



Mkwawa University College of Education (MUCE) and University of Dar-es-Salaam (UDSM), Tanzania: integrating OER into teacher development programmes

A case study

This case study documents the background, process and outcomes of a collaboration between Mkwawa University College of Education, the University of Dar-es-Salaam and OER Africa in the period 2011 to 2014.

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Contents

Background and context	3
Teacher development needs in Tanzania	3
Role of UDSM and MUCE	4
MUCE and OER.....	5
The role of OER Africa	7
Initial engagements.....	8
Further engagements.....	10
Materials development by MUCE staff.....	10
Lessons learned.....	11
Perceived benefits of OER.....	11
Increased choice	11
Increased student interaction with learning materials.....	11
Standardization of curricula.....	11
Reduced workload on materials development.....	12
Global visibility for institution and staff.....	12
Easier to work with OER from the start	12
Accomplishments/Products and outcomes.....	12
Challenges	13
Limited faculty availability	13
Confusion between OER, e-learning, creation and adaptation	13
Next steps	14
About UDSM	14
About MUCE.....	15
About OER Africa.....	15
About The William and Flora Hewlett Foundation	16

Background and context

The Government of Tanzania has resolved to invest in education as the prime driver for promoting socio-economic development and improving quality of life. This resolve has been articulated by various policies, including: *Vision 2025*, *The National Strategy for Growth and Reduction of Poverty*, popularly known in Kiswahili as MKUKUTA or MKUZA for Zanzibar; and the *Education Sector Policy*. These policies also take into consideration Regional and International Conventions and Protocols on education to which Tanzania is a signatory.

Tanzania's education and training system has two faces: the formal and non-formal. The formal is time bound, academic and professional. The academic strand begins at primary and runs through to university level and is structured as 2-7-4-2-3+, implying 2 years for pre-school, 7 years for primary, 4 years for ordinary secondary education, 2 years for advanced secondary education, and 3 years or more for university education. On the other hand the professional strand begins after completion of secondary education, and may last from one year to several years up to university level. Teacher education is both academic and professional.

Teacher development needs in Tanzania

Teacher education in Tanzania is offered by government and private teacher education colleges and in universities.

There are 34 (government) and 71 (non-government) teacher education colleges which provide training leading to the award of certificates and diplomas (BEST, 2012: 116). Graduates with a certificate are deployed to teach in primary schools; those with diplomas are deployed to teach in secondary schools at ordinary level. Graduates from universities are deployed to teach in colleges of education, advanced level secondary schools and in other education institutions as administrators, guidance counsellors or as tutorial assistants if they are retained by the universities.

The limited supply of teachers at all levels is not only placing serious constraints on the expansion of numbers, but more seriously, on quality assurance, quality control, and quality improvement. This can only be handled by a firm strategy that will allow the training of teachers to precede quantitative expansion in education. But more importantly, the country needs a more coordinated and holistic education development strategy that covers all levels and types of education, instead of the current tier by tier approach which often leaves out the teachers. Currently, teacher education development is guided by the *Teacher Development Management Strategy* (TDMS, 2007).

In implementing the TDMS, the government set fifteen targets including the following:

- i. attracting, obtaining and retaining adequate and high quality teachers;
- ii. improving and enhancing collaboration between education ministries on all matters related to teacher training, development and management;
- iii. enhancing teacher professionalism among teacher educators;
- iv. improving reform processes and linkages between Teacher Education Programmes;
- v. ensuring sustainability and continued in-service teacher training;

- vi. improving the quality of performance and differentiation of abilities in teacher education;
- vii. strengthening the monitoring and support systems for effective teacher education;
- viii. training effective teacher educators and faculty members;
- ix. developing teacher education in a planned and efficient manner;
- x. enhancing the quality of the teacher training curriculum and its relevance;
- xi. college infrastructure and facilities made more conducive for learning, teaching and working;
- xii. making the teacher education curriculum more holistic by the inclusion of cross-cutting issues.

According to official statistics, while the norm is 1: 40, the pupil per qualified teacher ratio (PQTR) has improved from 1:49 in 2011 to 1: 47 in 2012 (BEST, 2012: 30). Teachers categorized as qualified for primary education level are those with a grade A certificate and above. However, there are variations between districts, with Singida cited as the worst example, with a PQTR of 1:71.

There has been an increase in total enrolment in Form 1-6 by 54.1% from 1,222,403 in 2008 to 1,884,272 in 2012. The rapid increase is a result of the *Secondary Education Development Programme* (SEDP) programme (BEST, 2012:72). Pass rates in Form 4 examinations have been fluctuating from year to year with the highest in 2004 (91.5%) and the lowest in 2010 (50.4%). The percentage of candidates who failed started to increase again from 2008 (16.3%) to 2011 (46.4%). Among the factors that have contributed to the declining quality is inadequate attention given to teacher supply, teacher development and teacher motivation. The number of secondary school teachers increased from 40,517 in 2010 to 51,469 in 2012 while secondary schools increased from 4,367 to 4,528 respectively (MoEVT, 2012). The acute shortage of graduate teachers called for further intervention at higher education level.

Role of UDSM and MUCE

The *Higher Education Development Programme* (HEDP) is a logical follow-up of the *Education Sector Development Programme* (ESDP) which started with the first phase of the *Primary Education Development Programme* (PEDP) in 2002, and the first phase of the *Secondary Education Development Programme* (SEDP) in 2004. Among the expected outputs of HEDP are:

- (i) Increased quantity and enhanced quality of graduates in diversified fields of study through an improved teaching and learning environment;
- (ii) Enhanced education delivery systems which take advantage of ICT enhanced approaches.

It was in this context that in 2005 the government decided to establish two constituent colleges of education under the University of Dar es Salaam in order to increase the supply of graduate teachers for the expanding education sector. The two colleges are Dar es Salaam University College of Education (DUCE) and Mkwawa University College of Education (MUCE).

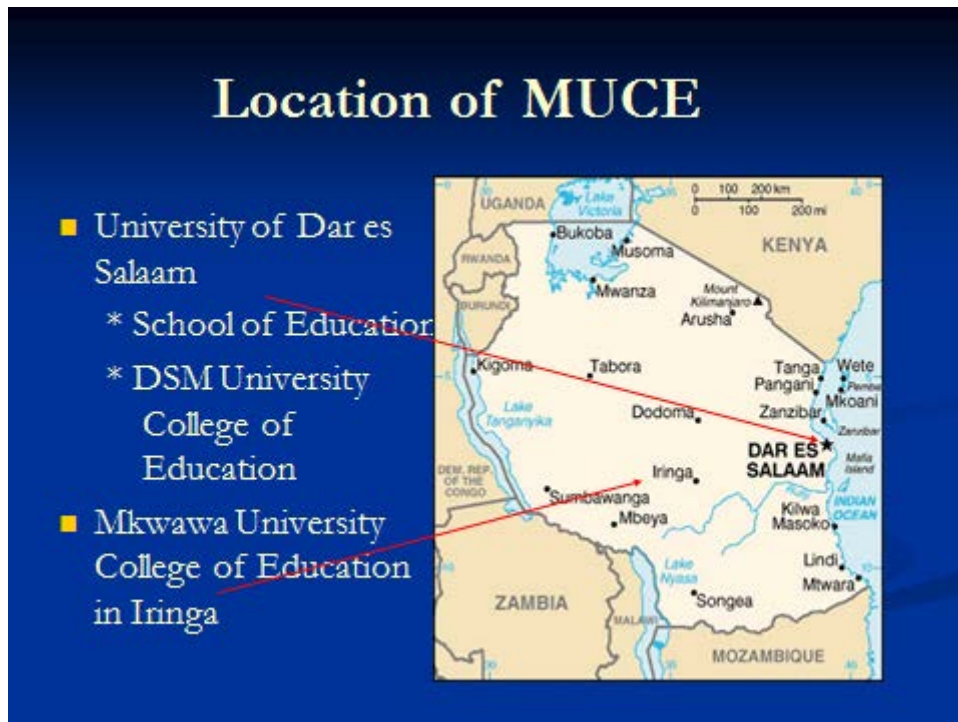


Figure 1: Map showing location of UDSM and MUCE

MUCE and OER

As part of quality enhancement in teacher education, the University of Dar es Salaam and its constituent colleges, MUCE and DUCE, decided to embrace technology for enhancing teaching and learning, including the integration of Open Educational Resources (OER). For MUCE, the foundation for the work on Open Educational Resources was laid after the pre-conference workshop that preceded the Distance Education and Teachers' Training in Africa (DETA) Conference held on 1st -7th August, 2011. The pre-conference workshop was jointly organized by the South African Institute for Distance Education (Saide)'s OER Africa initiative and the Teacher Education in Sub Saharan Africa (TESSA) project. An invitation was extended to the University of Dar es Salaam and Mkwawa University College of Education (MUCE), which institutions were represented by Dr. Hashim Twaakyondo (Director of the Center for Virtual Learning), Mr. Bugota Saganda (Technical Expert, CVL), and Prof. Godwill Mrema (Deputy Principal, Academic (MUCE), and Dr. Willy L.M. Komba (MUCE).

CVL and MUCE were invited to attend the pre-conference and the DETA main conference for two main reasons:

- i. Saide had been collaborating with CVL in order to build the capacity of CVL to support the development of quality online learning materials for the University of Dar es Salaam while MUCE was identified as the institution within UDSM that had shown interest in developing the capacity of staff to design quality online materials to be uploaded into Moodle as part of the QECTE (quality enhancement and consolidation in teacher education) project under STHEP (science and technology higher education project);
- ii. The collaboration between Saide and UDSM required to be formalized through a Memorandum of Understanding (MoU). The conference in Maputo was an ideal opportunity to meet and brainstorm on the terms and conditions of the MoU as representatives from CVL and MUCE would have been exposed to the activities and products of Saide/ OER Africa and TESSA in the business of distance education and the integration of OER.

After the DETA conference, representatives from CVL, MUCE and Saide convened to brainstorm on a number of issues towards the formalization of collaboration between UDSM and Saide. Areas of collaboration were delineated; modalities of staff exchange were defined; ethical and intellectual property issues were teased out; and funding responsibilities were agreed upon; including the duration of the project and schedule of activities.

The Draft MoU was formally ratified and signed by Prof. Rwekaza Mukandala (Vice Chancellor, UDSM, Tanzania) on 13th September 2011 and by Ms Jennifer Glennie (Saide, Republic of South Africa).

Two OER sensitization workshops were conducted subsequently at MUCE which were facilitated by Saide's Tony Mays and Greig Krull in October 2011 and March 2012. Participants were sensitized on the concept of Open Education Resources, principles for the development of quality educational resources, how to access OER, principles for the use as well as adaptation of the OER to meet the specific needs of learners.



Figure 2: Group photo of the core MUCE team and facilitators

The role of OER Africa

Higher education institutions in Africa are facing the challenge of dealing with a changing environment: the need to increase enrolments and throughput, often in the face of static or declining state subsidies, while simultaneously trying to ensure that teaching remains at the cutting edge of the discipline, which implies the need for the constant, and often very costly, updating of learning resources. One way to help address this challenge is to make greater use of OER. OER Africa's African Teacher Education OER Network (ATEN) seeks to support African universities in the adaptation and use of OER for teacher development.

The assumptions that underpin this initiative are:

- A structured engagement with OER provides opportunities to contribute to an improvement in the quality of higher education provision: the processes of finding, evaluating and adapting OER necessarily entails and creates opportunities for revisiting underpinning educational assumptions and practices; the processes of quality assurance, copyright clearance and publication open up teaching to public scrutiny, prompting a more considered engagement at the outset and allowing for constructive critical feedback;
- It is possible to source and adapt OER to meet the specific curriculum needs of African institutions;
- It is possible for institutions to clarify their internal policy and process frameworks to establish conditions that would enable them to publish new/adapted OER for further adaptation and use by other institutions;
- It is possible for African institutions, in particular, to adapt and use OER published by other African institutions;

- All of the above can be done in ways that do not add to, but could potentially reduce, the time and other resources needed to service curriculum needs, while simultaneously helping to enhance the quality of the teaching and learning resources that are adapted and used.

The results of this initiative are expected to be courses, developed and published as OER by African institutions, which incorporate OER from elsewhere including, hopefully, other African institutions, and which would model teaching approaches that stimulate active student engagement and deep learning. Concurrent with the practical work, OER Africa, is documenting the processes and results in a hermeneutic action-research cycle in order to tease out key lessons of experience for similar initiatives in the future.

Initial engagements

Two institutions were selected to implement the strategy during a pilot phase of this initiative. The first institution is the National In-Service Teachers College (NISTCOL) in Zambia. NISTCOL, which has subsequently transformed into Chalimbana University, had 12 affiliated contact-based colleges offering contact support to its distance education teacher-students. The second institution is the University of Dar es Salaam (UDSM) in Tanzania. As noted, UDSM suggested that its affiliate Mkwawa University College of Education (MUCE) in Iringa, Tanzania should be the primary focus for the OER engagement. Traditionally these institutions have made use of a contact and print-based model. However, they are in the process of expanding into the provision of technology-supported learning, using the open source Moodle Virtual Learning Environment (VLE), as the growth in student numbers means that, increasingly, students cannot be accommodated in already full lecture halls, library facilities and other campus-based resources.

Saide, through its OER Africa initiative, has entered into memoranda of agreement with both of these institutions and seeks to support both the individual needs of each of these institutions, separately, while also seeking to encourage collaboration between them.

Specifically, the partnership with these institutions sought to:

- promote the creation, sharing and free exchange of high quality OER materials for teaching and learning (for both undergraduate and postgraduate programmes).
- create capacity for access to evaluating, adapting, using and sharing of quality educational resource materials.
- promote the creation and use of a sustainable OER support infrastructure.
- promote the creation and sustainability of OER networks and communities.
- promote appropriate application of relevant educational technologies.

The first interaction with these institutions was in 2011 when a capacity-building workshop was organised by the UDSM's Centre for Virtual Learning (CVL). It was held at the Mkwawa University College of Education (MUCE) campus in Iringa. The workshop aimed to provide a contextual basis for OERs and explored the characteristics of quality learning resources. Participants were exposed to finding, evaluating and adapting OERs to meet existing curriculum needs.

A key focus of this engagement with the OER concept at UDSM was to explore ways in which an informed engagement with OER could support the curriculum renewal processes that were already underway. An important departure point for the workshop was that working with OER should not form a separate project in its own right, but should rather complement and support activities that were already in motion. The workshop built upon an earlier engagement with the CVL by Saide in support of the migration of UDSM teaching and learning resources into the Moodle VLE. The result of the workshop was a process for the development and review of courses and materials.



Figure 3: Workshops involved a mix of presentations and hands-on individual and group work

The first two days of the workshop comprised a wide-ranging overview of the field of learner support in open and distance learning (ODL) provision. This enabled participants to identify and prioritise the proposed content for the learner support short course that was to be developed as part of a wider professional development for ODL initiative, which it was hoped would also be published as an OER in due course. The remaining two days of the workshop were facilitated by Saide's OER Africa initiative, and explored the nature of OER, open licensing possibilities and issues to do with finding, evaluating and adapting OER as well as some of the policy implications thereof.

Participants in the workshop were able to get hands-on experience of searching for and evaluating OER related to their respective immediate needs – whether as part of the teacher education or the ODeL programme initiatives. A variety of strategies were followed and lessons learned, both in searching for appropriate content and in organising the search process (individually, in pairs and in teams).

Further engagements

The next engagement with UDSM was a follow-up capacity-building workshop, in March 2012, at the Mkwawa University College of Education (MUCE) campus in Iringa, Tanzania. The aim of the workshop was to build capacity so that the Education academics at these colleges would be able to design e-learning material that incorporates the use of OER. Specific focus was paid to the review of course design elements, namely learning and assessment strategies and activities.

Participants were again provided with the opportunity to search for and incorporate OER into their courses as well as implement the course design elements that were discussed. The outcome of the workshop was an implementation plan for the development, review and publication of pilot courses.

OER Africa has found that its engagement with institutions at this practical level has opened the door for discussions at a deeper philosophical and pedagogical level, drawing on the substantial bodies of literature on ODL provision, e-learning provision and the establishment and maintenance of communities of learning and practice.

Materials development by MUCE staff

The sensitization workshops at MUCE paid off as a good number of staff expressed interest in improving their course materials by integrating OER. Course instructors went on to integrate OER and the key lessons were shared with other colleagues in subsequent in-house workshops designed to improve the quality of course materials by using the TPACK (technical pedagogic and content knowledge) framework (see <http://www.tpack.org/>). Some draft materials were shared by June 2012 and forwarded to OER Africa for comment. Consultations followed, through email and exchange of documents demonstrating best practices. The TESSA format was used to guide the design, development and presentation of the materials for MUCE courses.

However, course instructors at MUCE recognize that TESSA resources target teachers focusing on improving their pedagogical skills while most MUCE resources target pre-service teachers focusing on content mastery. There is clearly need to address both dimensions in a holistic teacher development programme. To-date at least two themes for each of the ten pilot courses have been developed. The materials cover topics in English Language, Social Studies (Civics), Biology,

Information Science, Food and Nutrition, Educational Measurement and Evaluation, Mathematics and Physics.

Two sets of the course materials were submitted for sharing and further improvement. Most of the materials are undergoing internal moderation but three sets of the materials (in social sciences pedagogy, evaluation and analysis) have been submitted for wider circulation under an open licence and can now be found on the OER Africa website (www.oerafrica.org) .

Lessons learned

In the course of preparing the materials, course instructors, some of whom have had no or limited background in pedagogy, have realized the uniqueness of teacher education. The process is challenging because they have to operate at three levels. As teacher educators (level 1) they have to develop sufficient knowledge and understanding of subject content and theories of teaching and learning, both at adult and child level, plus pedagogic skills so that they can enable teachers (level 2) to develop their own knowledge and understanding of subject and pedagogy in such a way that teachers can enable pupils (level 3) to develop their own understanding and knowledge necessary for their future activities and achievement.

Even the experienced teacher educators face the challenge of using interactive pedagogies and modern technologies to enhance learning.

Perceived benefits of OER

It is felt that engagement with examples of OER during the process of enhancing pedagogy, as outlined above, has offered the following benefits.

Increased choice

The sharing of resources under open licences makes it possible to draw resources from multiple institutions and to expose students to a wider range of voices and approaches. It is possible to access some of the latest thinking in different fields but also to contextualise students' engagement thus creating a truly 'glocal' learning experience.

Increased student interaction with learning materials

Engagement with a variety of OER, and discussions around how to mediate student engagement through activities in a resource-based or distance learning approach, has created a much greater awareness not only of the need for such engagement but also how that engagement might be scaffolded. Breaking complex concepts into more manageable chunks and designing activities with feedback that students can work through independently or with peers, makes it possible then to use the limited lecture-student time more effectively by focusing on higher order discussion and problem-solving.

Standardization of curricula

Engagement with the OER process results in greater sharing of ideas and approaches and "opens" the classroom walls. Both students and staff can begin to compare the level of demand and the nature of the scaffolding provided in various courses that are now open to more public scrutiny. This results in greater pressure to for all courses to meet an emerging set of minimum expectations.

Reduced workload on materials development

Most academics are recruited on the basis of their qualifications and research publications not on their ability to teach well or to develop learning resources. A migration towards resource-based and distance learning approaches and the consequent need for materials development can be daunting. However, for most undergraduate programmes it is possible to find some or even most of the content so that the development work is reduced to adapting and filling gaps rather than needing to create all content from the beginning.

Global visibility for institution and staff

Sharing original content as OER or sharing back adapted OER content creates an awareness of the work being done both by institutions and their staff that would ordinarily be hidden behind classroom walls. Provided the work that is shared has gone through appropriate internal quality assurance processes, this sharing can only enhance the visibility of both in a positive way.

Easier to work with OER from the start

It is much easier to approach new learning resource development with the intent to integrate OER from the start and to publish the result as OER than it is to go back and reverse engineer existing resources and to clear all third party copyright content.

Accomplishments/Products and outcomes

The engagement between UDSM-MUCE and OER Africa has resulted in two key outputs to date:

- Development of a trained faculty and staff in OER integration and development; and
- Developed and shared learning resources in the following areas:
 - *Analysis 2 (Mathematics)*
 - *Basic concepts in Education Measurement and Review*
 - *Social Sciences methods for pre-service teachers.*

These OER resources have been incorporated into the UDSM-MUCE Moodle LMS.



Figure 4: First OER publications from UDSM-MUCE

Challenges

Two key challenges have emerged from the UDSM-MUCE and OER Africa engagement that are echoed in similar projects elsewhere:

- Limited faculty availability
- Confusion between OER, e-learning, creation and adaptation.

Limited faculty availability

Most staff involved with the development of learning resources, whether for internal use or for publication as institutional OER, need to fit the development work in around other commitments – most particularly the research outputs recognised for promotion and the teaching commitment to traditional campus-based students. The existing workloads both limit take-up and slow progress where there is commitment.

Confusion between OER, e-learning, creation and adaptation

For many staff, at least initially, resource development in general and OER in particular are seen to be a requirement for the move to e- and on-line learning – a move that not all faculty may be comfortable with and for which the workload is seen as additional rather than core. It is OER Africa's belief, however, that OER can be as effectively used to support traditional contact-provision as to support other forms of provision, facilitating a move from lecture-based methods to the resource- and problem-based approaches that seem more likely to equip graduates with the competences to compete in the changing world.

Next steps

As noted above, MUCE is still in the process of populating its revised course outlines and moodle site and has committed to releasing some more of this content under an open licence once the necessary internal quality assurance and copyright clearance processes have been completed.

So far, MUCE has been able to work within its existing policy framework but has recognised that it is necessary to review certain policy positions regularly with particular reference to:

- intellectual property rights and copyright;
- human resource management and promotion and in particular the ways in which contributions to high quality learning resource development are recognised and/or rewarded;
- ICT in terms of system maintenance and development, staff and student orientation and support, and software and hardware updates and licenses; and
- quality assurance to ensure that OER released under the UDSM-MUCE imprint reflect positively on the institution and its staff.

As the migration towards blended, online and distance provision progresses and the demand for additional learner resources increases, so it is anticipated that MUCE's engagement with OER will also increase. It seems clear that training in the use of the institution's moodle-based virtual learning environment, in the development of activity-based resources to support self-study and the integration of OER are all complementary aspects of the same process and need to be considered together.

About UDSM

The University of Dar es salaam is the oldest and biggest public university in Tanzania. It is situated on the western side of the city of Dar es salaam, occupying 1,625 acres on the observation hill, 13 kilometres from the city centre. It was established on 1st July 1970, through parliament act no. 12 of 1970 and all the enabling legal instruments of the constituent colleges. Prior to 1970, the university college, Dar es Salaam had started on 1st July 1961 as an affiliate college of the University of London. It had only one faculty- the faculty of Law, with 14 students. In 1963 it became a constituent college of the university of East Africa together with Makerere University College in Uganda and Nairobi University College in Kenya. Since 1961, the University of Dar es Salaam has grown in terms of student intake, academic units and academic programmes.



About MUCE



The Mkwawa University College of education (MUCE) is located in the Southern Highlands of Tanzania in Iringa Region, about 3 Kilometres from the main bus stand. MUCE was established as a constituent college of the university of Dar es Salaam (UDSM) on the 1st of September 2005 by upgrading the former Mkwawa High School, in response to the growing demand of teachers.

Mkwawa High School was first established as an 'O' level school in 1959 and was called St. Michael and St. George's School. However, in 1961, when Tanganyika became independent, the plan to establish the Girl's school was abandoned, and what was in place became a co-education school. In 1964 it became a High School, officiated by the First President of the United Republic of Tanzania, the late Mwalimu Julius K. Nyerere. In 1977 it became a teachers college offering certificate and diploma programmes in teacher education. Again in 1992 it became a High School and operated up to March 2003, when it was upgraded to a constituent college of UDSM, by order under section 55 (1) of the University of Dar es Salaam Act No. 12 of 1970 and published on 22nd July 2005 on Government Notice No. 2003.

Candidates admitted into the college pursue diploma and degree programmes in Science and Arts. The Diploma programme is designed in such a way that diploma content taught in two years will be equivalent to first year of content and pedagogy for the B.Sc. and B.A. (Education) programmes. Diploma students who will obtain an average score of B+ (or a GPA of 3.5) and above in the relevant teaching subjects will be deemed to have qualified for admission into the B.Sc/B.A. (Education) programmes and will take only two years of study. The duration of the degree programmes is three years. Other programmes which will be offered include pre-entry programmes in science for boys and girls, in-service programmes in education for teachers and education personnel, as well post graduate diploma in education (PGDE).

Vision: The guiding vision of the College is to become one of the best educational higher learning institutions at national, regional and international level.

Mission: To provide integrated teaching, research and consultancy services in education that address the challenges of a national and regional development.

Theme (Motto): Fostering Life Long Learning.

About OER Africa



OER Africa (www.oerafrica.org) is an innovative initiative established by the South African Institute for Distance Education (www.Saide.org) to play a leading role in driving the development and use of Open Educational Resources (OER) across all education sectors on the African continent.

Established in 1992, Saide's mission is to increase equitable and meaningful access to knowledge, skills and learning across the African continent, through the adoption of open learning principles and

distance education strategies. Saide’s OER Africa initiative brings together all of its OER-related activities under a common conceptual framework. Saide is – through its OER Africa initiative – providing a unique opportunity to deploy African expertise to harness the concept of OER to the benefit of education systems on the continent and around the world.

About The William and Flora Hewlett Foundation

The William and Flora Hewlett Foundation has been making grants since 1967 to solve social and environmental problems at home and around the world. The Foundation’s programmes have ambitious goals that include helping to reduce global poverty, limiting the risks of climate change, improving education for students in California and elsewhere, improving reproductive health and rights worldwide, supporting vibrant performing arts in its community and supporting disadvantaged communities. The Foundation is the primary supporter of the work of OER Africa generally and of its ATEN work in particular.

