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**OER Country Profile: Ghana**

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**Contents**

|  |  |
| --- | --- |
|  | **Page** |
| 1. **Factors that might impact on OER adoption**
 | **3** |
| 1.1 Infrastructure and technical readiness | 3 |
| 1.2 Socio- cultural and economic factors | 4 |
| 1. **Policy and legal framework**
 | **5** |
| 2.1 National and institutional OER and OER related policies | 5 |
| 2.2 National and regional laws and legal frameworks | 6 |
| 1. **OER Projects**
 | **6** |
| 3.1 Organisations and institutions engaged in OER and OER related work | 6 |
| 3.2 OER projects or initiatives at the regional, national and institutional level | 8 |
| 1. **Research on OER**
 | **10** |
| 4.1 Research by researchers based in region | 10 |
| 4.2 Research on OER in institutions and country by researchers not necessarily based in the region | 11 |
| 1. **Conclusion**
 | **12** |
| 1. **Bibliography**
 | **13** |

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## Factors impacting OER adoption

* 1. Infrastructureand Technicalreadiness

Higher education institutions in Ghana have access to broadband internet which facilitates access to digital OER resources. Examples are University of Education, Winneba UEW, University of Cape Coast and University of Ghana. UEW and University of Cape Coast have Learning Management Systems on which OER can be availed to students. A telecommunications service provider in Ghana launched its African Coast to Europe (ACE) submarine cable in Accra to enhance connectivity[[1]](#footnote-1). The arrival of the $700 million fibre optic, with a capacity of 5.12 terabyte-per second is a development that enhanced bandwidth in universities[[2]](#footnote-2) and facilitates searching for, development and sharing of OER in Ghanaian universities. The fibre optic is expected to connect Ghana with 22 countries to promote internet usage and increase internet penetration through smart partnerships with local internet service providers.

Through collaborative linkages established with other universities in Africa and outside, UEW benefitted in terms of building capacity amongst academics in the use of educational technologies. During the period 2003–2005 an American Fulbright Scholar (the late Professor Emeritas Sandra Vogel Turner) supported academics to develop basic technological competencies and use of ICT for teaching and learning.[[3]](#footnote-3) During this preliminary stage of the educational technology initiative at UEW, the University assisted academics in purchasing personal computers on hire-purchase agreements with local ICT vendors. [[4]](#footnote-4) Academic departments were also encouraged to set up departmental computer laboratories. The purpose was to increase access to computing facilities by academics and students for teaching and learning. Improvements in computer facilities on campus have created an enabling environment for accessing and using OER by students and staff.

After 2005, UEW was also assisted in mounting three courses for online delivery on Moodle. These courses were developed externally by a South African organization called eDegree. [[5]](#footnote-5)

In addition to the two capacity development initiatives mentioned above, UEW was also part of the Partnership for Higher Education in Africa Educational Technology Initiative (PHEA ETI)[[6]](#footnote-6) that was implemented in seven African universities spanning six different countries from 2008 to 2013. The objective of the PHEA ETI intervention was to support partner institutions improve the quality of educational provision by integrating educational technologies in the teaching and learning processes. At UEW, the PHEA ETI project supported three interventions: (i) conducting a baseline study on the status of educational technology in the university; (ii) developing and deploying hybrid courses on the Moodle learning management system (LMS); and (iii) carrying out an investigation into how academics and students use Moodle for teaching and learning.[[7]](#footnote-7) Through the PHEA ETI project 69 online/blended courses were developed by UEW staff of which 42 were submitted for external evaluation and ten were unpacked and their assets released as OER.[[8]](#footnote-8) An institutional OER repository was also developed and populated. Through support from the South African Institute for Distance Education *(Saide)*, eighty staff were capacitated to develop courseware for the Moodle platform. Thus, the University was not only supported to use but also to develop OER.

The development of social capital to integrate educational technologies in teaching and learning, to develop courseware and to embrace OER values, coupled with improved technological infrastructure on campus are key enablers for the adoption of OER at UEW.

* 1. Socio-cultural and economic factors

In spite of improvements in the technical infrastructure at UEW highlighted above, technological and infrastructural constraints are still reported in other universities in Ghana. With specific reference to Kwame Nkrumah University of Science and Technology (KNUST), Nadier, et al (2010) report that growing challenges in faculty time commitments, technological and infrastructural capacity and shortage of technical expertise constrain the use and production of OER. The same authors also lament at the general lack of awareness beyond the early adopters and the lack of a system for OER dissemination in the university in particular and in the country generally.[[9]](#footnote-9) This shows the limitations that are brought about by the entrenched academic culture of working with proprietary resources. Part of the reason why academics are so steeped in producing proprietary resources is that universities have a culture of rewarding for resources that are published in internationally refereed journals, and not necessarily high quality courses and materials produced for teaching and learning purposes and released as OER. Unless there is a well-planned advocacy strategy at institutional and national levels academics may still continue to operate in a mind-set that constrains effective adoption of OER.

## Policy and Legal Framework

* 1. National and Institutional OER and OER –related policies

In August 2010, the KNUST passed a landmark institutional policy in support of OER.[[10]](#footnote-10) The purpose of this OER Policy is to:

* guide the development and review of OER materials prior to sharing them on a worldwide scale;
* clarify publication rights and licensing issues;
* outline policies regarding the use of required infrastructure (information technology, library, etc.) and other support services;
* identify human and other resources to support faculty in developing OER for teaching and learning; and
* define collaborations within and outside the university and the intent to allow access.[[11]](#footnote-11)

The KNUST OER Policy to which both *Saide’s* OER Africa Initiative and the University of Michigan made an input states that a developer of content has the freedom to select the Creative Commons licence that he or she prefers.[[12]](#footnote-12) The policy however explicitly states that materials produced which do not indicate any specific conditions for sharing will automatically be considered to have been shared under a Creative Commons Attribution licence.[[13]](#footnote-13)

The policy also formalizes the role of the OER coordinator, as well as the technical support role of the Department of Communication Design (DCD).

The KNUST OER Policy encourages the development of OER by academics. OER production and publishing is recognized and given similar credit (actual weighting to be decided by University Appointments and Promotions Committee) as peer-reviewed publications. The University also allows time allocation for faculty to produce OER materials. Staff involved in OER publications is eligible to receive OER grants (when available). Thus, the OER policy of the University creates an enabling environment for the development of OER by academics.

The ICDE Report however notes that to implement the KNUST OER policy successfully, there needs to be wider stakeholder involvement particularly from the Ministries of Education and Health.[[14]](#footnote-14) It further notes that sustainable funding models need to be developed and emphasises the need to partner with students to get them more involved in their own learning thereby driving down the OER development costs. The same Report also underscores the importance of motivating faculty to become more involved and the need to develop metrics for the evaluation of OER use.[[15]](#footnote-15) The need to recognise and reward the development of OER is further underscored by the African Teacher Education OER Network (ATEN) who observe that key policy issues that need attention in order to enhance effective adoption of OER in African institutions include, amongst other things, the extent to which investment in improving the quality of teaching is both recognised and rewarded.[[16]](#footnote-16)

* 1. National and Regional Laws and Legal Frameworks

Ghana is one of the 14 countries that signed a Charter establishing the African Virtual University (AVU) as an Intergovernmental Organization. <http://oer.avu.org/about>. Amongst other forms of supporting education in Africa, the AVU is one of the major organisations developing OER through collaboration with universities in Africa, and promoting the adoption of these resources by supporting infrastructural development and capacity building at institutional level. More information about AVU’s contribution towards developing a critical mass of OER is provided in paragraph 3.2 below.

Ghana is one of the 15 countries that participated in the Africa Open Educational Resources Forum that was held in Pretoria, South Africa from 21 to 22 February 2012. This Forum which was jointly organised by the Commonwealth of Learning (COL) and UNESCO provided specific African inputs to the Draft Paris Declaration that was submitted to the World OER Congress which took place in June 2012 in Paris (France). <http://www.unesco.org/new/en/education/resources>.

## OER Projects

* 1. Organisations and institutions engaged in OER and OER –related work

#### 3.1.1 Kwame Nkrumah University of Science and Technology (KNUST)

The ICDE report, “Taking OER beyond the OER community” notes the Health OER project at the KNUST in Ghana.[[17]](#footnote-17) Through the Health OER project, KNUST produced very valuable teaching and learning resources in the fields of Internal Medicine, Microbiology, Obstetrics and Gynaecology and Behavioural Sciences that are now being used at the University of Michigan.[[18]](#footnote-18) These resources are openly licensed and demonstrate that developing countries are not mere consumers but also producers of OER. Using the KNUST OER, students at University of Michigan are now able to see aspects of tropical diseases that were previously only in textbooks[[19]](#footnote-19). In developing these resources, KNUST teamed up with the University of Michigan, OER Africa and other Southern African universities. The aspect of working collaboratively with similar institutions in developing OER is also an aspect of good practice that comes through the Health OER project at KNUST.

#### 3.1.2 University of Education, Winneba

The University of Education, Winneba (UEW) is the only university in Ghana dedicated to teacher education. UEW is a member of the Teacher Education in sub-Saharan Africa (TESSA) network, an international research and development initiative which brings together teachers and teacher educators from across sub-Saharan Africa. The objectives of the TESSA network are:

* to create a network of African universities, working alongside The Open University, UK and other international organisations to focus on the education and training needs of teachers in Sub-Saharan Africa;
* to support the exploration and development of school based modes of teacher education in which teachers develop their competencies and skills to meet the needs of pupils in their own classrooms;
* to design and build a multilingual Open Educational Resource (OER) bank, modular and flexible in format, that is freely available to all teacher educators and teachers in the region.[[20]](#footnote-20)

TESSA offers a range of materials (Open Educational Resources) in four languages to support school based teacher education and training.[[21]](#footnote-21) One of TESSA’s main projects involved the development of materials to support the teaching and learning of Science. This project started in August 2010 and aimed at extending TESSA education resources to teachers in secondary schools within 5 countries: Uganda, Kenya, Ghana, Zambia and Tanzania. Through this project, a total of 15 TESSA Secondary Science units were produced, all of which are OER and can be download on the TESSA website: <http://www.tessafrica.net/Secondary-Science>. UEW is making extensive use of the TESSA resources in order to achieve its main objective of producing creative and reflective teachers who are confident in teaching and managing a learning environment.[[22]](#footnote-22) The University was motivated to join the TESSA network by the perceived potential of the project to enable the production of a transformational teaching force, to build teachers’ capacity to use internet resources in their teaching and learning, to build teacher capacity to create their own resources in addition to the TESSA OERs and to create a culture of collaboration and networking with other teachers.[[23]](#footnote-23)

In a survey conducted amongst 104 teacher training students in the University, the overwhelming majority was reportedly satisfied with TESSA materials, as shown in Figure 1 below:



*Figure 1: Students’ overall satisfaction with TESSA OERs[[24]](#footnote-24)*

#### 3.1.3 University of Cape Coast

Like UEW, the University of Cape Coast is also part of the TESSA network and makes use of the TESSA materials in their courses. Although it has an ICT Policy, the University does not have a policy on OER.

Funded by the Food and Agriculture Organisation (FAO) of the United Nations and with technical support from the South African Institute for Distance Education (*Saide*), the University of Cape Coast developed a course on Food Safety and Food Quality Standards. The objectives of the course are to equip students with knowledge in:

* The importance of food security and food standards;
* Food safety threats, their prevention and handling;
* Food standards;
* National food standards and laws – the case of Ghana; and
* Compliance with standards. [[25]](#footnote-25)

This course will be deployed online as an OER.

* 1. OER projects or initiatives at regional, national and institutional level

One of the main challenges faced in African education systems is the shortage of trained teachers. It is estimated that across Sub-Saharan Africa a third of existing primary teachers are unqualified or under-qualified.[[26]](#footnote-26) To address the teacher shortage problem and as highlighted above, the TESSA research and development network was formed in 2005. The 15 Secondary Science Units produced through the Secondary Science initiative referred to in paragraph 3.1.2 above are in the process of being versioned for Ghana, Uganda, Tanzania, Zambia and Kenya, and will eventually be converted into web pages.

TESSA partner organisations in Ghana include [University of Cape Coast,](http://www.ucc.edu.gh/) [University of Education, Winneba,](http://www.uew.edu.gh/) OLA College of Education, Komenda College of Education, Foso College of Education and Holy Child College of Education. Awareness for OER has been created in these institutions and materials have been developed through this TESSA Community for Ghana and have been chosen by national experts to support school based education and training of teachers.[[27]](#footnote-27)

OLA College is using TESSA OER in several modules with student teachers on the Bachelor of Education. OLA are now working with three further colleges in a peer-supported process to extend the use of TESSA OER to students in these three colleges. [[28]](#footnote-28)

All TESSA materials are ‘Open Educational Resources’ (OERs) and are available in digital format from the TESSA website and also on CD-ROM. The TESSA project has both a national presence in Ghana as well as in the wider sub-Saharan region.

It is noteworthy that TESSA activities also include research into the use of TESSA materials. For instance, analysis is made of the range of modes of use of classroom-focussed OERs within a variety of programmes and the factors which influence successful use. Formative evaluation is also conducted of the influence of TESSA OERs on the quality of teaching and learning.

Another significant OER initiative at regional level relates to the work of the African Virtual University (AVU) referred to in paragraph 2.2 above. In 2005, the AVU through a collaborative approach involving 12 African Universities started developing academic material for enhancing science teacher education and accelerating integration of ICTs in education. A total of 12 African universities, 146 authors and peer reviewers from 10 countries in Anglophone, Francophone and Lusophone countries were fully involved in the exercise funded by the African Development Bank and partially by the United Nations Development Program-Somalia.[[29]](#footnote-29) Through this project, a total of 219 modules were produced, 73 modules in each of the 3 languages as follows: 46 in Mathematics and Sciences; 4 in ICT Basic Skills; 19 in Teacher Education professional courses; and 4 in integration of ICTs in Education.[[30]](#footnote-30) All the modules were released as Open Education Resources under the Creative Commons licence in order to make the material freely available. Consequently, the AVU@OER portal was launched in January 2011, making AVU the leading African institution in producing and using OERs.[[31]](#footnote-31) The resources are available on:<http://www.scribd.com/AfricanVirtualUni>

*OER Africa Teacher Education Network (*ATEN) is a noteworthy OER initiative in Sub-Saharan Africa. The ATEN was established by *OER Africa* as a way of promoting OER, facilitating dialogue and sharing existing teacher education content as OER.[[32]](#footnote-32) ATEN has been successful in promoting the publication as OER of teacher education resources by institutions with which *OER Africa* works directly. The role of the Network in promoting integration of OER in teacher education in Africa cannot be overemphasised.

## Research on OER

* 1. Research by researchers based in the region

**Adanu, R.M.K., Adu-Sarkodie, Y., Opare-Sem, O.,**  [**Nkyekyer**](http://www.ncbi.nlm.nih.gov/pubmed/?term=Nkyekyer%20K%5Bauth%5D)**, K. N., Donkor, P., Lawson, A. & Engelberg, N.C. (2010) Electronic Learning and Open Educational Resources in the Health Sciences in Ghana. In *Ghana Medical Journal- GMJ*, Vol. 44(4): 159–162.**

The study was conducted amongst 150 third year medical students at the University of Ghana Medical School and nineteen fifth year medical students at the School of Medical Sciences at the KNUST. The aim of the study was to determine whether Ghanaian students are able to easily use electronic learning material and whether they perceive this method of learning as acceptable. The study found out that at both institutions, medical students had access to a computer for learning purposes. All students who viewed technology- supported programmes at both institutions indicated that the e-learning programmes were “more effective” in comparison to other methods of learning. The authors argue that the power of an electronic educational resource lies in its ability to be distributed at little or no cost via the internet or on simple storage formats, such as pen drives or CDs.[[33]](#footnote-33) They further argue that the free dissemination of learning material is the principle behind the concept of open educational resources (OER).

**Harley, K. & Barasa, F. S. (2012) Teacher Education in Sub-Saharan Africa: Formative Evaluation Report.** [**http://www.tessafrica.net/files/tessafrica/TESSA\_Formative\_Evaluation\_Report\_October\_**](http://www.tessafrica.net/files/tessafrica/TESSA_Formative_Evaluation_Report_October_) **Retrieved: 20/02/2014**

The aim of the evaluation study was to enhance understandings of the way TESSA works and its achievements, as well as inform future TESSA activity and sustainability.[[34]](#footnote-34) Further, the evaluation process was intended to be a learning experience for the TESSA community and to make recommendations, informed by local conditions, for programme enhancement.

The evaluation employed an in-depth qualitative, open-ended, context-sensitive research design to enable understandings of the influence of the local social contexts and educational realities on the various configurations of TESSA implementation. Research *depth* was provided by in-depth case studies at three TESSA partner institutions, while research *breadth* was afforded by more limited analysis of TESSA activity across all TESSA partner institutions.

Individual and focus group interviews were used as data collection methods. These interviews were augmented by semi-structured questionnaires that were administered amongst teacher educators and teachers. A total of 141 respondents were interviewed (individually and in focus groups; 110 from partner institutions and 31 from non-partner institutions). The evaluation was also informed by project documentation as well as research and conference papers published by the Network partners; case studies conducted by Coordinators in each of the partner institutions; and the Open University’s study of educational policies in the countries of partner institutions.

The major finding of the evaluation study was that by 2012 there had been very considerable ‘take up’ of TESSA materials. The TESSA OER had been used in programmes with almost 300,000 enrolments of teacher-learners and in-service teachers across a wide range of programmes in all partner institutions.[[35]](#footnote-35) It was also encouraging to note that by the time the study was conducted, TESSA had taken hold in different kinds of settings and contexts, in different models, and for different purposes.

Notwithstanding successful ‘take up’, the evaluation report also flagged sustainability as an issue in implementing the project at various institutions. The authors note:

TESSA flourishes in the hearts and minds of teacher educators and their teacher-learners, and is certainly woven into the fabric of faculty practices. Nonetheless, in contact teaching programmes, where TESSA has been incorporated by an individual lecturer, sustainability is potentially threatened by staff mobility.[[36]](#footnote-36)

**Tagoe Nadia, T., Donkor Peter, Adanu Richard, Opare-Sem, Ohene N. Cary Engleberg, Aaron Lawson (2010)Beyond the first steps: Sustaining Health OER Initiatives in Ghana. In Open Ed 2010 Proceedings Barcelona: UOC, OU, BYU. Retrieved: 22/02/2014.**

The paper by Tagoe, et al (2010) is a reflection of a funded OER project that was introduced at the Colleges of Health Sciences at KNUST and University of Ghana. The project reportedly produced a significant number of eLearning materials as health OER in the first year. The paper however notes the growing challenges that were faced in the two institutions in the production of these materials. Some of these challenges include commitments by staff, technological and infrastructural constraints, shortage of technical expertise, lack of awareness beyond the early adopters and non-existence of a system for OER dissemination and use. Drawing from their experience on the project, the authors recommend that “…institutions in low resource settings should pay close attention to awareness creation, initiative structuring, funding, capacity building, systemization for scalability and motivation if OER sustainability is to be achieved.”[[37]](#footnote-37)

* 1. Research on OER in institutions and country by researchers not necessarily based in the region.

**Omollo, K. L. (2011) Case studies of evolving health OER initiatives in Ghana.** [**https://open.umich.edu/blog/2011/06/24/ghana-case-studies/**](https://open.umich.edu/blog/2011/06/24/ghana-case-studies/) **Retrieved: 04/03/2014**

The study by Kathleen Ludewig Omollo from the University of Michigan was conducted on OER in Ghana as part of a broader study of the evolving health OER initiatives implemented in the African Health OER Network. In Ghana, this study was conducted at the Kwame Nkrumah University of Science and Technology, one of the Network institutions. The aim of the case studies was to provide a glimpse into how and why these health OER partner institutions create OER.[[38]](#footnote-38) The study involved conducting interviews with OER management, faculty, and staff, as well as hosting focus groups with students. Through these interviews, the study sought to explore strategic priorities, achievements, challenges, lessons learned, and future plans for OER at the institution, as well as participants’ advice for others interested in creating their own institutional OER initiatives.[[39]](#footnote-39)

A similar study was conducted by the same researcher at the University of Ghana, which was also a member of the African Health OER Network and therefore also developed OER in Health. Both case studies are published on the OER Africa[[40]](#footnote-40) and University of Michigan websites.[[41]](#footnote-41)

## Conclusion

This review shows that efforts are being made to create an enabling environment for the adoption of OER in Ghana. Access to broadband as a result of the fibre optic cable, improvement of technological infrastructure on university campuses and the development of OER policies by some universities like the KNUST are all factors that are in favour of use of OER in Ghana. Several universities in the country are also taking the initiative to develop capacity amongst staff in the use of educational technologies in general and OER in particular. Examples of such universities are UEW, University of Ghana and University of Cape Coast. An important point to note is the involvement of higher education institutions in Ghana in regional OER initiatives. As highlighted in this review, six institutions in the country are part of the TESSA network. Over and above these institutions, Kwame Nkrumah University of Science and Technology is part of the Health OER network that has supported partner institutions in developing and using health OER. UEW was also one of the just-ended PHEA ETI project. Through support from the project, the University developed courses that have been deployed as OER. Other institutions like University of Cape Coast and University of Ghana have also developed OER through various funded projects they were part of. Involvement of these institutions in networks that promote OER has helped create champions at these institutions.

It is however noteworthy that in spite of these positive developments, a lot still has to be done in order for OER to be fully embraced at national level. This review could not identify any national guiding policy on OER. Unless a national strategy on the deliberate promotion of OER is mooted, OER will not be fully embraced by all academics in all institutions. Project-based efforts that are largely donor-funded need to be supported by the national government if they are not to remain isolated pockets of excellence.

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