New Technologies

The 2008 ERA monitoring report drew attention to the potential of new communication technologies and new modes of distance education to address the training needs of teachers. There are many examples of ICT being used to support different aspects of teacher training, an African survey recently identified sixty-one different teacher-training initiatives using ICT in Africa (Isaacs, 2005). They ranged from targeted small-scale projects, such as LearnLinks in Morocco, Namibia and Zambia, to broad-scale programmes offered through online distance education, such as the African Virtual University. However in considering the use of ICTs an important distinction needs to be made between the need to train teachers in utilising educational technologies for pedagogic purposes and the way these technologies can be used within the training process itself (Unwin, 2005); many of the projects in this report focus on the former. Discussion here is concerned with the latter purpose; the ways in which particular technologies, solely or in combination, are reported to be

utilised to deliver, improve and shape teacher education programmes. For this latter purpose recent reports and literature indicate an ambitious sense of experimentation but, as yet, constrained implementation and use; adoption of the latest technologies is still relatively rare. (Leach, 2006) A recent report on ICT use in Africa identified only a very limited number of projects exploiting ICTs for teacher development (Farrell et al 2007) for example hand –held computers in rural South African schools (Leach et al, 2005) and VSAT technologies connecting rural schools to the internet in Uganda through SchoolNet Uganda.

Wide scale use of the internet to support teacher education is little reported in Sub Saharan African countries. (An unusually large initiative involving online connectivity is taking place in Egypt. Nearly 10,000 teachers have studied an internet based programme to assist them in writing a research paper – part of the requirement for promotion. (E9 Report chapter 4, 2008)). But a number of websites to support the development of teachers at a variety of levels are being developed; in Nigeria a ‘teachers’ portal’ is being produced in a collaborative project with multinational companies and government agencies. This is intended to serve as a repository for innovations, research findings in teacher education and good practices in instructional design. Alongside this a Millennium Development Goals project is providing a network of computers in 150 training centres across Nigeria exclusively for national continuing professional development courses for teachers.

The toolkit of ICTs available to planners of teacher education programmes is being radically expanded with the availability of three very recent developments in global communications: the attributes of Web 2.0, mobile technologies and open educational resources or open content.

The internet is rapidly evolving from its early days purely as a means to retrieve information to encompass extended user participation through user generated content, data and content sharing and collaborative effort. This use of the web as a platform for generating, re-purposing and consuming content is often referred to as Web 2.0. Social software enables users to socialise, collaborate and work with each other and includes technologies such as weblogs, wikis, social bookmarking and social networking tools. There are currently many unresolved issues around use of these technologies, for example which pedagogies are enhanced by web 2.0 tools, but this architecture of participation has much potential for teacher education offering opportunities for teachers at all levels to collaborate across boundaries of space and time.

Across the globe there is a significant increase in the availability of relatively low cost mobile devices, mainly but not exclusively the mobile phone. These wireless and mobile technologies offer both a channel for distribution of materials and opportunities for easy regular engagement with teachers in communities lacking telecommunications infrastructure. The University of Pretoria, for example, is successfully using mobile phones to provide administrative and academic support to teachers on a range of programmes (Viljoen et al 2005).

The third significant breakthrough is the potential of the internet to create a global intellectual resource of teaching materials - Open Educational Resources (OERs). The development of OERs offers the promise of unencumbered access to digital

resources across the globe through the world wide web. The term ‘open’ is taken to mean both freely available over the internet (no technical or price barriers) and with as few restrictions (copyrighting and licensing) as possible on the use of the resources. OERs can take many forms from a store of discrete learning objects such as photographs, data and text materials through to media rich pedagogically structured e-learning materials in a full course and any tools used to support access to knowledge. (Atkins et al 2007).

The availability of OERs in a variety of formats therefore has the potential to make a difference in teaching and learning: OERs could dramatically reduce the costs of learning materials within training programmes. The facility to amend and modify OERs makes the production of educational materials relevant to the cultural context and heritage of each locality begin to become viable; OERs have a role in the promotion of innovation and change in educational practices (OCLOS 2007) and through reflected use and sharing of OERs there is the potential for constant improvement of the materials, the ‘virtuous learning loop’ (Atkins et al 2007).

Use of ICTs is not unproblematic for communities in Sub Saharan Africa; a key concern is the need to improve infrastructures, in particular to equip teacher training institutes with computers and internet facilities. Alongside this is a identification of the need for training to enhance the skills of teacher educators to enable them to make best use of the technologies and their pedagogic affordances. However there is continuing and growing interest in further development and deployment of new technologies to support teacher education; not only to enable the region to participate more fully in global learning networks but also to expand capacity, enhance communications, particularly in rural areas, and to open up possibilities of collaboration.

The .TESSA Approach

TESSA (Teacher Education in Sub Saharan Africa) is working within institutional and national policy systems to support more practically focussed and innovative systems of education. It is a consortium of institutions from across Sub Saharan Africa together with the Open University, UK and international organizations. TESSA aims to significantly develop and improve teacher practice in ways that raise levels of pupil achievement drawing on the research analyses outlined above and underpinned by the characteristics of effective in-service training programmes (Craig et al, 1998) TESSA is aiming to bring some of the advantages of new forms of communication technologies to address the challenge of designing and delivering programmes of school based professional learning, giving particular attention to the creation of a core of highly structured original open educational resources (OERs) to support teacher development in forms that can be adopted and localised to a variety of cultural and linguistic situations. In this way TESSA is contributing to bridging the digital divide and redressing the situation by which while Africa represents 12% of the world population, web content generated from Africa remains below 1%.¹

¹

Since its launch in 2005 TESSA has achieved much; a strong vibrant consortium of both African and international institutions; authoring and editing of a large number of core OERs (localized for different contexts) to support improvements in teachers' classroom practices; and a functioning website (www.tessafrica.net) providing access to the materials in various formats together with tools to support communication and sharing of further OERS. Alongside the development of the materials and website, consortium institutions have developed plans for integration of the localized TESSA OERS into teacher education programmes to meet identified needs; examples of such initiatives are described in detail below.

Drawing on the range of research and reports which highlighted the need for development of teachers' pedagogic practice, the TESSA change strategy identified the 'school classroom context' as the critical point at which actions and interventions will have maximum impact. The TESSA materials, therefore, are primarily oriented towards practical, activity based teacher learning, albeit within an overall framework that acknowledges the significance on classroom practice of a range of contextual factors (socio-cultural conditions, especially language and policy processes, for example). Whilst retaining classroom practice at the 'core' of interventions, TESSA modes of implementation embrace the significance of other stakeholders in ensuring successful take up. Examples include school leaders and regional and national authorities.

The traditional approach to implementation analysis can be described as 'centre to peripheral', the process starting with policymakers' intent and proceeding through a series of increasingly specific objective steps to a satisfactory outcome, measured against the original statement of intent. Embedded within this approach is an assumption that the generation of more and more explicit policy directives and greater attention to administrative responsibilities at each step will lead to more effective policy implementation. Discretion and local bargaining at each step of the process are highly controlled, leading to uniformity of implementation with little valuing of knowledge and skills at the delivery level.

Over a number of years and projects, experience, developing in TESSA, has suggested that intervention should start at the point of maximum impact. In this the work of people like Richard Elmore has been highly influential. This approach questions the assumption that policymakers have the determining influence on the implementation process. Instead our analysis has been concerned with isolating the critical point in complex education organisational structures with closest proximity to the problem - pupils' low levels of achievement during primary schooling - and describing the specific behaviours which need to happen at this point to solve, or move towards solution, of the problem. We begin, not with a statement of intent, but with a precise target of concrete behaviours at this 'core' point, the classroom. Our assumption is that successful problem solving in complex systems is directly linked to the ability to exert maximum leverage at the point where the problem is most immediate.

In the classroom, our analysis focuses on the transactions which are critical to the development of teachers' practices and hence to successful pupil learning. The structure of the intervention is not divorced from teachers' practices; what teachers need to know and know how to do is learned in the context of practice. (Much

training often pulls teachers away from their practice, focussing on information about practice rather than ‘knowledge in practice’ and ‘knowledge of practice’. (Schon, 1983)) In this there is a valuing of the agency of those closest to the problem and their ability to influence it; headteachers, tutors and peer teachers within the school. Alignment and interaction with existing communities of practice, at different levels within the system, is key to sustainability and scalability. The community is able to serve as a memory, spreading new ideas, tools and outcomes and achieving collective improvement. (Schalger & Fusco 2003).

TESSA materials define the new knowledge and skills teachers will learn as a consequence of their engagement, how this new knowledge and skills will then be manifested in their classroom practices and the specific activities that lead to this learning. Building outwards from the classroom, TESSA adopts the most direct path through the system or institution to support the development of teachers’ enacted practice. At each level questions are raised about the ability of that organisational unit to have a tangible influence on the target behaviour – teachers’ practices - and the resource required. This enables identification of the points in the system where certain tasks should be performed. Only at the final stage is a policy described which is directly linked to the targeting of resource to maximise impact. The innovations associated with the TESSA intervention thus become intimately connected to the larger learning context and developed within established social learning processes. (Elmore 2000).

Our analytical framework then takes account of the knowledge and problem solving abilities which exist at those levels of the education system not easily influenced by policy makers. Implementation is thus seen as a dispersed and decentralised process with discretionary activity occurring primarily within identified programmes and courses of partner institutions. TESSA coordinators, who occupy a variety of institutional roles, are key to the change process. Their knowledge of the social structures within which they are operating, the competing agendas and the relative influence of different layers within their institutions, are crucial in understanding the potential effects of the implementation strategies. The delegated discretion accorded to TESSA coordinators enables them to develop the most direct path for greatest impact on teachers’ practices in their context.

The integrated research and evaluation activity, together with the network of TESSA coordinators, are seen as vehicles to contributing to change, helping to inform ongoing modifications that enhance mechanisms for affecting teachers’ practice and supporting institutional sustainability.

Emerging data from TESSA

A recent TESSA project explored the development of new models of teacher education within existing in-service provision of the National Teachers Institute in Nigeria and the Open University, Sudan. Three projects were carried out, two in Nigeria and one in Sudan; these investigated different approaches to the use of school based, ICT enhanced materials to promote teacher learning in ways that could be replicable at scale. (TEAMS, 2008). Two projects combined TESSA materials (www.tessafrica.net) with existing course materials; the way in which the materials were selected and deployed different between the two institutions. The third project,

undertaken in Nigeria, adopted a different approach, in which the TESSA materials were used in teachers outside a formal programme in a number of schools, thus allowing exploration of a different approach to in-service teacher development. Each project involved the use of TESSA materials by around 250 student teachers, evaluation of the impact of the materials and exploration of how the pilot could be extended to maximum scale.

At NTI the TESSA materials from across the primary curriculum were integrated into selected course modules in the Nigerian Certificate in Education (NCE) ; the students involved were teachers enrolled on the NTI NCE upgrading programme in both rural and urban centres in three states. Over half of the students had only school learning certificates, with the remainder holding some level of teaching qualification. They taught classes of varying sizes (the majority having between 40 – 60 pupils) across the primary age range. Very few had access to a library or the internet.

At the Open University of the Sudan (OUS) the TESSA materials were used by students on the OUS B.Ed programme. This is aimed at up-grading the teaching skills and qualifications of the 120,000 under qualified primary teachers currently working in the country. OUS is a national provider and the project was undertaken in urban and rural locations in three regions of Sudan. In this group the prior educational achievements were more diverse; around 45% held a degree whilst around a third held a School Certificate. The TESSA materials for two curriculum areas, Numeracy and Science, were used alongside the usual B.Ed teaching practice materials for teachers working in grades 3 – 6 with varying class sizes. Access to library facilities was good for these teachers but again few had access to the internet.

At NTI TESSA materials were integrated into selected modules in one of two ways; either a new unit comprising exclusively TESSA approaches and materials was assembled and replaced an existing unit, or individual TESSA activities, case studies or supporting resources, were added to or replaced small granules of existing material. These new integrated modules were produced and printed as new course books.

At OUS it was considered most appropriate to provide TESSA materials alongside existing materials with the latter printed and distributed in the normal way. Thus it was possible to allocate different selections of the numeracy and science materials to subsets of the pilot sample of teachers.

Each of these projects introduced tutors and students to the materials through tutor briefings and student orientation events. Student teachers then used the materials for a period of 8 weeks, discussing them with colleagues and tutors during contact sessions at Study Centres. During this period participating student teachers were observed by their teaching practice supervisors and staff from NTI headquarters using a specially designed lesson observation instrument. At the end of the period student teachers were required to comment on the extent to which various aspects of their teaching had developed through the use of the classroom activities.

In the third project, undertaken by NTI, qualified NCE teachers in each of three states were asked to choose two TESSA study units to work through during the course of the project. Here head teachers provided ongoing support to the teachers and acted as supervisors, undertaking three formal lesson observations in addition to ongoing

informal discussions all centred on developing classroom practice. In addition independent supervisors, senior teacher educators from NTI, carried out lesson observations and formative assessments with the teachers.

In terms of the impact of the TESSA materials all three studies reported positive outcomes; teachers enjoyed using the materials and showed evidence of improved teaching practice, shifting from traditional teaching methods towards more activity – based approaches. The OUS team concluded that ‘ the student teachers benefited greatly from participating in the project, and this is reflected in their teaching performance.’

Reflective thinking after the teaching of the lessons was found to a beneficial outcome of the projects. Detailed evaluation of the projects revealed that amongst the key criteria for successful integration and use of the classroom based activities for teacher learning were, teacher education staff understanding of and commitment to activity – based learning, support for teachers in developing their communication skills and possible translation of the materials into local languages for lower primary level teachers - significant issues arose in the linguistically diverse contexts of the Nigerian schools; poor levels of English among teacher challenged teachers both in respect of their own understanding and learning from the materials and also in respect of communicating the activities and ideas to their pupils.

The project also pointed to the crucial role of supervisor support for teachers; the project teams concluded that with regular monitoring, supervision and reflective activities, teachers can benefit immensely from this approach.

The project teams, at NTI and OUS, recommended that this approach should be extended within their programmes and in additional upgrading and re-training programmes in their respective countries.

These projects are two examples of the activities currently being undertaken by members of the TESSA consortium with TESSA materials (further details of activity at other institutions is described at www.tessafrica.net).

Conclusion

Recent identified international trends in teacher education (OECD, 2001) detailed what teachers should know and be able to do. Certain characteristics identified in this survey, such as working collaboratively, reflecting on practice and structuring teaching to meet learners needs are missing from many teacher education programmes in sub Saharan Africa. Often conditions for teaching and learning in colleges of education are inadequate, reflecting the school systems they serve. Physical infrastructure is in a poor condition and inadequate for the number of students with limited access to textbooks and libraries. Teacher educators themselves have few, if any opportunities for staff development engagement. (Adekola, 2007)

There is thus an increasing imperative for new modes of teacher education to meet the quantitative and qualitative goals of UBE and EFA in Sub Saharan Africa.

This paper suggests that the characteristics of one possible mode are realised in an ambitious collaborative undertaking, the TESSA programme. This attempts to bring teacher training nearer to the point of delivery - school classrooms - offering practical activities to encourage teachers to become reflective practitioners rather than dispensers of knowledge. Cost effective implementation of this approach is through a utilisation of a core of highly structured study units which can be adapted for local implementation. However, as the recent projects in Sudan and Nigeria, identified, alongside these classroom activity must develop professional support for teachers and teacher educators. The challenge for programme designers is the inclusion of such mentoring and support at scale within budgetary constraints.

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