

TESSA OER: A SUSTAINABLE APPROACH TO TEACHER EDUCATION IN SUB-SAHARAN AFRICA

SUB-THEME: TEACHING AND LEARNING

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Summary

The sustainable supply of highly qualified teachers is critical to the human resource development of sub-Saharan Africa; the teacher is responsible for preparing the next generation of engineers, doctors and other professionals and skilled personnel. The current need has arisen from the upsurge in school enrolment since the 1990s as a result of the commitment of sub-Saharan African countries to the MDG and EFA goals as well as other regional and sub-regional commitments. In some countries pupil/teacher ratios are as high as 81:1 at the primary level.

The dire need for qualified teachers is exacerbated by the presence of a high percentage of untrained primary teachers in more than half of sub-Saharan African countries. Worsening the issue is the negative effect on teacher supply of the HIV/AIDS pandemic and the migration of trained teachers to other countries and other job situations inside their countries. All these factors play a contributing role in the low levels of pupil achievement and low rates for pupil completion of primary schooling in many parts of the region.

It is clear that the conventional approach to TE in sub-Saharan Africa that restricts teacher education to the college- or campus-based model has not been able to meet the increasing demand for teachers with effective pedagogical competencies and in their right numbers in a sustainable way.

The Teacher Education in Sub-Saharan Africa (TESSA) model of teacher education is designed to train adequate numbers of quality teachers in a sustainable way to meet increasing demand for teachers and at the same time provide adequate, and affordable resources for teacher education.. Combining innovative educational models and technological tools, TESSA has created an extensive range of web-based open educational resources (in English, French, Arabic and Kiswahili) and advisory support systems to extend access to new modes of school-based teacher training. As a consortium of thirteen teacher training institutions from nine countries in sub-Saharan Africa, it is providing support for sustainable teacher development in these countries. In Ghana, TESSA resources are being used in the Colleges of Education and the teaching

universities. The materials allow educators to have access to a wide range of free quality open educational resources, which they can download, use, reuse, modify, and share.

It is observed that if sub-Saharan Africa is to meet its teacher need, which is currently estimated to be 4 million then it must adopt innovative and sustainable models of teacher development that uses the new forms of communication technologies such as the TESSA model.

Introduction

The provision of basic education for all children of sub-Saharan Africa (SSA) by 2015 is one of the major educational objectives that many countries especially, sub Saharan African countries are grappling with. Countries in sub-Saharan Africa are among countries in other regional blocks that have committed themselves to the achievement of UNESCO's Education for All (EFA) goals and the UN's Millennium Development Goals (MDGs), which include the achievement of completion of primary education by all pupils (Universal Primary Education (UPE)) by 2015.

Commitment to these initiatives has given rise to an upsurge in school enrolment since 1990. Access to pre-primary education increased from 5 million in 1999 to 9 million in 2006, even though gross enrollment ratio remained low at 14% with huge disparities among nations. The average net enrolment ratio at the primary level in SSA went up dramatically from 54% to 70% during the same period resulting in a total of 116 million children enrolled in the schools in 2006. A marked increase was noted for new entrants to primary schools, which increased from 16 million in 1999 to 23 million in 2006 with the net intake ratios almost doubling from a median of 27% to 52%. With these increases, the number of out of school children across the region also dropped by 10 million, from 45 million in 1999 to 35 million in 2006. But this represents a third of the school-age population who are not enrolled in school. The situation is particularly serious in some countries such as Nigeria, which accounts for one in 9 of the world's out of school children (UNESCO, 2008).

Although access to and participation in primary education is improving, the quality of educational delivery remains a challenge, leading to high repetition and drop out rates - many millions of children are not completing primary schooling. The repetition rate at the primary level is still the highest among all regions of the world even though it decreased from 17.4% to 13.1% from 1999 to 2006. The primary cohort completion rate of 67% for the school year ending in 2005 is still very low (UNESCO 2008) ..

The situation described above creates an urgent need for SSA countries to devise and implement policies to meet the demand for trained and resourceful teachers in order to

meet the increase in pupil enrolment, participation and achievement, and reduce repetition rates.

Teacher and Teacher Education context

The demographic and practical realities facing teacher supply and demand accentuates the need for teachers. The increase in pupil enrolment has increased pupil-teacher ratios in Sub-Saharan Africa from 41:1 to 45:1 since 1999. The pupil-teacher ratio for SSA could increase further to about 58:1 if the 35 million primary-age children not in school are enrolled (UNESCO, 2009). The situation is more serious in some countries in the sub region. In Mozambique and Rwanda, for example, it is 67:1 and 66:1 respectively (UNESCO, 2009), in Congo it is 83:1 (UNESCO, 2008).

Sub-Saharan Africa faces a severe shortage of teachers to meet its needs. For example, nationally, Ghana has a quarter of the teachers it needs, Lesotho has a fifth (UNESCO, 2005). However, the national figures tend to hide the great disparities in teacher distribution within countries due to poor decentralised education planning systems (Moon, 2008). In the last budget statement of the Government of Ghana it was stated that about 32,000 national service and volunteer teachers were recruited to beef up the teacher supply (GOG, 2009).

The dire need for qualified teachers is exacerbated by the presence of a high percentage of untrained primary teachers in more than half of sub Saharan African countries. It is estimated that over half of the existing 2.6 million teachers in SSA are unqualified. The 2008 GMR observes teacher shortages in many countries and these, it is suggested, are compounded by low percentages of trained teachers (pp. 31/40) (UNESCO, 2008)

Worsening the issue is the negative effect of the HIV/AIDS pandemic and the migration of teachers to other countries and other job situations inside their countries on teacher supply and distribution (Anamuah-Mensah et al, 2008). It is estimated that over four million extra teachers are needed to meet the teacher demand in SSA (Global Campaign for Education, 2005; UNESCO, 2008).

The sustainable supply of highly qualified teachers is critical to the human resource development of sub- Saharan Africa. But the inability of SSA to provide enough teachers, over the years, to meet its needs has been attributed to teacher education's reliance on conventional campus-based or college-based training. This is characterised by relatively low student-capacity, lack of capacity for expansion, limited teaching/learning resources, and removal of teachers from their classrooms to upgrade themselves while leaving the classrooms empty. This conventional approach has not contributed to the sustainable development of quality teachers on the continent. The programmes are often predominantly theory-laden with consequent influences on trainees' teaching styles. Teachers will need intense and supported learning experiences to change their strategies,

a condition which is not provided for in teacher education. Reports show that even where Sub-Saharan African school curricula encourage investigational or activity methods, the majority of lessons rely on traditional rote-learning (Mereku, 2003; Mirembe, 2002).

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.

The current unsustainable situation has been attributed to the lack of policies (as well as non implementation of policies) to address this great demand. A number of studies have pointed to the instability of policy structures to support the extension and improvement of teacher education in sub-Saharan Africa. Most notably, a series of research studies initiated through the 'MUSTER' programme highlighted the inadequate, often incoherent, strategies addressing this enormous challenge (Lewin, 2002; Lewin and Stuart, 2003). Successive UNESCO monitoring reports have articulated the pressing need for strategies to improve the provision and quality of teacher education and training (UNESCO, 2005; UNESCO, 2008). The theme of the reform of teacher education, first identified in the 2005 report. ' 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.

TESSA's Model of Sustainable Teacher Education

In response, initiatives such as TTISSA (Teacher Training Initiative for Sub-Saharan Africa) have emerged to provide sustainable teacher education. TTISSA is a ten-year, UNESCO-led programme working with global, regional and national stakeholders to facilitate advocacy, capacity building and policy development around teacher education (UNESCO, 2007b).

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. 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 many of the projects described here focus on the need to train teachers in utilising educational technologies for pedagogic purposes rather than the way these technologies can be used within the training process itself. 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.

One important initiative that exploits recent developments in new technologies and is gradually gaining ground as an acceptable mode of sustainable teacher training in a number of African countries is the Teacher Education in Sub-Saharan Africa (TESSA) initiative. TESSA is working in collaboration with TTISSA, and other initiatives in providing practical tools to enable national education systems implement the EFA objectives.

TESSA is a consortium of eighteen organisations aimed at developing a highly creative response to the above challenges in teacher education. Established in 2005, TESSA brings together thirteen higher education institutions from nine countries in Sub-Saharan Africa together with five international organisations including the BBC World Service Trust, the Commonwealth of Learning, African Virtual University, SAIDE of South Africa and the Open University, UK. The countries are Ghana, Kenya, Nigeria, Rwanda, South Africa, Sudan, Tanzania, Uganda and Zambia. TESSA'S key objective is to improve access to, and raise the quality of, all aspects of teacher education and training (Wolfenden, 2008). The setting up of a Partner Advisory Council consisting of the consortium members provides policy directions for achieving this objective.

Working through closely knitted and complementary strands of research and development activity, the TESSA initiative is using the potential of new communication and technology tools to develop teacher education materials. It has focussed on bringing together the affordances of increasingly available connectivity in the region, the advent of Open Educational Resources (with their associated philosophy of adapt and share) and aspects of the social web. This unique mix has led to the creation and production of original country-specific Open Educational Resources (OERs) in different forms to support teacher education. The original TESSA materials were written by over 100 academics from across the region and have been contextualised into nine country-formats including versions in French, Arabic and Kiswahilli. In total TESSA has created nine hundred study units (sections). A TESSA website (www.tessafrica.net) has been created where all materials are located. Built on open source technology, the website is at the heart of the TESSA initiative (see fig.1 below). The user is engaged through the TESSA website.



Fig.1 TESSA website Welcome page

Content of TESSA Resources

The core TESSA content consists of on-line, text based study units for developing key teacher practices, competencies and skills delivered through the context of pupils' school curricula. These TESSA materials are designed to be a pedagogic “toolkit” of skills, knowledge and artefacts to enhance the professional knowledge (both subject and pedagogic) of teachers. The school-integrated activities, at the heart of the study units, combine theory and practice, and encourage teachers to learn about teaching through classroom experiences while stimulating experimentation and critical debate (Connolly et al, 2007). The materials were refined through workshops and testing and were subjected to rigorous quality assurance procedures.

The text materials are complemented by a series of audio materials. The efficacy of audio to support teacher development is well documented but currently little deployed in the region. TESSA audio materials include thirty short dramas, using characters from a radio drama series together with teachers' audio diaries. Centered on key classroom incidents, the audio clips illuminate issues and model good practice to inform and stimulate discussion and reflection.

The study units focus on core curriculum areas; Literacy, Numeracy, Science, Social Sciences and the Arts, and Life Skills. TESSA sections (study units) are the smallest level

of granularity available on the website and they are written in a highly structured template. Sections are designed to possess integrity and autonomy with a high degree of internal context. Each section begins with learning outcomes and teacher learning is scaffolded through the activities and case studies to the final key activity (Connolly et al, 2007). This scaffolding also supports language comprehension. The template structure facilitates easy localisation for different environments; component parts of each section are designed to be generic or with contextual references. Localisation focuses on the latter components – the case studies and supporting resources.

On the website, ‘Key Resources’ offer practical advice on a wide range of topics such as “working with large or multi-grade classes” and “using the community and the local environment as a resource”. Users are encouraged to develop these materials further through the OER ‘adapt and share’ philosophy and extend sections by incorporating other OERs.

An innovative tool, ‘TESSA Share’ offers an area for users (teacher educators and teachers) to share amended or additional content as collections of files, ‘baskets’, in a wide range of formats. This ‘easy-to-use’ tool encourages iterative improvement of the materials along with the ability to offer notes on the context and effectiveness of their use.

From its conception the TESSA website aimed for international credibility, yet to be locally appropriate. The underpinning organisational principle of the TESSA website is country identity. Users select their country to locate materials appropriately contextualised and to participate in online discussions with professionals in their locality and in the language of their choice.

Although TESSA’s OER resources are internet-based, TESSA is aware through its study on total bandwidth and internet penetration that Africa is the “least connected continent” (SAIDE, 2005:11). The same study reported, however, that higher education institutions are increasing their budgets for ICT infrastructure. Similarly, a more recent study by Commonwealth of Learning and infoDev noted that Sub-Saharan African Universities and schools are developing internal ICT policies (Farrell and Isaacs, 2007). In addition, the OLCOS Roadmap:2012 highlights the growing numbers of educators and students using the internet for personal and professional use (Geser, 2007).

While progress is being made in the expansion and use of internet resources, for many in Sub-Saharan Africa, especially those in rural areas, internet access is expensive, limited, and hindered by unreliable electricity and fragile ICT infrastructures. Indeed these factors initially challenged the development and deployment of TESSA’s OERs. For sustainable use of the resources, It was necessary that the website was designed to take these conditions into account.

TESSA responded to these challenges by developing the OERs in a variety of formats: html, 'Word' and PDF, for use both on-screen and in print. A document transformation 'engine' was designed into the site specifically for this process. In addition, CDs containing the complete resources were produced for those with computers but no internet connection. This is to ensure that the TESSA OERs are accessible, useable, and adaptable.

Sustainability of TESSA Approach

The sustainable nature of TESSA model can be described by the following characteristics:

- Although TESSA is online-based, the flexible nature of the resources allows for its offline use through the production of print and CD versions, which can be used in all situations;
- It allows for more teachers to be trained beyond the capacity of campus-based training;
- Used as a school-based learning resource, it helps in locating teachers' learning in their own classrooms, grounded in their own experiences, and linking theory and practice through classroom activities; it can therefore be used for training the numerous untrained teachers in the schools without removing them from the classrooms;
- It allows teacher educators to construct and enhance their courses by using different learning pathways through a series of locally relevant study units that are freely available and easily accessible;
- It provides opportunity for teachers to modify, adapt and add-on to, and thereby enrich the stock of resources available for training (through TESSA Share);
- The sharing of ideas allows for networking among teachers (through TESSA Share and Forums);
- It provides a supportive on-line environment for communities of TESSA users – teacher educators and teachers;
- It places emphasis on the importance of well-qualified teachers in meeting EFA/MDG goals including pupil completion of primary school and achievement.
- The activity-based nature of the resources assists in shifting the focus of teacher education from theoretically dominated, content-heavy programmes to school-based practical activities, which recognise the duality of theory and practice; and encourage pupil-centred learning.
- It focuses on the need to change teachers' practices and hence students' learning from chalk and talk and receptive teaching and learning to investigative , reflective and constructivist teaching and learning. The resources are only a means to an end; they are to promote innovation and change in teaching and learning, and to create a new educational culture and mindset.
- The use of locally relevant resources allows for easy utilization of the resources.

INSTITUTIONAL IMPLEMENTATION OF TESSA

For institutional implementation, the TESSA model gives great consideration to the “legacy of traditional institutional frameworks” and existing course models to ensure the TESSA OERs are relevant, useable, flexible, are durable (OLCOS, 2007 p.41). The richness and flexibility of TESSA OERs allows for a wide range of implementation models, for both pre- and in-service courses and at informal, institutional and national levels. This allows for the use TESSA materials for training teachers in a sustainable manner in a variety of contexts. The following highlights the use of TESSA resources in teacher education programmes to date:

Integrating TESSA into existing curricula

The granular form of TESSA enables integration of the TESSA materials and approaches without major revisions to existing course materials. The National Teachers’ Institute (NTI) of Nigeria has incorporated TESSA activities and case studies within the general and subject methodology course materials of the Nigerian Certificate of Education as part of the in-service training for teachers in their distance learning programme. Student teachers carry out the activities during teaching practice periods, supported by tutors and teaching practice supervisors. As at now, 65,000 teachers have been retrained.

The Open University of Sudan has restructured the teaching practice components of its Bachelor of Education programme with TESSA OERs. A Teachers’ Guide for Teaching Strategies has been developed to support student teachers in their final B.Ed teaching practice It is estimated that about 53,000 students will be involved;

Creating new curricula using TESSA

A national review of the Nigerian Certificate in Education, the predominant pre-service teaching qualification, identified the need for the new curriculum to focus on active teaching skills and their development in the classroom. The National Commission for Colleges of Education (NCCE), in collaboration with TESSA, has incorporated TESSA activities and case studies into the new curriculum to respond to these needs. The NCCE has produced five subject-based manuals each with ten classroom activities adapted from TESSA OERs together with a dedicated teacher educator manual. Individual Colleges of Education, delivering this programme on-campus, will have access to all the printed resources.

At the Open University of Tanzania, a new diploma course has been developed based on TESSA resources for an initial group of 500 students.

Implementing TESSA through the use of new technologies

At the University of Education, Winneba, a new Post Graduate Diploma in Mentorship is being developed to address an acute national shortage of support for newly qualified

teachers. A major thrust of the pedagogic approach is the creation of specially created videos of TESSA activities and the use of TESSA audio dramas distributed on CDs to enhance student learning. This model provides a new perspective on how active teaching strategies can be introduced to student learners.

Students on the Bachelor of Education programme at the University of Fort Hare in South Africa are creating their own learning pathways linking TESSA activities to their individual needs and areas for development. This model utilises the granularity of the TESSA resources to empower the students to develop their own learning.

At OLA College of Education in Ghana, which has a reliable connectivity and bandwidth, student teachers prepare their lesson notes using TESSA resources directly from the net during specific times allocated on the timetable.

Informal implementation of TESSA through student support groups

At Kyambogo University, Uganda, TESSA resources are being used by about 1000 students on a new Diploma in Education programme. Informal student self support groups have grown up and are developing a focus on supporting the use of TESSA activities during semesters, with the facilitators able to access TESSA resources.

At the Institute of Education of the University of Cape Coast, students have formed TESSA clubs as an informal group for sharing information and experiences.

Informal implementation of TESSA by individual staff

At the Department of Early Childhood Development of the University of Education, Winneba, lecturers have adapted TESSA OERs for early childhood education and have produced a set of videos based on field experiences for on-campus teaching practice.

Conclusion

Sub-Saharan African countries have a critical need to provide about 4 million trained teachers for their classrooms if the MDG and EFA are to be achieved by 2015. This enormous challenge of producing large number of teacher of high quality cannot be done through the conventional teacher education model. The TESSA model described above offers an innovative and sustainable model of teacher development through harnessing the benefits of new forms of communication technologies in particular access to 'open resources' and sharing across communities which are geographically distant. It 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. The

flexible and adaptable approach of TESSA allows teacher educators to use it to accomplish different purposes

TESSA is currently one of Africa's most extensive multi-lingual websites for Open Education Resources. Through its activities it is setting a new research agenda around the conditions, education and training of teachers. There has been a high level of interest from new members and new countries, eg Namibia, Cameroon, Sierra Leone, Mozambique, Senegal, Togo, Malawi, and The Gambia thereby embracing Anglophone, Francophone and Lusophone Africa.

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