



Teacher Education in Sub-Saharan Africa



Case Studies

2010–11



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Foreword

Sub-Saharan Africa continues to make good progress in expanding access to education as a result of the global commitment to ensure universal access to primary education spelt out in the Dakar Education for All goals and the Millennium Development Goals. However, it is facing enormous challenges in one of the critical issues in education, namely, quality, as a result of the increasing shortage of trained teachers. The teacher factor is an important reagent in the education quality equation and it is estimated that sub-Saharan Africa will need a further 1.1 million qualified teachers to meet its teacher requirement.

The challenges that this poses underlie the philosophy and strategies used by the Teacher Education in Sub-Saharan Africa (TESSA) Consortium to address a range of disempowering situations, such as high pupil/teacher ratios, urban/rural divide, and teacher-centred pedagogy. It is said that the major purport of education is to engage pupils in learning processes that liberate them from socio-economic and cultural shackles and places them on the path to develop themselves in freedom. In his book, *Development as Freedom*, Amartya Sen (1999) argues (my own paraphrasing) that education expands the freedom that people need in order to make development happen and that without the liberating effect of education, there is no freedom or development.

The authors of the 12 case studies in this book have presented scenarios on their experiences in the adoption and practice of TESSA OERs, as an empowering educational practice for the millions of pupils for whom education embodies the hope for a better future. The challenges that the authors deal with range from forms of adoption of TESSA OERs, issues of context, classroom interaction, practical pupil-centredness of activities, opportunities for creating similar resources, as well as infrastructural and other challenges that mitigate against effective adoption. The 12 accounts from eight countries (Ghana, Kenya, Nigeria, Rwanda, South Africa, Sudan, Tanzania and Uganda) provide a wide diversity of contexts within which TESSA OERs are implemented.

In addition, they depict the different levels of adoption and the challenges encountered (e.g. KIE, Kyambogo). Although many institutions mainly use the resources in print form (e.g. NTI, Egerton, OUS, OUT, UNISA), other institutions use the website and/or CDs (e.g. UCC's Colleges of Education, University of Pretoria, UEW). Another interesting aspect of the

adoption is the level of ownership assumed by the institution: whereas most institutions have integrated aspects of the resources into their regular programmes (e.g. OUS, OUT, UEW, UNISA, Egerton University), others may have integrated them in assignments given to students (e.g. University of Pretoria, UFH, Makerere University) or as part of the general school timetabling (e.g. OLA College cited in the UCC case study) or in the formation of informal groups (e.g. UCC). Almost all the authors cited the benefits that TESSA OERs have generated in their institutions and their training programmes including the shift from teacher-centred to activity-based, pupil-centred pedagogies that empower pupils to be creative and critical problem solvers.

It is clear from the accounts of the authors that despite the challenges that may be encountered in the use of TESSA OERs, it is a model that has the potential to reform educational practice through transforming teaching and learning to liberate pupils, encourage creativity, innovation and problem solving.

Professor Jophus Anamuah-Mensah
TESSA Executive Chair

Overview of 12 case studies

Freda Wolfenden (TESSA Director, The Open University, UK) with Moira Laidlaw
2010–11

Introduction

TESSA grew out of the vision of prominent educationalists at African and international institutions; they shared a background in teacher education and a determination to improve the quality of basic education across sub-Saharan Africa (UNESCO, 2010). Deeply concerned about the lack of teachers in large parts of the region, particularly rural areas, and the low level of skills of large numbers of existing teachers, these educationalists directed their analysis to teacher training. TESSA was officially launched in 2005 to improve access to, and the quality of, teacher education. The TESSA Consortium of African-based and international institutions harnessed emerging ideas around open content to focus on the collaborative creation and use of an Open Educational Resource (OER) toolkit to support school-based teacher professional development.

After over five years of collaboration it is highly appropriate to hear the voices of some key TESSA players, the TESSA Coordinators¹. In this collection they record their perspectives on the development and the adaptation of the TESSA OERs, and the implementation and integration of these OERs into programmes in their own institutions. Contributors were offered prompt questions which they might wish to explore, but the form and content of the contributions are individual stories rather than official institutional reports. The diversity of the accounts reflects the differing nature of their institutions, vastly different political contexts and personal circumstances.

In many development initiatives, reports and evaluations deliver ‘management’ or external commentary but the voices of individual participants are frequently given little space. This collection attempts to redress this for TESSA. The voices in these case studies are those of teacher educators. Engagement of teacher educators is crucial to improvements in formal teacher development opportunities and our interest here was to understand their sense of

¹ TESSA is funded by grants and donations from a number of philanthropic charitable trusts and government agencies.

‘purpose, passion and desire’ in their own context (Hargreaves, 1994). These understandings are feeding into the strategic direction of TESSA and planning of future collaborative activity. Each individual account offers us a small insight into the complexities of change, the challenges and rewards of engaging with innovation and the motivations for so doing. But perhaps more enlightening is to read the collection as a whole, noting emerging refrains across the project sites and the influence of international collaboration to inspire and drive forward action for change. In this brief overview we have attempted to draw out themes to support the reader to gain a fuller picture of the context and form of TESSA activity.

TESSA background

The scale of the challenge concerning teachers for basic education in sub-Saharan Africa (SSA) is immense: approximately a third of existing primary teachers in SSA are either unqualified or under-qualified; to achieve Universal Primary Education an estimated 1.1 million additional teachers are required (UNESCO, 2011) and existing teacher education institutions do not have capacity to train greater numbers of teachers or to offer extensive professional development to teachers in service.

This necessitates innovative and cost-effective solutions, workable across huge areas where infrastructure is weak and availability of learning resources is inadequate or non-existent. Solutions need to work with existing institutions and policy agendas but harness the latest international thinking around learning and the affordances of new technologies. Such were the challenging and demanding factors framing initial TESSA discussions.

But for the TESSA founders, the solution was to be found not by starting with changes to systems and frameworks. Rather analysis identified the ‘school classroom context’ as the critical point at which actions and interventions could have maximum impact. At the heart of the TESSA response is the classroom teacher; a teacher working in challenging conditions without any useful resources to support her in mediating the curriculum, or sufficient textbooks for her classes, and perhaps with little or no prior training. Support for this teacher needs to be school-based, enabling her to remain with her pupils while developing her own understandings, skills, beliefs, values and behaviours in the context of her own practice. Similarly support for new teachers needs to enable them to develop their professionalism within the context of the classroom – a dimension commonly neglected in many teacher education programmes where practicum can be limited to one period during the entire two–three-year programme.

Bringing together OU and African expertise the TESSA founders envisioned a toolkit for the teacher – a set of open resources which could be adapted for multiple contexts and cultures to help the teacher to teach the appropriate curriculum while improving their practice. The result is the TESSA OER bank; a collection of OER study units focused on the core areas of the primary school curriculum – numeracy, literacy, science, life skills and social studies and the arts, which support the teacher to develop a set of core classroom skills – understandings, competencies, skills and behaviours. The units draw on a particular view of learning – situated, distributed and social – for both teachers and their pupils. Teachers are not expected to apply instrumentally suggestions or detailed recipes for best practice to their classrooms. Rather the TESSA OERs aim to encourage and support the development of reflective and discursive identities and roles within the teachers, encouraging them to engage in ongoing conversations with and about their practice. The OER study units attempt to encourage the incremental integration of new strategies and tools into existing practice, with support to use the ideas and tools in other curriculum areas. The model of teacher change recognises the importance of making mistakes and gaining enjoyment and motivation from being able to surmount obstacles (Bruner, 1996; Lave and Wenger, 1991; Wenger, 1998; Wolfenden, 2008).

Crucially for members of the TESSA network, the approaches embedded in TESSA are congruent with those expressed in national policy documents and seen to support national policy goals.

The Rwandan Ministry of Education has introduced a new policy on Teacher Education, which emphasises the use of participatory methods in Primary Teacher and Primary School Education and the subjects ... Fortuitously TESSA materials match these areas well.

Rutebuka, KIE, Rwanda

At the UNISA engagement with TESSA coincided with poor results in a national literacy evaluation; the TESSA literacy OERs were explicitly chosen by the UNISA to address this with its student teachers. For all the contributors the ethos and aims of TESSA were seen to resonate with those of their own institution, supporting empowerment from within the project.

TESSA OER engagement

Individual motivations for prolonged contribution to TESSA are varied but a key feature of the accounts here is the high level of personal engagement with the project and a deep desire to effect change. This is perhaps not unusual from senior professionals in teacher education but the sense of ownership conveyed by some authors is striking. TESSA is a practical

representation of their own personal views about what is ‘effective’ teaching and fits with their desire to locate teacher education in a broader framework of values and social goals:

The [TESSA] materials used for teacher preparation expose students to knowledge beyond the boundaries of South Africa as intended in the vision of the UNISA.

Lenyai, UNISA

Through harnessing the ideas of the OER movement TESSA aimed to generate resources which are conceptually strong and have local applicability. Each institution in the TESSA Consortium was involved in adapting the TESSA OERs for their context (Wolfenden, 2008); in some cases the case study author leads this process. Analysis has shown that the adaptation process did not lead to extensive changes in many of the TESSA OERs (Wolfenden and Buckler, 2012) but the process itself can be seen to have encouraged ownership of TESSA OERs with colleagues in each institution raising awareness of the initiative within their Faculty. Adaptation including translation into a number of languages; for Rwanda the existence of TESSA OERs in both French and English is seen to support the development of English language fluency for teachers and teacher educators, following the government shift to English as the mode of instruction. Interpreting and adapting the materials is happening at many points of teaching and learning; several case studies give examples of the adaptation of the OERs by individual teachers in their own classrooms in order more fully to meet learning needs of their pupils.

Threaded through the case studies is an understanding of the need for engagement of political and education stakeholders at all levels. Several authors record the energy and effort expended in gaining recognition of the validity of the approach and use of TESSA OERs from key stakeholders both internal and external – ministry officials, district officers, or head teachers – to their institution. But the involvement of stakeholders can itself create challenges through fragmented infrastructures and competing priorities; the need to deal with the demands of operational realities can sometimes obscure planning and progress.

At the University of Education, Winneba, the involvement of heads of departments in acclimatising TESSA OERs with lecturers was seen to reduce rejection of the materials whereas in other institutions more sustained discussion was required to convince teacher educators that the resources were relevant and it was permissible to adapt and integrate them. In Rwanda KIE colleagues have needed to be persistent with a succession of ministers and changes of leadership and responsibilities within their institution. But after numerous pauses in activity there are now hopeful signs of progress and use of the TESSA OERs in the KIE programme. In neighbouring Kenya initial disapproval of TESSA by Ministry of Education

Quality Assurance Officers has been overcome through focused and detailed work in schools and most recently the TESSA Coordinator (Professor Fred Keraro) has been invited to share TESSA work at the highest policy level in Kenya and more widely with CEMASTEIA (Centre for Mathematics, Science and Technology Education in Africa). Similar stories can be found in many of the accounts – TESSA champions have learnt to be passionate and persistent advocates.

TESSA OER use

Implementation of TESSA at each institution is best described as following the process of ‘backward mapping’ (Elmore, 1979). TESSA players are driven by shared high level aims and aspirations but the form and extent of TESSA engagement at each site is shaped by personal, institutional and national factors including analysis of need and priorities. There has been no blueprint for implementation applied across the network. Rather, within the professional supportive structure of the TESSA network each institution has selected programmes and groups of students to learn with the common tools (TESSA resources, webspace and guidance): for example, at the University of Pretoria, TESSA study units form part of all the specialisms in the B.Ed. degree; at the University of Education, Winneba, students in the Early Childhood Care and Development department adapt the TESSA activities for their young pupils; and at the Open University of Tanzania, TESSA study units are integrated into approximately 35% of the modules on a new and unique programme – the Diploma in Primary Teacher Education. This flexibility of use is a key feature of the TESSA OER implementation.

(The full list of programmes and courses in which TESSA OERs are being used can be found in Appendix 3.)

Factors which have influenced such choices include:

- **Background and current responsibilities of the TESSA Coordinator:** At Egerton University, the TESSA Coordinator, Professor Fred Keraro, has been a key champion of their innovative B.Ed. Primary and Diploma in Primary Education and hence the focus of Egerton University’s engagement with TESSA has been around these qualifications. Professor Keraro recognised his agency to effect change within this qualification; he himself was able to draw on the TESSA materials in his own lectures and seminars and set assignments for students requiring their detailed engagement with the TESSA science materials. Thus although initial use was very small scale, his

personal experiences of successes and challenges gave depth and credibility to his advocacy for TESSA with colleagues.

- **Institution priorities:** As a relatively new university, the Open University of Sudan (OUS) is keen to prove that it can deliver effective teacher professional development using distance methods. It has been mandated by the government to ‘upgrade’ all primary schoolteachers to B.Ed. level – an increase in teacher certification which the OUS is keen should also lead to an improvement in pupil achievement. Thus the focus of the OUS TESSA activity was in the teaching practice cycles of the B.Ed. programme; key players at the OUS identified TESSA as a tool to support them in realising their ambition of increasing the importance of practice in relation to theory. Equally importantly, this was an area of the teacher education curriculum where there were no existing government endorsed curriculum materials so introduction of TESSA OERs was seen by the relevant government agency as complementing their own materials rather than as a competing alternative.
- **National priorities:** The National Teachers’ Institute (NTI), Nigeria holds a remit to deliver teacher education, using distance methods, across the entire country. As a national provider the NTI is engaged in a number of initiatives including delivery of a capacity building programme for teachers in basic education, known as the ‘MDG project’. This involves an annual cycle of workshops for over 100,000 teachers at a number of centres across Nigeria. The NTI chose to develop a booklet of TESSA resources for all teachers participating in these workshops; the booklets are introduced and modelled during the workshops and teachers are encouraged to try out the ideas when they return to their schools. The NTI acknowledges this model of use needs further development, in particular support for teachers following the workshops, but TESSA materials provided a framework and resources for the programme.

Similarly institutions vary widely in how they facilitate access to the TESSA OERs; mode of engagement with TESSA resources usually reflects the operating methods of each institution, harnessing existing systems and facilities (Thakrar et al., 2009). The NTI and OUS are both large-scale institutions operating at a distance with dispersed cohorts of students. They have utilised facilities associated with these operations to print and distribute books of TESSA OERs to several thousand students, supporting use through their tutors and supervisors as part of their existing duties. For these institutions engagement has foregrounded the need to learn more about the supervisor–trainee relationship and how to manage and guide this at a distance.

Smaller institutions teaching through face-to-face delivery have become more intimately engaged in the use of TESSA at school level. For the lecturers involved at these institutions an unforeseen benefit has been an increased knowledge of the reality of teachers' lives in schools and an awareness of context when discussing teaching scenarios or when assessing teachers in classrooms;

The [TESSA] resources also added a new dimension to the content of teaching practice modules, that of context. Lecturers in the TESSA Committee realised the significance of relating teaching practice activities to different learning contexts and to evaluate student teachers in terms of those contexts.

Lenyai, UNISA

An interesting footnote to TESSA use is the rippling out to other organisations including NGOs offering informal or non-accredited teacher education; in Rwanda KIE has been working with IEE (International Education Exchange), Makerere University has used the TESSA OERs in a Global Partnership Teachers' Certificate course (British Council) and through the University of Cape Coast TESSA OERs are supporting teacher development in the TENI project (VSO) in Northern Ghana.

Benefits of TESSA

The case studies all testify that TESSA OERs provide much needed materials to support teachers in the classroom; material that mediates the textbook and guides teachers to develop skills and behaviours they have encountered in theory sessions.

The accounts here are qualitative personal views from TESSA champions but these experienced educators are acutely realistic about the challenges of achieving sustainable change. Analysis of the accounts suggest that benefits could be grouped as:

- **Benefits to teacher educators:** The personal benefits reported by many of the writers have been considerable: exposure to a range of ideas and practices at both TESSA events (including visits to other sites) and international conferences; peer support for problem solving and personal activity such as research writing or presenting; and a wider understanding of their role. Many case studies speak of increased skills in devising, writing and selecting learning materials and in planning a broader range of experiences for teachers.

In common with many teacher educators across the continent, many of these teacher educators and their colleagues have little or no personal experience of school teaching and for several of the authors participation in TESSA has broadened and deepened their knowledge of what happens in school classrooms and possibly motivated them to explore teachers' contexts more fully;

Engaging in TESSA activities has also helped me to grasp education issues in primary schools and in Uganda in general much more clearly than was the case before.

Bbuye and Aguti, Makerere University, Uganda

- **Benefits to institutions:** In some of the case studies we learn of challenge and disruption to current ways of thinking and operating; at the OUT the move towards assessment through portfolios rather than exclusive reliance on examinations has been given added impetus through engagement with TESSA. TESSA involvement has also raised the profile of ‘CPD for serving primary teachers in the OUT’. At Makerere University

TESSA has also facilitated the introduction of activity-based materials for all the external programmes ... and this has become an accepted strategy. Hence the methodology of teaching in our study materials has changed from being teacher centred to being student centred, and this is also influencing how teaching is carried out at Makerere University itself.

Bbuye and Aguti, Makerere University, Uganda

In other institutions participation in TESSA has encouraged increased collaboration across departments and with linked institutions such as the Primary Teachers’ Colleges with Kyambogo University.

- **Benefits in schools and classrooms:** Achieving improved pupil learning is at the heart of TESSA but establishing a clear link between TESSA use and pupil attainment with any certainty is fraught with difficulty – a multitude of factors influence change in the classroom. However, there is plenty of evidence here that teachers recognise and accept, sometimes over time, that the approaches, ideas and activities within the TESSA OERs offer a ‘professionalism’ that works for them (Evans, 2011). Trying out the activities is frequently not wholly comfortable but there are many references to teachers seeing the use of the TESSA OERs as offering something better for both themselves, as teachers, and for their pupils.

All ... supervisors believed that the handbook had led to improvements in teaching. They had observed improvements in pupil motivation and involvement.

Zahawi, OUS

..., it makes the teaching very easy and children understand you better.

Essuman and Otami, UEW, Ghana

The observers and head teachers found more pupil enjoyment and interest. They reported increased self-confidence, good class control and better pupil–teacher relationships.

Yaya, NTI, Nigeria

The biggest testimony to the value of TESSA is possibly the continued engagement demonstrated by the individuals and institutions in this collection over a six-year period; engagement has not been at a constant level – TESSA Coordinators at KIE and Kyambogo discuss this in detail, but none have withdrawn from the project². Perhaps this underlines the need for a longer-term approach to development work such as this – champions and innovators need time to convince relevant stakeholders and to work through to a position of sustained momentum. Certainly there is evidence here of the power of working collaboratively in a consortium with peers. The accounts all include descriptions of the professional support, energy and motivation – that colleagues gained from collaboration within the TESSA network;

..., participation in the TESSA Consortium has afforded the UFH academics ... access to communities of practice within the institution, across institutions, across countries and generated a new discourse of finding, adapting and sharing educational resources.

Sotuku, UFH, South Africa

Challenges

Access to TESSA OERs remains deeply problematic. The aspirations for teacher interaction through the web, articulated in the planning documents of 2005, now look wildly optimistic; most teachers in sub-Saharan Africa remain without easy access to the internet other than through occasional visits to cybercafés. Connectivity is unreliable and printing expensive.

For some [colleges], printing materials was no problem, but for others this was an insuperable obstacle.

Kaije, Kyambogo University, Uganda

Reaching out to more under-resourced schools [is required]. ... Such schools do not have electricity so the CD-ROMS as a vehicle for sharing TESSA OERs are not suitable. Such schools require materials in print and this is costly.

Sotuku, UFH, South Africa

Further, inadequate and/or insufficient training in the ICT skills necessary to navigate the website successfully are also seen as challenges to be overcome. Even in many tertiary education institutions, infrastructure and connectivity is still limited and some of the TESSA Coordinators writing here do not possess either their own PC/laptop or access to the internet from their desk. However, there are hopeful signs of increasing availability of technology access and use; for example, OLA college in Ghana, working with the University of Cape Coast, has sufficient computers to offer each student a weekly opportunity to browse the TESSA website and the UNISA is using video conferencing and SMS to support teachers in

² Institutions receive no financial assistance from the TESSA project with embedding use of TESSA OERs.

remote areas with their use of the TESSA OERs. Also promising is the increasing access to offline versions of the TESSA OERs through the use of CDs and institutional intranets. To date, efforts to engage teachers beyond those registered on formal programmes have shown limited success. The reasons for this are complex; for some teachers there is no perceived ‘problem’ with their current practice; for others the TESSA OERs originate from an unfamiliar source and so they feel little ownership of the materials; and for some the materials are limited in their relevance as they are not sufficiently closely linked to the pupil curriculum or able to be shared directly with pupils. In-service teachers need support and guidance from a variety of sources to become confident with the TESSA OERs; findings from the University of Pretoria reveal the importance of support from tutors, peers and the school community and current work in Kenya points to the key role that head teachers can play here.

Concluding remarks

The starting point for TESSA is a recognition that pupils’ achievements in schools are heavily influenced by the knowledge, skills, behaviour and values of their teachers. The diversity of implementation models and mode of use throughout the TESSA partner institutions is a reflection of the everyday realities of practice within these partner institutions and the schools they serve; the motivations, priorities and capacity of individuals and systems are all factors in the plans and activities reported here – sometimes considered explicitly, in other cases having an implicit or tacit presence. These reports suggest that TESSA is beginning to support teacher development which combines what is universal in classroom pedagogy with unique aspects – cultural, policy-related and educational – of each environment (Crossley and Watson, 2009). This is achieved through an innovative approach which forfeits designing a professional development *system* – and hence encounters challenges in evaluation and quality assurance across the different sites, in favour of a *conceptually strong toolkit* with local adaptability. Thus how the participants experience the change becomes part of the planning for enacting the change; there are gaps between the intentions and outcomes in many of the case studies but these might be considered relatively modest compared to those in many similar projects.

As the use of TESSA OERs becomes more fully embedded in the programmes described here, we look forward to further accounts of progress and increasingly robust analysis of the influence of TESSA on the practices of teacher educators and teachers.

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Appendix 1: Acronyms and abbreviations

ACE – Advanced Certificate in Education

ADE – Advanced Diploma in Education

B.Com. – Bachelor of Commerce

B.Ed. – Bachelor of Education

B.Sc. – Bachelor of Science

CEMASTEА – Centre for Mathematics, Science and Technology Education in Africa

CETDAR – Centre for Teacher Development and Action Research

CLING – Community Literacy and Numeracy Group

COL – Commonwealth of Learning

CPD – Continuing Professional Development

DEPE – Diploma in Education Primary External

DETA – Distance Education for Teachers in Africa

Dip. Ed. – Diploma in Education

DLS – Distance Learning System

DPE – Diploma in Primary Education

DPTE – Diploma in Primary Teacher Education

ECCD – Early Childhood Care and Development

EFA – Education for All

FCT – Federal Capital Territory (Nigeria)

FET – Further Education and Training

GES – Ghana Education Service

GSM – Global Systems for Mobile communication

HEI – Higher Education Institution

ICE – Institute of Continuing Education

ICT – Information and Communication Technology

IEE – International Education Exchange

ITEK – Institute of Teacher Education, Kyambogo

KIE – Kigali Institute of Education

LIEP – Language in Education Policy

LOLT – Language of Learning and Teaching

MA – Master of Arts

MDG – Millennium Development Goal

M.Ed. – Master of Education
MoE – Ministry of Education
MoEVT – Ministry of Education and Vocational Training
M.Phil. – Master of Philosophy
NCCE – National Commission for Colleges of Education
NCE – Nigeria Certificate in Education
NGO – Non-Governmental Organisation
NMI – Nelson Mandela Institute
NPDE – National Professional Diploma in Education
NTI – National Teachers’ Institute (Nigeria)
OBE – Outcomes-Based Education
ODL – Open and Distance Learning
OER – Open Educational Resource
OLA – Our Lady of the Apostles (College of Education, Ghana)
OLE – Open Learning Exchange (Ghana)
OU – Open University
OUS – Open University of Sudan
OUT – Open University of Tanzania
PES – Primary Education Studies
PGCE – Postgraduate Certificate of Education
PGDE – Postgraduate Diploma in Education
Ph.D. – Doctor of Philosophy
PTC – Primary Teachers’ College
PTE – Primary Teacher Education
PTTP – Pivotal Teacher Training Programme
RPL – ‘Recognition of Prior Learning’
SACMEQ – Southern African Consortium for Monitoring Education Quality
SISP – School for In-service Programmes
SITE – School for Initial Teacher Education
SPGS – School for Postgraduate Studies
SPSS – Statistical Package for the Social Sciences
SSA – Sub-Saharan Africa
STUP – Special Teacher Upgrading Programme
TCII – Teachers’ Grade II Certificate

TEAMS – Teacher Education at Maximum Scale
TENI – Tackling Education Needs Inclusively
TESSA – Teacher Education in Sub-Saharan Africa
TIMSS – Trends and International Mathematics and Science Study
TLM – Teaching and Learning Material
TTC – Teacher Training College
UBE – Universal Basic Education
UCC – University of Cape Coast (Ghana)
UEW – University of Education, Winneba (Ghana)
UFH – University of Fort Hare (South Africa)
UG – Undergraduate
UNESCO – United Nations Educational, Scientific and Cultural Organization
UNISA – University of South Africa
UNISE – Uganda National Institute of Special Needs Education
UPE – Universal Primary Education
UPK – Uganda Polytechnic Kyambogo
USAID – United States Agency for International Development
VSO – Voluntary Service Overseas



Appendix 2: List of TESSA Partner Institutions and Authors

Egerton University, Kenya – Professor Fred N. Keraro

Kigali Institute of Education, Rwanda – Revd Dr James Rutebuka

Kyambogo University, Uganda – Doris Kaije

Makerere University, Uganda – Professor Jessica N. Aguti and Juliana N. Bbuye

National Teachers' Institute, Nigeria – Dr Dele O. Yaya

Open University of Sudan, Sudan – Dr Amani Zahawi with colleagues at the Open University, UK

Open University of Tanzania, Tanzania – Dr Cornelia K. Muganda

University of Pretoria, South Africa – Alison Buckler (based on work by Carol van der Westhuizen)

UNISA, South Africa – Dr Ellen Lenyai

University of Cape Coast, Ghana – Might Kojo Abreh

University of Education Winneba, Ghana – Dr Sally Essuman and Salome Praise Otami

University of Fort Hare, South Africa – Dr Namhla Sotuku

Appendix 3: Programmes using the TESSA OERs

Country	Institution	Courses
Ghana	University of Cape Coast	B.Ed.; Dip. Ed.; MA
Ghana	University of Education Winneba	UG Dip.; UG
Kenya	Egerton University	B.Ed.; DPE
Nigeria	National Teachers' Institute	PGDE; ADE; STUP
Rwanda	Kigali Institute of Education	B.Ed.; (PGDE/DPE)
South Africa	University of Fort Hare	B.Ed.; NPDE; ACE
South Africa	University of Pretoria	B.Ed.
South Africa	University of South Africa	B.Ed.; PGCE
Sudan	Open University of Sudan	B.Ed.; Dip. Ed.
Tanzania	Open University of Tanzania	DPTE
Uganda	Makerere University	B.Ed.
Uganda	Kyambogo University	DEPE

TESSA and the University of Cape Coast, Ghana **Might Kojo Abreh**

Institute of Education, UCC

2010–11

<http://www.ucc.edu.gh/>



This case study highlights, by example, the potential for TESSA use in a number of innovative ways. The University of Cape Coast (UCC) works closely with Colleges of Education in using TESSA to support the development of imaginative and resourceful pedagogy among students and the development of wider sets of IT skills. A unique feature of use in Ghana is the exciting formation of TESSA clubs which foster active and reflective communities of practice among students and staff.

Introduction

The University of Cape Coast (UCC) is one of a few sea-front universities in the world. It was established in 1962 out of an urgent need for highly qualified and skilled manpower in education. Thus, it was established to train graduate teachers for second-cycle institutions, for example Teacher Training Colleges and Technical Institutions, which was a mission that the two existing universities were not equipped to fulfil. The University was also given the mandate “to serve the needs of the whole country” and “to play a unique role in national development by identifying national needs and addressing them”. This positions UCC as the forerunner in teacher education at the higher education level in Ghana.

How the UCC became involved with the TESSA project

The University of Cape Coast joined the Teacher Education in Sub-Saharan Africa (TESSA) scheme in 2005 after several behind-the-scene activities by the Open University, UK; the Open University of Tanzania; the University of Fort Hare, South Africa; and the Commonwealth of Learning (COL), which aimed at research and development of programmes that focus on teacher education and Open Educational Resources (OERs) for countries south of the Sahara. Ghana’s Ministry of Education and the Teacher Education Division of the Ghana Education Service embraced the TESSA idea and consequently empowered the University of Cape Coast and University of Education, Winneba, to be at the forefront to develop strategies to disseminate and carry out the implementation of the TESSA pedagogy to teacher candidates as well as serving teachers in Ghana.

TESSA resources are open-content resources that have been peer reviewed and versioned to suit users in partner countries across sub-Saharan Africa. Three of the five Ghanaian scholars that led the adaptation of the TESSA resources for Ghana were from the University of Cape Coast. The three faculty members of the University of Cape Coast together with other lecturers and researchers have since been at the leading end of training and capacity development, teaching and learning as well as research and implementation using the TESSA resources.

Developments with TESSA activities

In 2006 strategies to carry out dissemination activities of the TESSA concept began under the leadership of the then TESSA Coordinator in the University of Cape Coast. First, the departmental board of the Institute of Education, mandated by the University of Cape Coast to carry out the TESSA idea, met and conceptualised a plan. The plan related to engaging further

stakeholders who could be classified among the end user groups to be part and parcel of the system. That was closely followed by consultation intended to create buy-in for the TESSA OERs from university faculties, researchers, chief examiners, college principals and teachers' unions as the target. The identified stakeholder groups and the teacher candidates in the UCC and the Colleges of Education (that the Institute of Education oversees in terms of assessment and certification) were invited for a briefing session on TESSA by the professional board during its emergency meeting to relay the birth of TESSA. It was an all-embracing concept to the attendees but nevertheless, not one without challenges as some Colleges have difficulty accessing the internet and for others, computers are very limited.

Programmes using TESSA

The Diploma in Basic Education, B.Ed. and Masters' candidates in education have been introduced to TESSA resources in the University of Cape Coast and Colleges of Education in Ghana. Although attempts at using all the resources have been made, it appears the least used materials in our institutions are Life Skills, which users only sparingly consult to enrich their Science and Social Studies lessons. This is probably the case because users of TESSA resources tend to use the resources that are more related to the Ghanaian curricula for the basic education level and many of the topics in these Life Skills resources do not feature in the Primary School Curriculum in Ghana. The TESSA Monitoring and Evaluation for 2010 recommended among other things that TESSA resources should be created in other subject areas to make such materials available to more users whose subject areas are as yet not represented on the TESSA website. The TESSA resources are used as reference sources for teacher education programmes at both the colleges and in the University of Cape Coast itself. The materials are also used as tools for in-service teacher training and teacher capacity development resources. For example at two teachers' union meetings TESSA resources were used as training aids. During inauguration of TESSA clubs its resources are used as training aids. The Voluntary Service Overseas led project on Tackling Education Needs Inclusively (TENI), which is being implemented in three selected districts in northern Ghana, uses TESSA for training school inspectors, head teachers, professional teachers, unqualified teachers and volunteer teachers.

TESSA resources are used in several Colleges of Education but the proximity of Our Lady of the Apostles (OLA) College of Education makes it easier for the TESSA implementation team from the UCC's Institute of Education to reach out to teacher candidates and lecturers at the college, and there are many success stories here. Importantly the College recognises the

importance of TESSA materials to teacher education practices in the 21st century teacher preparation programmes. That background empowered the TESSA implementation committee (that is OLA College of Education TESSA implementation committee) to initiate and support the integration of TESSA into the teaching timetable. Every class from first year to second year is given 55 minutes for TESSA activities in a week. This arrangement benefits both tutors and students, enhancing the competencies of yet more persons about computers and Open Educational Resources.

Further, the OLA College of Education, which happens to be the test college of TESSA use in the Central Region of Ghana, sees the TESSA OERs which are mostly internet-driven as a starting point for exploring educational resources that can be accessed free of charge across the globe. Consequently, ICT tutors are tasked by the college management to take the students through surfing the internet for information, how to post blogs, open email addresses etc. Students are shown how to access the various materials from the TESSA website and then various tutors in the respective subjects come in to help the students use the materials in their practice teaching. During these times, tutors, who themselves use the materials in their teaching, guide the students to adapt and use the materials in their on-campus and off-campus teaching practices. Support offered in this way is mostly institutional, but further support exists which is special – the operations of the TESSA clubs in the University of Cape Coast, OLA College of Education and some other colleges merit explanation.

TESSA clubs

Today, by means of the TESSA clubs in the selected Colleges of Education in Ghana, teacher candidates are becoming more familiar with the TESSA resources. Currently there are vibrant TESSA clubs in UCC, OLA and seven other Colleges of Education in Ghana, across two districts in the Central region. The original idea of establishing TESSA clubs in selected colleges in Ghana as well as certain educational districts is to nurture a nucleus of teachers in the various educational zones who would eventually champion the cause of the TESSA OERs. Seeing the essential role these clubs are playing in rolling out the resources, the Open Learning Exchange (OLE – Ghana) has written to TESSA UCC to partner with us to execute teacher computer support service for districts through the TESSA clubs. Essentially, TESSA UCC is certainly grateful to Professor Joseph Kingsley Aboagye whose suggestions gave birth to the TESSA club concept which in my view would see TESSA UCC being more able to devolve appropriate knowledge and skills that teachers need to acquire.

The history of TESSA clubs dates back to 2007 when TESSA UCC mapped its TESSA activities against niche opportunities to expand the end user community of the TESSA resources. The first club was started in University of Cape Coast with a membership of 25 Diploma and Post-Diploma in Basic Education Candidates as well as faculty members. Activities of the club were coordinated by two UCC faculty and three student representatives. TESSA clubs are usually composed of:

- Coordinator (faculty/lecturer or school supervisor)
- Deputy coordinator (teacher trainee or teacher)
- Public Relations Officer
- Members (i.e. teachers, teacher candidates, teacher educators and other educational workers as the case may be).

The club members meet every fortnight to familiarise themselves with resources and try out the teaching methods that the TESSA materials offer. Occasionally, contests and quizzes on best teaching practices are held among club members to deepen use and create avenue for advocacy about the resources. The activities of the club are meant to spark the interest of the various stakeholders in the teaching and learning business about TESSA OERs and their role in teacher professional development. The status of the clubs gives more information as to which category of persons form part of the educational stakeholders. TESSA clubs see the stakeholders listed as community members who influence education development and as such target these members in spreading the TESSA message. In doing all this, there are a number of skills that the club members aim at, six of which include the fact that they learn to:

- Collaborate to integrate and share knowledge and resources on the TESSA website both in the TESSA Share and TESSA Forum
- Improve search and find strategies of TESSA OERs as well as other OERs
- Share pedagogical information resources with friends and colleagues, including information about how the TESSA resources should be used
- Participate in conducting curriculum mapping at the decentralised education unit
- Use technology and tools to model and participate in creating simple alternatives to complex teaching and learning materials
- Develop the blogging platform of teachers.

In the University of Cape Coast and in the Colleges of Education in Ghana, the most popular medium of accessing the TESSA resources is through compact discs (CDs). Besides CDs, access to the resources is through the TESSA website via the internet, as well as printed

versions of the resources themselves. The process of acquisition and the supply of computers in Ghanaian schools and across teacher communities in Ghana have affected the integration of OERs in Ghana. However, the University of Cape Coast will continue to transmit the TESSA resources to end users through the use of CDs until such a time that the internet becomes efficiently and effectively ubiquitous in Ghana.

Benefits from TESSA use

Recently, I used TESSA OERs with my students on the Masters in Teacher Education programme in the University of Cape Coast, and the interest it has sparked in the Masters' candidates was truly amazing. One of them who has been teaching for the past 25 years had this to say in a written communication:

I have been teaching for years and within my career life I have not had any information on teaching Numeracy well packed like I have it now. The TESSA materials bring best practices in teaching to bear and reveal wonderful examples for teachers to emulate and I will be most ungrateful if I do not give my thumbs up for this package.

The use of TESSA resources is beginning to reveal the following influences:

- breaking the technophobia that bothers college faculty and teacher candidates in the universities and colleges
- creating a platform for more and more teachers to learn how to use computers and their accessories in their practice
- increase in the content and methodology knowledge of the users
- developing the practice of teachers who use them.

In addition considering what two past students of OLA College had to say about the resources when they were contacted reveals further evidence about the worth of the resources. Mrs Rebecca Nkumsah, a past student of OLA College, commented:

I became very much aware of the fact that as teachers we need to be aware of the importance of knowledge, skills and attitudes with regard to learning. The materials gave me an insight into ways of developing responsible attitudes in pupils towards the use and reuse of material resources. In view of

this I was able to teach my students how to reuse water sachets into bags, purse etc. This made the pupils very responsible as it taught them not to litter the environment.

In the same spirit, Ms Anita Marfoa remarked:

TESSA has helped teacher trainees to adapt to new methods of teaching some subjects. I personally realised this impact when I started my teaching practice internship program at Saltpond in the Central region of Ghana. I learnt from one of the resource materials why it is not effective to use edible things like fruit and cheese to teach multiplication an aspect of numeracy. I learnt that it distracts pupils' attention and prevents them from understanding the concept fully since the fruit and cheese whet their appetite. I also learnt that a fruit like the orange should not be used to teach division because it cannot be divided into equal parts. These facts have impacted greatly on my internship programme as I know that I can substitute the fruit and cheese with seeds and pebbles.

Users of the TESSA resources have benefited themselves in different ways. Among such benefits one could identify teachers and teacher candidates having enough resource web links to turn to. Significantly, the TESSA resources serve as a reference source for both trained and untrained teachers and offer an atmosphere where in-service opportunities for serving teachers have become readily available.

Impact of TESSA

In late 2009 and early 2010, a monitoring exercise was carried out among two categories of teachers in the Central region of Ghana. One group were final year students of OLA College of Education on internship, and the other group were in-service teachers who were taking a programme leading to the award of Bachelors degree in Basic Education at the Institute of Education, University of Cape Coast. The participants in the study were monitored over a two-month period to complete a portfolio of teaching and activities that take place in their

various classrooms. They were asked specifically to identify when they refer to TESSA resources, how they go about resourcing their teaching using the materials, the benefits and the challenges.

Conclusion

Based on the monitoring exercise some conclusions were reached. These included many teachers using TESSA resources exhibited very small shifts in their teaching practice, in the study period, but felt that these were enhancing their interactions with pupils. Such small changes often related to practices and techniques which the teachers were familiar with at a theoretical level but had rarely used in their own practice, such as the use of open questions or games in class. The study found that older teachers find it difficult to integrate TESSA resources, possibly because they find it harder to change their practices and possibly because many of the ideas in the materials are wholly new to them. Newer and younger teachers are more likely to integrate the TESSA resources in their classroom practice. A recurring explanation for teachers' non-use of TESSA resources in the lesson planning and delivery is that computers are not available, internet services are not available, and that electric power outages disrupt their work. The study seems to suggest that reaching out to subject teacher association meetings, teachers' union meetings, and conducting more rigorous outreach to disseminate the use and benefits of OERs will be effective in raising awareness of the resources. Making the use of TESSA resources compulsory for teachers in training has the potential of deepening their interest and use of the resources.

Ways forward

The 2009/2010 report also featured some recommendations that are crucial for the sustainability of earlier efforts in deploying TESSA resources to users. Three such recommendations were:

- 1) The Ghana Education Service (GES) must set up teachers' resource centres in the circuits to start with on a pilot basis.
- 2) It is recommended that all schools be assisted to have the TESSA resources in book form and placed in the school library or staff common room to serve as easy references for teachers.
- 3) It is recommended to the GES to help in the training of teachers in the use of TESSA resources by better equipping the teachers' resource centres in the Colleges of Education. Teachers in the surrounding schools would visit these centres to learn to use the resources.

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This case study shows, through a rigorous analysis and evaluation of various data sources, how lecturers and students across a wide range of programmes make their own resources work alongside the TESSA materials. In addition the case study emphasises how much the TESSA materials are integrated within all resources so that all students have the opportunity to access and use them. Crucially student feedback indicates that the TESSA materials appear to enhance the learning of their pupils in schools. Recommendations include the desirability of introducing students to the materials early on in their studies, and as an interesting possible solution to access and developmental problems, the suggestion of a help office to monitor, maintain and improve the use of the TESSA materials. This office would liaise with stakeholders and others in order to create a dialogue about how the integration and educational value of the TESSA project, and perhaps other similar projects, might be augmented.

The University of Education, Winneba

The University of Education, Winneba (UEW), established in 1992, is the only university in Ghana entirely devoted to teacher education. There are three campuses: the Colleges of Technology Education in Kumasi and Agricultural Education at Mampong-Ashanti, and the main campus in Winneba. The University has eight faculties including science, mathematics, technology and business, languages, agriculture, creative arts, social sciences, and home economics education, which offer 11 undergraduate diploma courses, 26 undergraduate degree programmes, and courses for MA, M.Phil., M.Ed. and Ph.D. in various aspects of education. It has a centre for distance education with 12 study centres across the country for face-to-face interaction with students. In 2009, the student population was over 32,686 with 1,549 teaching and non-teaching staff. The UEW turns out over 6,000 students each year.

The UEW's participation in TESSA

TESSA was introduced to the UEW in 2007 after ten lecturers from various departments were engaged to test and answer questionnaires relating to the development of the TESSA portal. I was asked to coordinate this activity and send reports to the website developer at the Open University in the United Kingdom. Earlier on, three lecturers from different departments had been engaged in versioning the current Literacy, Science and Life Skills modules online. By 2008, approximately 41 teacher educators were introduced to the TESSA materials. They were from the Basic Education and Early Childhood Care and Development (ECCD) departments, and the 13 Distance Education centres. These departments have over 16,000 students and it is believed that the students have had access to the TESSA materials through the TESSA website, face-to-face teachings and tutorials and during their practical lessons in nearby schools.

In fact the Act that established the University mandated it to prepare pre-service and in-service teachers who are competent in their fields of specialisation. They are to be creative and committed reflective practitioners, confident in teaching, planning and managing the learning environment and are able to select or assemble and use appropriate learning resources, including technology to address the learning needs of all students. These qualities have been instilled into the UEW's graduate teachers by the use of TESSA resources and access to the website. Again, the UEW was motivated to join TESSA so that it will be able to create a transformational teaching force, build teachers' capacity to use internet resources in their teaching and learning, build teacher capacity to create their own resources in addition to the TESSA OERs and create the culture of collaboration and networking with other teachers.

Reorientation to learning

As a lecturer and trainer of teacher mentors, I (Salome) have used the TESSA OERs, which have reoriented my teaching and my students' orientation to teaching and learning resources. For instance, I often adopt and modify case studies and activities to suit some of the lessons that I teach. In addition, the key resources readily provide alternative strategies to be used with topics when I don't have an exciting technique to use in class. The resources have helped my learners to be active and constructive learners. They have become more investigative, creative and innovative in their teaching approaches as reflective teaching and learning skills inform their practices. For example, their peer teaching demonstrations in class often have TESSA resources as aided materials. The resources have created a resource-rich environment for them instead of the traditional inadequate chalk-and-talk environment. This has contributed to producing quality teachers who are committed reflective practitioners, are confident in teaching, planning and managing the learning environment and are able to select or assemble and use appropriate learning resources, including technology, to address the learning needs of all students.

TESSA use in courses at the UEW

Currently the programmes that are using TESSA resources mostly are in the Basic Education, Early Childhood Care and Development, Distance Education and Science Education departments. This is because some lecturers from these departments were among those chosen during the versioning and initial development of the website. So by virtue of their involvement in the concept they have continued to access the site and use it in their teaching. In addition others were introduced to the website after the establishment of the implementation committee by the Vice Chancellor in 2008. The committee was made up of heads of most departments who were to sell the concept to their lecturers at their departmental and faculty board meetings.

TESSA resources and UEW users

The main TESSA resources that lecturers and students use are the key resources; and the modules: Literacy, Numeracy, Science, Social Studies and Life Skills. This is because, during awareness interactions, all departmental staff members and students are introduced to the TESSA website. Lecturers then prepare their course outlines for their methodology courses incorporating aspects of the TESSA materials. For example, under the 'Peer teaching' unit, students are put into groups and given topics from any aspect of the primary curriculum (e.g. literacy, numeracy, environmental studies, etc.) to prepare for teaching in class or practical

teaching in nearby kindergarten schools. The unit references include websites such as that of TESSA and books for consultation and preparation. With this background students have no choice but to visit the websites to be able to carry out specific assignments. So generally, students select activities and strategies from the TESSA key resources section of the website to prepare their Teaching and Learning Materials (TLMs). These TLMs are used for practical demonstration in nearby schools and later presentations for class discussions and brainstorming.

Form of TESSA materials

The form in which students and lecturers use TESSA resources is mainly in print. Individuals usually download the materials from the website and use them in lesson preparations, assignments and TLM development. The Centre for Teacher Development and Action Research (CETDAR) extracted some of these materials to be developed into booklets but there was not enough budget for printing them as booklets. However, aspects have been incorporated into a module, ‘General methods, techniques and skill of teaching’, which was first used by Postgraduate Diploma in Mentorship students in the academic year 2010/2011. Some methods lecturers have been incorporating aspects of TESSA OERs in their teaching encounters and during post-internship seminars. Students are advised to develop and keep their materials for future use. Also lecturers supervise group work on material development and implementation in schools and provide formative assessments. Table 1 shows which departments use TESSA resources.

Table 1: Departments using TESSA resources and number of students

Department	No. of lecturers/tutors	No. of students
Distance Education	300 tutors at 12 study centres	Years 1 – 16,000 Year 2 – 18,000
Science Education	4 methods lecturers	151
ECCD	4 (all lecturers)	159
Basic Education	15	2,345
CETDAR	Trained mentors (480)	2,350

Note: It became evident during interviews with educators that it is mainly lecturers teaching the ‘Methods of teaching’ courses in the departments that tend to use the TESSA resources.

Investigating OER use: findings from the UEW

With the UEW's focus on building teachers' capacity to use internet resources, a study conducted to evaluate the use of TESSA resources on the UEW campus by students and lecturers from the Early Childhood Care and Development (ECCD) department is reported here. At the time of the study ECCD students were available to take part. It was hoped that other users would be included in future studies. Objectives set for this evaluation were to:

- establish the conditions that support TESSA use by student teachers on the UEW campus
- establish users' satisfaction with the TESSA OERs
- determine the impact/influence of the TESSA materials on teachers' classroom practices as they share their experiences
- determine the kind of obstacles/challenges users encounter during use.

Methodology

In this study, both quantitative data (data expressed in numbers) and qualitative data (data expressed in narratives or words) were considered appropriate in gathering data from students. Mixed methods of survey and interviews, questionnaires (Appendix 1) and semi-structured interview guides (Appendix 2) as instruments were used in collecting data from 109 regular student teachers. These were the Level 300 group who had just completed their methods course. Six group leaders were purposely sampled for the interview. Later, two methods lecturers were also interviewed on a one-to-one basis.

The questionnaires were administered to all 109 students during a lesson with their methods lecturer. There was 95.4%, that is, 104 out of 109 return rate of the questionnaires. With the interviews, a semi-structured interview guide was designed with the focus of the objectives in mind. Interviewees' consents were sought before the interviews and they were assured of confidentiality and anonymity. Interviewees willingly agreed to contribute to the study and allowed their responses to be recorded on a tape recorder for transcription. The questionnaire data were coded and the computer software Statistical Package for the Social Sciences (SPSS) was used to analyse them. The interview data were analysed using the qualitative software, Atlas.ti.

Some findings from the study

Students' perceptions of TESSA OERs

The survey revealed that most respondents and interviewees have positive impressions about TESSA materials although there are challenges. Almost all of them described the resources as good, making teaching and learning easy, helping teachers to design innovative TLMs and learners actively participating in lessons. Further, respondents seemed to be satisfied with the website and consider it as useful and beneficial for innovative and reflective teaching. They indicated that the materials could enable teachers to prepare adequately learner-centred activity-oriented lesson plans and encourage learners' participation in teaching and learning situations. They also indicated that the materials could enable teachers easily to attain their lesson objectives and enhance teaching and learning by making lessons more practical.

This is what one interviewee had to say:

I think it is very good because children learn a lot when you've the real materials so when you teach them with these teaching and learning materials they learn better and are able to know and understand everything.

Similarly, responses from the questionnaires on students' impressions about the OERs produced results as indicated in Table 2.

Table 2: Respondents' impression about the TESSA OERs

Rate the quality of the OERs in terms of ...	Responses (n = 104)				
	Very poor %	Poor %	Fair %	Good %	Excellent %
1. Content knowledge	1	0	16	68	15
2. Appropriateness for the level of learners	1	0	19	50	30
3. Variety of strategies	1	1	23	67	8
4. Module coverage appropriateness	1	1	42	51	5
5. Effectiveness as teaching and learning tools	1	0	14	49	36
6. Using it to teach in our context	1	1	26	49	23

It can be gathered from Table 2 that 83% of students rated content knowledge of the TESSA OERs as good or excellent. The quality of its appropriateness was rated as good or excellent by 80% of the students, though 42% considered them as fair. This could likely be due to the materials not covering all subject areas and being limited to a few topics. None the less, the results seem to indicate that the students see the TESSA modules as providing variety of teaching strategies/methodologies, which improve classroom lesson delivery. The modules give directions that are helpful in making lessons practical and meaningful to the individual learner. When asked to rate the value of the TESSA OERs, almost all of them pointed out that the OERs are of much value to them as teachers. Reasons assigned to their responses from the open-ended questions were compiled and are as shown in Table 3 below. It is evident from Table 3 that more than two-thirds of the students in the cohort (69%) see the TESSA materials as contributing to enhancing teacher–learner interactions in teaching and learning situations, and making lessons practical.

Table 3: Reasons assigned by student teachers to the worth of TESSA OERs

TESSA OERs ...	Responses (n = 104)	
	Frequency	%
1. enhance teaching and learning by making lessons more practical	44	42
2. enable teachers to prepare learner-centred activity-oriented lesson plans	28	27
3. augment the understanding of concepts in literacy and numeracy	14	13
4. encourage active participation of the learner in teaching and learning processes	10	10
5. enable teachers to easily attain their lesson objectives	8	8
Total	104	100

Eight of the respondents considered the materials as helping teachers to plan their lessons with clear objectives that they are able to assess at the end of the lesson. 52% (items 1 and 4) of the respondents consider the materials as encouraging learner active participation in lessons. Again, students indicated ways that they have used the TESSA OERs in their classrooms and how commendable they found the materials. These are presented in Tables 4 and 5 below. Table 4 shows that the students have used the materials in various ways to bring about changes in their lesson deliveries in their classrooms.

Table 4: How TESSA materials are used by teachers in their classroom practices

	Responses	Frequency
Ways I now use the TESSA materials include ...	helping pupils to interact with TESSA materials and engaging them in problem-solving activities such as through games.	11
	guiding pupils to explore varieties of outcomes from the TESSA materials and coming up with their own ideas to share with others.	8
	gradually taking pupils through the use of TESSA materials to enhance their understanding of concepts.	7
	maintaining the levels of creativity in the use of TESSA materials	5
	using the TESSA materials to cater for individual differences.	4

Also interview responses from some interviewees are that:

I know how to prepare some of them myself and since it makes teaching and learning very interesting and understandable, it is easy and simple to use.

I will because when you've the materials, it makes the teaching very easy and children understand you better. I will recommend that all teachers access the website.

Also it is clear from Table 5 that the TESSA materials have been useful to students in many ways. For example, 45% of the respondents consider the materials as appropriate to the curriculum at their level and that they could be used to achieve different concepts being taught (items 1 and 4). Again, 45% of them see the materials as providing a variety of teaching approaches and therefore making delivery autonomous (items 2, 3 and 5). On the other hand, a few people only (3%) think that the materials are accessible. This could imply that those respondents have the requisite knowledge and skill of accessing information from the internet. These findings are confirmed in Figure 1 in which 88% of respondents indicated that they were satisfied with the materials and only 2% seemed not to be satisfied. Their dissatisfaction could be attributed to challenges they have been encountering as they try to access the website. Often, the issue of accessibility is listed as a challenge to students because of cost and low connectivity.

Table 5: Indicators of TESSA OERs being useful to student teachers' classroom practices

	The worth of TESSA OERs includes ...	Responses (n = 104)	
		Frequency	%
1.	the appropriateness of the OERs in relation to what the curriculum specifies	32	31
2.	materials making teaching more autonomous	21	20
3.	variety of methods to make lessons learner-centred	14	13
4.	ability to use teaching and learning materials appropriately in lessons	15	14
5.	making informed decisions about lesson presentation/delivery	12	12
6.	adopting/adapting the mode of presentation	7	7
7.	adequate access to TESSA website	3	3
Total		104	100

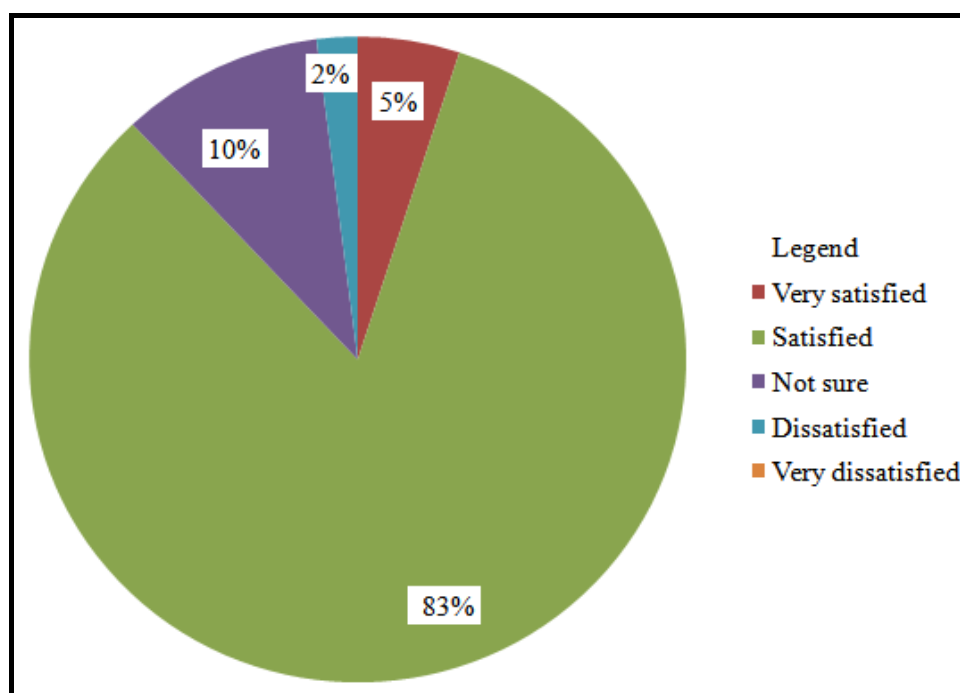


Figure 1: Students' overall satisfaction with TESSA OERs

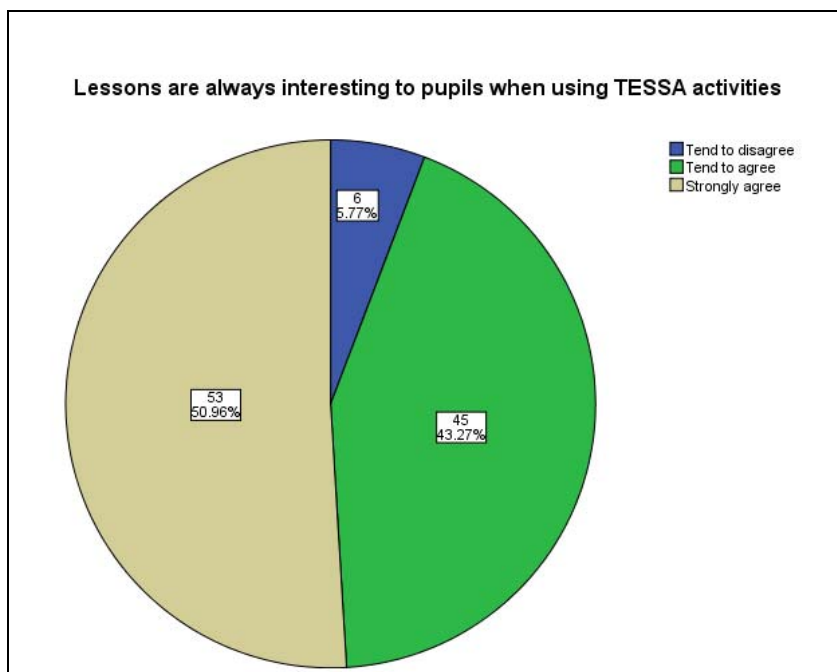


Figure 2: Lessons being interesting to pupils when using TESSA activities

In Figures 2 and 3, respondents indicated that using the materials enabled learners to grasp concepts and ideas easily as well as made lessons interesting. In both cases, most of the respondents (94.23% and 95.19%, respectively) were of that view. This could mean that perhaps the activity nature of lesson delivery and involving the pupils contributed to the outcomes. Considering the grade levels that respondents were employing the materials, the findings are illuminating for all teachers.

Again, from the data, respondents seem to have benefited greatly from the use of the TESSA OERs by having their teaching techniques improved. Table 6 shows that 90.3% of respondents agree that their teaching techniques have improved whereas 9.6% tend to disagree. In relation to how they have been practising using the OERs, almost 81% of them tend to agree and strongly agree (see Table 7) that they have been practising using the various components of the OERs. This is likely to include the key resources, audio clips and the actual module.

Table 6: Using TESSA OERs have improved my teaching techniques

	Frequency	Percentage
Strongly disagree	4	3.8
Tend to disagree	6	5.8
Tend to agree	51	49.0
Strongly agree	43	41.3
Total	104	100.0

Table 7: I have been able to practise most of what I have learnt from the TESSA materials

	Frequency	Percentage
Strongly disagree	6	5.8
Tend to disagree	14	13.5
Tend to agree	63	60.6
Strongly agree	21	20.2
Total	104	100.0

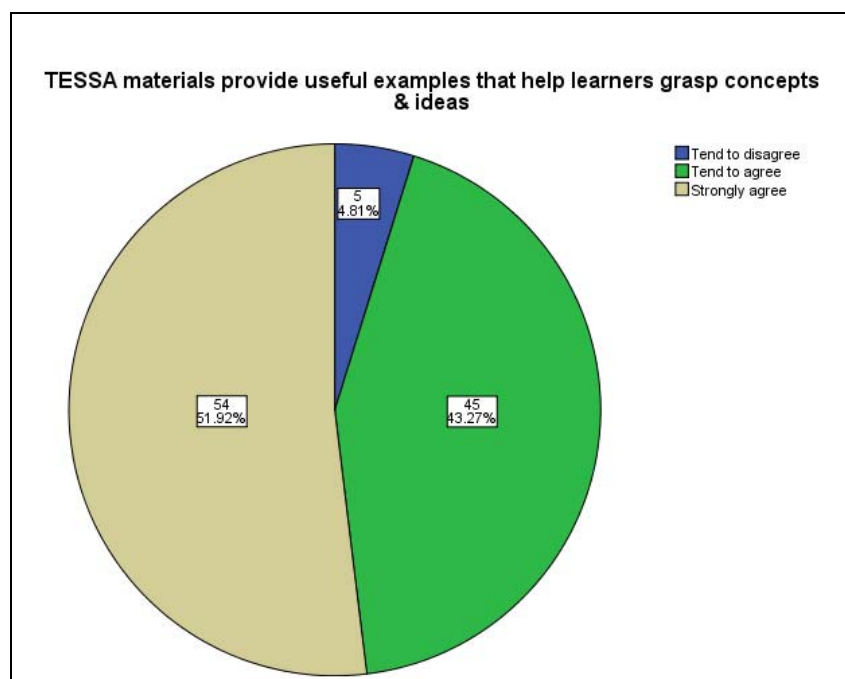


Figure 3: TESSA materials provide useful examples that help learners grasp concepts

Users' challenges with TESSA OERs

Notwithstanding the benefits and satisfaction that students and lecturers derive from the OERs, there are obstacles, which range from access to lack of capacity to use the materials effectively. When respondents were asked in the questionnaire whether they encounter any problem(s) accessing and using TESSA OERs, responses included:

- Inadequate training to use TESSA materials
- Non-availability of time to browse the website and difficulty in understanding modules
- Money to access the website and to buy tools (TLMs) to prepare materials locally
- Inadequacy of the materials to be shared for pupils in a class
- Materials not matching with topics in the local syllabus
- Some drawings of the learning materials/templates not clearly understood

- *The first thing is that it is not more about our community. I got information on South Africa and another country. Even on Ghana, it is about literacy and language. I wanted something on pre-schoolers but I didn't get. But I don't know if they have some information. So it's only language and literacy.*
- *Another thing is the easy accessibility. The few places you can access the website are very slow. So it means you waste a lot of time and hence you pay more. Sometimes if you key in you see that there are a lot of programmes at the website. You may be looking for language and literacy but if you aren't specific, it will generate a lot of information that may be irrelevant to you at that moment.*

Figure 4 shows challenges that students encounter when using TESSA OERs.

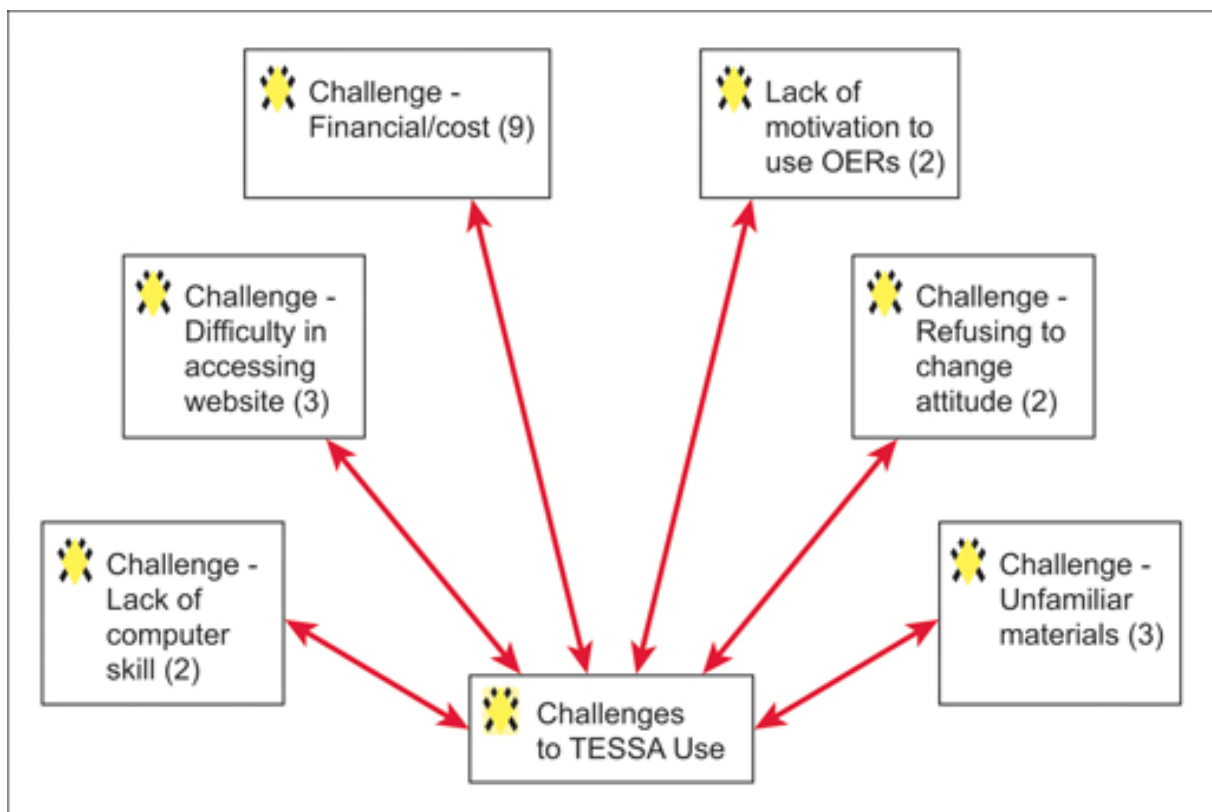


Figure 4: Challenges during TESSA use

It can be gathered from the first quotation above (The first thing...) that although the materials were not developed for pre-schoolers, teachers at that level were adapting the materials in their contexts. This calls for an expansion of the versioning to cover other categories of teachers teaching at different levels.

Possible improvements to access

With these experiences respondents suggested various ways that access to the website could be improved and sustained on the UEW campus. They suggested the creation of an office on campus which students could visit at any time to ask for assistance. This calls for a permanent desk officer whose duties may include creating awareness among staff and students through various means such as workshops, seminars, radio talk shows and forums or conferences. The person should also regularly monitor the use of the website and address the needs of users. The individual could liaise with other stakeholders in education such as the Ministry of Education or Teacher Education Division for a wider acceptance and spread of the concept. This office could be in existence for a period of time and then its activities mainstreamed into the regular University system. But it needs to be mentioned that these suggestions would need the support of management.

Another suggestion that needs to be emphasised is when the students are introduced to the website. It appeared that most students in this cohort learnt about the website when they were in their third year of the programme, which they considered as too late to benefit fully from the website while on campus. They suggested that students should be introduced to the website earlier on in their programmes, to be precise in the first year; in which case they would have a much longer exposure to it. Again, this could be implemented when there are regular workshops, forums and seminars for them. These suggestions have been included in a report sent to management.

Conclusion

Overall, students in this study had positive remarks to make about the TESSA OERs. They seemed to be satisfied with how the school curriculum could be linked to the resources. They consider the materials as useful to assist teachers in TLM development and for lesson preparation and delivery. They also consider the materials as the kind that will have positive impacts on their pupils' learning as there is room for creativity and adaptability to use, with learners active participation in the learning situation. However, there were concerns raised about difficulties in accessing the materials, lack of support, motivation and capacity to use the internet.

Ways forward

Suggestions for improving the use of TESSA OERs on the UEW campus are that:

- Decision-makers in teacher professional development, including management should be sensitised about the importance and benefits of TESSA materials to teachers
- There should be regular forums, conferences and seminars organised for students, lecturers, other in-service teachers and all interested individuals
- Students should be supported to build their capacities in internet use and they should be given more access to the use of the internet at no or low cost as a form of motivation
- The TESSA concept should be publicised to all teachers.



Appendix 1: Questionnaire

Monitoring and Evaluating TESSA Use on UEW campus
Questionnaire for student teachers from Early Childhood Care and Development (ECCD) department

As a student teacher who has been using the Open Educational Resources, OERs from the TESSA website, we will be grateful if you can help us by completing this questionnaire which is part of a study of the implementation and use of TESSA OERs on UEW campus. The aim is to help improve the implementation and use in future. The questionnaire is divided into sections. Some questions are to be answered by ticking or circling whilst others require a more extensive answer. It is important that you read the instructions for each question very carefully, some of which are in brackets. Dotted lines mean that you need to respond in writing. Please try to answer all questions.

SECTION A: BACKGROUND INFORMATION

1) What is your gender?

Female	1
Male	2

In what age category do you fall?

18–22	1
23–27	2
28–32	3
33 and above	4

How would you describe yourself in terms of the following? (Circle only one option)

Very competent in computer usage	1
Quite competent in computer/internet usage	2
Somehow competent in computer usage	3
Not competent in computer/internet usage	4

How often do you access and use TESSA OERs in your teaching and learning situations?

Daily or more than once a day	1
Every other day	2
Weekly or within the week	3
Monthly/occasionally	4

SECTION B: IMPRESSIONS ABOUT TESSA OERs USE

How do you rate the quality of the OERs in terms of:

s/n	Item	Excellent	Good	Fair	Poor	Very poor
a)	content knowledge?	5	4	3	2	1
b)	the appropriateness for the level of learners?	5	4	3	2	1
c)	the variety of strategies?	5	4	3	2	1
d)	module coverage appropriateness?	5	4	3	2	1
e)	effectiveness as teaching & learning tools?	5	4	3	2	1
f)	using it to teach in our context?	5	4	3	2	1

Which aspect of the OERs do you think has benefited you MOST as a student teacher? And why do you say so?

.....

Overall, how do you rate the value of the OERs as a teacher? (Please circle one figure).

Of no value at all 1 2 3 4 5 6 7 Of great value

And why?

.....



Which single aspect of the OERs has been most useful to you as a student teacher/teacher?

.....
.....
.....

Which aspect of the OERs has been least useful to you as a student teacher/teacher?

.....
.....
.....
.....

List the TWO things about the TESSA OERs that could have been improved:

.....
.....
.....
.....



SECTION C: IMPRESSIONS ABOUT TESSA IMPLEMENTATION PROCESS

Please rate your extent of agreement or disagreement with each of the following statements

s/n	Item	Strongly agree	Tend to agree	Tend to disagree	Strongly disagree
a)	I enjoy accessing & using TESSA OERs to teach	4	3	2	1
b)	TESSA OERs are my favourites in lesson preparations	4	3	2	1
c)	Given the opportunity, I'd like to learn more about TESSA OERs	4	3	2	1
d)	I am not comfortable working with TESSA OERs	4	3	2	1
e)	TESSA OERs provide better opportunities to creative teaching & learning	4	3	2	1
f)	I find TESSA OERs enhancing and improving classroom practice	4	3	2	1
g)	TESSA activities encourage the use of locally available resources	4	3	2	1
h)	Lessons are always interesting to pupils when using TESSA activities	4	3	2	1
i)	I have been able to practise most of what I have learnt from the TESSA materials	4	3	2	1
j)	TESSA materials provide useful examples that help learners grasp concepts & ideas	4	3	2	1
k)	Using TESSA OERs have improved my teaching techniques	4	3	2	1
l)	I still struggle to understand how to access the various modules	4	3	2	1
m)	The content knowledge of the TESSA OERs are adequate for my students	4	3	2	1
n)	TESSA materials provide variety of teaching strategies	4	3	2	1
o)	I now feel confident to develop TLMs using TESSA OERs for my lessons.	4	3	2	1
p)	TESSA materials have helped me build innovative skill in teaching	4	3	2	1

How satisfied or dissatisfied are you with TESSA OERs in terms of the following: (You must circle the number that best represents your opinion.)

s/n	Item	Very satisfied	Satisfied	Not sure	Dissatisfied	Very dissatisfied
a)	The adequacy in introducing me to the TESSA website & OERs	1	2	3	4	5
b)	The frequency of training received to use TESSA materials	1	2	3	4	5
c)	The availability of time to browse and select TESSA materials to use	1	2	3	4	5
d)	The quality of orientation anytime there is a TESSA forum	1	2	3	4	5
e)	The pre-arrangement & administration to disseminate TESSA knowledge	1	2	3	4	5
f)	The motivation to network with other teachers	1	2	3	4	5
g)	The support I receive from the TESSA family	1	2	3	4	5
h)	The encouragement to reflect on TESSA activities for future improvement	1	2	3	4	5
i)	The assistance that addresses my challenges during TESSA use	1	2	3	4	5

Did you encounter any problem(s) accessing and using TESSA OERs?

Yes	1
No	2

IF YES, please state TWO problems that you encountered during the process.

i.....

ii.....

Which aspect of the implementation process do you find most helpful?

.....

Which aspects of the implementation process do you find least helpful?

.....
.....

State ONE thing about the implementation process that has to be improved.

.....
.....

Overall, how satisfied are you with the TESSA OERs?

Very satisfied	1
Satisfied	2
Not sure	3
Dissatisfied	4
Very dissatisfied	5

Do you need help in using TESSA OERs?

No Yes

If Yes, state the kind.

.....
.....

What form of support do you receive from the coordinator or educator?

.....
.....

Thank you for taking the time to complete this questionnaire.



Appendix 2: Semi-structured interview guide

Semi-structured interview guide for educators and student teachers

Name/Code Date

.....

Gender: Venue/Time/Duration of interview

.....

Introduction

Introduce yourself and remind teachers of the purpose of the interview.

Assure teachers about confidentiality and anonymity.

Interview questions and probes

How did you get to know about TESSA OERs and when was that?

Would you mind telling me some of your experiences about how you use TESSA OERs?

[Probe for specific experiences]

How often do you use the OERs?

How have the OERs benefited you as a student teacher/educator? [Probe further]

What influences/impact have the OERs had on your teaching & learning situations?

Do you see the TESSA OERs as relevant in our educational context? If so, in what way(s)? [Probe for specifics]

What would you identify as the greatest problem or challenge you face in using the website or the materials? [Probe further for specific and more challenges]

What is it about the TESSA OERs that you will recommend to other teachers?

What would you suggest as some of the things to be done to improve upon the use of the materials?

What other comments would you like to add to what you've said?

Thanks for your time. I appreciate your contribution!



TESSA and Egerton University, Kenya

Professor Fred N. Keraro

2010–11

<http://www.egerton.ac.ke/>



The focus of TESSA at Egerton University has been on changing the practices of both teacher educators and teacher learners. TESSA OERS are important to both the B.Ed. (Primary) and Diploma in Primary Education (DPE) programmes and this account describes the challenges of introducing new activities into school classrooms where there is a heavy focus on exam preparation.

Egerton University

Egerton University is one of the seven public universities in Kenya. It is about 180 kilometres to the South West of Nairobi in the Great Rift Valley. It is the oldest institution of higher education in Kenya. It started as Egerton Farm School, founded in 1939 by Lord Maurice Egerton of Tatton, a British national. The school was upgraded to an Agricultural College in 1950. The Egerton Agricultural College ordinance was enacted in 1955. In 1979, the Kenyan Government and United States Agency for International Development (USAID) funded a major expansion of the institution. The college continued to offer Agricultural Courses at diploma level (including agricultural education and extension) up to 1986 when it was gazetted as a constituent college of the University of Nairobi. In 1987, Egerton University was established through an act of Parliament. Egerton is a multi-campus university. Njoro is the main campus. It houses eight Faculties, namely Agriculture, Arts and Social Sciences, Commerce, Education and Community Studies, Engineering and Technology, Environment and Natural Resources Development, Health Sciences, and Science. The total student enrolment in the Njoro campus stands at about 15,000.

Participation of Egerton University in TESSA

Mission

Egerton University joined the TESSA Consortium in November 2005. The focus of TESSA is to improve the quality of teacher education in sub-Saharan Africa. The mission of Egerton University is to generate and disseminate significant knowledge and offer exemplary education to contribute to, and innovatively influence, national and global development. The objectives of TESSA are thus in line with Egerton University's mission and, indeed, vision.

TESSA use in education programmes

TESSA resources are a perfect blend for Egerton University's Bachelor of Education Primary and Diploma in Primary Education programmes. The TESSA OERs cover the curriculum areas that form the areas of specialisation of these two programmes, namely Science Education, Mathematics Education, Literacies (Language Education), Social Studies and the Arts, and Life Skills. The TESSA OERs are, indeed, useful in enhancing both the B.Ed. Primary and Diploma in Primary Education programmes. Nine courses in each programme directly benefit from these TESSA resources.

Egerton University academics (mainly from the Faculty of Education and Faculty of Arts and Social Sciences) and B.Ed. Primary students (teachers) are among more than 100 academics and 1,000 teachers across sub-Saharan Africa that participated in the development and versioning of the TESSA OERs.

Versioning of TESSA materials in Egerton University

TESSA resources were initially developed as generic materials by a number of academics mainly from sub-Saharan Africa. English was the language used in the development of the materials. As a result, they reflected diverse contexts. Therefore, for effective use, it was necessary to version/contextualise these materials to suit each of the varied contexts found in sub-Saharan Africa, at least at the country level.

Two teacher educators at Egerton specialising in each of the respective disciplines covered by the TESSA materials were identified and trained on the versioning process. To ensure uniformity and coherence, and also to avoid distortion, versioning guidelines were provided by TESSA. The versioning exercise involved:

- translation of the materials from English into the language of instruction used in a country
- use of relevant/local examples in case studies
- use of names that reflect a local context (country context)
- incorporation of content and resources focusing on local issues as would be found appropriate and use of activities relevant to local needs and the primary school curriculum.

Maintaining quality during the process

In the process of versioning, it was essential to maintain the quality of the TESSA resources. This was achieved by ensuring that all versioned case studies and activities fitted into the introduction and narratives as provided in the generic materials. Both the introduction and narratives were not subjected to versioning. The learning outcomes and the first activity for each section (study unit) were also not subject to versioning and, therefore, were key in maintaining the quality and sense of the materials.

Translation issues

The language policy in Kenya provides for the use of English as the medium of instruction from primary grade 4 to university (including all other instructions in Higher Education and Training except where Language Studies are involved). Therefore, there

was no translation in the versioning of Kenyan TESSA resources. After the completion of the versioning exercise, the lead versioning author reviewed the material to ensure coherence before final submission.

Benefits of TESSA for Egerton University

As already indicated, TESSA has greatly enhanced the quality of teacher education programmes in Egerton University. This has in turn contributed to the realisation of the University's vision and mission and to some extent contributed to the country's achievement of the provision of quality basic education. TESSA has exposed both staff and students to the development and use of OERs and ICT which, indeed, is the way to go in the provision of Higher Education. It has introduced innovative pedagogical approaches that place more emphasis on activity-based learning not only to teachers, but also to teacher educators. In a very practical way, the approaches advocated by TESSA demonstrate that learning is an active process and learners ought to be actively engaged in learning activities for meaningful learning to be achieved. TESSA has redefined the role of a teacher as a guide, facilitator, moderator and consultant in a classroom and **not** the absolute source of knowledge.

My involvement as TESSA Coordinator at Egerton University

The role of TESSA Coordinator is important in both enthusing and organising colleagues at the University, working to embed new ideas about teaching in our student teachers and spreading the use of TESSA OERs in our partner schools. I took on this role in November 2005. At the time I was acting in the position of Director of the College of Open and Distance Learning and also substantively a Coordinator in charge of Instructional Materials Development in the same College, a position I still hold to date. The Dean of the Faculty of Education and Community Studies in consultation with the Deputy Vice Chancellor (Academic Affairs) asked me to do the TESSA Coordinator role. They felt that I was most strategically placed for this role because it concerned materials development and was also a school-based programme.

As an individual I have immensely benefited from the programme. First and foremost, TESSA has enhanced my capacity in developing and evaluating distance learning materials in general and Open Educational Resources (OERs) in particular. Indeed, I was the critical reader for the TESSA Science resources. This has greatly enhanced my capacity to support distance learning materials authors and reviewers in my institution. Secondly TESSA has exposed me to work environments outside my country and

institution. These have been wonderful learning experiences that have not only enriched my skills and cognition, but also my capacity to interact and work with people from other parts of the world. TESSA has enabled me to attend a number of international conferences on teacher education programmes, distance education and OERs.

Use of TESSA materials in Egerton University

The use of TESSA materials in Egerton University has been described as being loosely structured³. Nine courses in the Bachelor of Education Primary and the Diploma in Primary Education programmes amenable to the use of TESSA were identified and the relevant TESSA materials integrated as part of the basic course materials. These are largely pedagogy courses.

A number of assignments given in the respective courses are also based on the TESSA resources. This, therefore, enables the teachers (learners) to engage themselves more actively with the TESSA resources because these assignments form part of the final assessment. The TESSA resources are either adapted or adopted as may be found appropriate. This has also made the teacher educators more creative as they also create some of the materials by using TESSA resources as templates.

Teacher educators support teachers in mapping and embedding the TESSA resources in the primary school curriculum. Indeed, some teachers have gone a step further and created materials that are even more relevant to their own contexts and hence enabling learners to engage actively in classroom learning activities. Jenestar's "crocodile" story is a good example⁴! TESSA resources are thus not only having a positive influence on teachers' classroom practices but also enhancing active participation of pupils in the learning process (Figure 1).

³ For more detail on the modes of use of TESSA resources see Thakrar, J., Zinn, D. and Wolfenden, F. (2009) 'Harnessing open educational resources to the challenges of Teacher Education in Sub-Saharan Africa', *IRRODL*, vol. 10, no. 4: <http://www.irrodl.org/index.php/irrodl/article/view/705>

⁴ Jenestar's "crocodile" story can be viewed at www.tessafrica.net



Figure 1: A B.Ed. Primary graduate engaging her class in group activities in a science lesson

TESSA resources used in Egerton University

The use of TESSA materials in the Bachelor of Education Primary and the Diploma in Primary Education courses has come about because the materials were found to be more relevant to these two programmes compared to other teacher education. Indeed, the TESSA resources directly related to the pedagogy courses in the two programmes. It has, however, now been realised the resources can be adapted for the other teacher education programmes offered in the Faculty of Education.

The selection of TESSA resources to be used required a lot of consultation among teacher educators and teachers. This entailed close scrutiny of the resources and the teacher education curricula plus the primary school curriculum. The TESSA resources had to be mapped and embedded in relevant courses. The introduction of the TESSA guides “Working with Teachers” and “Working with Pupils” helped to facilitate this process.

This perhaps was the most significant exercise because it determined the level of uptake and utilisation of the resources. Both teacher educators and teachers had to be convinced that the resources were relevant before they could adapt and use them in their lessons.

TESSA resources are used in various forms. The most popular, however, is the print form as the level of utilisation of ICT in Kenya and developing countries is still low. Most teacher and teacher educators thus are more comfortable with the print form. There is also limited use of the website and CDs. The TESSA resources are used as complementary materials in assignments and projects (for the teachers) on the B.Ed. and Diploma programmes. In primary schools, the resources are adapted and used as basic learning and complementary materials. Many B.Ed. Primary students’ [teachers’] projects which contribute to their overall assessment are now based on TESSA resources, for example the model solar system shown in Figure 2 was developed by a B.Ed. teacher learner and is now in use across the primary school.



Figure 2: Model of a solar system in a primary school

Implementation: experiences and challenges

Benefits

A number of lessons can be drawn from the TESSA project. The project has given Egerton University staff and students opportunities to work collaboratively with colleagues from other institutions both within and outside the country. This has been a very rewarding experience. Academics and students have had an opportunity to share their experiences and ideas more particularly on the use of OERs in improving classroom practice. In many ways this has been an eye opener. The exposure of teachers and teacher educators to OERs has augmented the few learning resources available and tremendously influenced classroom practice.



Figure 3: A teacher educator visiting a B.Ed. graduate using TESSA OERs with her class

Recent visits to classrooms have revealed teachers more focused on the learning of their pupils than on the transmission of information from textbooks (Figure 3). Teachers have been using more artefacts in the classroom, for example setting up simple science experiments with water and plastic bottles or batteries and bulbs for their pupils to carry out in small groups, or word games using cards, or ‘shops’ with pretend money to practise arithmetic. And as follows from setting up these kinds of activities, teachers are much more questioning of their pupils, asking pupils to check and challenge their results, interpret their findings, and explain their learning to others in the class.

In addition the project has brought to the fore a number of issues on teacher education and basic education in sub-Saharan Africa.

Challenges

The implementation phase of the TESSA project faced a number of challenges. To be accepted in Egerton University, the Faculty of Education together with the College of Open and Distance Learning had to justify to the University management the need to join the TESSA Consortium. Among the concerns of the University management were:

- Who was to fund the project?
- The role the University was expected to play
- How the University was to benefit from the project
- University programmes targeted and the justification
- Expected outputs from the project.

Persuading others

After winning the support of the University management by addressing these concerns, it was time to sell the idea to sceptical Faculty of Education staff and the Bachelor of Education (Primary) students. Just like the University management, they all wanted to understand:

- their role in the project
- the benefits of the project to the B.Ed. Primary programme
- the specific courses to benefit
- benefits to individuals who were to participate
- its implementation.

It took a number of meetings and workshops to clarify all these concerns. These meetings included work with TESSA colleagues from other institutions in sub-Saharan Africa as well as the Open University, UK and detailed interrogation of the TESSA resources and reports from pilot use by the author and another academic.

At this time, however, major concerns were being raised by teacher educators because they were expected to introduce the project to their students (teachers) in class. In addition to the issues on developmental testing, versioning, mapping and integration/embedding of TESSA resources into relevant courses, there was also the issue of competency in using ICT and internet connectivity. A number of would-be participants thus failed to join lest they expose their weaknesses. Some teacher educators felt this was additional workload whose benefits appeared not to be tangible. Their participation in the project was very much on a voluntary basis. However, this changed later as their students (teachers) pushed to be introduced to the TESSA resources, having learnt about them

from colleagues exposed to them. The few students who were initial converts of the TESSA project embraced it and found the resources useful and spread the word. Soon, TESSA was on the lips of many of the B.Ed. (Primary) students and this, indeed, introduced more challenges.

Challenges in using TESSA resources in primary schools

After introducing TESSA resources to students (teachers), a number of new challenges came up. First they needed to be taken through the structure of the materials and the relevance to the primary school curriculum explained. The second concern was how to introduce the resources into primary school classrooms. The first challenge thus was to have copies of the resources. Although a number of students were given TESSA CDs, many found it difficult to use them because of lack of computers in schools. The most popular access mode is the print materials. With support from the TESSA project, limited print copies were made available. The next step was to ensure that the students (teachers) felt empowered to use the materials in their own classrooms. This made it necessary for us to identify collaborating schools and, therefore, teachers to work with. Teachers identified for this project attended a workshop together with their school heads and teacher educators. The focus of the workshop was on the integration of TESSA materials in the primary school curriculum. The rationale for involving the head teachers was to ensure that they provided the necessary support and facilitated use of the materials in the schools. At the end of the workshop, each school was provided with a set of the print copies of the TESSA materials, a TESSA CD and a copy of the TESSA guide “Working with Pupils”. It was agreed that the teachers were to integrate/adapt and use TESSA materials and activities in their classrooms. It was also agreed that teacher educators would visit the schools for a monitoring and evaluation exercise in the last two weeks of March 2010. The findings of the monitoring and evaluation exercise identified the following challenges.

Time

Time allocated on the school timetable was often insufficient to allow for effective integration of TESSA activities in respective subjects. TESSA places emphasis on learner-initiated activities. These normally require more time both for planning and delivery in the classroom and yet there is pressure of covering the school syllabus and lessons are often delivered in very short times, 30 or 40 minutes. This, therefore, becomes a big challenge especially in an exam-oriented system like ours. Emphasis on exams

impacts negatively on TESSA use. In addition teachers also found themselves spending long hours preparing for lesson activities. The demand on their time was overwhelming for some.

Lack of ICT skills

For effective participation in the project, teachers required ICT skills. This was necessary if they had to use the TESSA CDs and also share their experiences with the larger TESSA Consortium. Very few were willing to take this challenge and go for an ICT course at their own expense. This thus limited their participation.

Lack of some basic ICT equipment

Many primary schools in Kenya do not have ICT equipment like computers, printers and other related equipment. They also do not have power supply and therefore internet connectivity may sound like a foreign idea! This thus also limited effective participation in the project beyond the paper materials distributed.

Reluctance to change

TESSA introduces pedagogical approaches which demand a bit more from teachers. Like all human beings they tend to resist any new innovations when introduced. Teachers were reluctant to embrace these new approaches that tended to be more demanding and more so were coming from fairly unfamiliar quarters. In many cases, only those teachers on the University upgrading programmes made extensive use of the TESSA resources. This, indeed, was seen as an aspect of training for those on our programmes.

Opposition from Ministry of Education officials

The resources were introduced to primary schools through the University. When the Ministry of Education (MoE) officials learnt about them it was felt they were an additional burden on the school curriculum. Their advice to teachers was “stick to the curriculum”. However, as it would emerge later, many MoE Quality Assurance Officers who visited our collaborating schools realised the potential benefits of the TESSA resources to the learning process. A number of the late converts came to seek clarification on possible scale up. In essence, therefore, the resources are finding accommodation within the MoE though belatedly. Some advocacy will be essential to allow for effective mainstreaming.

Conclusion

The use of TESSA resources in the B.Ed. Primary and Diploma in Primary Education programmes has greatly enhanced creativity among the teachers and influenced their classroom practice and commitment. This places Egerton University at a vantage point in contributing to the provision of quality basic education and thus influencing national and global development.

The Egerton University academic staff and students continue to participate actively in TESSA activities. Jenestar Wanjiru (a B.Ed. Primary graduate of the 2003 class; Figure 4) won the 1st prize in the first TESSA competition, the results for which were announced during a TESSA conference held at the University of Cape Coast, Ghana in August 2009. The competition attracted 32 entries from four countries in sub-Saharan Africa.



Figure 4: Jenestar Wanjiru with her students using TESSA materials

Ways forward

The findings of the first phase exercise gave insights into what perhaps needs to be done to promote and enhance the use of TESSA resources to improve the quality of teaching and learning in basic education in Kenya. Indeed, the teachers and education officials need to be convinced that TESSA is not in any way introducing a new curriculum but rather innovative pedagogical approaches that place more emphasis on activity-based learning. TESSA has gone a long way in trying to illustrate how these approaches can be put into effect in a classroom situation and certainly redefined the role of a teacher as a guide, facilitator moderator and consultant, much as TESSA emphasises the active role learners have to play if meaningful learning is to take place. Teachers have to assist learners to learn by providing appropriate learning experiences. Learning is an active process and thus learners ought to be actively engaged in learning activities for meaningful learning to be achieved.

To achieve this, the TESSA project together with all the stakeholders in basic education should consider carrying forward the following:

- More induction workshops for teachers
- Involve more teachers, more schools
- Sensitise MoE officials at various levels
- ICT induction courses for teachers
- ICT infrastructure and equipment for schools
- Sensitisation of school administrators and parents to galvanise support.



TESSA and the National Teachers' Institute, Kaduna, Nigeria

Dr Dele O. Yaya

2010–11

<http://ntinigeria.org/>



This case study reveals the vast scope of the National Teachers' Institute's (NTI's) educational influence, and its implementation of the TESSA materials and pedagogy. The NTI, with a long tradition of teacher education through open and distance learning and developing ICT infrastructure for its staff, works through a large number of satellite offices and study centres across the country raising awareness about the use of OER and TESSA materials. Also of particular interest here is the use of the audio materials.

The National Teachers' Institute

The National Teachers' Institute (NTI) is a single mode distance education institution dedicated to the training, retraining and upgrading of teachers. It was established in 1976 as a strategic means of providing the badly needed teachers for the Universal Primary Education (UPE) scheme.

Since its inception, the Institute has mounted six distinct teacher training programmes through the Distance Learning System (DLS):

- The Teachers' Grade II Certificate (TCII) – 1982 to 2006
- Nigeria Certificate in Education (NCE) – 1990 to date
- Pivotal Teacher Training Programme (PTTP) – 2000 to 2003
- Postgraduate Diploma in Education (PGDE) – 2005 to date
- Advanced Diploma in Education (ADE) – 2005 to date
- Special Teacher Upgrading Programme (STUP) – 2007 to date.

The Institute operates through a network of six Zonal (Regional) and 37 State offices (including Abuja) with over 327 study centres, dispersed all over the country. The trainees are mostly serving teachers. Apart from the one-week, nationwide Millennium Development Goals (MDGs) Capacity Building Programme for retraining 145,000 primary schoolteachers annually (held in 2006, 2008 and 2009), the Institute offers regular customised Continuing Professional Development (CPD) Programmes for serving teachers in the basic education sector. The focus of these workshops is to provide innovative and effective techniques for teaching the core subjects offered in primary and junior secondary schools.

The Institute is well equipped with a Computer Centre, Audio Visual Unit, Virtual Library, Radio Station, a Staff School, Internet Café, Art and Illustrations Unit, and Printing Press. It also has a V-SAT at the Headquarters and Zonal offices as well as a wide area network. It maintains a website on www.ntinigeria.org. Communication with Zonal and State offices is done through emails and Global Systems for Mobile communication (GSM). The NTI offices have functional computers and internet connections. Senior officers have laptops/desktop computers and are connected to the internet.

The NTI's participation in TESSA

The NTI has been a member of the Teacher Education in Sub-Saharan Africa (TESSA) Consortium since it was founded in 2005. It took part in the authoring and versioning of

TESSA modules and in the user testing of the TESSA website. The NTI has produced in print format:

- TESSA modules
- NCE (DLS) integrated TESSA course books (in Education and PES)
- NTI TESSA Teachers' Guides (for teaching the 9-year Basic Education Curriculum)
- NTI–TESSA integrated manuals for the nationwide MDGs retraining workshops.

The vision of TESSA tallies with the NTI vision of “enhancing the professional skills of serving teachers for high quality education delivery at primary and secondary education levels with a view to uplifting the standard of educational system of the country”. NTI joined TESSA to take advantage of its provisions for training teachers on a mass scale and for improving the quality of education. As a Distance Education Institution, the Institute benefits from the Open Educational Resources of TESSA. The Institute runs Continuing Professional Development Programmes for teachers that focus on providing innovative and effective techniques for teaching the core subjects offered in primary and junior secondary schools particularly English, Mathematics, Integrated Science and Social Studies which are also covered in TESSA. The modular approach of TESSA suits the distance learning approach of NTI.

TESSA use and background at the NTI

The first TESSA Coordinator for the NTI was Dr Abdurrahman Umar, who was the NTI Director of Academic Services and is now Education Specialist, Teacher Education, Commonwealth of Learning, Vancouver, Canada. He handed over to Dr Eugenia Ukpo, Assistant Director, Learner Support Services. When Dr Ukpo left the Institute, I (Dr Dele Yaya) took over from her in early 2008. Before my appointment, I took part in the Teacher Education at Maximum Scale (TEAMS)⁵ project and participated in the integration of TESSA into the NCE Cycle II methodology course books and into the Social Studies MDGs manual. The NTI has used TESSA mostly in its Continuing Professional Development Programmes as can be seen in the table below.

⁵ For further detail on the TEAMS project and a project report see www.tessafrica.net

Programme	Level	Approx. students on Annual Programme	Duration of Programme	Method of accessing TESSA
1. NCE (DLS) – upgrading TCII holders to the minimum qualification of NCE	Primary schoolteachers with less than the NCE	80,000	4 years	TESSA integrated course books & TESSA website
2. Nationwide Capacity Building workshops for primary schoolteachers on innovative techniques of teaching the four core subjects: English, Maths, Basic Science and Social Studies funded from the MDGs project	Public primary schoolteachers and head teachers	2006 143,140 2008 157,566 2009 115,415 2010 140,000	1 week	TESSA integrated manuals
3. CPD Teacher Programme for States on demand for all categories of teachers in primary schools	Primary and junior secondary schoolteachers	5,000	1 week	TESSA integrated manuals
4. Federal teachers scheme induction workshop	College of Education graduates taking up first-time appointments	2009 45,000 2010 28,000 target	1 week	TESSA integrated manuals

The Institute also intends to use the TESSA materials in its regular programmes, including the NCE programme. This is accredited by the National Commission for Colleges of Education (NCCE) which also provides the Minimum Standards for teaching the programmes. The latest edition of the Minimum Standards is in preparation. As soon as the Commission publishes the new edition, the Institute will not only revise the NCE course books but also integrate TESSA materials into the new course books.

The TESSA narratives, case studies, activities and resources in the key curriculum areas of Literacy, Numeracy, Science, Social Studies and the Arts, and Life Skills were integrated into the NTI materials as detailed above. In addition, the NTI Radio has continuously broadcast TESSA audio programmes such as the “TESSA Teasers” and “Story Story” series. The “TESSA Teasers” have been used to initiate discussion with listeners on effective teaching techniques and needs of children.

The TESSA resources have been useful as they provide innovative approaches and new factual knowledge, as well as emphasising the improvisation and use of local materials. The TESSA materials employ learner-centred, activity- and resource-based teaching that promote active and cooperative learning by pupils. They provide opportunity for teachers to learn from the experience of teachers from other countries through the case studies. Assessment is comprehensive, activity-based and practical. Ultimately, teachers can become reflective practitioners and more collaborative and cooperative in schools.

The NTI’s experience of TESSA use

TESSA was introduced in the NTI in 2007 through the Teacher Education at Maximum Scale (TEAMS) Projects. This was a research and development initiative that undertook the field testing of TESSA materials in two projects⁶:

- Project 1: field testing the integrated NCE (DLS) Cycle 2 methodology course books in three States (Bauchi, Osun and Rivers) with 254 student teachers
- Project 2: field testing TESSA modules in three States (Kaduna, Ogun and Ebonyi) with 89 teachers.

In addition, TESSA materials were integrated into the 2009 MDGs Training Manuals and used in training 120,000 primary schoolteachers, and in 2009, the Federal Capital Territory (FCT) Education Board organised a workshop on TESSA. In February 2010, a follow-up study was conducted to monitor and evaluate the classroom use of TESSA by teachers that participated at the 2007 TEAMS Project 2, the 2009 MDGs and the FCT workshop. The consultant and the NTI TESSA Coordinator adapted the TEAMS Project 2 instruments and produced four instruments: teacher questionnaire; classroom lesson observation and discussion with teacher; head teachers’ interview schedule; and Guide for lesson notes inspection. These were vetted by the TESSA Programme Director and the multiple instruments used helped to triangulate the findings.

⁶ For details see the TEAMS report at www.tessafrica.net

The planning meeting with the research team, state coordinators and consultant was held on 9 February 2010 followed by a meeting on 13 March 2010 with the research team and consultant to finalise arrangements. Monitoring visits to schools took place between 15 and 19 March 2010. It involved administering the questionnaires; conducting interviews with the teachers and head teachers as well as pupils; carrying out classroom observation; inspecting the lesson notes; and video recording and photographing specific classroom demonstration/sessions. (See Appendix 1 for the study sample.)

Findings

An analysis of the questionnaires showed that:

- The class size ranges from 21–40 to above 100
- Teachers taught across all Grades 1–6
- Majority of the teachers are female and between 31 and 50 years old
- All teachers accessed TESSA in paper form
- All teachers had mobile phones
- All teachers seem to agree or strongly agree that they enjoy using the TESSA materials, lessons are starting better, and lessons are more enjoyable
- Teachers in Ogun State seem to have made most progress in integrating TESSA materials into their lessons
- Primary School Nyaya had regular in-house workshops for its teachers centred on TESSA with the headmistress conducting the training.

The use of TESSA materials is gradually taking root. Six themes emerged from the TESSA monitoring and evaluation project.

Theme 1 Lesson planning

From the teacher questionnaire responses and interviews, there is evidence that teachers are more aware of lesson planning. They are thinking more about their teaching and taking longer to plan. They write more detailed plans which focus on pupil activity. They are planning ahead and focusing more on what they are trying to achieve and more appropriately on the level of the children. Teachers are becoming more ‘time conscious’ and gather teaching materials in advance.

Theme 2 Use of active learning approaches

Teaching in Nigeria is characterised by a didactic lecturing style. Responses to the various instruments reveal that these schools are beginning to adopt a more active approach to

learning with more pupil participation, using activities which relate to their everyday lives, using local resources and local examples and more pupil talk. Classroom observation and interviews with the teachers showed that there is more interactivity and use of resources. Teachers are grouping pupils to involve them in discussion. There is more pupil play. Practical activities are being used to complement theory. Pupils are being encouraged to debate and find solutions to problems in groups. They are being allowed to ask questions as well. Teachers are beginning to use storytelling, wall pictures, outdoor activities and drama and different activities are being used to teach one topic to achieve the same objective.

Theme 3 Pupil engagement

The observers and head teachers found more pupil enjoyment and interest. They reported increased self-confidence, good class control and better pupil–teacher relationships. There is some suggestion that pupils are more willing to come to school. It was reported that there is increased communication by pupils with their teachers. Children are more interested in school and academic work, including homework, and there is some evidence that they take their assignments more seriously.

Theme 4 Assessment

Although the assessment procedures are not structured enough to be able to tell whether the TESSA approach is leading to higher levels of achievement, several people – teachers, head teachers and observers – thought the children were ‘learning faster’. Teachers considered assessment to be ‘easier’ because they could see what the pupils were able to do. There seems to be a slight shift towards assessing a broader range of skills with more focus on lesson objectives. Some observers commented on ‘more encompassing’ assessments.

Theme 5 Teacher engagement

Reading all the questionnaires leaves a clear message of enthusiasm from the teachers about their desire for change. A few talked about pausing now to think about how the lesson went. Teachers want ‘constant encouragement’; several suggested that more lesson observations, discussions and collaborative work are done in order to help them to adapt to a new way of working. One even suggested an internal ‘teaching and learning competition’. From the interview with the teachers and head teachers, it was found that teachers were beginning to read more widely and reflect on their lessons more.

Theme 6 Challenges

There was much agreement within the sample about the challenges ahead:

- Pupils and teachers need access to libraries and the internet.

- Pupils and teachers need more basic resources – pens/pencils/paper/chalk etc.
- There are bigger challenges around pedagogy and assessment – how to influence practice on a big scale.
- Pupils sometimes find it difficult to express themselves, which can make group work difficult, hence need for change in classroom culture.
- Teachers are buying materials by themselves and head teachers feel teachers should therefore be given financial incentives.

Implications

As already noted, in the questionnaires there is a clear message of enthusiasm from the teachers about their desire for change. The challenge seems to be how to convert this appetite for change into more schools-based training with TESSA ‘champions’ providing regular support for teachers in their own school. This will require intensive monitoring and follow-up, serious advocacy to ensure ‘buy in’ and ‘ownership’ by the teachers and head teachers and parents, as well as the school administrators.

Personal benefits from TESSA

TESSA has been of much benefit to me as its Coordinator in the NTI. It has afforded me the opportunity to meet with a cross-section of highly dedicated, committed experts in TESSA and the UK. It has assisted me in greatly improving my ICT skills and in accessing new knowledge. I have also been able to develop a new perspective towards teacher education. It has helped me to put into practice some of the ideas gained during my training in Educational Technology.

Some benefits to the NTI

The NTI has benefited from TESSA by way of integrating TESSA materials into its Continuing Professional Development Programmes. This has given the Institute an edge over similar teacher education institutions in the country and has enhanced the quality of its training programmes. The Institute intends to integrate TESSA into its regular programmes, particularly the NCE. The Institute is also going to use TESSA to upgrade the standard of instruction in its Staff Primary School. The focus of the NTI CPD is on innovative and effective techniques for teaching and TESSA has been a great source of strength in this area.

Conclusion

There is no doubt that the TESSA vision is acceptable to Nigerian schools and teachers. Already, TESSA materials are entering Nigerian schools and classrooms on a large scale

through the MDGs Capacity Building Programme. However, the major challenge is to follow on from these programmes and encourage a culture of school-based Continuing Professional Development of teachers. The NTI is strategically placed to lead this process. To take full advantage of TESSA requires ICT skills and internet connectivity. In addition, there is a need to explore the possibility of using mobile phones (which nearly all teachers have) in order to create access.

Ways forward

- More internal funding and local sourcing of funds for TESSA
- Full integration of TESSA into the NTI NCE and proposed B.Ed. DLS course materials
- Mass production of TESSA materials – books, manuals, CDs, DVDs etc. for distribution to users
- Creation of awareness and advocacy through workshops, mass media and various forums
- Researching, monitoring, evaluating and recording TESSA use in Nigerian schools
- Collaborating with relevant stakeholders
- Intensifying action on existing “TESSA Schools” and scaling up to other schools
- Linking TESSA with national programmes, national curriculum and national policy
- Creating a Nigerian TESSA network
- Promoting the awareness and use of OERs at the various levels of the educational system
- Drawing up a strategic action plan for the dissemination of TESSA nationwide
- Intensifying contacts and collaboration with the Open University, UK, TESSA Consortium members and OER Africa Network
- Presenting information memo on TESSA at the Joint Consultative Committee on Education (Reference & Plenary Committee) and National Council on Education Meeting and following it up
- Building the capacity of staff members on use of OERs
- Using the NTI Staff School for demonstration of TESSA use
- Upgrading ICT infrastructure especially interconnectivity and internet access in the NTI Headquarters and field centres
- Broadening from print to online access to TESSA materials and promoting participation in TESSA Forum and TESSA Share.

Appendix 1: Study sample

The table below shows the study sample.

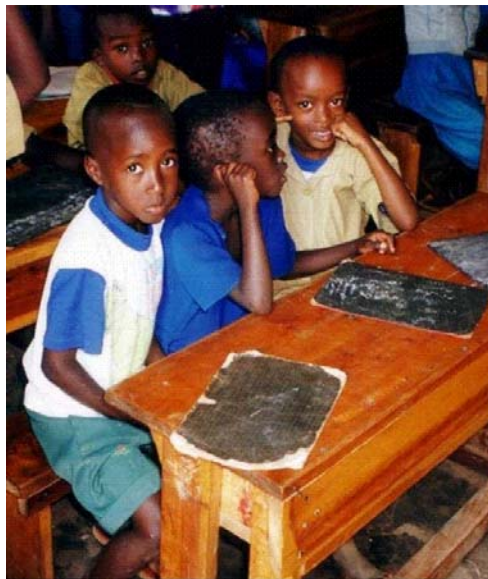
State	2007 TEAMS Project 2		2009 MDGs Workshops		2009 FCT TESSA Workshop		Total	
	No. of schools	No. of teachers	No. of schools	No. of teachers	No. of schools	No. of teachers	No. of schools	No. of teachers
Ogun	3	15	3	14	–	–	6	29
Kaduna	3	16	3	16	–	–	6	32
Ebonyi	3	15	3	15	–	–	6	30
FCT	–	–	3	8	3	10	6	18
Total	9	46	12	53	3	10	24	109

TESSA and Kigali Institute of Education, Rwanda

Revd Dr James Rutebuka

2010–11

<http://www.kie.ac.rw>



This case study notes the adaptation of the materials in French as well as English, which aims to facilitate the development of English language skills in teacher educators and teachers. Fifteen staff in Kigali Institute of Education (KIE) participated in this versioning, giving them a good understanding of the style and content of the TESSA materials. There is as yet only limited reach beyond this group in KIE although we are confident there will soon be some systemic embedding of the TESSA OERs in the new Primary Teacher Education (PTE) programme; the case study illustrates the importance of including national political figures in the implementation of new resources in teacher education institutions and schools, particularly in a rapidly changing environment.

Kigali Institute of Education

Kigali Institute of Education (KIE) is a young public institution of higher education and an internationally known centre of excellence. Its mission is to produce professionally qualified secondary school teachers, primary teacher educators and other professionals in a quality research environment that promotes community service.

KIE was established through the efforts of the Government of Rwanda in 1999 with assistance from various development partners (donors). By statute KIE is responsible for improving national education standards by producing competent teachers for all levels of education. Within 12 years of existence, KIE has evolved into a very progressive institution with significant strides in producing teaching professionals of high calibre, ranging from Diploma to Honours degrees to meet national needs.

KIE is situated in the suburbs of Kigali, the capital city of the Republic of Rwanda, which is in East-Central Africa. Rwanda, with an area of 26,338 square kilometres and a population of approximately 11.055 million (2010 figures), is often described as a “Land of a Thousand Hills” because of its steep hills and deep valleys. This former Belgian colony gained independence in 1962 and has been admitted to the East African Community (2007) and to the British Commonwealth, and in 2008 adopted English as its official medium of communication. This small country is bordered by Uganda in the North, Tanzania in the East, Burundi in the South and a range of volcanic mountains (Virunga) in the North-West inhabited by the gorillas which have become a lucrative tourist attraction.

KIE participation in TESSA

KIE became involved in the TESSA Programme through the initiative of Dr George Njoroge in 2005, when he was the Vice Rector (Academic). In February 2005 he attended the first meeting of the African Council of Distance Education and Distance Education for Teachers in Africa (DETA⁷) Conference in South Africa and heard a briefing paper on the emerging Teacher Education in Sub-Saharan Africa (TESSA) initiative. He realised that TESSA would be suitable for KIE and discussed KIE involvement with Professor Bob Moon, the founding Director of TESSA. It seemed to him, and other colleagues at KIE, appropriate to enhance implementation and the fulfilment of KIE’s objectives, which are:

- To train high-calibre schoolteachers and teacher educators to meet local needs
- To provide professional higher education to support the development of Rwanda

⁷ www.deta.up.ac.za

- To develop the potential of staff to provide a stimulating intellectual environment within which students are facilitated to become competent, autonomous and responsible practitioners
- To carry out research to meet the country's need for informed educational policy and practice
- To contribute to international scholarship
- To carry out consultancy and mobilise the institution's expertise to support and develop Rwanda's educational services
- To make a contribution to the community within which the institution is located.

Later in 2005, Professor Moon visited KIE in order to discuss with academic staff the possibilities of introducing TESSA materials at KIE. KIE (Rwanda) was subsequently incorporated as a member of the TESSA Consortium following the awarding of funds from the Hewlett Foundation to extend TESSA activity to Ghana, Kenya, Rwanda, Sudan, Uganda and Zambia.

KIE then participated in the meeting of TESSA Coordinators which took place in Addis Ababa on 23–24 May 2006. KIE (Rwanda) was represented by Dr Erasme Rwanamiza, the first TESSA Coordinator.

KIE and TESSA

To fulfil its obligation to improve the standards of education in Rwanda through procuring competent teachers, KIE has benefited a great deal from its involvement in TESSA.

The training of a team of 15 writers (versioners). These colleagues took part in a number of workshops, led by colleagues from the Open University, UK and including other TESSA colleagues from East Africa, to learn about OERs – the TESSA resources – and how to adapt these learning materials for the Rwandan context. The trained versioners are the key writers and facilitators in the training exercises and production of educational programmes and other related educational materials such as Teachers' Guides and Handbooks at KIE. Their first contribution after training was the transformation of TESSA modules to make them more appropriate, in accordance with the Rwandan cultural concepts and National Education Policy.

In the ongoing process of affiliating Teacher Training Colleges (TTCs) to KIE, these writers have a significant role to play in the construction of new programmes for the reformed Primary Teacher Education (PTE), because the new programmes will probably adopt a great deal of theories and practices from the TESSA OERs.

The gift of modules on TESSA Curriculum for teacher educators and teachers. The TESSA Curriculum is purposely very similar to the curriculum for Primary Teacher Education in Rwanda and therefore must be appreciated for its potential enrichment in the Rwandan Primary Teacher Education programmes. In addition KIE has benefited from a variety of educational hardware resources (flash drives, CDs, Flip Cameras, etc.), advice and guidance from colleagues, as well as copies of the TESSA handbooks for use at KIE, TTCs and some NGOs offering school-based in-service Teacher Training courses and Continuous Professional Development courses and seminars. The Flip Camera has been used in peer teaching and microteaching to facilitate discussions and self-evaluation in order to improve classroom practices.

The focus of the TESSA Programme is to improve the quality of teachers in sub-Saharan Africa, especially in the use of learner-centred methods and approaches. By coincidence KIE has been categorically assigned the role of incorporating the learner-centred pedagogical approaches into all the teacher education curricula. The trained versioners and the modules are indispensable resources in the fulfilment of this assignment.

Personal involvement in the TESSA Programme

When Professor Moon met a group of academic staff in the office of the Vice Rector (Academic), I was in the team as the Head of the Primary Department and was introduced as the most likely prospective coordinator of the programme once the arrangements for its implementation were finalised.

However, in the subsequent administrative meeting Dr Erasme Rwanamiza became the key Coordinator but I was on the steering committee. When Dr Erasme Rwanamiza was appointed Principal of Kavumu National College of Education, I replaced him as the TESSA Coordinator in January 2007. My job description read, in part, as follows:

In this appointment you are bestowed with the responsibility of ensuring that the principal aim of TESSA: the research and development of quality resources and support systems to help significantly improve teacher education in Rwanda. This is in the background of the broadened mission of KIE with regard to teacher education and development in Rwanda. You will be expected to be making report of the activities and progress of the TESSA programme to the Vice Rector (Academic).

My first direct participation as the TESSA Coordinator was attendance at the TESSA Nairobi meeting in March 2007. All my subsequent activities have been geared towards fulfilling my job responsibilities.

Personal benefits from TESSA

As the TESSA Coordinator for Rwanda I believe the benefits lie in both directions. I have learnt a great deal as an individual, but I have also managed to introduce the programme and its ideals and practices to my colleagues at KIE and other educational institutions, especially with Primary Teachers' Colleges.

All the TESSA activities are coordinated by my office and I have had the opportunity of attending TESSA workshops and committee meetings, representing KIE and Rwanda in general. It has always been a privilege to meet and share educational and social ideas with others from different institutions. These interactions have often been very enriching professionally and socially.

As the TESSA Coordinator and B.Ed. (Teacher Education) Programme Leader, I have had opportunities to experiment with some of the acquired ideals with my B.Ed. teacher education students – the first cohort graduated in December 2010. Unfortunately they were not deployed in teacher education institutions, as originally hoped, to exercise their skills as teacher educators and ended up in other sectors, unable to utilise the skills that they had developed during their study. These graduates, who were confident, proud and excited to be the first professionally trained Rwandan teacher educators, are understandably bitterly disappointed. My experience with TESSA has helped me to apply and consolidate my theories on Teacher Education in Rwanda. I have therefore been researching and am writing a memoir on “The Present Challenges and Future Chances of Teacher Education in Rwanda”. Hopefully this memoir will be ready by December 2011. This is basically an analysis of the present approaches and policies on Primary Teacher Education and foresights of the impact of the ongoing reform activities and agencies like TESSA.

TESSA use at KIE

Although TESSA has not yet had time to make a significant and sustained impression on the KIE academic community, it is becoming better known. Many of the academic staff, especially the versioning authors, have been given CDs and several sensitisation sessions have been conducted, and attended by a total of 40 members of the academic staff.

The first such session (November 2007) included not only academic staff, but also the Minister of State for Primary and Secondary Education. The Minister was principally impressed by the generosity of all 15 modules in the TESSA Curriculum being offered free of charge without any copyright conditions.

It was after this sensitisation that a cohort of writers was identified who successfully adapted all the modules for the Rwanda context in both English and French. Although the National Policy on Language use had changed and Rwanda is no longer categorised among the French-speaking countries, KIE still enjoys the privilege of being the first institution to version TESSA materials in French. In addition, because many teacher educators and teachers have not mastered English properly, they read both versions together in order to improve their English.

In addition several Rwandan individuals, drawn from among teacher educators, primary schools and B.Ed. student representatives, participated in the process of “User Testing of TESSA Portal”.

With regard to the use of TESSA materials in teaching, KIE has adapted them to the B.Ed. (Teacher Education) Programmes. The Rwandan Ministry of Education has introduced a new policy on Teacher Education, which emphasises the use of participatory methods in Primary Teacher and Primary School Education and the subjects include the following major options of:

- Foundations of Education
- Language Education
- Science and Maths Education
- Social Studies.

Fortuitously TESSA materials match these areas well. They have already been adapted to KIE courses and thus make KIE materials more applicable to these learner-centred approaches, especially in the Primary Teachers’ Colleges. It is hoped that primary teachers who graduate from the colleges will be able to apply the same approaches in their classrooms. Besides adapting some portions and/or extracts from the TESSA Teacher OERs and integrating them into KIE courses in the process of practising the learner-centred approaches, a course is taught based on two units from the draft TESSA’s Teacher Educator Guidance handbook:

- Integrated Teacher-based Activity Learning
- School-based Integrated Teacher Education.

These two units were chosen because we found them pertinent to our B.Ed. students who are preparing to go out as teacher educators in Primary Teacher Training Colleges where they will teach not only in pre-service, but also in the in-service sessions. This is particularly the case when the school-based Teacher Education programmes start – the Primary Teachers’ Colleges will serve as the hubs of teacher training activities. We therefore wanted to prepare

and equip the Teacher Training Colleges with capable staff to handle the new approaches in Teacher Education, especially when the massive in-service school-based Teacher Education programmes start. This course is mainly done by students studying for the degree of Bachelor of Education in Teacher Education. So far, 64 candidates have graduated, 238 will graduate in December 2011, and 645 are still in the early stages of the process.

Use of TESSA materials in collaboration with other stakeholders

The use of TESSA materials has stretched beyond KIE confines to include other educators such as International Education Exchange (IEE). This is an American-based Teacher Education organisation engaged in school-based Teacher Education in Rwanda handling three educative aspects of teacher education, namely:

- Effective use of English as a language of instruction
- Effective learner-centred classroom practices
- Leadership and peer mentoring skills.

The collaboration with this organisation was a pilot venture into collaborating with other stakeholders in the use of TESSA materials to improve teachers' classroom practices.

In this venture we are working with 14 teacher trainers across four districts in 28 primary schools with an estimate of approximately 980 teachers involved in the training exercises. We are yet to go to these school centres to evaluate the tangible impact and then prepare a comprehensive report. However, the initial impressions are encouraging and promising. Therefore collaboration with NGOs, and international NGOs like VSO, and other Teacher Education organisations seems a commendable strategy in the dissemination of TESSA ideals and practices.

TESSA implementation: experiences, challenges and plans

Although the TESSA Programme and its educational ideals and practices have not been systematically and effectively disseminated into the whole country, it has not been without impact because some areas are well acquainted with it. When the TESSA website was finally established, it was publicised widely.

In addition to this publicity, all Primary Teachers' Colleges have been given CDs so that they might print out the numbers of modules they want. However, the challenge is that many people have not looked at the TESSA website because the internet is not accessible in all places, and many colleges are unable to print out the modules, perhaps because this is not their priority area and they lack the resources.

Well-organised dissemination of information about TESSA has gained the interest of many different people, even those at high levels of the political administration such as successive Ministers of Primary and Secondary Education, Mr Joseph Murekeraho and Mr Theoneste Mutsindashyaka. The latter was so appreciative and excited about the initiative that, in 2008, he appointed a liaison officer to coordinate the discussion between KIE and National Curriculum Development about adapting the TESSA materials to the Teacher Education Programme.

More recently in March 2010, at an education summit at which Professor Moon was the keynote speaker and the Ministers were active participants, the use of TESSA materials was very strongly recommended. It was also emphasised, as never before, that KIE was going to lead the implementation of the recommended strategies including the use of new materials and pedagogical approaches in primary teacher reforms. Here the main challenge in terms of the adaptation of new approaches, based on new educational materials, requires a great deal of discussion because of the various stakeholders involved in teacher education. The need for so much discussion may also be due to some inherent mistrust and tenacious holding onto the old traditional theories and practices and uncertainty about resources from projects outside the Government; for example from May 2009 to March 2010, TESSA was put to a Vetting Committee to first ascertain whether TESSA aims, materials and approaches were in line with Rwandan National Education Policy. After about a year of uncertainty these doubts were cleared with the assistance of the KIE Rector, Professor George Njoroge, together with Professor Bob Moon, and TESSA was once again set in motion.

There is a strong possibility of implementing the TESSA materials and approaches much more widely in Rwanda by incorporating them into the new PTE programmes being developed in the process of affiliating all the Primary Teacher Training institutions to KIE. This is certain because the affiliation modalities require the review and restructuring of Primary Teacher Education programmes and TESSA Open Education Resources are among the main resources. Furthermore, there is still the prospect for developing some diploma programmes. The diplomas in focus include:

- Postgraduate Diploma in Secondary Education
- Postgraduate Diploma in Teacher Education
- Diploma in Primary Education (Undergraduate).

They would include TESSA OERs.

Afterword: September 2011⁸

We have continued adapting TESSA materials and approaches to KIE teaching programmes and methods using the mapping and integrative approaches. However, with the frustrating experience we had with our first B.Ed. (Teacher Education) students, we are no longer strictly emphasising their working in the Teacher Training Colleges (TTCs) exclusively, because we know this will not be so.

As regards the affiliation of TTCs to KIE, preparations are in high gear. We have written all the strategies and modalities which will guide the affiliation procedures; with KIE receiving the TTCs and taking on the guidance of all the academic and professional activities in the TTCs, thus leading to the production of competent primary schoolteachers.

One of the most urgent activities is for KIE to establish a structure in which the TTCs are required to produce primary teachers in four major pathways of specialisation in:

- Language Education
- Science and Mathematics Education
- Social Studies Education
- Early Childhood Care and Development.

In all this, KIE has to lead the assessment, review and restructuring of the Teacher Education according to the above pathways or areas of specialisation. Furthermore, KIE has to monitor and ensure the effective implementation of those programmes, and then finally carry out the evaluation and certification.

As for TESSA, this is an opportune time to have the OERs massively integrated into the new PTE programmes, as the TESSA materials have all been reviewed and adjusted to the Rwandan cultural concepts and National Education Policy by the Rwandan lecturers at KIE. Of all the resource materials we have for reference, it is only the TESSA materials that are educationally authentic and streamlined. In addition, the TESSA Curriculum consists of the same subject areas as the Rwandan Primary Teacher Education Curriculum. Most of the KIE lecturers, who did the versioning of TESSA materials in both English and French languages, will participate in the production of the PTE programmes.

⁸ This Endnote constitutes part of a letter from Revd Dr James Rutebuka to Freda Wolfenden, Open University, UK, about progress in the TESSA project.



Use of TESSA resources at the University of Fort Hare, South Africa

Dr Namhla Sotuku

2010–11

<http://www.ufh.ac.za/>



TESSA OERs provide teachers with activities which are a good fit for the National Curriculum of South Africa. At the University of Fort Hare, TESSA resources have been used in a number of different ways; by individual lecturers in seminars and classes and in highly structured ways, particularly for the ‘Recognition of Prior Learning’ in NPDE and B.Ed. upgrading qualifications for in-service teachers.

The University of Fort Hare

The University of Fort Hare (UFH) is recognised as one of the prestigious universities in the continent of Africa. It is the oldest historically black university in South Africa as it came into existence in 1916. The UFH has produced graduates from South Africa and Africa. Many went on to prominent careers in fields as diverse as politics, medicine, literature and art. Some politically active alumni like Oliver Tambo, Nelson Mandela, Govan Mbeki Robert Sobukwe in South Africa; Robert Mugabe and Herbert Chitepo in Zimbabwe; and Elius Mathu and Charles Njonjo in Kenya have impacted decisively on their nations. In the Arts the UFH has educated the poet Dennis Brutus, drum journalist Can Themba, sculptor and painter Ernest Mancoba and Xhosa author and scholar Archibald Campbell Jordan. The first black Zimbabwean medical doctor, Tcofoa Samuel Parirenyatwa, and historian and novelist, Stanlake Samkange, were also among the many non-South Africans who spent their formative years at the UFH⁹.

The UFH is located in South Africa in the rural Eastern Cape province. Currently it has more than 7,000 students across three campuses: Alice (which is the main campus), Bisho and East London. Five faculties are the backbone of the UFH's academic system. These are the Faculties of Education; Science and Agriculture; Law; Management and Commerce; and Social Sciences and Humanities.

However, the UFH serves an education system that seeks radically to renew curricular and pedagogic practices but works within structures characterised by poor education quality, teachers with poor subject knowledge, a lack of physical resources in schools, poor support for pupils at home, and meagre teacher support¹⁰. The South African education system faces a number of challenges that have proven hard to shift in the 15 years since apartheid. For example there are profound inequalities throughout the education system, which has not shed its apartheid legacies. Inequalities related to students' economic background, race and locality (including rurality) were structured into the apartheid system, and remain predictors of students' educational experiences and outcomes^{11,12}. Moreover South Africa contends with widespread and profound poverty. The Eastern Cape province, where the UFH is situated, is

⁹ University of Fort Hare calendar (2010): http://www.oocities.org/bona_spes/uni/FortHare.html#_ftn1

¹⁰ Thakrar, J., Zinn, D. and Wolfenden, F. (2009) 'Harnessing open educational resources to the challenges of Teacher Education in Sub-Saharan Africa, *IRRODL*, vol. 10, no. 4, p. 7. <http://www.irrodl.org/index.php/irrodl/article/view/Article/705/1319>

¹¹ Christie, P., Butler, D. and Potterton, M. (2007) *Schools that Work* Report to the Minister of Education http://www.sbmetsouth.co.za/Schools_that_work_ministerial_committee_report.pdf

¹² You can find more information about SACMEQ at: <http://www.sacmeq.org/about.htm>

known as one of the most impoverished and disadvantaged provinces of the nine provinces making up South Africa. The effects of poverty are evident in all aspects of schooling in the Eastern Cape. For example:

- In physical infrastructures and classroom conditions, the province has more than 400 unsafe and so-called mud schools.
- In the provision of laboratories and libraries, the distribution is 59% for Gauteng, 57% for Western Cape, 10% for Limpopo and 7% for the Eastern Cape.
- In the distribution of ‘no fee’ schools across the provinces, the Eastern Cape has the largest number of such schools as it has the majority of its schools in poor communities.

The distribution is as follows:

Province	Number of schools	Number of ‘no fee’ schools
Eastern Cape	1,158,053	3,725
Free State	502,674	1,202
Gauteng	391,378	443
Kwazulu-Natal	1,139,592	3,174
Limpopo	1,106,681	2,836
Mpumalanga	420,395	952
Northern Cape	143,160	395
North West	296,468	895
Western Cape	136,109	407
Total	15,294,510	14,029

Source¹³

Lastly, South Africa’s poor performance on international and national tests is a strong indicator of problems with quality in the system.

- In the 2003 Trends and International Mathematics and Science Study (TIMSS), testing Maths and Science proficiency at Grade 8 level, South Africa came last out of the 50 participating countries³.
- On tests administered by the Southern African Consortium for Monitoring Education Quality (SACMEQ) in 2005, South Africa scored ninth out of 14 countries in the region. Top performers were Seychelles, Uganda, Kenya and Tanzania. South Africa’s

¹³ Department of Education (DoE), Republic of South Africa (2010) *Education Statistics in South Africa – 2008*. Pretoria, South Africa.

<http://www.education.gov.za/LinkClick.aspx?fileticket=p3PuRJ8%2F5VQ%3D&tabid=93&mid=1131>

results were worse than Swaziland, Botswana and Mozambique but better than Malawi, Zambia, Namibia and Lesotho. Yet many of the countries that performed better than South Africa spent less on their education systems.

- The National Education Policy Act provides for South Africa to undertake ‘systemic evaluations’ on a regular basis at exit points of each phase of schooling in the General Education and Training (GET) Band. This Band starts from Grade R-9, with the Foundation phase (Grade R-3), Intermediate phase (Grades 4–6) and Senior phase (Grades 5–7). Systemic evaluations are therefore conducted in Grades 3, 6 and 9. The Grade 3 systemic evaluation (2001) found low achievements across all provinces in Literacy and Numeracy¹⁴. The Grade 6 systemic evaluation (2004) also pointed to low levels of performance across Language of Learning and Teaching (LOLT), Maths and Science.

When results are closely analysed, they fall into two categories. The best results are achieved by historically privileged schools and there is a big gap between these and historically disadvantaged schools. A further analysis in terms of provinces shows that the Eastern Cape province is usually among the worst performing provinces due to its inherited history of disadvantaged schools.

The TESSA project is housed at the UFH’s Faculty of Education which is tasked with teacher education and development. The Faculty of Education currently has three schools and an institute. These consist of the School for Initial Teacher Education (SITE) which focuses on pre-service programmes, the School for In-service Programmes (SISP) which focuses on practising educators in the employment of the Eastern Cape Department of Education and finally the School for Postgraduate Studies (SPGS) and the Nelson Mandela Institute (NMI) for rural education.

Participation in the TESSA Consortium and its benefits

The UFH’s Faculty of Education’s involvement in the DEEP¹⁵ project exposed the possibilities and potential of ICT in teacher education, even in a province starved of access and connectivity. Recognising the need for new forms of teacher education and development resources and keen to harness the potential of a variety of ICT platforms, the UFH’s Faculty

¹⁴ Kanjee, A. (2007) “Do we need more public examinations, or better use of assessment information?” UMALUSI/CEPD Seminar Series, Tshwane North College, 31 October 2007, HSRC. Retrieved on 18 September 2011 from:

http://www.hsrc.ac.za/research/output/outputDocuments/5231_Kanje_Downeedmorepublicexaminations.pdf

¹⁵ <http://www.dfid.gov.uk/r4d/caseStudies.asp?ArticleID=116>

of Education became involved with the TESSA initiative from the start. (See Appendix 1 for information about the UFH's Faculty of Education.)

Jay Thakrar was the first coordinator of the TESSA project until mid-2009 when she left to head the directorate for Community Engagement at the University. As the current coordinator of the project, I was exposed to the TESSA project in its conceptualisation stage when I was part of the think tanks and informal discussions with Jane Devereaux (Curriculum Director TESSA [2005–2007] and a visiting lecturer at the UFH between 2006 and 2007). Later, I was exposed to the TESSA OERs when requested by Jay Thakrar to identify student teachers from the B.Ed. in-service programme to trial the TESSA materials in their classrooms. This provided me with opportunities to interrogate the materials, as a B.Ed. in-service Programme Coordinator and a lecturer at SISP.

Participation in the TESSA Consortium has substantial benefits for the UFH's Faculty of Education. South Africa is still in a process of curriculum renewal. Such a process requires practising teachers and organisations tasked with teacher education development to alter their prior conceptions, beliefs, skills and behaviours regarding teaching and learning.

After 1994 the South African school curriculum was changed. This change was informed by the vision for democracy and redress. A critical examination of the educational system revealed that in order for this vision of democracy to be realised, there was an urgent need to address issues of educational access, redress, equity and quality. The vision of democracy was made a reality in education by introducing Curriculum 2005 (C2005) in 1997. And through an Outcomes-Based Education (OBE) approach to teaching, learning and assessment, South Africa finally had a teaching methodology that would transform teaching and learning after the era of apartheid. However, C2005 was fraught with challenges at the implementation stage and the curriculum was streamlined and strengthened between 2000 and 2002 and towards the end of 2002 the revised National Curriculum statement was launched. Changes in curriculum were characterised by the introduction of new subjects, restructuring of the school system and new teaching and learning methodology

How TESSA fits into the South African Curriculum

TESSA has five module areas which are similar to some of the learning areas taught in the SA GET Band (Grade R-9). Moreover the modules for each learning area share similarities with the learning outcomes, defining the focus of each learning area. However, the issue of conceptual progression that is grade specific was questioned. (See Table 1.) A learning

outcome is perceived as a description of what (knowledge, skills and values) learners should know, demonstrate and be able to do at the end of the GET Band.



Table 1: Subjects, TESSA relevance and comments

<p>1) Literacy/Languages</p> <p>In the SA Curriculum Literacy is a learning programme for the Foundation phase (Grade R-3), and Languages are a learning area in Grades 4–9.</p> <p>Learning outcomes: Speaking; Listening; Writing; Reading and viewing; Thinking and reasoning; Language structure and use.</p> <p>TESSA has modules in Literacy that focus on Reading and Writing for a range of purposes, promoting communication in an additional language. The modules therefore focus on four of the six learning outcomes for literacy/languages in the SA Curriculum.</p>
<p>2) Numeracy/Mathematics</p> <p>Numeracy is a learning programme in the Foundation phase and Mathematics is a learning area offered in Grades 4–9.</p> <p>Learning outcomes: Numbers, operations and relationships; Patterns, functions and algebra; Space and shape (geometry); Measurement and data handling.</p> <p>TESSA has modules in Numeracy that focus on Investigating numbers and pattern, Exploring shape and space and Investigating measurement and data handling. These are similar to the SA learning outcomes for Mathematics/Numeracy.</p> <p>Comment: Subject advisers acted as critical friends and reviewed the materials regarding their suitability for use in the GET Band. They were concerned about the depth of content in these modules and claimed it was suitable for Foundation and Intermediate phase classes and also that the depth of the content was a basic introduction to Mathematical concepts. However, some recommended that the modules could sometimes be used as ‘catch-up’ materials for the Senior phase (Grades 7–9).</p>
<p>3) Natural Sciences</p> <p>Learning outcomes: Scientific investigations; Constructing science knowledge; Science, society and the environment. In South Africa Natural Sciences has ‘Core knowledge concepts that are presented by phase and organised into four main content areas or knowledge strands’.</p> <p>Life and living focuses on Living processes and healthy living; Interactions in environments; Biodiversity; Change and continuity.</p> <p>Energy and change focuses on Energy transfers and systems; Energy and development in SA.</p> <p>Planet Earth and beyond focuses on Our place in space; Atmosphere and weather; The changing Earth.</p> <p>Matter and materials focuses on Properties and uses of materials; Structures, reactions and changes of materials.</p> <p>TESSA has modules in Science that focus on Looking at life; Investigating materials; Energy and</p>

<p>Movement. These are similar to the content strands for Natural Sciences in the SA Curriculum. The only strand that is not catered for is Planet Earth and beyond.</p> <p>Comment: As in Mathematics, subject advisers who acted as critical friends and reviewed the materials regarding its suitability for use in the GET Band were concerned about the depth of content in these modules. They claimed that it was suitable for Foundation and Intermediate phase classes. They claimed that the modules provided surface knowledge of the content strands without any in-depth examination of each and how it could be taught in different grade levels.</p>
<p>4) Social Sciences (History and Geography)</p> <p>TESSA does not have stand-alone modules focusing on History and Geography. Its modules for Social Studies and the Arts focus on Developing an understanding of place; Investigating history; Looking at art.</p>
<p>5) Life Skills/Life Orientation</p> <p>In the Foundation phase, the learning programme is Life Skills and Life Orientation is offered from the Intermediate phase.</p> <p>Learning outcomes: Personal development; Health promotion, social development, physical development and movement; Orientation to the world of work.</p> <p>TESSA has modules on Life Skills that focus on Personal development; Exploring social development and community issues and citizenship, which address some of the learning outcomes for Life Skills in the SA Curriculum.</p>
<p>6) Arts and Culture</p> <p>TESSA does not have stand-alone modules focusing on Arts and Culture.</p>
<p>7) Technology</p> <p>TESSA does not have modules on Technology.</p>
<p>8) Economic and Management Sciences</p> <p>TESSA has no modules in this subject.</p>

As indicated, South Africa's revised National Curriculum has at its centre an OBE approach to teaching and learning and the emphasis on participatory, learner-centred and activity-based education. The TESSA materials also put emphasis on these issues: the modules outline the learning outcomes for each lesson and learning experience. Moreover they offer activities for teachers and learners to undertake in their classrooms. The activities encourage learner centredness and are highly engaging for learners. The key resource book exposes teachers to various professional skills that include classroom-management strategies, dealing with large classrooms, teaching and learning strategies and methodologies.

The three TESSA models

The highly structured model generally manifests itself in the form of a closely structured guide drawn directly from the TESSA resources bank, sometimes with prompts, activities and exercises written by experts in the field of education and learning.

The loosely structured model is characterised by selection by lecturers at partner institutions for use in their own courses. This usually takes place at a formal function, perhaps a workshop, and then the results are taken back to another official function for discussion.

When using **the guided model**, teachers select the TESSA resources for their own units of study by themselves from the TESSA website. They don't discuss their choices or results with academics. The teachers then work their way freely through the materials, as it suits their classroom needs.

Owing to the flexibility of the TESSA OERs, various combinations of the forms and use of TESSA OERs at the UFH have emerged (Table 2).

Table 2: Forms and use of TESSA OERs at the UFH

TESSA model	Implementation strategy	Programme/s using the TESSA OERs	TESSA modules used and form
Highly structured	Used as part of the 'Recognition of Prior Learning' (RPL) process. Assignments towards the development of RPL portfolio, included: Adapting TESSA resources to the National Curriculum statements, preparing lessons using TESSA activities; delivering and engaging in reflection on the teaching and learning.	B.Ed. in-service; National Professional Diploma in Education (NPDE)	Literacy Life Skills Key resource Modules printed for students
Loosely structured	Used during lectures in exposing teacher learners and students to a variety of aspects related to classroom pedagogical practices for example the TESSA key resource: managing group work in the classroom. Used for formal assessment: Teacher learners and students asked to interrogate a particular case study and adapt it to own classroom context and	B.Ed. in-service; B.Ed. pre-service; NPDE; PGCE and in the Advanced Certificate in Education (ACE) Programmes	Literacy Life Skills Science Numeracy Social Studies and the Arts Key resource A combination of printed materials and use of intranet

	also map the TESSA activities to the National Curriculum statement of that learning area and determine learning outcomes and assessment standards addressed in the activity. Students use the materials when preparing lessons for teaching practice.		
Guided use	Academics have included TESSA OERs as a source of reference in their module learning guides.	B.Ed. in-service; B.Ed. pre-service; NPDE; PGCE and in the ACE Programmes	Literacy Life Skills Science Numeracy Social Studies and the Arts Key resource A combination of printed materials and use of intranet

When TESSA was introduced at the UFH, lecturers were given a chance to engage with the materials and see how they could use them in their courses. Therefore for lecturers it was optional to use the materials. However most lecturers, whose courses are school teaching subjects, use the TESSA materials by drawing examples from them. One can safely say about 80% of the Faculty of Education lecturers use the TESSA materials and share them with their students during lectures. Moreover the availability of the TESSA newsletter has influenced lecturers to use the materials, and even those who are not using the materials get copies of the newsletter. The materials are made available to all students and are accessible from the TESSA website through the UFH's intranet.

However, in contexts where the materials were allocated, their use was highly structured, the materials were printed for students and they were guided on how to use them. For example when the materials were used as part of the 'Recognition of Prior Learning' for NPDE and B.Ed. in-service, students were given printed copies of the materials and they were taken through the modules in order to become acquainted with how they are structured. They chose module areas and modules to work with. Their tasks were in stages:

- **Stage One:** Choosing a module area, a module and two sections to teach from that module. Teaching and reflecting on the lessons taught. Sharing one's experiences with other teachers in a contact session.
- **Stage Two:** Choosing a different module area, a module and two sections to teach. Teach, assess and reflect. Sharing experiences with other teachers on how the lessons were taught and assessed.
- **Stage Three:** Choosing one of the lessons taught, and examining it in terms of how it responded to the elements or requirements of the SA Curriculum.

Life Skills and Literacy were popular module areas among students and teacher learners. One of the reasons as expressed by some teacher learners is that the language used is reader friendly and – unlike with other modules – even unqualified teachers could easily try out some of the activities without worrying much about their own content knowledge. Much as students and teacher learners' favourites are Life Skills and Literacy, they are exposed to all the TESSA modules especially in the B.Ed., PGCE programmes and the NPDE which are aimed at generalist educators. Lecturers offering a variety of courses in the Faculty are using the TESSA OERs. As a result all the current TESSA modules find their way into the lecture rooms.

The TESSA OERs have thus afforded educators in-service registered at the UFH with opportunities to reflect and improve their classroom practices. As already indicated, when the SA Curriculum was reviewed new subjects were introduced, namely, Life Skills/Life Orientation and Technology. Participation in TESSA and using the Life Skills module area have thus helped teachers to have a greater understanding of how to implement the learning area in classrooms. Teachers, especially those in-service through using the TESSA OERs, have realised that there is no such thing as a perfect teacher as long as knowledge in the field of education continues to evolve. Moreover, the TESSA OERs have helped teachers both in pre-service and in-service programmes not to find themselves wanting before learners as the materials are written in a way that guides their use in the classroom. Through using the TESSA OERs teachers can identify gaps and strengths in their classroom practices, thereby engaging in a process of becoming reflective practitioners. For pre-service teachers the TESSA OERs have provided opportunities for linking theory with practice: bringing the classroom into the lecture room. Lastly, participation in the TESSA Consortium has afforded the UFH academics and students both (pre-service and in-service) and relevant stakeholders such as DoE, access to communities of practice within the institution, across institutions,

across countries, and has generated a new discourse of finding, adapting and sharing educational resources.

The TESSA OERs usage in the teachers' classrooms observed during the monitoring and evaluation process of TESSA implementation has revealed the following:

- **Most unqualified teachers teach the TESSA activities as they are and do basic adaptations of the case studies.** The basic adaptations include changing the names given to characters and places in the case studies. As a result their planning tends to fit with the TESSA activities and sometimes one activity will be implemented in class and made to be the lesson for the day and not the range of activities that build up to the Key activity. The teachers would implement the activities as they are and not consider the requirements of the National Curriculum. For them the fact that the names of the TESSA module areas and modules were similar to SA subjects and learning outcomes for the learning areas was enough. Their adaptations were such that the activities fit learners' contexts. However, they would modify the resources to fit the focus of their lessons. For example, Resource Three in the module area Numeracy was changed to focus entirely on Addition.
- **Most qualified teachers extended the activities; selected parts of the activities.** These teachers would plan their lessons in line with the requirements of the SA Curriculum. They would identify learning outcomes and select assessment standards. They would design their own activities and perhaps use a TESSA activity to activate learners' prior knowledge, or reinforce a concept that was taught in the previous grades. They did this when they had identified the activities to be fit for the learners' previous grades and not by introducing new content in the current grade level. Some would select scaffolding activities from the TESSA materials that they would then use to activate learners' prior knowledge, making lessons learner centred and supportive of the achievement of the lesson outcomes. Moreover they would sometimes collapse two scaffolding activities into one by choosing the elements they needed from each activity. In addition, assessment standards described the level at which learners should be demonstrating their achievement of learning outcomes through revealing the depth and breadth of that achievement.

However, the key resource book was identified as resourceful by teachers, qualified and under/unqualified.

Challenges of implementation

Reaching out to more under-resourced schools. As discussed earlier, the Eastern Cape province is one of the most impoverished provinces with a number of historically disadvantaged schools. Most schools in the Eastern Cape are in poor communities and are under resourced. Such schools do not have electricity so the CD-ROMs as a vehicle for sharing TESSA OERs are not suitable. Such schools require materials in print and this is costly.

Ensuring that the TESSA OERs are not used as textbooks. Most inexperienced teachers (very little time in the teaching profession or unqualified), and those who still struggle in understanding the OBE approach and the requirements of the new curriculum and its classroom management strategies, are tempted to follow TESSA activities religiously and do not examine how each activity responds to the requirements of the National Curriculum.

TESSA OERs are not grade specific and therefore progression was questioned. Most of the TESSA OERs address the learning outcomes of the learning areas/subjects offered in the GET Band school curriculum in South Africa. However the issue was that the content of the modules was general and not grade specific and could not describe the level at which learners in different grades could demonstrate their achievement of the learning outcomes as outlined in each section of the modules. They therefore could not specify or demonstrate how conceptual progress would occur in a module

TESSA OERs and the South African Language in Education Policy (LIEP). South Africa's LIEP indicate that in the Foundation phase (Grade R-3) learners should be taught in their home languages. All TESSA materials are in English which is a second or third language to a majority of learners and teachers in the schooling process.

Sharing TESSA beyond the University of Fort Hare

The Faculty of Education has an exchange programme with Umeå University in Sweden. Lulu Kahla, one of the lecturers who visited Umeå University in April 2010, conducted lectures on second language acquisition and learning and utilised the TESSA OERs for case studies and relevant contexts. She also took some copies of the TESSA CDs with her and that has helped in creating awareness about TESSA at Umeå University.

Except for teaching and research, one of the core duties of the Faculty of Education is community engagement. Through community engagement projects TESSA OERs have been introduced to a Community Literacy and Numeracy Group (CLING). CLING includes all the various constituencies of Tshatshu, a village in King Williams Town. These include teachers

(including Adult Basic Education), the Department of Education Officials servicing the schools at Tshatshu, other members of the community and out-of-school youth.

Animating TESSA beyond UFH is an ongoing task and it is very useful in soliciting the voices of other stakeholders in education. Efforts have been made to share TESSA OERs in a CD-ROM version and in printed form with the District and Provincial Department of Education. Subject advisers from some of the districts have acted as critical friends in ascertaining the suitability of using TESSA OERs in teacher development workshops.



Appendix 1

A 2010 synopsis of the University of Fort Hare's Faculty of Education

School	Programmes offered	Duration of the programme	Entry requirements	Student profile	Enrolment estimates
School for Initial Teacher Education	B.Ed. – GET and FET Band (pre-service)	A full-time 4-year degree	National Senior Certificate (Grade 12)	English, Xhosa, Afrikaans and Sesotho background	750
	PGCE (Postgraduate Certificate in Education) GET and FET Band	One-year full-time certificate of teaching	A degree with school subjects	English, Xhosa and Afrikaans background	50
School for In-service Programmes	National Professional Diploma in Education (NPDE)	3-year part-time	Practising teacher with a teaching certificate	English, Xhosa and Afrikaans background	200
	B.Ed. – (F&I) Foundation and Intermediate phase	3-year part-time degree	Practising teachers with a diploma in Education	English, Xhosa and Afrikaans background	100
	ACE – Advanced Certificate in Education Specialisations: Mathematics Education/Science Education/Technology /Mathematical Literacy/Mathematics/ School Leadership	2-year part-time certificate	Practising teachers teaching the subjects they want to specialise in. ACE School leadership is for school principals	English, Xhosa and Afrikaans background	60
School for Postgraduate Studies	Bachelor of Education (Honours)	2-year part-time Postgraduate degree	Practising teacher with a degree in		60

			Education		
	Master of Education by dissertation only				30
	Doctor of Philosophy (Ph.D.)				10
Nelson Mandela Institute	The institute focuses on rural education and development. NMI works in 21 schools in the deep rural areas of the Eastern Cape.				

Survey of TESSA use at the University of Pretoria: 2008/2009

Alison Buckler (based on work by Carol van der Westhuizen*)

2010–11

<http://web.up.ac.za/>



This case study is a report on a survey of students using TESSA at the University of Pretoria in 2008/2009. It shows the ways in which student teachers creatively engaged with TESSA materials, adapting them to suit their curricular, learning and cultural agendas. The level of autonomy given to teachers to experiment with the materials is an indication of the adaptability of TESSA OERs to a variety of learning and teaching situations and local and national needs. The survey also highlights the significance of ongoing dialogue with tutors about issues such as assessment and innovation in the learning process for the student teachers.

* Sadly Carol passed away in April 2011.

Introduction

At the University of Pretoria TESSA materials have been introduced to student teachers in the Teaching Practice phase of campus-based and distance pre-service primary and secondary B.Ed. programmes. The Teaching Practice Guideline booklet directs students to the TESSA website and registration with the TESSA site is compulsory. At the end of term 3 students submit a portfolio for assessment which must include a critical reflection on their use and adaptation of a TESSA lesson. Current incorporation of TESSA at the University of Pretoria draws, in part, on the findings of this survey carried out with students in 2008/2009.

The survey aimed to capture the views of B.Ed. students from the Faculty of Education who had used TESSA materials in their teaching practice. These students were specialising in one of the following: Foundation and Early Years Education (up to Grade 3), Intermediate Education (Grades 4–6), Senior Education (Grades 7–9) and Further Education and Training (FET, Grades 10–12). The survey was administered to students enrolled on the Foundation (primary), Intermediate, Senior (secondary) or FET course during their third school term internships and interrogates their classroom experiences of using TESSA materials or methods. In total 99 surveys were returned.

The findings of this survey are reported here. This report is divided into two parts. Part 1 reports data from the survey and Part 2 summarises this data and suggests further avenues for data collection to enhance understanding of TESSA use and engagement.

Part 1 – Survey data

1. What course are you currently studying?

The distribution of responses was as follows:

36 students were enrolled on the FET course.

16 students were enrolled on the Senior course.

15 students were enrolled on the Intermediate course.

32 students were enrolled on the Foundation course.

2. Which TESSA sections did you use in your teaching?

In total, 96 of the 99 students used the TESSA materials (97%).

There was some confusion for students answering this question. Some specified the TESSA *learning area* they had used (e.g. Numeracy, Literacy, etc.) whereas others specified the *type of resource* they used (e.g. activities, case studies or learning resources).

Learning areas used

77 students specified the TESSA learning area they had used in their teaching.

The most commonly used learning area was Numeracy, used by 26% of these 77 students, whereas the Science and Social Studies units were each only used by 12% of the students.

Figure 1 shows TESSA usage across the curriculum areas.

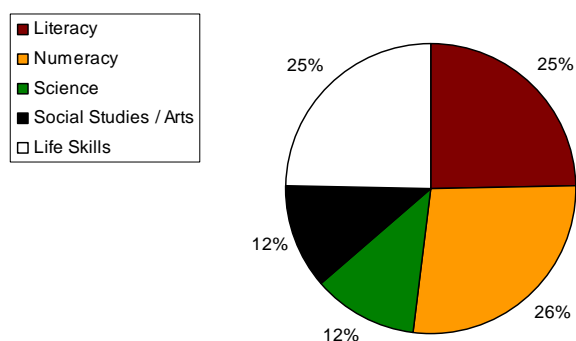


Figure 1: TESSA use by subject

Type of resource used

18 students specified the TESSA OER that they used in their teaching.

Half of these students used activities whereas only two used case studies and the remainder used the study unit resources.

2i. If you did not use any of the TESSA materials, what was the reason?

The two students who did not use the TESSA materials are enrolled on the FET course specialising in Accounting and Technology. These subject areas are not covered by the TESSA materials and these students did not feel that the TESSA materials were relevant to their teaching practice.

3. Which part of the TESSA materials did you find most useful?

Analysis of the returns showed that the activities were found to be especially useful by 55% of the cohort; 29% thought the case studies were especially useful, whereas 27% thought the learning resources were especially useful. (*NB: some students ticked more than one answer.*) Proportionately, students specialising in Foundation level education found the activities more useful than those specialising at other levels. Students specialising in FET and Senior level education found the resources more useful than those enrolled on Foundation or Intermediate. Three students did not think that the TESSA materials were useful. Two of these students were enrolled on the FET course and one was enrolled on the Senior course. Only one of the FET students offered a reason for their answer, which was that the TESSA materials were not suitable for the age range of their pupils.

4. Did you adapt any of the TESSA activities or case studies?

The majority (87%) of students who used the materials adapted them in some way.

Foundation students were more likely to adapt the materials than students specialising in other phases.

4i. How did you adapt the TESSA materials?

Students were asked to give examples of how they adapted the TESSA materials. In total 86 examples were given. These examples have been coded into nine categories as shown in Figure 2.

The most common adaptations were to suit the age group of the students' class or to fit the materials into the existing curriculum. Many students added their own resources to supplement the TESSA materials in their lesson delivery.

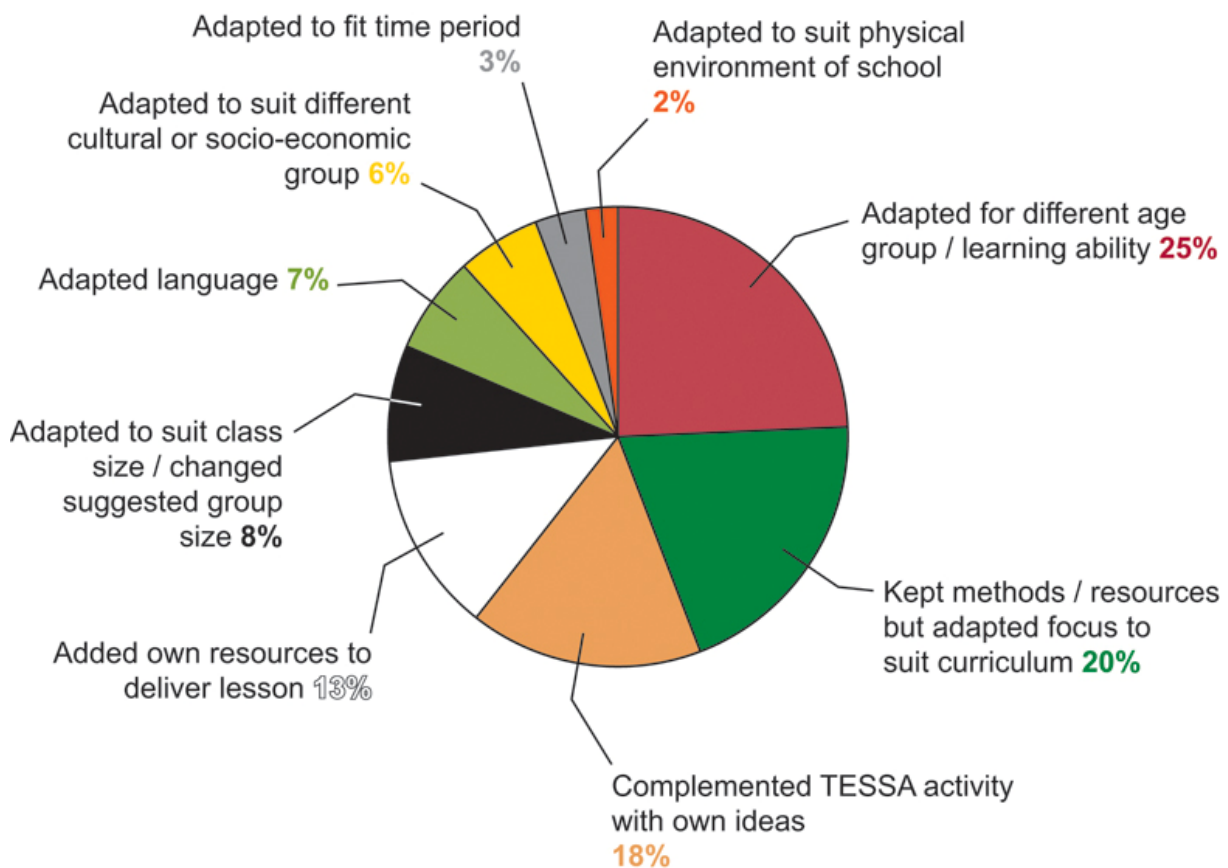


Figure 2: Adaptation of TESSA use

The table below shows how students described their adaptation of the materials.

Type of adaptation	Student responses
Adapted for different age group or learning ability	"I adapted three activities. I looked at the age of the learners and the level of the activities and made them shorter."
Kept methods/resources but adapted focus to suit curriculum	"In the TESSA lesson the learners had to write to a friend or penfriend so I adapted it by making them write to the main character in the book we had just read." "I used the resources for a movement lesson but incorporated it into a life-orientation lesson which involved teaching them their individuality." "I adapted the resource of getting learners to create their family timelines by getting them to create a timeline of the history of medicine which was covered before and links to art/creativity."
Complemented TESSA activity with own ideas	"I used TESSA to adapt my lesson on "The Ugly Duckling" so that it touches the subject of discrimination and acceptance." "I allowed the learners to find examples of symmetry rather than just showing them pictures of symmetrical objects." "I read through the lesson and used it as an idea. I then used my own ideas as well as the notes given to me by my teacher. I gave the learners a standard net which they needed to draw and make into a cube as well as a triangular pyramid. These were handed in for marks."
Added own resources to deliver lesson	"Instead of playing a game I decided to do a visual lesson where learners look at a PowerPoint presentation. Reason is learners in G8 are interested in visual technology. Enjoy lessons where "watching television" is the focus. They also internalise knowledge faster"
Adapted to suit class size or changed suggested group size	"I used shared reading but adapted the group size so that the learners are more involved. The learners worked in groups of four. Our theme was fairy tales." "The TESSA lesson called for large groups but I chose to allow the learners to complete the activity in pairs."
Adapted language	"I used some of the TESSA activities in teaching my G1 learners in English. We worked in the official languages of South Africa."
Adapted to suit different cultural or socio-economic group	"Learners made symmetrical Chinese masks from the Pretoria Chinese school." "To a rather large extent. I changed the case studies (the information) for instance; instead of using the examples containing small fires outside and children having to walk to get water, I changed it to a larger house and children getting up from the TV to help more around the house." "The socio-economic group in the class did not sing the praise songs suggested by TESSA so I wrote my own songs for the learners to sing."
Adapted to fit time period	"I shortened some of the questions in order to finish it in one period."
Adapted to suit physical environment of school	"I adapted the lesson to work in a smaller classroom with less space."

5. How helpful were the TESSA sections in supporting you to explore different classroom activities?

Just over half of the students (51%) found that the TESSA materials were “very helpful” or “helpful” in supporting them to explore different classroom activities. 37% of students found them to be “fairly helpful” and 11% found them to be “not at all helpful”.

Foundation level students tended to find the materials most helpful in supporting them to explore different activities whereas FET students tended to find them least helpful.

Every student who thought the TESSA sections were “very helpful” in helping them to explore different classroom activities had adapted them in some way.

6. How helpful were the TESSA sections in supporting you in using different forms of assessment with your pupils?

In total, 36% of students found the TESSA sections to be “very helpful” or “helpful” in supporting them to use different forms of assessment. 38% found them to be “fairly helpful” and 26% “not at all helpful”.

None of the FET students chose “very helpful” for this question.

7. How helpful were the TESSA sections in improving your understanding of the different ways pupils learn?

In total, 39% of students found that TESSA was “helpful” in improving their understanding of the different ways in which pupils learn. 35% found the materials to be “fairly helpful” in this respect, and 15% chose “not at all helpful” (1% of the answers were missing from this question).

8. How would you describe your pupils’ interest and engagement when you used the TESSA activities?

Just under half of the students thought that their pupils were more interested and engaged than usual during the lesson where they drew on the TESSA materials. Of these, 10% saw a dramatic difference in their pupils’ interest. Half of the students saw no difference and a very small number (2%) thought that their pupils were less interested and less engaged than usual (1% of answers were missing).

Students enrolled on the FET course noticed the least difference in their pupils’ interest and engagement.

Unsurprisingly students who felt there was an increase in learner interest and engagement are keen to use the TESSA materials again in their teaching.

9. Describe other impacts (learning or behaviour) when you used the TESSA materials in your lessons.

Student teachers were asked to comment on any additional impacts resulting from using TESSA materials in their classroom. Just over half of them answered this question.

These answers were coded according to whether they described positive or negative impacts, and whether they were referring to themselves or the learners. The overwhelming majority (82%) of responses described positive impacts on learner engagement and behaviour. A selection of the responses is given in the table below.

Type of impact	Student teacher responses
Learner impact (positive)	<p>“Learners were more focused and asked more questions. They were very interested.”</p> <p>“The children enjoyed it and showed great progress in their mathematical skills.”</p> <p>“The learners were more interested than usual and their behaviour was very good.”</p> <p>“The learners always enjoy practical work so they liked this aspect of the lesson.”</p> <p>“It seemed like the TESSA lesson was very different to what they usually did. I think this excited them quite a lot, they did pay attention.”</p>
Learner impact (negative)	<p>“When using group work the learners were very disruptive and not very focused on the task at hand.”</p> <p>“I cannot have the learners discuss “everything” among themselves the “whole” time. It makes discipline a lot harder.”</p>
Teacher impact (positive)	<p>“It opened my eyes to look deeper than the obvious.”</p> <p>“It provided me with a framework from which to work from.”</p> <p>“Worked well. Broadened my way of thinking and teaching.”</p>
Teacher impact (negative)	<p>“I found group discussions difficult. If they discuss as a class you can have a little more control and offer guidance.”</p>

10. How much dialogue did you have with your tutor/supervisor/mentor about the TESSA materials?

76% of the students had at least some dialogue with their tutors, with around a quarter of students describing this as “reasonable” or “lot” of dialogue.

As might be expected the more dialogue a student had with their tutor, the more they understood the purpose of the TESSA materials, the more appropriately they adapted them to suit their pupils and, overall, the more useful they considered them to be.

11. Did you talk to other teachers in your school about TESSA?

Disappointingly less than half the student teachers spoke to their colleagues in the school about TESSA (43%).

Students enrolled on the FET course are less likely to have talked to other teachers about TESSA.

12. Do you plan to use the TESSA materials, either in an original or adapted form, in your teaching in the future?

The majority of students (80%) said they would either “definitely” or “possibly” use the TESSA materials again with only 8% firmly against any future use. When further analysis was undertaken it was found that students enrolled on the Foundation or Intermediate courses are more likely to have answered “definitely” or “possibly”. Students enrolled on the Senior or FET course are more likely to have answered “unlikely” or “no”.

13. Any other comments regarding the TESSA materials.

At the end of the survey, students were asked if they had any further comments about the TESSA materials and about their experiences of using TESSA in the classroom.

55 comments were received. Of these, 22 comments expressed positive reactions to different aspects of TESSA; around a third of these suggested that using TESSA materials had enhanced or supported their development as teachers (see table below).

Type of comment	Student responses
General	“A very good website for teachers! Inspiring!” “Very helpful. Enjoyed adapting it, will surely use in the future teaching.” “They are very interesting and useful.”
Impact on teacher development	“The materials were very useful and in future I will keep in mind that materials from the everyday outside world can be useful in the classroom.” “Very helpful for when you feel “stuck” and have no creative ideas. Triggers ideas for great lessons, if adapted.” “I will definitely use it, the resources were also very helpful and they have helped to define and improve how I structure my lessons.”

33 of the 55 comments highlighted disappointment or frustration with the materials. Many offered areas for improvement, for example, students felt that not enough learning areas were covered by the TESSA materials or that they were not suitable for certain age groups or cultural groups. Other comments focused on the website; students felt it was not sufficiently user friendly.

A few students felt that their experience of planning a lesson with TESSA materials could have been better supported. A selection of these student responses is given in the table below.

Type of comment	Student responses
Variety/breadth of learning areas	<p>“They must adapt it for senior phase.”</p> <p>“It seems the lessons and materials were suited to a certain demographic/culture group/socio-economic group. Therefore difficult to use in my class as my learners did not fall into that group.”</p> <p>“Please write TESSA materials in the other learning areas as well. There should be a difference in difficulty level for older learners.”</p> <p>“There is not a lot of variety with regards to the choice of lessons.”</p> <p>“Access was difficult and not user friendly.”</p> <p>“TESSA is more for schools in rural areas with no resources.”</p>
Website related	<p>“Improve the website – it wasn’t user friendly for me.”</p> <p>“The website is NOT user friendly and all the learning areas aren’t there.”</p> <p>“It is just that I find the website and registering to be a bit confusing.”</p>
Student support	<p>“The process of using them was a bit vague.”</p> <p>“The mentor teacher did not realise why there should be a TESSA lesson.”</p>
Impact on teacher development	<p>“I do however think that teachers can become lazy and copy other teachers’ work instead of creating their own.”</p>

Part 2 – Summary of findings

In general the University of Pretoria students’ experiences with the TESSA materials were positive. The majority of students enjoyed using them to plan and carry out their lessons and found that the materials had positive effects on both their own teaching and on pupil interest, engagement, behaviour and understanding. Most students felt that the TESSA materials had broadened their repertoire of activities and forms of assessment and the majority would consider using more TESSA materials in the future.

There are some key factors, however, that appear to maximise student and learner gains. The TESSA materials were designed for teachers who are training to teach at the primary level. The findings of the University of Pretoria survey suggest that they are appropriately designed and adapted for teachers training to teach at this level; students enrolled on the Foundation and Intermediate courses tended to find the TESSA materials more appropriate and more useful than those enrolled on the Senior and FET courses.

However, the survey also shows that although Foundation and Intermediate students found the TESSA activities to be most useful, some Senior and FET students enjoyed and benefited from using the TESSA resources. This suggests that different aspects of the TESSA materials could be utilised in courses for students training to teach a range of different age groups.

Some students struggled to use the materials and the free-response comments suggest that in a number of cases students had not engaged with the underlying pedagogic approaches. There is a strong correlation between those who had discussed the materials with their colleagues and tutors and those who appeared to engage with the pedagogies. This suggests that dialogue is crucial in helping students to get the most out of the materials.

A similar correlation can be found between the students who adapted the materials and the students who felt they had developed new teaching skills. The students who reported adapting the materials were also more likely to have reported that the materials had a positive impact on their own and their pupils' learning. This is not surprising; students who are sufficiently confident to make changes to the materials to suit their learners might be predicted to have experienced more successful learning experiences with them. This emphasises the importance of tutor support in encouraging students to think about the learning needs of their pupils when planning lessons and to make appropriate changes to the activities to best meet these needs.

A significant number of students (10%) commented on the difficulties they had accessing the TESSA materials online. For some this was due to a lack of computer access but many students struggled to use the TESSA website. This suggests that if students are expected to access the materials themselves, they might benefit from a TESSA website tutorial or more guidance on the TESSA website itself.

Overall the survey suggests that the majority of students were able to engage with and adapt the TESSA materials, but that this engagement is enhanced when there is dialogue with their tutor both before and after they use TESSA activities in their lesson. Engagement is also enhanced through dialogue with other students using the TESSA materials.

The survey is self-reported data from students which have not been corroborated through other data collection. In-depth discussion with some students, lesson observations, discussions with tutors and with mentor staff would all deepen our understanding of how the students are using the materials. However, the survey provides a useful snapshot of issues; most pertinently how students are introduced to the materials, the role of tutors and access to the website. The notes in Appendix 1 identify areas where the survey might be improved for future cohorts.

Appendix 1: Suggestions for future survey design

Additional student information

- It would be useful to compare data on students' prior experience and gender. Additional questions could be added to the start of the survey to collect this data.
- It would be useful to know how much access students have to computers and the internet both in college and during their teaching practice.

Additional learner information

- It would be interesting to know the location or setting of the practice school. A simple “urban”, “semi-urban” or “rural” multiple-choice question could be added.
- It would be interesting to know the age range of learners in the classroom.

Student perceptions and use of the materials

- It would be interesting to know whether or not they engage with the underlying pedagogies of the TESSA materials. A question could be asked about how students feel the TESSA OERs resonate or link to their own practice. It would be interesting to know why students used the module area and specific sections that they chose.
- It would be interesting to understand more about the planning process students underwent before conducting the TESSA lesson.

General comments

- Question 2 could be rephrased to ensure all students answer the same question. For example the question could read “Which learning area did you use?” and students could choose from “Literacy, Numeracy, Science, Social Studies and the Arts or Life Skills”. A sub-question could ask more specifically which section or which activities/resources the student used within the broader learning area.



Use of TESSA Open Educational Resources at the University of South Africa: 2007–2011

Dr Ellen Lenyai

2010–11

<http://www.unisa.ac.za/>



The University of South Africa (UNISA) is an Open and Distance Learning (ODL) university with learners dispersed across an immense area. This case study illustrates how the available technology, in particular video conferencing, has supported the use of TESSA OERs in remote rural areas. Colleagues describe a number of benefits of TESSA engagement at both institution and individual lecturer level.

The University of South Africa

The University of South Africa (UNISA) is an Open and Distance Learning (ODL) institution and has a student enrolment of 349,160 (2011) worldwide. The enrolment to the College of Education is 67,091 (2011). It is Africa's largest mega distance education institution, rated by the Commonwealth of Learning among the top 10 mega-universities in the world. The student profile is a clear reflection of South African demographics and shows that females comprise 60% of the total student population whereas black students make up 73%. The institution is accessible to many because of the affordable fees which are lower than the fees at other campus-based universities. The flexible manner in which tuition is offered also attracts many students who are not able to deal with a full degree programme all at once because of work and family commitments.

Participation in the TESSA project

The TESSA Open Educational Resources (OERs) were introduced in the Department of Teacher Education in 2007 after they were versioned at the University of Fort Hare. Adopting the project was one way of putting the vision and mission of the UNISA into operation. In its mission statement the UNISA declares that it is an Open and Distance Learning (ODL) institution that produces among other things excellent research, provides quality tuition, and promotes active community engagements. It is, however, the responsibility of departments, in this case, the Department of Teacher Education, to put the mission statement into operation. The tuition policy states that the UNISA's main responsibility is to its students and, through them, to their communities. It emphasises research and recognises the need to meet the demand for knowledgeable, qualified, effective citizens.

The use of TESSA materials encompasses all three ideals. As this is a student-centred university, the teaching approach takes into account the different needs and different backgrounds from which students come and make learning material including OERs accessible to students through technology. Technology is used to explore knowledge, conduct investigations and produce tangible outcomes. TESSA resources serve as an innovative way of providing tuition to students. The materials used for teacher preparation expose students to knowledge beyond the boundaries of South Africa as intended in the vision of the UNISA.

Introduction of the OERs in the Department of Teacher Education

The Department of Teacher Education is committed to addressing concerns in the field of education either through services or through research. The inception of TESSA in the

department coincided with the release of the country's poor results in the literacy systemic evaluations. It was important for the Department of Teacher Education to respond to the dismal reading performance of the Grade 3 learners. As a language specialist in the Foundation phase, I chose to include the Literacy module of the OERs in the language modules of our teacher preparation programme in 2007 first as it was the most relevant. The aim was to enhance the teaching skills of the teacher trainees who would complete in that year so they could deal with the literacy problem efficiently.

The growth of the TESSA project can be summed up in the following points:

- The first step was to establish the extent to which the TESSA website would be accessible to our students.
- The OERs were incorporated into the teaching practice modules after the realisation that students from previously disadvantaged backgrounds and those living in remote rural areas did not have access to the internet.
- A TESSA Committee comprising lecturers who were responsible for the modules containing the resources was formed.
- Student teachers were obliged to use the resources in their lessons and mentoring teachers in the schools were required to evaluate the lessons. In this way the OERs were introduced to those schools where our students were doing their teaching practice.
- The Head of the department, Dr Mabunda, added the TESSA webpage to the webpage of the Department of Teacher Education to ensure delivery and to encourage those students (even those not in the Department of Teacher Education) who had access to the internet to navigate the TESSA website.

Growth of the TESSA OERs

The success that was experienced with the use of the TESSA Literacy module encouraged the growth of the TESSA Committee and more OERs that were related or were similar to the content of our modules were incorporated. The modules now included Literacy, Numeracy (Maths), Science, Social Studies and the Arts, and Life Skills. Table 1 gives the growth in OER use for 2007, 2009 and 2011 in terms of number of modules and number of students.

Modules	Number of modules	Number of students
2007		
Literacy	1	360
2009		
Literacy	3	1342
Numeracy	3	1650
Guidance and Counselling or Life Skills	2	2502
Social Studies	2	1249
Arts	2	1142
2011		
Literacy	4	1883
Numeracy	3	2557
Guidance and Counselling or Life Skills	2	5069
Social Studies	2	5062

Table 1: Growth in OER use for 2007, 2009 and 2011

Benefits for the UNISA and the Department of Teacher Education

- The UNISA and the Department of Teacher Education in particular have benefited from the resources because of the fact that the OERs could be disseminated to a wide readership for free. This delivery mode is in line with ODL practice and mainly enabled the Department of Teacher Education to reach out to students and to teachers in the field.
- The content of modules in our programme is heavily on theory and some students might not know how to translate the theory into practice. The case studies in the OERs are a good way of demonstrating the application theory into real classroom situations. The materials therefore facilitate and enhance our aims in tuition.
- I have already referred to the UNISA's policies on research and community engagement. The decision to incorporate the materials into teaching practice modules proved to be a good way of introducing the materials to community schools. It is envisaged that research projects will emerge from the observed use of these materials at schools.

Benefit to individual lecturers

- As the coordinator of the project in the department, I have been offered the opportunity of participating in a network of researchers experienced in the use of the TESSA OERs. I have learnt to appreciate the resources and opportunities available at this institution and would like to put them to more use through community engagement. I have learnt how to exploit available resources, no matter how meagre, for the benefit of a larger society.
- The wealth of knowledge that is freely available to me as an individual raises the obligation in me to reciprocate in kind. I feel the need to contribute and share what I have learnt through my research activities with other people for the good of society and to sustain the OER movement.
- The resources also added a new dimension to the content of teaching practice modules, that of context. Lecturers in the TESSA Committee realised the significance of relating teaching practice activities to different learning contexts and to evaluate student teachers in terms of those contexts. This was a lesson learnt from the case studies in the TESSA materials.

Challenges and successes

Three major challenges influenced the approach adopted and the extent to which the OERs were made accessible to student teachers.

- **Students' lack of access to the internet:** materials were downloaded, incorporated into the relevant existing modules and posted as hard copies. When the costs of reproduction proved to be prohibitive, CDs were considered as an alternative.
- **Large student numbers:** the large numbers were a concern in terms of reproduction costs. Lesser content was downloaded but valuable details were omitted. Internet facilities at the UNISA centres in the country were then made available to students to view the resources. The UNISA centres are established to provide services such as registration, library and tutoring for students.
- **Distance:** not all students in all parts of the country could be easily reached via centres because some places were very far apart from others and it was not viable to have a centre catering for a few students. As a result more contact centres were established closer to students in all provinces and provision of internet facilities was made available at those centres.

The use of different technologies proved to be the ultimate solution for addressing the setbacks. The first step was to make the necessary paradigm shift from equating the TESSA resources with online facilities only and considering alternative delivery means.

Dissemination is now through CDs, satellite and video conferencing. The UNISA took advantage of the most commonly available technology, the mobile phone, and used it as a means to alert students about sessions where TESSA resources would be discussed. Students receive an SMS message advising them to go to the UNISA centres for these discussions. Video conferencing has proved to be the most favourable method because the facilities at the centres could be used for many students at the same time. There was the added advantage that students from three to four centres could be linked at the same time and receive guidance from lecturers. This system also encouraged student interaction across the different provinces and there was a cross-pollination of ideas.

Community engagement

The TESSA materials now form part of the content at some of our community projects. The aim is to develop teachers and to facilitate teaching. In addition, research projects on the OERs will be generated from these community school projects for the benefit of the Department of Teacher Education, lecturers and communities.

Future plans and conclusion

It is a blessing that the UNISA top management has bought into the TESSA project and has indicated their willingness to support and promote it. The Dean of the College of Education has conceived an exciting plan through which to promote OERs. The TESSA project and OERs in general will be considered in the planning of college structures and will feature prominently in the new College of Education at the UNISA. I hope to inform the TESSA family about the new structures and the role it will play in teacher preparation.

In conclusion, I wish to point out what I observed when the materials were used by teachers at our community schools projects.

- Teachers preferred lessons where there are a lot of activities for children to perform. They indicated that such lessons were best for large classes.
- Teachers also liked lessons with sound (audio materials) because that interested children and held their attention.
- They frequently asked about the Grade appropriateness of some of the materials they selected to use.

- There is a need for materials suitable for Grade R classes which will consider the fact that children at this level cannot read or write in the conventional sense and also acknowledging that their way of learning is different from that of children in formal classes.





TESSA and the Open University of Sudan **Dr Amani Zahawi with colleagues at the Open University, UK**

2010–11

<http://www.ous.edu.sd/en/>



The uniqueness of the Open University of Sudan (OUS) case study lies principally in the detailed integration into its education courses of a dedicated TESSA handbook, making it compulsory for all students and involving supervisors from the start. This integration serves to narrow any gap between use and use value. The OUS's ongoing use, research and development of the handbook is a convincing endorsement of the educational value of the TESSA resources to this institution and the utilisation of existing OUS printing and distribution methods points to a sustainable model of TESSA use.

Introduction

At the Open University of Sudan (OUS) TESSA materials have been used to create a handbook for student teachers enrolled on B.Ed. programmes. This report explains how the handbook was designed to complement the existing course materials and summarises the findings of a series of research studies aimed at evaluating the usefulness of the handbook. It concludes with some suggestions for future development of the handbook. The report has been compiled from a range of sources including surveys of use among the OUS supervisors and B.Ed. students, interviews and focus groups with supervisors, translated interviews and dialogue with the OUS TESSA staff and contributions from the Open University, UK TESSA staff who supported the design, implementation and evaluation of the handbook at the OUS.

The Open University of Sudan

The OUS is a government-funded university using a mixed-mode approach to educational delivery. It is a new university – the first students enrolled in August 2003. It was established partly in response to the raising of the minimum qualification for teachers to a B.Ed. The OUS operates distance-learning programmes aimed at upgrading the teaching skills and qualifications of the 120,000 primary teachers currently in employment who are not degree holders, although it also offers programmes in Business and Language Studies. The OUS provides in-service training through distance-learning methods that enable teachers to remain in the classroom during school hours. The OUS provides Diploma and B.Ed. courses for those teachers whose previous highest level of qualification was a Certificate of Education. The OUS has now trained more than 90,000 primary schoolteachers, as well as 9,000 secondary schoolteachers, and estimates that it has the capacity to meet the demand for the training of under-qualified teachers currently working in schools by 2011. However, given the number of teachers required to meet Universal Primary Education (UPE) goals, it is likely that the B.Ed. programme will continue to operate, training new teachers ‘on the job’ as they enter employment.

Teacher education programmes

The OUS offers two teacher education programmes, both aimed at providing in-service provision for under-qualified teachers. These are:

- an in-service Bachelor’s (B.Ed.) degree for basic (primary) teachers, taught through distance learning over four years

- a one-year Diploma in Education, mainly focused on secondary teaching but also for teachers who hold degrees in subjects other than education.

The B.Ed. programme commenced in 2003 with approximately 5,000 students and around 90% of the student teachers enrolled were already serving teachers. The other 10% did not have prior experience.

OUS B.Ed. course structure

The B.Ed. course is taught across eight semesters (two per year). The programme is outlined in Figure 1. Subject study occurs alongside educational theory in each semester.

Semester	Courses
1	Learning How to Learn Introduction to Psychology Fundamentals of Education
2	Developmental Psychology Educational Psychology
3	Curriculum Development Evaluation and Measurement
4	Educational Technology Educational Administration Methods of Teaching
5	Teaching Practice 1: General Primary (years 1–3)
6	Teaching Practice 2: Primary years 4–6
7	Teaching Practice 3: Subject specialist teaching, Primary years 7 and 8
8	Examinations etc.

Figure 1: The OUS B.Ed. course programme

Teacher education – staffing

The OUS teacher education is staffed by four people employed centrally, together with around five staff members (some part-time) in each of the 22 regional centres and 350 sub-regional centres. In each educational centre there is a part-time administrator who is usually a teacher in a local school. Regionally employed staff members are used for both academic support (tutors) and for the supervision of teaching practice (field supervisors). Chief teaching

practice supervisors are employed in each region to oversee the work of educational field supervisors who work out of each regional centre. The basic education phase of the B.Ed. course involved around 350 field supervisors. Each field supervisor has responsibility for around 20 student teachers. Each student teacher undertakes three periods of assessed teaching practice and each field supervisor visits their trainees three to four times during each teaching practice.

OUS B.Ed. materials

Delivery is mixed mode, with learning resources – including textbooks – recorded materials (currently audio and video tapes, CD production has recently been started), broadcast programmes and internet resources. Students are supported through tutorial sessions. Students have access to the libraries of other government universities. The OUS also provides an e-library, which operates on the basis of a national licence, enabling provision to be made available to students of all governmental universities.

Print material production is through the OUS press. Print materials are warehoused in Khartoum and distributed by the OUS and commercial vehicles. Distribution of materials is by road to regional centres, and students collect their materials from the education centre they attend for tutorials.

OUS B.Ed. assessment

Assessment is through completion of two assignments per semester for each subject. These are collected and marked by the academic tutors before the end of each semester.

Additionally, theoretical and subject elements of training are examined at the end of each cycle (Figure 2). These written examinations are marked by the same tutors.



Figure 2: The OUS examinations

Classroom practice is also assessed. All the programmes are school-based, being provided to teachers already in service. However, assessment of school-based activity is confined to three defined periods of teaching practice, each of 3–4 months, during the B.Ed. The Diploma

course has only one period of assessed practice. Teaching practice is assessed against a competence model.

Participation in TESSA

The OUS's core philosophy is the emphasis on the value of the practical component of teacher training. The OUS believes that although other Faculties of Education in Sudan have a very high quality theoretical and academic focus, in general there is insufficient time spent on teaching practice.

There is a belief that knowledge is enough and that it is possible to teach knowledge without training, but there is a big difference between learning and training and here at the Open University of Sudan this is the distinction we believe in.

(Professor Sinada, Faculty of Education, OUS)¹⁶

The Faculty of Education at the OUS focuses as much on the practical aspects of teaching as it does the theoretical.

The handbook

TESSA materials are being used at the OUS on the B.Ed. course; the materials were used by 4,000 students in their final year of the B.Ed. programme in 2010.

Building upon the work carried out during the TEAMS¹⁷ project, the TESSA units were mapped against the pupil and trainee curricula and the handbook was designed and written around 14 key teaching strategies. The handbooks were distributed to the OUS study centres. Trainees in the third cycle of the B.Ed. course received the handbooks from their local OUS study centre. A guide was also prepared and printed to help supervisors to support the trainee teacher's use of the handbook.

Aim of the handbook

The aim of the handbook is to improve the effectiveness of the trainees in supporting pupils' learning through the use of a range of teaching strategies that encourage pupils' involvement as active learners. Through using the handbook students are expected to use the teaching strategies in their teaching and complete self-evaluation sheets for each of the strategies. The

¹⁶ Quote from an interview conducted on 5 February 2009 by Alison Buckler (TESSA Research Assistant) about TESSA use at the OUS.

¹⁷ Teacher Education at Maximum Scale. This TESSA project took place in 2007–8 and involved the OUS and the National Teachers' Institute in Nigeria. TEAMS trialled TESSA materials with the OUS B.Ed. students and their supervisors who provided positive feedback.

trainee's use of the strategies is an element of their assessed teaching practice supported through discussion of the completed self-evaluation sheets with their field supervisor.

Experiences of use and evaluation of the handbook

There are several strands to the evaluation of the handbook. The methods used included surveys, semi-structured interviews, focus groups and a camera project that used reflexive photography techniques to capture teachers' perceptions of changes in their teaching practice as they worked through the handbook.

Trainee survey

This was distributed to a randomly selected sample of 300 trainees across nine sub-regions of Khartoum who were asked about their use of the handbook. Responses were received from 220 trainees. Over half of respondents were relatively new to teaching and had less than 5 years' experience.

Survey analysis indicated that in future it is important that supervisors and staff at the study centres are able to frame the handbook in the context of the teachers' work; the trainee survey showed that over 20% of respondents did not understand how the strategies in the handbook could be integrated into their teaching. Over half had only used between one and three strategies in their teaching. More positively over one third of teachers used more than eight strategies and one fifth used more than ten.

Overall the survey data showed that 91% of trainees found the handbook helpful in their teaching.

Supervisor survey

Questionnaires were distributed to 250 field supervisors and 216 responses were received. The surveys showed that all respondents attended an orientation session to discuss the handbook and the supervisors' guide. Every single respondent agreed that the orientation session was crucial in order for them adequately to support the trainees' use of the handbook. Although this was valued, other data from the survey suggest that it wasn't fully effective; a small number of supervisors did not discuss the trainees' experiences of the handbook at all and over one third of supervisors did not discuss the handbook until their fourth visit. It is important, therefore, that supervisors are supported beyond this initial orientation session and that expectations are clearly articulated.

Supervisors evaluate trainees in a range of areas relating to the B.Ed. programme. Supervisors indicated that students using the handbook performed better in a range of these areas. Notably over 87% of the supervisors thought that the handbook enabled teachers to reconsider their

current teaching methods and was effective in helping trainees to reflect critically on their work.

Field supervisor interviews

Four interviews were conducted in October 2009 and four in March 2010. All eight supervisors believed that the handbook had led to improvements in teaching. They had observed improvements in pupil motivation and involvement. In addition, they found the supervisor guide effective in helping them to support trainees.

In addition, the supervisors made recommendations as to how the handbook and its use could be improved. Of the field supervisors interviewed, all but one suggested that the teaching guide could be useful for teachers in all three cycles of teaching practice. To improve and develop the guide, the supervisors suggested the establishment of more workshops, as well as linking to the Federal Ministry of Education to circulate the guide to all teachers.

The teaching strategies included in the handbook were seen as important for quality education, but some supervisors believed that some strategies are not relevant to areas of the Arabic language. In addition, most of the supervisors thought that the general organisation of the guide needed to be addressed and six of the supervisors thought the guide should be divided into three books, with one for each stage, rather than simply one book. It was thought that some strategies would fit into the first and second book, such as telling stories, drama and group working.

Strategies such as the use of questioning, explanations, presentations and the local environment – along with new technologies and mind mapping – were seen to be more suitable for the third cycle. Although some of the TESSA materials used in the handbook had been versioned by Sudanese teacher educators, the core strategies were mainly drawn from the TESSA key resources which are not versioned. The supervisors felt that some of this content needed to be adapted, or adapted further, to suit the environment and culture of Sudan.

Focus group

The supervisors' focus group was a discussion between 13 supervisors and key OUS personnel to review the use of the handbook and to suggest improvements and ways forward for future use. Similarly, supervisors agreed that the handbook was having a positive impact on trainees' practice and that it should be used more widely. Therefore the approach should be extended to three cycles of the teaching practice on the OUS B.Ed. programme. In addition

the focus group agreed that there is a need to engage the federal ministry in the TESSA approach to teacher education, so that the approach could be extended across Sudan.

Camera project

In this strand of the evaluation 12 teachers were given a disposable camera and asked, over a period of a few weeks, to take photographs that they thought captured changes in their teaching. Individual discussions were held with the teachers where they were encouraged to talk about the photographs and the changes they portrayed. This project found that teachers genuinely felt that the handbook was encouraging them to be more experimental in their teaching and that they reported greater enjoyment from their perspectives and that of their pupils. The project also found that the handbook appeared to legitimise different approaches to teaching in the trainees' minds; working through the handbook provided theoretical justification for strategies they had been using previously. More in-depth findings from the camera project are being reported elsewhere.

Implications for the development of the handbook

The reception of the Teachers' handbook and the Supervisor guide has been positive. Although there are real questions yet to be explored about the depth of the changes that have occurred, there is evidence of initial enthusiastic responses from teachers and supervisors as well as interesting signs that point to ways in which the handbook could be further developed.

Make the handbook more widely available

Supervisors in individual interviews and in the focus group meeting are generally in agreement that a handbook of this sort would benefit teachers in all three teaching practice cycles.

From this a number of possible suggestions arose, to make available:

- the existing handbook from cycle 1
- a new, single handbook, covering all three cycles
- three handbooks, one for each cycle.

Of these options the third has clear advantages over the other two. Supervisors and student teachers pointed to some strategies being more difficult to apply than others. With three handbooks it would be possible for there to be progression from those strategies perceived as 'easy' in cycle 1 to those perceived as harder in cycles 2 and 3. Similarly, because each teaching practice involves teaching pupils of different ages the creation of handbooks for each cycle would enable a re-mapping of TESSA sections to include those most appropriate to the

pupils in each age group and a re-versioning of the strategies to complement relevant areas of the curriculum at each cycle. Teachers could be expected to use increasingly more complex and varied use of the different strategies as they move through the cycles.

An example of how this could be structured is shown in Figure 3.

First cycle	Second cycle	Third cycle
Introduction	Build on strategies from first cycle	Build on previous cycles
Lesson planning	Brainstorming	Investigations
Introduction to group work	Drama	Research
Storytelling	Questioning	New technologies
Games	Assessment	
Working with large classes	Using the local environment	

Figure 3: Suggested strategies for each teaching practice cycle

One key challenge in this respect is that the National Curriculum Centre already provides a guidebook for teachers in the first and second cycles of their teaching practice. To create a handbook for students in these cycles would necessitate collaboration with the National Curriculum Centre.

Adapt the TESSA strategies for a wider range of subjects

It is worth noting that a very high proportion of the OUS students choose Arabic as their major teaching subject – in the student survey, for example, nearly half of respondents had chosen to specialise in Arabic. It may be that the OUS could explore the possibility of adapting TESSA resources specifically for the teaching of Arabic (and/or Islamic studies). In relation to this the studies suggest that subject-specific guides could be produced for different specialist subjects although this might risk losing the breadth and richness of the existing handbook.

The views of the supervisors also suggest that advice on teachers working with large classes could be addressed in a more integrated way throughout the handbook rather than presented as a separate strategy. This idea is now being explored further.

Assessment

The data suggest that TESSA materials should not just be made available to teachers during their teaching practice but should also be integrated into the OUS curriculum. For this to be the case there would need to be an examinable component. This assessment might take the

form of lesson plans or lesson notes or reflective discussions with supervisors etc. Such practically based assessment would ensure engagement with the materials.

Greater engagement of education stakeholders

Comments made in the supervisors' forum indicated that there could be a conflict for student teachers between strategies in the OUS handbook and expectations of a more traditional teaching style expected by some federal staff. Supervisors attending the forum discussion expressed the need to inform federal government supervisors about the handbook. These regionally appointed staff members have what is ostensibly an advisory, but frequently – the supervisors implied – an inspectorial, role. It is clear that there is a need to collaborate with inspectors and introduce them to the underpinning approaches of the handbook.

It is important too that supervisors receive ongoing training and support so they can ensure their trainees get the most out of the handbook.

It is also clear that teachers feel tensions between the strategies and the heavily prescribed B.Ed. school curriculum. It will be important to address this. There has been previous dialogue about TESSA with the National Curriculum Centre and it might be worth exploring how that dialogue could be maintained in the context of the upcoming national curriculum review.

Conclusion

The OUS/TESSA handbook was valued by all stakeholders who participated in this range of opinion and data-gathering activities. It was especially valued because previously the teachers in the third cycle of the B.Ed. had no other resources that specifically related to this phase of their course. It appears the handbook helped them to mediate the activities in the syllabus and the pupil textbooks.

The outcomes of the activities described in this report have inspired developments in the next version of the handbook and supervisor guide in order that they are most suitable, relevant, inspiring and useful for the trainees. A particular focus has been on how to better support the trainees so that they are able not only to embed the strategies in their work throughout their teaching practice and beyond but also to ensure that critically reflecting on their teaching – and the strategies they use – becomes a regular activity.

TESSA and the Open University of Tanzania

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<http://out.ac.tz/>



The focus in this case study is the incorporation of TESSA OERs into the course materials of the new qualification – the Diploma in Primary Teacher Education (DPTE). The Open University of Tanzania (OUT) is currently the only public university in Tanzania offering a diploma qualification for primary teachers and through this it makes TESSA materials available to its student teachers in both English and Kiswahili.

The Open University of Tanzania

The Open University of Tanzania (OUT) is a public institution that offers Higher Education (HE) through Open and Distance Learning (ODL). The OUT was established in 1992 and became operational in 1994 with 766 students. Currently, it has an enrolment of more than 35,000 students taught in 27 regional centres. About one third of OUT students are undertaking programmes in the field of education. The OUT is making considerable strides in its development and use of current developments in ICT. However, the print version of study materials is still prevalent. The OUT promotes partnerships with higher education institutions, national and international educational bodies through networking and collaboration.

Why did the OUT join TESSA?

The participation of the OUT in Teacher Education in Sub-Saharan Africa (TESSA) came about partly because of our previous membership with other smaller associations which involved the Open University, UK and other Higher Education Institutions (HEIs) in sub-Saharan Africa. The OUT has been involved in TESSA from its inception and was part of the discussions in 2002–2005 among those who became the founding members of TESSA. For example, the OUT was represented at a key meeting in 2002 in Durban (South Africa). Also present was the University of Fort Hare and the Open University, UK. Our discussions centred on how our institutions could work together in a consortium to research and develop materials to assist teachers, and improve teaching in the primary school classroom across sub-Saharan Africa through activity-led interactive teaching. The OUT management in consultation with the teacher education department of the Ministry responsible for education in Tanzania gave consent, and the OUT became a member of the TESSA Consortium.

A needs analysis, which was carried out by the OUT across Tanzania¹⁸ and reported during the official launching of the TESSA project at Mount Grace in South Africa, showed that there would be benefits in ODL teacher education programmes at many levels in HE, including at non-degree, undergraduate and graduate up to Ph.D.; but there was a particularly urgent need to prioritise the training and professional development of primary schoolteachers, and provide a workable means for their successful study of higher qualifications.

Of particular concern in 2005 was the fact that in Tanzania primary teachers holding a Certificate in teaching and wanting to obtain higher qualifications could only specialise in

¹⁸ Muganda, C.K. and Babyegeya, E. (2005) *Needs Assessment for Diploma in Primary Teacher Education in Tanzania*, Dar es Salaam, the OUT.

secondary school teaching. A Ministry of Education and Vocational Training (MoEVT) ruling of 2007 that endorsed the placing of Diploma in Education holders into secondary schools was also unsettling. Although this was a sensible ruling as Diploma in Education holders' expertise was in secondary education, it reinforced the acute shortage of well-qualified primary schoolteachers. In addition, there was little follow-up (Continuing Professional Development, CPD) for primary teachers newly qualified with the Certificate. There were inadequate workplace mentors and assessment of teaching practices through school inspection.

All these highlighted the need for an approach which would improve the quality of teaching and teacher education for primary schools. TESSA materials and the approach to teaching developed through TESSA fitted into this focus and have begun to address this need. The 21 members of staff at the Institute of Continuing Education (ICE) and the Faculty of Education have taken the lead in the OUT in taking forward the work of TESSA. These OUT staff have participated in:

- curriculum development
- writers' workshops
- developmental testing of materials
- versioning of TESSA materials into the Tanzanian context
- translation of materials into Kiswahili
- integration of TESSA materials in the OUT course materials
- use of the TESSA materials
- monitoring and evaluation of TESSA in use.

The TESSA materials have become an integral part of the teaching and learning in the Diploma in Primary Teacher Education (DPTE) offered by the ICE of OUT. Because the materials have been adapted to suit the Tanzanian context, teachers are creating lessons using resources which exist, and situations which are relevant to the Tanzanian environment. The TESSA materials demonstrate an interactive approach to teaching and learning, and they are able to move teachers forward in their teaching by helping them to become reflective, more dynamic and promoting active learning in their classrooms. The fact that we use TESSA materials in our ODL programme for serving teachers means that we are effecting changes in classroom practice very quickly, as our students are using the TESSA materials in their classrooms while they are studying with the ICE.

The use of the TESSA materials has helped to raise the profile of CPD for serving primary teachers in the OUT, and the fact that all the materials are for primary teachers means that CPD and qualifications for primary teachers are being given a higher priority at the OUT. There is discussion, for the first time, of a degree programme in primary teaching at the OUT. In addition, the TESSA approach and the international dialogue have contributed to the dialogue across the OUT about assessment. The OUT has begun to implement some radically different methods of assessment; TESSA has been introduced at a time of significant change for the OUT and has aligned itself to that change. The teaching in the ICE is changing as a result of the introduction of portfolio assessment (e.g. removal of two assignments and having one timed test instead of two), giving teacher educators more time to concentrate on teaching and assisting the students to learn. The Student Progress Portfolio is maintained by the student and a key annual one-to-one meeting with their tutors leads to a joint decision as to whether the student is ready to take examinations. This is a formative assessment with no marks for the portfolio though the record is scrutinised to establish the student's readiness for the final assessment.

Internationally, TESSA has also benefited the OUT because it has been able to work with other HEIs in Africa to develop a shared understanding of the needs of children in primary schools. The OUT has been involved in five-year extended collaboration with colleagues from other institutions: a continuous dialogue about pedagogy which has benefits for teaching, even beyond TESSA itself. The OUT has also developed stronger links with other HEIs in southern Africa which focus specifically on open and distance learning.



My involvement as TESSA Coordinator at the OUT

The role of TESSA Coordinator is important in both enthusing and organising colleagues at the OUT, and working to embed new ideas about teaching into our student teacher programmes. Through TESSA

I have gained experience in writing and integrating Open Educational Resource (OER) materials. I have enjoyed coordinating TESSA activities in Tanzania and the OUT in particular, including recruiting and supporting all the writers of TESSA materials. I have benefited from being a part of expanded networks with other teacher educators and educational institutions in Africa and beyond. I have been the representative of the OUT in the Partner Advisory Council, and in the TESSA East Africa Region network. I have been part of a project which in the UK has won the Queen's Anniversary Prize for 2010. And

perhaps most of all, I have been able to translate into reality the vision of developing a teacher education diploma that focuses on primary education in Tanzania.

TESSA use at the OUT: Diploma in Primary Teacher Education (DPTE)

The needs analysis carried out in 2005 identified the need for a Diploma which focused on primary teaching. The Diploma would provide CPD and a higher qualification for those primary teachers who were already qualified with the Certificate. And the open and distance learning model pioneered in Tanzania by the OUT could ensure that this was available to serving teachers, helping to ensure speed of change in practice in the classroom. The teaching materials for the Diploma would incorporate the TESSA materials and the ICE would take the lead in teacher training, using the materials.

Background to the DPTE: The DPTE came into being in 2009. The first intake of students was in January 2009 and the second in January 2010. There have been approximately 200 active students in each intake so far, so the total student numbers on the Diploma of Year 1 and Year 2 combined are between 400 and 500. The intake for September 2010 increased to 250–300.

Design of a DPTE qualification: The basic qualifications to begin the DPTE are a pass in the Teachers' Certificate (Grade A), 5 passes or 3 credits at Ordinary level. On the Diploma course, some materials (the Academic Advancement courses) are shared with the Foundation course (OFC) and this helps to ensure that Diploma students have a current means of progression into an undergraduate programme after the Diploma. Although a degree course in primary education at the OUT is our goal, at present there is no automatic next qualification in primary teaching for Diploma students; however, success on the Foundation course gives them access to a general degree course. A degree course in primary teaching is the subject of current discussion, which is supported by the Vice Chancellor at the OUT, and this would represent a further step towards the vision of highly qualified primary schoolteachers in Tanzania. So at present, the OUT is the only public HEI in Tanzania that is offering a Diploma which focuses on primary teaching. It is therefore the means for any teacher who wants further qualifications after the Certificate and who wishes to stay in primary teaching. All the materials in the Diploma focus on primary education and substantial amounts of TESSA material have been incorporated into the written materials for the Diploma, particularly in modules which focus on pedagogy – teaching methods and teaching strategies.

Use of TESSA resources in the DPTE teaching materials

The DPTE at the OUT consists of 21 units focusing on three major areas including Professional Competencies, Pedagogical Skills and Competencies, and Academic Advancement/competencies in the teaching areas. Courses are organised at two levels with Level 1 in the first year and Level 2 in the second year. The courses on Pedagogical Skills and Competencies are worth two units each and are studied at both Level 1 and Level 2.

As an integral part of the creation of the 21 units that make up the DPTE, relevant TESSA materials were incorporated when each course module was written. The decision was made in each case by the particular team responsible for the specific course. In this way, the TESSA materials have been used flexibly and have been completely integrated into the overall Diploma materials. The courses which are most closely linked to TESSA are those which teach pedagogical skills and competencies:

- ODC 044 General Teaching Methods and Strategies
- ODC 045 Numeracy Teaching Methods and Strategies
- ODC 046 Literacy Teaching Methods and Strategies
- ODC 047 Science Teaching Methods and Strategies
- ODC 048 Social Studies Teaching Methods and Strategies
- ODC 064 Vocational Skills Teaching Methods and Strategies
- ODC 053 Classroom Management – (life in the classroom)

So for example in ODC 045 and ODC 046, three of the seven lectures in each course make extensive use of TESSA materials; slightly less TESSA material is used in ODC 048 and much more in ODC 047 where six of the seven lectures draw heavily on TESSA materials. Typical of this approach would be the introduction to ODC 047 (Science Teaching Methods and Strategies, p. viii), which sets up an overall framing of the course rooted in the pedagogy of TESSA. The course is dynamic as it exposes learners to syllabus analysis, lesson planning and designing, and preparation of teaching and learning materials, pupils' assessment and evaluation in science. The student teachers are also expected to be able to analyse and select relevant TESSA sections and resources and use them in teaching science in their schools. Another example is ODC 044 General Teaching Methods and Strategies course: there is use of TESSA materials such as the 'characteristics of a good teacher', questioning techniques, mind maps, brainstorming, explanation of group work and the case method.

Integration of TESSA materials

The integration of TESSA materials was a process of team building, sharing of expertise and teamwork. There were two TESSA programme-funded workshops held with the OUT teacher educators on how to integrate TESSA materials into the Diploma materials. The aim of these workshops was not didactic but as a means of learning from each other. The first of these in May 2007 in Tanga was a one-week workshop for about 25 people, who included subject course teams plus representatives from the publishing unit, regional staff from Tanga, and involved a number of the current DPTE teaching staff. It was at this point that the Diploma course outlines were mapped out. Each group was provided with the relevant TESSA materials and in groups of three or four they mapped out what they thought should be included. Each group presented to the whole workshop and the shared experiences provided a kind of template for the outline of each course (a course description, course objectives, expected learning outcomes, topics/content, at least six or seven lectures in each course). There was another one-week workshop in Iringa in November 2008 to try to complete the drafts; 18 teacher educators participated in this workshop.

So typically, the TESSA materials used will include a combination of teaching and learning strategies, key skills, key resources and case studies. All TESSA resources used in the course materials are in the English version. As Pedagogical Skills and Competencies are studied starting from Level 1, students begin to work with TESSA materials from early on in the Diploma programme and the approach to teaching which has been developed in TESSA is one which they can begin to adopt early on in their Diploma studies.

TESSA use in DPTE assessment

The assessment of the students' teaching practice which is carried out at their schools as part of the Diploma study uses 17 criteria grouped under four headings. The second of those 'Performance: the Learning Process' assesses the students in terms of six criteria which are very much rooted in the TESSA approach. These criteria are the ability to:

- arouse and sustain interest during the lesson
- promote full participation of all the students through group work or other procedures
- arouse and handle students' questions
- use both recall and thought-provoking questions
- devise and use an adequate variety of procedures to evaluate progress in all of the objectives of the lesson
- engage students in critical thinking and problem solving.

These lesson observations are carried out in Year 2, with separate observations of two lessons, and students are graded. See Appendix 1 for a selection of the brief comments made at the bottom of the DPTE Teaching Practice Assessment forms by teacher-trainer observers in Morogoro, Iringa, Mtwara and Manyara. These comments indicate the ways in which the approach to teaching and learning from TESSA is integral to the assessment of DPTE practice.

All these comments indicate that the DPTE students are employing an interactive approach to teaching, hence reinforcing pupils' active participation in their learning process.

More general use of TESSA materials

Besides the TESSA resources, which are integrated into the DPTE teaching materials, students on the DPTE programme also make more general use of the whole range of TESSA materials. The versioning of the materials for the Tanzanian context and the translation into Kiswahili took place in 2007/8 and the work was carried out by professional translators, ICE members and other colleagues from the Faculty of Education at the OUT. This helped to ensure a really in-depth knowledge of all the TESSA materials among the OUT teacher educators, and that the materials are available in a form which will help the DPTE students to use them. Students tend to use materials in Kiswahili and in English and switch back and forth gaining the benefits from both versions.

Students use the whole range of TESSA materials through accessing the TESSA website, by means of CDs sent out from the Open University, UK, or from 10 print copies which are kept at each of the Teacher Training Colleges (TTCs) participating in the DPTE face-to-face sessions and the OUT regional centres. For the second year cohort on the DPTE, each student was given a CD of the full range of TESSA materials during their first year.

Implementation: experiences and challenges

Inevitably, there have been both successes and challenges during the first two years of the DPTE programme. For example, the complete range of TESSA resources, i.e. the full resources available on the website, were due to be introduced to the DPTE students as the first cohort started in January 2009. However, the cohort did not access/receive those TESSA materials until June 2009, as it was decided that they needed to be introduced as part of the intensive face-to-face programme which is conducted twice (now once) during each year of the Diploma teaching programme and this was the first such opportunity.

When we started the DPTE programme, we didn't have TESSA printed materials either. The intention was to introduce the materials via the website and computers, but our students

needed basic instruction on how to use computers before they were ready to do this (Figure 1). In the first face-to-face session for the first intake of DPTE in June 2009, at the TTCs, ICT technicians spent the available time teaching the students how to use a computer, how to get into a website, how to be set up with an email address and so on. This was to help to make them ready to access and use the TESSA materials from the website and CDs.



Figure 1: DPTE students in the computer room

Evaluation

Much of what follows in evaluation of the use of TESSA materials is based on analysis of a student questionnaire sent to the DPTE students at the beginning of their second year of study. Data also include focus group discussions with the OUT's ICE staff and teacher educators at the regional TTCs used by the DPTE programme. Four individual members of the ICE staff were also interviewed for the evaluation.

Methods of data gathering

The student questionnaires were administered only to second year DPTE students. They were sent electronically to the regional directors in January 2010 who printed and distributed them. However, returns by post were relatively poor on the first pass, so follow-up copies were sent with the OUT central teaching staff at the April 2010 face-to-face teaching sessions and were filled in and returned by hand at these sessions. The questionnaire was written as a means of collating student perceptions of the first year of the Diploma, so the reaction to the TESSA materials is set into their reactions to the study of the Diploma as a whole. However, the fact that some questionnaires were not returned until April 2010 means that some of the second year experience of the Diploma inevitably influenced the responses.

Questionnaires administered/returned by regional centres

Regional centre	Questionnaires returned
Shinyanga	7
Lindi	4
Kigoma	6

Mtwara	50
Kinondoni	2
Iringa	14
Total	83

The students were asked to choose one of the following responses to each statement:

1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree.

For the purposes of analysis, 3 (Agree) and 4 (Strongly Agree) were combined and 1 (Strongly Disagree) and 2 (Disagree) were combined to give percentages of respondents agreeing or disagreeing with the statement. Not all the students answered all the questions, so the numbers do not always add up to the total number of respondents as is generally the case with questionnaires. Only a minority of the second year Diploma students returned it, so it is important to be cautious about the findings.

Access to TESSA materials

Perhaps inevitably questions of access to the materials continue to dominate. It is important to bear in mind that students have full access to the materials which are included in the DPTE teaching materials, but access to the full range of TESSA materials continues to be an issue. DPTE students have very limited capacity to access TESSA materials electronically. The student profile in relation to access to computers reveals that the majority of students (over 80%) do not have computers at their workplaces or at home. Less than half (43%) can access computers at an internet café. As a result, some email addresses that students had acquired during the intensive face-to-face sessions have now expired due to non-use.

The DPTE students are accessing TESSA materials through a variety of ways including:

- the DPTE teaching materials (80.6%)
- the print form of the full range of TESSA materials (50.6%)
- the TESSA website (41.8%)
- CD-ROM (32.5%)
- students have obtained TESSA materials at study centres (64.7%) where they share the copies they have
- the OUT regional centres (59.7%)
- the OUT computing centres (47.8%)
- teacher training college laboratories (41.8%)
- teacher resource centres (34.3%).

The main challenges to access are: production/copying of print materials is expensive due to bulkiness of the materials; limited access to materials due to limited access to computers and poor connectivity; although the majority of students are using the intensive face-to-face sessions to access TESSA materials through the internet and CDs, the time for intensive face-to-face tuition is limited. Also, other DPTE programme activities are scheduled during these sessions. The OUT/TESSA integrated materials include only some TESSA materials so students can access only a selection of materials. There are generally limited computer skills among students, thus limiting their access to electronic materials. Most of the students are accessing computers at the OUT computer laboratories which are steadily being established but have not yet reached all centres.

Their current strategies include: photocopying a part of the materials that they need at a time; using a variety of ICT centres/laboratories including the internet café, computer laboratories at OUT regional centres, TTCs and some resource centres; using computers which belong to friends and relatives; using mobile phones; making effective use of the face-to-face sessions; making effective use of Teachers' and Tutors' Guide handbook to assist them to select relevant parts.

A section of the student questionnaire deals directly with the use of TESSA materials in the DPTE teaching materials. An important point to remember is that the TESSA materials are fully integrated into the 'Pedagogical Skills and Competencies' teaching materials so it cannot be taken as read that students will identify TESSA materials as separate. Set against that, however, is the thought that the TESSA approach is likely to be different to their previous experiences of teaching, training and preparation for classroom practice.

TESSA materials modules	1*	2*	3*	4*
Total questionnaires returned = 83 (percentages are rounded up)				
The aims and objectives of each section are clearly stated	5%	21%	56%	19%
The content is adequately related to the learning objectives	4%	20%	52%	24%
The course content stimulates learning	5%	7%	48%	40%
The style of presentation helps sufficiently in self-learning	6%	14%	65%	15%

There were enough illustrations and examples to help understand the content properly	8%	20%	59%	13%
The learning activities helped in applying new learning in the classroom situation	4%	14%	54%	28%
The language used is readable (easily understandable)	6%	13%	63%	19%
The materials make me reflect on my own practice as a teacher	4%	6%	58%	33%

*1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree

Key findings include the generally strong support for the benefits of the TESSA materials.

The responses to all the statements in the table above give clear indications to responses in the Agree/Strongly Agree categories. Positive responses are particularly marked for the influence of the TESSA materials on reflective practice (91%) and on stimulating learning (88%). There is also very positive support for the use of the TESSA materials in aiding new learning in the classroom (82%). 82% of the respondents feel that the TESSA materials are easy to understand and 80% feel that the way that the material is presented gives good support to independent learning.

That is not to say that there is cause for complacency. More than a quarter of the respondents (26%) are concerned about the clarity of the aims and objectives; almost a quarter (24%) are concerned about the relationship of the content to the learning objectives; and 28% feel that there are not enough illustrations and examples.

The questionnaire also includes two open-ended questions: ‘Which TESSA module benefited you most?’ and ‘Which module of TESSA did you like least?’ Not all participants responded to this part of the questionnaire and there was no easily discernible pattern of responses – i.e. no one module which seemed more popular than another.

Indicative of the range of responses to which module they felt benefited them most are:

- “All modules benefit me.”
- (Numeracy) “Because it shows real examples of teaching various topics.”
- Because “there are a lot of games – that was my problem in mathematical games.”
- (Literacy) “Because it is clearly understandable with the teaching material which helps me as a teacher to use in my classroom activities.”

- (Social Studies) because “The TESSA modules can help me to know how to teach field trip kind of strategies of teaching.”
- (Science) because “There are many illustrations and examples to approach many teaching and learning contents.”
- (General Teaching Strategies) “Because it improves the technique which encourages standards of teaching capacity.”

Data gathering and analysis of teacher educator focus group discussions

The focus group discussions were conducted with the cooperating tutors and some teacher educators at the OUT. The cooperating tutors are tutors at the TTCs that are participating in the DPTE as intensive face-to-face centres. Most of them are participating in the tutoring of DPTE students during intensive face-to-face sessions. I visited the TTCs, met some of the tutors in groups and discussed issues of access to TESSA materials by the DPTE students and the tutors themselves. Discussions focused on the number of computers available for use by the DPTE students; whether and how they accessed TESSA materials; challenges related to the DPTE students’ access to computers, connectivity and TESSA materials in general; as well as suggestions of strategies for improvement.

Participants in the focus group discussion included:

- Bunda TTC in Mara region – 5 (four academic staff and one IT technician)
- Patandi TTC in Arusha region – 5 (four academic staff and one IT technician)
- Iringa TTC in Iringa region – 4 (three academic staff and one IT technician).

All cooperating tutors had accessed TESSA materials through print, website or CD- ROM. Tutors have accessed the print version related to their curriculum areas especially parts of the TESSA materials that are integrated in the OUT course/study materials. The tutors revealed that their colleagues who were not participating in the intensive face-to-face sessions were not familiar with TESSA materials. “I have just heard people participating in your programme referring to TESSA but I have not seen the materials,” said one member of the academic staff at Bunda TTC. The tutors suggested that it would be good to introduce TESSA materials to tutors who are currently not participating in tutoring DPTE students because the materials can also be used in teaching courses at the TTCs. Further, as the numbers of DPTE students grow more tutors will be needed.

With regard to the challenges facing the DPTE students, the tutors in the focus group discussions indicated that most of the students lacked or had limited computer skills and competences. One month allocated to intensive face-to-face sessions was not enough for

students to acquire ICT skills and use them to access TESSA materials. They observed that students were focusing more on the timed tests that were conducted during the last week of the intensive face-to-face sessions. Students' limited access to computers and connectivity after face-to-face sessions was also stated as a challenge because the lack of reinforcement reduced the retention of the skills gained during face-to-face sessions. Low speed and unreliable connectivity were also identified as challenges.

The tutors suggested the strategies for improvement of access of TESSA materials to DPTE students should include allowing DPTE students to continue using computers at the TTCs so that they could gain and retain ICT skills. Some arrangements could be made with the management of the TTCs so that students could use the computers at a reduced price: Bunda TTC, for example, suggested half the price of that charged by local internet cafés. TTCs could also offer basic computer courses to the DPTE students at a reduced price.

Discussion with the OUT teacher educators and the OUT management revealed that TESSA had provided them with an opportunity to understand OERs and how to use them. They explained that the message about TESSA and the DPTE programme is being spread gradually but unevenly. They pointed out that District Educational Directors were key to the message about the benefits of the DPTE but most of them were not yet aware of it. Consequently only 11 regions are participating in the DPTE programme. The participating regions are widespread. They include Shinyanga, Mara, Iringa, Mtwara, Lindi, Morogoro, Pwani, Manyara, Kigoma, Mwanza and Kagera (Figure 2).



KEY:
 ● Regional centre

Figure 2: Active students in Diploma in Primary Teacher Education at OUT Regional Centres 2010



The teacher educators pointed out that the Ministry responsible for Education so far is very supportive of the programme; however, they were not clear what would happen if the diploma becomes very popular and there are increased calls on funding. Currently most DPTE students are self-sponsored; some are sponsored by local government – rising from about one third in the first cohort who were funded to about half in the second cohort.

The OUT management noted that the local governments who are funding students are very enthusiastic about the DPTE programme. The next step is to move forward the dialogue for an OUT degree in primary teaching. This has the support of the OUT senior management including the Vice Chancellor.

Conclusions

The participation of the Open University of Tanzania (OUT) in the Teacher Education in Sub-Saharan Africa (TESSA) programme has benefited the institution and Tanzania. The OUT has been able to work with other HEIs in Africa to develop a shared understanding of interactive approach to teaching and how to improve the quality of teaching and teacher education for primary schools. The launching of the Diploma in Primary Teacher Education in which TESSA materials are intensively used has opened up avenues for primary schoolteachers' professional development and upgrading to levels which were otherwise out of reach. The DPTE students are exposed to a variety of ways to access materials including websites, CD-ROM, print and the internet. The OUT staff who have had opportunities to participate in the TESSA activities have gained experiences not only in working collaboratively but also in engaging with OERs including authoring, versioning and integration of OERs into course materials and programme.

The evaluation exercise has found that among achievements there have also been some challenges. Although the DPTE students found TESSA materials user friendly with useful teaching techniques, relevant activities and adequate illustrations, access was limited by the bulkiness of the materials, which makes printing costly. Other challenges include lack of computers, connectivity and electricity, as well as inadequate ICT skills. Computer laboratories at some OUT regional centres and collaboration with TTCs that have operated as intensive face-to-face centres have assisted in TESSA access and use. However, widening the scope of TESSA materials by exposing the materials to more users would reinforce the use of TESSA materials and the embedded activity-based approach to teaching and learning.

Ways forward

The following are some of the steps that can assist in enhancing access and use of TESSA materials as well as the sustainability of the DPTE programme in the OUT and Tanzania.

- Plan for regular workshops to prospective DPTE cooperating tutors in TTCs and new OUT staff.
- Organise a national stakeholders' workshop to provide exposure to a wide range of prospective users and beneficiaries of TESSA materials.
- Regional workshops to train regional tutors would benefit their understanding of TESSA
- Distributing loose print copies and CDs of TESSA materials and handbooks to the OUT mini-libraries in every regional centre, TTCs and operating teachers' resource centres to improve access to materials.
- Enhance publicity and advocacy for the diploma programme to all regions so that more regions can participate.
- Assist DPTE students to gain and retain ICT skills and competences
- Train tutors at TTCs on how to use, adapt and integrate TESSA materials in their teaching.
- Move forward the dialogue for an OUT bachelors degree in primary teaching.
- Plan and conduct a tracer study of the DPTE graduates.
- Continue the monitoring and evaluation of the DPTE.

Appendix 1

Brief comments made at the bottom of the DPTE Teaching Practice Assessment forms by teacher-trainer observers in Morogoro, Iringa, Mtwara and Manyara:

- “Use of local resources was good. Students were well-motivated.”
- “Learners were actively involved in the lesson.”
- “Creativity of the teacher in lesson presentation.”
- “A well-prepared lesson, competent and high mastery of the subject content.”
- “Good pupil participation, competent and good voice.”
- “Managed very well to promote participation of pupils in the learning process.”
- “Students were so excited.”
- “The lesson was active and well-executed.”
- “The lesson was interesting with vivid tangible examples and teaching aids. If student teacher would maintain this, he will be excellent teacher.”
- “Pupils actively involved in the lesson; the classroom instruction was active and successful.”
- “She has a good rapport with her pupils. All pupils were involved in their own learning which is good”.
- “Needs some improvement in class management and organisation. Some students at the back were not following up the lesson. There were too many in group discussion: 12–15 in one group.”
- “Participatory methods used to develop addition of fractions with different denominations.”
- “Very well-prepared and presented lesson. Promoted full participation of pupils in the learning process i.e. calculation of areas of rectangles.”
- “Group work is applicable where the number of pupils doesn’t exceed 45 (management difficult).”
- “Lack of making use of the students’ knowledge on a number of things which they knew but they were not asked to say anything.”
- “Arouse pupils to make them active to ask questions!”
- “Clear and well-organised use of blackboard. Use of provoking and thinking questions. Arousing pupils’ interest during the lesson.”
- “Group work to help each pupil to participate and visiting each group to check progress. Evaluating understanding by giving exercises at the end.”

- “Use of group work to help each pupil to participate. Evaluating understanding by giving quizzes and cutting whole into pieces, visiting each group to help in difficulties.”

These comments indicate the ways in which the approach to teaching and learning from TESSA is integral to the assessment of the DPTE practice.



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TESSA and Kyambogo University, Uganda

Doris Kaije

2010–11

<http://www.kyu.ac.ug/>



The Diploma in Education Primary External (DEPE) is the main curriculum area for use of TESSA resources at Kyambogo University but there are additional interesting uses of the materials within Special Needs and Life Skills modules. Kyambogo University is currently extending use to a number of linked Primary Teachers' Colleges across Uganda.

Kyambogo University

Kyambogo University was founded in 2000. It brought together three sister institutions, namely the Institute of Teacher Education, Kyambogo (ITEK), the Uganda National Institute of Special Needs Education (UNISE) and the Uganda Polytechnic Kyambogo (UPK). Each of the three specialised in particular areas. These were, respectively, Teacher Education, Special Needs Education and Technology.

The main mode of delivery in all three institutions was conventional, and remains so.

Lectures, workshops, seminars and tutorials dominate. But ITEK also introduced the distance mode of delivery, whereby practising teachers study modules on various subjects during term time and come together for face-to-face sessions in the school holidays. This work is led by the Department of Distance Education, and involves many staff from the Education Faculty mainly and other faculties like Science, Arts and Social Sciences.

ITEK, and now Kyambogo University, has a mandate from the Ministry of Education and Sports to oversee all teacher education carried out in Primary Teachers' Colleges (PTCs).

Participation in TESSA

Kyambogo University was invited to consider joining the TESSA Consortium in September 2005, and expressed considerable interest. Dr Aron Otto, the Head of the Department for Distance Education, subsequently participated in a TESSA meeting at the 2006 e-Learning Africa Conference in Addis Ababa. On his return he disseminated information to the department at Kyambogo University; his view was that this was an important opportunity for Kyambogo University.

I personally became involved in TESSA as a Life Skills country facilitator and DEPE facilitator. DEPE (Diploma in Education Primary External) is the main distance education programme and the initial focus for TESSA work. The first task was versioning, and I was selected to version the Life Skills modules. Several colleagues were selected to version other modules based on their DEPE subject areas.

TESSA has been beneficial to Kyambogo University in a number of ways:

- It has increased the resources available for use in the distance mode of delivery
- It has contributed to the variety of methods of delivery in University programmes, both conventional (full-time programmes delivered face-to-face) and distance modes of delivery (delivered part-time in the school holidays), such as DEPE and other work with primary schools
- Members of the university have learnt versioning skills

- Some tutors and academics have become more creative in their teaching
- It has encouraged collaboration and teamwork within Faculties in the University
- It has helped to strengthen the links between Kyambogo University and the Primary Teachers' Colleges (PTCs)
- It has encouraged the sharing of information with Makerere University and other partner institutions in the TESSA Consortium across the continent
- It has strengthened the link between Kyambogo University and the Open University, UK
- It has encouraged use of ICT resources in learning at the University especially among the DEPE and PTC tutors, and also students to some extent.

I personally have benefited in many of the ways mentioned above. In particular, being exposed to the TESSA Consortium meetings has been very enriching. I have also become much more aware of:

- the challenges faced by teachers and tutors when seeking education resources to help them in their work
- the reality of difficulties with connectivity
- the need for professional development for schoolteachers. This comprises, for example, upgrades from diploma to graduate teacher, graduate teacher to postgraduate levels, particularly Masters programmes in different areas of teachers' specialisations. For a long time, many teachers have remained at their level of initial training because of the lack of opportunities for professional development.

TESSA use at Kyambogo University

Kyambogo University is using TESSA in its own programmes, and is also helping the PTCs to incorporate it in their pre-service programmes, which Kyambogo University supervises.

Kyambogo University's own programmes

The key programme has always been the Diploma in Education Primary External (DEPE). Alongside this, Kyambogo University has considered TESSA use in a number of other programmes, including the Diploma in Special Needs Education, and various B.Ed. programmes. However, during this period there were major organisational changes in Kyambogo University itself, staff changes in distance education, and great pressure on University finances. In addition there were significant changes in schools' curriculum structure. All of these disrupted developments at Kyambogo University generally, and not

only with regard to TESSA. They held back TESSA use in the DEPE, and the early large-scale plans proved unfeasible. Nevertheless individuals continued to use TESSA in the DEPE, and are now poised to make significant and systematic progress in the coming year. TESSA has been used in small ways in other programmes. Examples are Social Studies, Language Education, Music, Religious Education, Biological Studies and Mathematics.

PTC pre-service programmes: Plans are well advanced for using TESSA at the PTCs, in their pre-service programmes. This work began in October 2009, and five colleges are actively involved. A further three were brought in during 2010–11.

DEPE

The DEPE was selected for three reasons:

- To create a firm ground for TESSA before taking it to other programmes
- It targets primary schoolteachers, so TESSA is very relevant
- Kyambogo University already has a controlled monitoring and evaluation process through school practice, so TESSA use in classrooms could be observed
- The hope is that graduates will sell the idea of TESSA to other teachers, tutors and to all other stakeholders: hence there will be a multiplier effect.

Experience with the DEPE can be built on now as we extend TESSA use to the colleges.

Use of TESSA in the DEPE

There is a team of academics in Kyambogo University who work on TESSA (Figure 1). Many were involved in versioning TESSA modules. These same individuals also work on the delivery of the DEPE, as facilitators. In this role they conduct three face-to-face sessions a year, in one of the nine DEPE centres around Uganda, and they are involved in setting and marking the DEPE assignments.



Figure 1: A TESSA team meeting

Each of these individuals, in their different ways, has made use of TESSA materials. Social Studies has used case studies in TESSA. Language has used reading for a range of purposes in the face-to-face sessions. Science has been able to use simple materials as apparatus in practical classes. Other subjects include Mathematics using the Numeracy module and Religious Education and Music have used the Life Skills module.

PTC pre-service programmes

These produce teachers who will teach in primary schools. TESSA is very relevant to these future teachers, for example with the Certificate Teacher Training programme for primary teachers. At the moment they take senior secondary school leavers (O level and A level certificate holders).

In some cases, college-based tutors, who work alongside Kyambogo University staff in face-to-face sessions, have themselves drawn on TESSA materials as they saw fit.

PTC TESSA selected items

These were selected and tried in the DEPE classes by the facilitators during face-to-face sessions (see Appendix 1).

These materials were seen to be suitable for:

- the curriculum and subject area, enriching the content of the subject area. For example, case studies in literacy were used in developing aspects and skills planned in the subject
- experiments in science that were thought to make content in the subject easy to understand and to make learning more interesting
- the various approaches used in teaching/delivering TESSA that encourage teachers to adopt those very approaches and methods and reduce teacher dominance in lessons.

The selection process

- The modules in each area – Numeracy, Literacy, Social Studies, Science and Life Skills – were given to possible users
- The facilitator (in the case of the DEPE) and other users of TESSA identified the content relevant to their subject area
- The users studied TESSA materials to find out which particular resources would enrich their delivery
- The users selected specified aspects from TESSA to use in their teaching, e.g. case study, resource, experiments when appearing relevant
- The users mapped TESSA resources onto the required content in their areas.

In what forms are they used?

- Printed copies of selected materials are given out to student teachers. This is the main form because of limited computer connectivity.
- CDs are used but only in a small way, because of limited computer accessibility.
- Some PTCs have downloaded CDs onto PTC computers. However eventually the material is printed.
- Group assessment, particularly in Social Studies at St Aloysius and Rakai PTCs, where students had to write a report of an excursion trip focused on resources for living and development. Science and numeracy also used assessment in group work.
- They were used in School Practice in September 2010, particularly in St Aloysius, Ngora; Jinja; Ibanda; Canon Lawrence; and Busubizi. With the DEPE group centred on Canon Lawrence PTC, the material had already been used in the semi-final School Practice, with more then used in the September session.

Implementation: experiences and challenges

DEPE experiences

The original plan was to begin using TESSA at the end of 2007. The aim was to select materials for all students to use, and put them in a TESSA booklet. The team that had been involved in versioning was very keen to do this and a lot of thinking and planning had taken place by that point. Team members had also had the chance to interact with members of the TESSA Consortium from elsewhere in East Africa – Makerere University in Uganda, Egerton University in Kenya, and the Open University of Tanzania – and were very keen to begin implementation. A set of diploma learning outcomes, applicable across East Africa, had also emerged, and Kyambogo University planned to use this. Sadly, Kyambogo University was then beset with many institutional problems, and everything was put on hold.

In August 2008 the threads were picked up again, and efforts were made to introduce TESSA to the cohort of about 1,500 first year students. The DEPE also has regular induction sessions for the tutors/facilitators, who are drawn from Kyambogo University and PTC staff, and some of these were sensitised to TESSA in preparation for this. There was no TESSA booklet, as had been hoped, so each member of the Kyambogo University team had to do the best they could with the resources they could locate.

The result was a patchwork of opportunistic TESSA use, which was much valued by the in-service teachers who encountered it, but which was not systematically made available to all

DEPE students. This is now different. Plans include microteaching during face-to-face sessions, and building TESSA activities into assessment.



Figure 2: Using the weather station at Namugongo School

Nevertheless many DEPE students have done very interesting things with TESSA, with support from the Kyambogo University team. One teacher at Namugongo School built a weather station for the school, and has engaged his P6 pupils in a lot of practical work around it (Figure 2). A teacher at Kansanga School (Figure 3) has explored the local community with her class, inspired by literacy materials. Teachers in both Waterford Academy and Nsambya School were inspired by ‘Reading and Writing for a Purpose,’ and had built interesting lessons around that. Both teachers felt that creativity and language development had substantially increased. Several DEPE students have tried group work for the first time, and found TESSA guidance very helpful. The Kyambogo University team has asked the DEPE students to keep ‘learning journals’, and to share examples of their experiences, so that they can learn from each other. At this stage there isn’t anything to share from this process as it hasn’t yet been looked at by the DEPE facilitators. Monitoring and evaluation processes need to address this.



Figure 3: Break time at Kansanga School

The experience of PTC pre-service programmes

Four representatives from each of six colleges, and most of the Kyambogo University team, attended a four-day workshop in October 2009. The colleges had an in-depth introduction to TESSA, and then each of them made plans for incorporating TESSA into their work, with

support from the Kyambogo University team (Figure 4) and other TESSA representatives from Uganda, Kenya and the UK. Five of the six PTCs have gone forward with their plans: Busubizi, Ibanda, Rakai, Canon Lawrence and St Aloysius Ngora. Lodonga PTC withdrew.



Figure 4: A Kyambogo University team member and the principal of Busubizi PTC discuss TESSA

Each college was given CDs containing the TESSA materials. After some delay, each college was then provided with a complete printed set of the materials, which made access much easier. The five colleges have introduced TESSA to their tutors and student teachers, and they have already used a variety of materials, particularly case studies, in ways that meet their current needs.

Their initial feedback is very positive. For example:

- TESSA resources have made teaching and learning more realistic e.g. Science and Social Studies are no longer taught in an abstract way, but are more hands-on. Pupils are able to collect materials for experiments in class. In addition the environment in the school is used in the study of Social Studies and Science more than before.
- Literacy has accumulated many case studies, and these have increased the availability of reading materials to the learners.
- Tutors are now planning simple experiments for their classes using available resources in their local environment.
- Social Studies has been taught in a more realistic way: it is now able to fulfil its purpose, namely skill development, and the ability to identify local resources relevant to the content.
- Student teachers at PTCs have used the materials in their classrooms; their tutors have assessed them during school practice. They have recorded many success stories. St Aloysius, Ngora and Ibanda have reported active participation by learners in the

learning experience as well as student teachers handling large classes in a more manageable way after being introduced to TESSA resources.

- In three institutions, namely Ibanda, Canon Lawrence and St Aloysius PTCs, the CD information has been downloaded on the computers in the computer labs making access much easier.

Challenges

- It has not been possible to reach out to all the tutors, lecturers and student teachers in their relevant places of operation.
- Making printed materials available to those stakeholders as stated above.
- The initial college work plans were too ambitious, and had to be scaled down.
- The colleges have such busy programmes that it has been difficult to find time for their TESSA members to train many more colleagues. Indeed, this has been overcome at all the colleges involved.
- Continual transfer of tutors from one college to another has denied some colleges their trained and dependable resource staff for TESSA.
- Limited financial support to colleges has made the whole TESSA implementation exercise hard to handle, especially in relation to printing material for students and staff.
- Some teachers still initially think that TESSA is for pupils, rather than a resource for tutors. It is a revelation that it is not another set of textbooks. They take time to come to terms with this, and with the need for them to be creative in planning their own use of TESSA materials.

General accessibility issues

There are many issues about access to materials. Schools all had CDs, but varied enormously in computer access. For some, printing materials was no problem, but for others this was an insuperable obstacle.

- Computer connectivity is limited in most institutions. The majority may have only one computer for the entire work of a college.
- Large classes in PTCs make teaching using TESSA resources difficult.
- Some administrators do not encourage TESSA work, for example at Lodonga. The Principal at the time did not support the initiative much from the initial workshop. The University moved on with the remaining five. Today the college has a new Principal

and tutors are requesting reconsideration. However, we could bring in another college from Western Uganda – Canon Apollo PTC.

- Kyambogo University supervision and monitoring of TESSA activities in the colleges and schools have been inadequate so far because of limited facilitation.
- Many teachers in primary schools took on teaching as a last resort so the student teachers do not really want to teach at all – they are there because nothing better has come up. Therefore, the use of TESSA materials is seen as an extra burden.

The way forward

The second year of this work is underway; three more colleges are joining, making eight altogether, and workshops and supporting visits for monitoring and evaluation are planned. The challenges experienced so far will be mitigated as far as possible, and our expectations are high. Today we realise a lot has been done and there is progress.



Appendix 1: TESSA modules used

Social Studies:

- Module 1, Section 2 ‘Human settlements and resources’
- Module 1, Section 4 ‘Investigating the changing environment’
- Module 2, Section 2 ‘Investigating how we used to live’

Life Skills:

- Module 1, Section 1 ‘Ways to explore who pupils are’
- Module 1, Section 2 ‘Planning physical growth and development sessions’

Literacy:

- Module 1, Section 1 ‘Supporting and assessing reading and writing’
- Module 1, Section 2 ‘Stimulating interest in reading stories’
- Module 1, Section 3 ‘Ways of reading and responding to information texts’
- Module 1, Section 5 ‘Ways of becoming a critical reader and writer’

Science:

- Module 1, Section 1 ‘Classifying living things’
- Module 1, Section 2 ‘A closer look at plants’
- Module 1, Section 5 ‘Developing attitudes towards our environmental impact’
- Module 2, Section 3 ‘Looking at liquids’
- Module 3, Section 1 ‘Everyday forces – investigating movement’

Numeracy:

- Module 1, Section 1 ‘Learning through games’
- Module 3, Section 1 ‘Introducing measurement’



TESSA and Makerere University, Uganda

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2010–11

<http://www.mak.ac.ug/>



This case study from Makerere University emphasises the transformative effect on pupils as well as teachers with TESSA resources. Descriptions of processes and outcomes show the deepening of understanding about pedagogy by teacher educators and teachers through involvement with TESSA and the influence on materials production and learner activity and achievement.

Makerere University

Established in 1922, Makerere University has grown tremendously since its inception. It was affiliated to the University of London until 1963, when it became part of the newly established University of East Africa. In 1970, it gained autonomy and has since expanded greatly. As of now, it has a student population of 34,000 students, 3,000 being postgraduate students. Makerere University has recently adopted the college model of university administration and now has eight colleges and two stand-alone schools that are in transition. The vision of Makerere University is ‘to be the leading institution for academic excellence and innovations in Africa’ and its mission is ‘to provide innovative teaching, learning, research and services responsive to National and Global needs’.

Participation in TESSA

Makerere University staff members have been involved in TESSA since an early stage; when TESSA was launched during the Distance Education for Teachers in Africa (DETA¹⁹) meeting in Pretoria in 2005, Makerere University was fully represented.

There were three main reasons for Makerere University to be part and parcel of TESSA. One was that Makerere University prepares students for the in-service B.Ed. programme and some of the courses offered by the programme could benefit from TESSA modules. It was evident that the TESSA materials would fit very well in the Makerere University curriculum and could easily be included as preparation of materials for primary teachers was being carried out by that time. Another reason was that the TESSA materials were open source, and more significantly open content, so Makerere University had the opportunity to access a rich bank of Open Educational Resources (OERs) while at the same time exploring further the opportunities OERs have to offer. The third was that the quality of education, particularly at primary level, is a great challenge for Uganda. Makerere University was convinced that the use of TESSA materials in teacher education would improve the quality of primary education. In addition, it is important to note that TESSA was seen to have potential to create an impact on the general writing of materials in Makerere University, acting as an example to tutors attending writing workshops.

Our involvement in TESSA

We joined TESSA at different times. (*For Jessica:* I had just completed my Ph.D. and was keen on exploring issues related to teacher education further. Participating in TESSA was

¹⁹ www.deta.up.ac.za

therefore an opportunity for me to do so and I participated from the early days of TESSA. *For Juliana:* when the TESSA project was being introduced at Makerere University, I was Head of the Materials Section in the Department of Distance Education and became involved through this role.) We were urged to embrace the project itself, and also to use it more widely. The idea was to encourage tutors writing for the B.Ed., B.Com. and B.Sc. courses to emulate TESSA materials by including activities, case studies and other resources in their materials.

TESSA at Makerere University

Makerere University has gained access to a rich resource of materials, and has been able to network with other institutions of higher learning within Uganda and beyond. Tutors have improved their writing skills. As a result of TESSA, closer links have been established with schools. By encouraging use of the TESSA materials in schools and also using the TESSA methodology while giving assignments to students, Makerere University has been able to follow up students in schools and see their performance after studying with Makerere University in the B.Ed. programme. TESSA has also facilitated the introduction of activity-based materials for all the external programmes of Makerere University and this has become an accepted strategy. Hence the methodology of teaching in our study materials has changed from being teacher centred to being student centred, and this is also influencing how teaching is carried out at Makerere University itself.

Personal benefits of TESSA

Juliana comments: the Materials development in the Department of Distance Education has been enriched, and guidance to writers is much more thorough than was the case before. I have been exposed to participatory methods of teaching as I observe students using the participatory methods in TESSA modules. I have increased my knowledge on how to use group work as I teach, and I can see that group work and other participatory methods of teaching increase the quality of teaching tremendously, even at university level. Engaging in TESSA activities has also helped me to grasp education issues in primary schools and in Uganda in general much more clearly than was the case before. TESSA has also given me the opportunity to interact with universities across the TESSA Consortium and I have learnt much from this.

TESSA use at Makerere University

Q: Which courses/programmes use TESSA?

A: The B.Ed. programme and the Global Partnership for Teachers' Certificate course.

Q: Why were they chosen?

A: The B.Ed. is Makerere University's key in-service programme for practising teachers, and hence was the obvious place to use TESSA. The Global Partnership for Teachers' Certificate course is a programme that supports teachers engaged in the British Council scheme that links British schools with Ugandan ones.

Q: Which TESSA resources are being used?

A: The particular resources chosen for the B.Ed. curriculum were those that fitted into the Social Studies, Geography, Mathematics and Language Education courses. The resources used for the Global Partnership certificate were from Life Skills modules.

So far, in the B.Ed. programme, the materials have been used by lecturers who give assignments to the students in particular subjects following the methodology in the TESSA materials. Here are a few examples:

- One lecturer based an assignment on Social Studies and Arts module 1, section 5, 'developing an understanding of a place'. He wanted to bring out the idea of comparison. The lecturer thought the comparison exercise could draw on fieldwork or photographic interpretation. The whole idea was to encourage students to explore differences between two contrasting environments. He also made use of case studies from associated modules.
- In Mathematics, section 1 of Numeracy module 2, 'exploring shapes' has been used in handouts and teaching about classification of shapes. The materials on Geometry have been of particular interest. Another assignment was set from Numeracy module 1, section 1, 'learning through games'. Students were requested to create games and teach numerical concepts through the games developed.
- In Language, the lecturer used Literacy module 2, section 1, 'investigating stories', as an assignment. Students were required to develop and use a song from their own culture, and use it in the context of their classrooms to teach grammar, pronunciation, etc. They experienced the activity themselves first, so they saw the benefits of that way of learning language.

Q: Why were the resources and case studies that were used to give assignments to students chosen?

A: Some of the lecturers on the B.Ed. had participated in versioning and review of the TESSA materials. They were particularly receptive to using TESSA in the courses they were working on, and so were a good starting point. Life Skills was an obvious choice for the Global Partnership programme as there was much that teachers from different countries could discuss.

Q: What was the selection process?

A: The tutors involved examined the B.Ed. curriculum and identified particular sections relevant to what they were teaching. The leader of the Global Partnership programme chose materials from Life Skills that he considered would be of interest to the participants and that met the demands of the course.

Q: In what form are they used?

A: Students and tutors were told about the TESSA website. CDs were given to tutors and students who were using the TESSA materials. Many copies have been reproduced and distributed to schools participating in TESSA. When tutors gave coursework assignments using TESSA methodology, the department reproduced relevant sections and gave paper copies to both teachers and students.

Implementation: experiences and challenges

Since the inception of TESSA, a number of activities have taken place in the form of meetings, workshops, visits to schools and intensive use of the TESSA materials for the assignments of students on the B.Ed. programme.

Workshops with tutors of B.Ed. programmes

A number of workshops have been held with B.Ed. tutors to sensitise them to TESSA materials and methodologies. As a result of the workshops, several lecturers have come to appreciate the value of TESSA and this is manifested in the way they set assignments around the TESSA materials. Mathematics courses have benefited a lot in the area of Geometry and tutors report that the Makerere University materials have been enriched. Numeracy module 3 has been found relevant to the teaching of basic statistics. One lecturer used the practical approach taken by TESSA when teaching sequences and limits. He divided a piece of chalk into $\frac{1}{2}$ then $\frac{1}{4}$ then $\frac{1}{8}$ thus developing a sequence. Then he talked about the number of times the subdivision could be undertaken and when it would stop. However many times the chalk was divided, it could always be done another time. So the number of divisions tends to infinity. Such a practical exercise helped the lecturer to assist the students to conceptualise abstract ideas such as limit and infinity.

Science modules were also commended by some tutors for their use of an inquiry-based approach to learning science, their use of examples from daily living and their emphasis on science process skills like observation.

Language staff saw great value in Literacy module 1 for its approaches to listening skills, pronunciation, writing and reading reports, the application of imaginative writing, and the

development of reasoning techniques. Literature teachers were very impressed with the approach to developing values such as integrity, self-esteem, dignity, tolerance and hard work.

Through experimenting with TESSA materials, the staff involved in materials development and in tutoring on the B.Ed. programme have made much greater use of activities in their other work, such as collecting stories from adults, inviting experts to supplement previously collected materials, acting out situations, discussing work and writing reports. In Social Studies much greater use has been made of mind maps. Work has taken place on the development of observation skills, classification skills, environmental awareness and concern, weather observation, measurement and recording, and there has been much greater application to daily life experiences.

Stakeholders' workshop

A stakeholders' workshop to create awareness about the TESSA materials was held on Saturday 28 March 2009. It involved officials of the Ministry of Education and Sports, Kyambogo University, National Curriculum Development Centre, Makerere University and some of the teachers who had tried out the TESSA materials. The intention was to share experiences of TESSA use and to find a way forward for the continued incorporation and use of these modules in the training of teachers.

Three B.Ed. students were able to present their experiences of using TESSA materials in the classroom working with Social Sciences and Arts module 1, section 4 on pollution. Some of the benefits they pointed out were:

- the primary pupils were able to discover by themselves
- they were able to build confidence in the pupils
- as they went out to the immediate environment they shared a lot with each other and with the community
- the pupils were motivated as they learnt.

They were also able to witness the extent of pollution of their local environment, much to their dismay.

The students, however, pointed out some challenges including:

- the large class sizes that made classroom organisation difficult
- lesson preparation being much more demanding and thus requiring more time
- excursions interfering with other programmes of the school because they 'ate' into other teachers' lessons.

The stakeholders' reaction to the students' presentations was very positive about the impact of TESSA materials. They realised that the children themselves become a resource, as they discover knowledge on their own and this is good given the limitation of resources. Children also become more creative and this unfortunately is hardly provided in the present school curriculum, as it is bent on giving information and not developing competence, unlike TESSA, which is more practical. It was also realised that with TESSA materials it is very easy to give feedback and to reflect on the outcome of lessons. It was finally recommended that preparation of teachers, especially those who are in service, should give more emphasis to TESSA, as it is more practical. The National Curriculum Development Centre representative thought that there was a need to review the current syllabus and work with the National Examinations Board to incorporate the good ideas offered by the experiences of using TESSA in the classroom into the national examinations. The broad recommendations of the workshop were that there was a need for a national education conference to carve out what skills we want primary schools to develop. Also that an inquiry-based, outcomes-based curriculum would be the best way to move forward.

Monitoring and evaluation in schools

This began with sensitising workshops for head teachers and teachers, to secure their commitment to using TESSA materials. Among teachers' comments were: TESSA materials are child friendly, encourage use of local materials, make learning real, attach importance to the local environment and to what pupils are learning. Other comments were:

- Teaching and learning should be made practical, not only theoretical
- Learning is much better if pupils work in groups as this allows learning of many concepts at a time
- The teacher–pupil relationship is enhanced.

Follow-up workshops were also held in selected schools to sensitise all their teachers. Head teachers and teachers were interviewed, using schedules developed jointly with Kyambogo University. CDs and print copies of the TESSA materials were provided in each school and lessons observed in three of the participating schools (Kisa, Greenhill and Kiswa).

At Kiswa Primary School, a primary 6 class was observed having a lesson based on Numeracy module 3, section 3 on 'discussing data'. This was built around the question 'How many bottles of different kinds of sodas must I get for the class party?'

The key learning outcome was tally charts, but the teacher brought this alive by telling a story about the mistakes he had made the previous year when planning the class party, because he

had assumed he knew what the children’s favourite sodas were (Figure 1). The plan for this year was to get it right. The children related to this immediately and it was a lively lesson with all 77 children involved. The teacher also integrated topics outside the maths lesson, notably the upcoming elections and census.

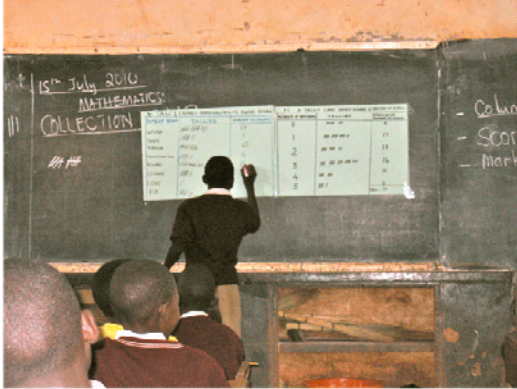


Figure 1: Kiswa school P6 – a group leader tallying the different kinds of sodas for the class party on the blackboard

At Greenhill Primary School, a primary 6 class was observed during a double lesson on classifying living things, based on Science module 1, section 2, ‘a closer look at plants’. For some of the time they went around the school compound, looking at the plants they found. The children went beyond the immediate requirements of the lesson and asked questions which the teacher answered, often bringing in new material, or referring back to previous lessons. One example was when one child asked how the insects could get nectar when it was hidden down a narrow tube in the flower set among thorns. The teacher picked up the flower and explained, including referring back to what they had studied the previous year about the bee’s proboscis (Figure 2).



Figure 2: Greenhill school P6 – how does an insect get the nectar from this flower?

This teacher felt that the ‘spontaneous learning’ of other things during activities and the knitting together of this with previous learning were very powerful consequences of doing TESSA activities.

When the children returned to the classroom, the topic of photosynthesis came up. The teacher asked for definitions. One child came up with ‘using energy from the sun’. This was only a partial answer, but it was in the child’s own words, and led to a discussion to flesh out the concept, again in the children’s own words. It turned out that many of the class could recite the standard textbook definition, but the ability to express it in their own words indicated a much deeper understanding of the concept.

A third visit was to a P6 class in Kisa Primary School. There the lesson was based on Social Sciences and Arts module 1, section 1, and was about physical features on maps. The lesson was consolidating what they had learnt about symbols for physical features, and was based on a map of the local area and of East Africa. The children were working in groups for much of the time, finding out answers to questions from the map (Figure 3). Working in groups like this had been a great source of satisfaction to this teacher, and it was evident that the children were completely involved. The teacher was also very struck with the speed of learning and the way in which children retained what they had learnt. He was sure that he would be able to cover more content than before, using this kind of approach.



Figure 3: Kisa school P6 – working on a map of physical features of the local environment

In interviews and discussions after each visit, the key points were drawn out. These teachers had reported more content coverage, deep learning, spontaneous learning and teaching, linking of lessons with other subjects and with previous lessons. Generally, lessons were more child centred, with children expressing ideas in their own words, and raising facts outside the textbooks but which were relevant to the topics being covered. They also commented on the increased language development going on in all subjects, not just in the English lessons, on

the increased use of group work, and on how much fun it was working with mind maps, which they hadn't expected.

We also learnt that one head teacher has planned to disseminate use of TESSA materials to neighbouring schools through the district head teachers' forum.

The school visits have demonstrated that head teachers and teachers involved are very committed, and that many more teachers in these schools have been sensitised. Many more visits are planned to about 50 teachers in total. All of them have been asked to keep a 'teacher journal', and 13 of these have been received and analysed so far. Between them they include journals on work with P1, P2, P3, P5 and P6 classes.

Eight teachers reported more coverage of content; all of them reported more learner participation and six of them said there was less teacher talk. All the respondents said the learners fully participated and very much enjoyed the lesson. They all also said they hope to use the materials in future because this promotes quality/deep learning, makes learning real and practical.

Out of the 13 respondents, six used the TESSA material just as it is, four used only part of it, two modified it a little and one person totally modified the material. Five respondents said the lesson was very different from the earlier lessons they had taught covering the same topic, because of using TESSA. Seven said it was a little different and one said the lesson was slightly different.

Conclusion

We are very encouraged by the effect we have seen TESSA having so far. TESSA is being used in schools in a number of ways. The quality of learning is improving, and the lessons are more interesting. Children enjoy the lessons because of variety and their participation. We also note that there are still a few challenges that teachers are facing while using TESSA materials, requiring further work on promoting TESSA use. Our plan therefore is to take this much further, and to do more substantial studies of impact than has been possible at this stage.