

*This is the public version of the 2010-2011 African Health OER Network Proposal. For more information, please contact Ted Hanss at [ted@umich.edu](mailto:ted@umich.edu)*

## **Proposal Title**

2010-2011 African Health OER Network

## **Public Description**

Strengthen the intellectual and policy infrastructure to grow an African Health OER Network.

## **Proposal Summary**

In 2009, the University of Michigan, OER Africa, Kwame Nkrumah University of Science and Technology, the University of Ghana, the University of Cape Town, and the University of the Western Cape used a Hewlett Foundation grant to develop a scalable OER program to support health education. We now propose a two-year program to deepen our African Health OER initiative while eventually moving from Hewlett Foundation support to a resource model built on

1. a community of donors committed to addressing health challenges in the Millennium Development Goals, and
2. institutional investment that makes OER production and use an integral part of the teaching and learning process in health schools.

The proposed African Health OER Network is designed to strengthen the intellectual and policy infrastructure within and between African institutions. Our objective is to systematically draw in more African and, eventually, global participants to create, adapt, share, and use OER to the benefit of health education in Africa, while developing models of collaboration and sustainability that can be replicated in other regions of the world. In this proposal, the University of Michigan is requesting \$624,401 to cover its costs (including the African institutional grants). The South African Institute for Distance Education (SAIDE) is requesting \$375,599 to cover OER Africa costs in a separate proposal. Please note that while we are submitting separate budget requests, this is a unified work plan.

The proposed African Health OER Network is structured to build on the OERs created and deployed during the 2009 Design Phase. These materials were selected due to pedagogical needs within health education in Africa, such as limited training materials available for certain conditions and diseases and materials that can augment the crowded lecture and ward-based training contexts. More information on those efforts can be found in the inputs and activities sections, below.

In this phase we will:

1. Ensure that the OER infrastructure model, successfully deployed during the design phase, maintains momentum with current participants and begins growing the Network while simultaneously seeking to expand the community of support.
2. Aggregate a critical mass of African-produced health open educational resources published through both institutional and regional ([oerafrica.org](http://oerafrica.org)) repositories.
3. Continue to enhance (e.g., through functionality and localization) an innovative, low-cost, and scalable process (dScribe) for converting educational materials into OER.
4. Build on pilot and formative analyses undertaken in 2009 to establish the basis for an evidence chain that connects from faculty productivity and career satisfaction measures through efficacy in learning contexts to application of acquired knowledge in health care settings.



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## SECTION 2. PROPOSAL NARRATIVE

**Name of Organization: Regents of the University of Michigan**

**Program Unit within Organization: Medical School Administration**

### A. Problem/Theory of Action

We propose a two year program designed to strengthen the intellectual and policy infrastructure within and between African institutions in order to grow a vibrant, sustainable African Health OER Network. Our objective is to systematically draw in more African and, eventually, global participants to create, adapt, share, and use OER to the benefit of health education in Africa, while developing models of collaboration that can be replicated in other regions of the world.

We use the word infrastructure in this document to refer primarily to the people, policies, and services that support and enable an OER network. Historically, the term infrastructure has been applied exclusively to the physical plant underlying a city (e.g., electrical systems) or a manufacturing business (e.g., assembly lines) or similar large scale technological systems.<sup>1</sup> In the IT context, infrastructure has encompassed network cables, desktop computers, servers, etc. Our view of infrastructure goes beyond the “hardware” to also encompass socio-technical (legal, cultural, policy) components, with a focus on the gaps and barriers that constrain progress. For example, lack of institutional policies around copyright ownership is a barrier to publishing OERs. By embedding new policies in conventions of practice, we have made policy a key component of OER infrastructure.<sup>2</sup>

The University of Michigan and OER Africa have demonstrated our ability to work together on international collaborations in multilateral partnership with African universities. The management plan we established in 2008 and documented in Appendix 3 will continue to guide our cooperative actions.

Our ‘Theory of Change’ begins by identifying a clear set of specific problems, as follows:

1. We need to prepare students in health profession schools to practice in a global health context.
2. There are poor health outcomes in Africa’s developing countries, as documented in the millennium development goals <<http://www.un.org/millenniumgoals/>>.
3. There are too few health care providers in Africa. However, African countries, particularly Ghana and South Africa, do have enough qualified students who can be taught to become health care providers if they get access to learning opportunities.
4. There are too few faculty members in Africa to teach both basic and clinical sciences (i.e., insufficient institutional capacity). Existing faculty are overtaxed in time and ability to teach, reducing time available for ongoing program and materials development.
5. There are too many students enrolled in programs for the amount of money available to run those programs.
6. Educational resources for learners and lecturers in Africa are too few, too expensive, and often not built on evidence-based educational design principles.
7. There is limited ICT infrastructure to gain access to up-to-date information available on the Internet and to participate in inter-institutional, geographically dispersed collaborative activities.

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<sup>1</sup> Hughes, T.P. (1989), “The Evolution of Large Technological Systems,” in *The Social Construction of Technological Systems*, MIT Press, Cambridge, 51-82.

<sup>2</sup> Star, S. L. and K. Ruhleder (1996). "Steps toward an ecology of infrastructure: Design and access for large information spaces," *Information Systems Research* 7(1): 111-134.

Our project design is premised on the following key assumptions:

1. Appropriate training of more, skilled health care providers can lead to improved patient outcomes.
2. Ghanaian and South African academic medical centers have sufficient patient encounters (numbers and presentations) for additional trainees.
3. More productive learners and faculty members can lead to more and better trained health care providers.
4. While ‘brain drain’ is a concern with education programs in Africa, U-M has demonstrated in previous education collaborations (in Ghana in particular) that health care workers can be trained and supported in such a way that they are motivated to stay in their native country.
5. Increased availability of relevant, need-targeted learning materials can contribute to more productive learners and faculty members. (Evaluation of this assumption is a key component of our impact assessment efforts.)
6. The potential of OER is best achieved through a collaborative partnership of people working in communities of practice. Collaborative OER processes built on networks of peer faculty members can lead to increased availability of relevant, need-targeted learning materials by facilitating sustainability, achieving a better understanding of learners’ needs, and motivating contributions from participating institutions.
7. Because OER licensing removes restrictions around copying resources, it holds potential for reducing the cost of accessing educational materials.
8. The principle of allowing adaptation of materials contributes to enabling learners to be active participants in educational processes, whereby they learn by doing and creating, not just by passively reading and absorbing.
9. OER has the potential to build capacity in African higher education institutions by providing educators with access, at low or no cost, to the means of production to develop their competence in producing educational materials and completing the necessary instructional design to integrate such materials into high quality programs of learning.
10. To be successful and sustainable, development of OER cannot be a sideline activity within a university. It must be integrated into institutional processes in order to both leverage its potential and provide for its sustainability. (We intend to validate an assumption that OER learning materials used for regular teaching and learning activities, once created, essentially sustain themselves through ongoing processes of refinement and updating.) Likewise, institutional policies, particularly around intellectual property rights, remuneration, and promotion, need to be adapted to support and sustain development and use of OER. OER’s potential includes bringing transparency to educational processes, facilitating collaborations between faculty members and students at different institutions, and establishing a new economic model for procuring and publishing learning materials. Ultimately, a key to its success will be to demonstrate that, in the medium- to long-term, OER will help over-stretched faculty members to manage their work more effectively, rather than adding new work requirements to their job description.
11. Although our long-term vision for OER will seek to be expansive in terms of its possibilities, the project will seek to design OER that can work immediately, and add educational value, within the current ICT infrastructure constraints of all of the participating institutions. While we note the challenges of limited ICT capabilities above, we have learned during the 2009 Design Phase that medical students, for the most part, have reasonably good access to computers and can and will share OERs via discs and flash drives. Medical schools may be better positioned than other colleges within African universities, and thus can serve as a bellwether for OER creation, delivery, and use. In addition, recent successes with submarine cable implementations (e.g., SEACOM along East Africa) make us optimistic that broadband connectivity will become increasingly accessible to growing numbers of Africans.

Given the above, the approach of this project is to continue a series of collaborative engagements on OER policy and content infrastructure with Faculties of Health Sciences at five universities, two in Ghana (KNUST and UG), two in South Africa (UCT and UWC), and U-M in the U.S., while building on that experience and

adding new institutions to establish the African Health OER Network. The Network is an emergent system; it was proposed and designed during a July 2009 inter-institutional workshop held in Cape Town with participation from the core partners and five guest institutions. An African Health OER Network will build ties among the health science faculties that can cross both distances and health disciplines. As in the “invisible college” model described by Caroline Wagner, the African Health OER Network can be a system that will “scan for knowledge globally and tie down knowledge locally” as participants collaborate in a “complex system for creating and sharing knowledge in which they both absorb and contribute resources.”<sup>3</sup>

## **B. Background**

### *The University of Michigan*

The University of Michigan (U-M) has a strong tradition of leadership in health science education. The University of Michigan established the first school of scientific medicine on the western frontier in 1850 and quickly became a leading producer of both practitioners and faculty members for other medical schools. Other health sciences programs were established in the late 19<sup>th</sup> Century and early 20<sup>th</sup> Century, leading to the university’s current complement of programs in Medicine, Public Health, Nursing, Dentistry, Pharmacy, Kinesiology, and Social Work.

The university has long been an innovator, with a history of leadership in the exploitation of technology to improve learning. In partnership with Google, the University Library is transforming scholarship by putting its entire holdings of more than seven million volumes online. The University is home to its pioneering School of Information (SI), one of the world’s leading programs of research and instruction in the emerging information professions, with special expertise in the development of support for global collaboration. U-M’s first course management system, Coursetools, became the base of Sakai, and U-M leadership helped guide the Sakai Project to become one of the most important initiatives in the application of IT to the transformation of education and learning. Supported by both the Hewlett and Mellon Foundations, Sakai has grown to a community of practice of over 150 institutions of higher education who participate as full contributors to the development and core code for the project. Built and supported by the U-M team behind this proposal, Open.Michigan <<https://open.umich.edu/>> is the university’s portal site for open educational resources, open learning, open source, and open standards efforts.

U-M’s health professions schools are deeply involved in issues of global health. Building on that legacy and investment, in 2008 U-M launched the university-wide Center for Global Health <<http://www.globalhealth.umich.edu>>, through which OER efforts are promoted. Across the university there is strong investment in partnerships with African institutions. For nearly 40 years the Center for Afroamerican and African Studies has been a research and education center based in the university’s largest undergraduate college. In 2008, following a trip to Africa made by a delegation led by President Mary Sue Coleman, U-M established the African Studies Center to provide an institution-wide focal point for the more than 160 U-M faculty and students involved in Africa-related initiatives and research <<http://www.ii.umich.edu/asc>>. That center manages the University of Michigan African Presidential Scholars program, which has just accepted its second cohort of ten early career faculty members from Ghana and South Africa to Ann Arbor-based residencies of up to one year.

The University of Michigan provides a unique platform from which to launch this initiative. We have one of the strongest collections of health sciences education programs, deep engagement in cutting-edge informational and educational technologies, and a vision for global service. Our Hewlett Foundation-supported Planning Grant (2008) and Health OER Design Phase (2009) provided us the evidence-based approach we are recommending. The president, provost, deans of health sciences schools, and key faculty are all committed to this exciting venture.

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<sup>3</sup> Wagner, C., The New Invisible College, Brookings Institution, 2008.

### *OER Africa*

OER Africa is an innovative project, headquartered in Nairobi, Kenya, and managed under the auspices of the South African Institute for Distance Education (SAIDE) <<http://www.saide.org.za>>. OER Africa was established to play a leading role in driving the development and use of Open Educational Resources (OER) on the African continent. With funding from the Hewlett Foundation, OER Africa provides a unique opportunity to deploy African experts and expertise to harness the concept of OER to the benefit of higher education systems, institutions, academics, and students on the continent and around the world. More information on OER Africa can be found at <<http://www.oerafrica.org>>.

### *Partner Institutions*

Through campus visits in 2008 by a delegation led by U-M President Mary Sue Coleman, a May 2008 workshop in Accra, Ghana, and a one year design phase in 2009, we have established and will continue to build relationships with several African universities interested in Health OER. The core partner institutions are the University of Ghana (UG), Kwame Nkrumah University of Science and Technology (KNUST), the University of Cape Town (UCT), and the University of the Western Cape (UWC). The University of Michigan has had a decades-long health education partnership with institutions in Ghana and has well-established academic ties with UCT and UWC. Lead individuals for the African institutions are KNUST Health Sciences Provost Peter Donkor, University of Ghana Health Sciences Provost Aaron Lawson, UCT Health Sciences Dean Marian Jacobs, UWC School of Dentistry Dean M.H. Moola, and UWC School of Public Health Senior Academic Program Coordinator Lucy Alexander.

## **C. Inputs**

The key inputs to this proposal are the people and institutions that have established a very effective collaboration and have the expertise and enthusiasm for health OER necessary to build the Network. At the center are the four African institutions that have the support of their senior leadership, the passion of individual faculty members who are creating and using OER-based learning materials produced during the 2009 Design Phase, and the involvement of students who benefit from the OERs and provide feedback to improve them. To maintain the momentum of the initiative while giving the institutions an opportunity to internalize processes and make them sustainable, we are requesting \$30,000 per year per institution over the next two years. Preliminary work plans for the institutions are documented in Appendix 2.

A brief status report on institutional efforts for the first half of 2009 is found in the activities section, below. To illustrate the faculty and institutional commitment and provide a context for the materials being developed, we point first to Dr. Richard Adanu, an obstetrics and gynecology specialist at the University of Ghana. Dr. Adanu has created OER modules on Caesarean-sections that are meant to teach medical students as part of a learning process that involves surgical videos, lecture videos, formative self-quizzes, external resource links, etc. Dr. Adanu notes that WHO does have a video on C-sections, but it is aimed at practicing physicians without much explanation of the reasons underlying the procedure and no interaction or self-assessment, thus the need to create a module specifically designed for training medical students. This is one of nine OER case studies developed to fill a curricular need at UG. These materials are broadly applicable and thus fill a global training gap.

At KNUST, faculty members have built interactive modules to teach students about Buruli ulcer disease, a predominately tropical disease for which appropriate teaching materials are not available in any format. Although Buruli ulcer disease is rarely seen in the U.S., it has been reported in over 30 countries around the world, including Mexico. That is one reason why Dr. Cary Engleberg is planning to use these African-produced modules in teaching when he returns to Michigan after his sabbatical in Ghana, so that Michigan students are provided wider access to global health training. Part of the motivation behind OER at KNUST and other African institutions is to create shareable learning materials that address the problem of large numbers of students crammed into lecture halls and around the beds on ward rounds (so crowded that medical students stand behind the residents and typically cannot see the procedures). Thus, KNUST is creating skills procedure

OER videos, such as “examination of the pregnant patient” for students to review, with built-in learning objectives, self-assessments, etc. To illustrate its creation and use scenarios further, KNUST developed the video “OER in Action,” which allows one to hear directly from the academic leadership, faculty members, and students. KNUST College of Health Sciences Provost Peter Donkor is a practicing surgeon, educator, and administrator. His interest in OER, as well as that of the vast majority of engaged faculty members, comes not from any technical perspective but from someone seeking to enhance education and practice. The KNUST video is available on the open.umich.edu web site at [https://open.umich.edu/oertoolkit/oer\\_intro/oer\\_at\\_knust/oer\\_at\\_knust.html](https://open.umich.edu/oertoolkit/oer_intro/oer_at_knust/oer_at_knust.html).

OER Africa and the University of Michigan have established a cooperative management structure, based on our complementary skills, for facilitating the 2009 efforts that we aim to continue in 2010 and beyond. That structure is documented in Appendix 3. We will jointly manage the inputs and outputs, thus the common proposal text submitted simultaneously by both organizations. Specific responsibilities and requests are as follows.

OER Africa requests support for:

- its administrative tasks that are specific to the African Health OER Network
- the travel and workshop costs of African participants
- the sub-contract for the project assessment, educational design, and dScribe services, which will be filled by looking first for expertise within the Network’s participating institutions

U-M will contribute its management effort (the effort of Ted Hanss and Karen Kost), but requests support for:

- 10% of Dr. Cary Engleberg’s time for one year to continue the collaborative OER deployment and evaluation efforts started during his sabbatical in Ghana
- the ongoing maturation of the dScribe processes and tools and dScribe training and ongoing dScribe mentoring and support by dScribe leaders Pieter Kleymeer (20% for two years) and Kathleen Ludewig (65% for two years) and software developers Kevin Coffman and Ali Asad Lotia (10% and 20%, respectively, for one year)
- the next phases of the study into Network collaboration effectiveness led by Dr. Airong Luo (25% for two years) in coordination with researchers at each site
- coordination with OER Africa on web publishing of OER materials and the online community of practice by U-M OER Publication Manager Susan Topol (20% for two years)
- travel and workshop expenses (this includes dental OER workshops and meetings run by Dr. Lynn Johnson, who has previously and will continue to contribute her time to this effort)

For additional details, see Section 5 for the budget justification, Appendix 1 for the CVs for key participants, and the accompanying spreadsheet with the budget requests from both U-M and OER Africa.

#### **D. Activities**

Our activities emphasize three priorities:

1. developing and deploying the infrastructure for network building, including growth and awareness of the African Health OER Network, generalizable lessons in community building, and policies, practices and tools;
2. aggregating content, by which a critical mass of learning materials will help sustain a community of OER providers and users; and
3. attracting funding and support through a documented business case that will draw from
  - a. our case study experiences building the African Health OER network, and
  - b. assessment efforts intended to show the efficacy of the Network through an evidence chain that connects from OER production through OER use in learning and ultimately to application of that learning.

These three priorities will be achieved through the seven work areas described in detail below, Network Building, Advocacy, Institutional Nurturing, dScribe Process Development, dScribe Services, Search and Discovery, and Evaluation and Impact Analysis:

### *Network Building*

A key aspect of the success of the University of Michigan/OER Africa project has been initiation of an African Health OER Network. This occurred both by building on the relationships established with the four participating African universities and by generating additional interest through parallel projects (for example, work that OER Africa is doing with the Universities of Malawi and Botswana to find, adapt, and deploy OER into medical and nursing programs running at the institutions) and links with associations (for example, a workshop on OER run on behalf of the South African Association of Health Educators).

During the 2009 grant period, we successfully launched a web space for the African Health OER Network, as an integrated part of the broader OER Africa website. Participants in the Network currently include people, amongst others, from:

- OER Africa
- University of Michigan
- Kwame Nkrumah University of Science and Technology
- University of Ghana
- University of Cape Town
- University of the Western Cape
- University of Malawi's Kamuzu College of Nursing
- University of Botswana
- Health Education and Training in Africa (HEAT) Project of the Open University, United Kingdom
- University of Nairobi

Academics from all the above institutions participated in the inaugural meeting of the African Health OER Network in July 2009 in Cape Town.

As custodians of the Network, OER Africa and the University of Michigan have successfully identified an appropriate structure for initially organizing and tagging content. We are currently engaged in drawing content in from Network participants and ensuring its licensing is cleared as required using the dScribe process (described in more detail below). The materials will be posted on institutional repositories and, due to bandwidth limitations, will also be available from regional and global repositories. We will use the [oerafrica.org](http://oerafrica.org) site as the primary regional repository for the African-produced materials to help campuses conserve their external bandwidth.

In order to grow the Network into a self-sustaining initiative, small investments in further activities are required. These are as follows:

1. Growth of Network participation through OER advocacy and sensitization processes within institutions and through key African and global health associations of different kinds (see below).
2. Aggregation of a critical mass of content to ensure that the African Health OER Network web space becomes the preferential point of access for African academics seeking and sharing health education content. This will require
  - a. Locating new sources of content that individuals, institutions, and/or project consortia are willing to share under a Creative Commons or equivalent licence;
  - b. Seeking permission from the copyright holders to release the content for sharing through the African Health OER Network;
  - c. Running content through the dScribe process to ensure that it conforms to all legal requirements before being shared.

3. Supporting African Health OER Network members to use the tools available through the web space at oerafrica.org.
4. Further technical development of the Health OER Network space, including:
  - a. Integration of a peer feedback facility to enable Network participants to engage in collaborative review of content where participants request such review and volunteers can be found to undertake the feedback process;
  - b. Upgrading the profile facility of the space to enable people to indicate their areas of interest/expertise, so that other participants in the Network can find people with shared interests or specific kinds of skills;
  - c. Building data export relationships with OER Commons, OpenCourseWare Consortium, and the Global Alliance to facilitate export of content into global OER repositories (both to enhance discoverability and eliminate unnecessary duplication in repository facilities around the world).

### *Advocacy*

In the first phase of this project, we conducted sensitization workshops at the four African universities, whilst policy reviews and content development workshops were held as requested at these institutions. Sensitization workshops served to introduce faculty and staff to the notion and underlying principles of OER as well as to alternative licensing frameworks such as Creative Commons. In most instances, both were new to participants and served to allow them to envisage how OER might be used as a means to improve teaching and learning within their faculties or indeed across their institutions. Furthermore, these initial workshops served to alert senior administration and departmental heads to the fact that adopting processes in support of the use, development, and dissemination of OER would only be possible if this were integrated into the institutional policy frameworks. Accordingly, policy review becomes integral to advocacy for OER, by allowing institutions to appreciate which of their policies, e.g., remuneration, promotion, intellectual property, quality assurance, etc., serve to hinder or support the use of OER. Finally, within this continuum, it was apparent that faculty would need to acquire new pedagogical skills in order to use, create, adapt, and share OER. In this regard, content development workshops form the third tier of the Advocacy strategy.

The above framework proved essential to the early success of the project's first phase and is leading all institutions to generate new policy frameworks to support more systematic adoption of OER. Accordingly, in keeping with the objective of using OER to fill identified needs within university health faculties, we propose to introduce this approach to any institutions that show interest in joining the African Health OER Network. Additionally, we will actively seek to generate awareness of this approach to as many universities and health faculties as we are able to reach over the course of this grant.

The proposed process is as follows:

1. We will facilitate sensitization workshops for health faculties at a minimum of four new institutions / medical bodies / universities, in keeping with the aims described above.
2. In support of policy review, universities participating in the workshops will gather and supply institutional policy documentation pertaining to intellectual property ownership of materials and curriculum design; faculty support/recognition/remuneration; content standards and quality assurance; technology infrastructure; and financial support/sustainability. For example, from our 2009 policy reviews have emerged updated policy recommendations to include OER production as a review criterion for faculty promotion.
3. We will analyze the above documentation for possible gaps regarding OER implementation.
4. We will plan workshops to cover any gaps in such areas as:
  - Faculty support/recognition
  - Localization/adaptation/translation
  - Intellectual property issues
  - Technology infrastructure



- Content standards and quality assurance
  - Financial support/sustainability
  - Pedagogical approaches to teaching and learning in health programs
  - Instructional design and materials development skills
  - Cultural acceptance of learner-centered approaches to health education
5. We will work with institutions to turn the results of these focused workshops into detailed strategies for policy amendments responsive to their needs. With permission from the participating institutions, we will post the new policy frameworks on the OER Africa site (including the outputs from the reviews conducted in 2009).
  6. To facilitate scaling and capacity building, we will recruit workshop planners and leaders from the original four African universities and, in the future, from others that have participated in sensitization and other workshops.
  7. We will actively seek to identify and list African and international associations of health practitioners (e.g., Colleges of Surgeons, Associations of Dentists, etc.) in whose major events (conferences, annual general meetings, etc.) African Health OER Network members might participate in order to introduce new audiences to the concept of OER.
  8. We will host/facilitate one international health education meeting (through an existing grant).

#### *Institutional Nurturing*

It is anticipated that African institutions involved in the first phase of the Health OER initiative will require further support to consolidate lessons of experience and then to begin to institutionalize changes to sustain momentum.

In many ways the first phase has comprised a set of largely stand-alone projects that have helped to:

- raise the awareness of participants to the potential of OER;
- identify some of the practical implications of moving towards a more resource-based learning approach, increasingly built upon the identification and adaptation of existing OERs;
- continue to change institutional policies, procedures, and ways of working in order to sustain a resource-based learning approach that both uses existing OER and generates new OER, including revised versions; and,
- ensure that content developed during the design phase is shared between the five universities and potentially with all others who choose to join the extended African Health OER Network, e.g., by finalizing draft OER policies and have them submitted to university senates, in order to facilitate this.

During the 2009 Design Phase, each university received an institutional grant of US\$40,000. In July 2009 at the first inter-institutional health OER workshop in Cape Town, each university reported on its progress during the first half of the year. Highlights from those reports are:

- KNUST has held an intensive series of meetings and workshops, including an OER Africa-led policy review workshop that contributed new OER policies to an underway institutional policy review; hosted dScribe and OER production training led by U-M; established a formal partnership between the College of Health Sciences and the Department of Communication Design to provide technical and design assistance with OER production; appointed staff to provide dScribe and production assistance; through a Gates Foundation grant, secured software licenses and equipment (laptops, camera microphones, etc.) for OER creation; developed and locally deployed OERs around various lab techniques (e.g., PCR, Gram staining); and has additional OER publishing work underway (urinary track catheterization, newborn assessments, cleft palate development). KNUST has deployed a local OER repository available for internal use that will be opened for general access when the OER policies receive final approval.
- UG has hosted policy review and OER production workshops led by OER Africa and U-M and is now running awareness and production workshops led by their own faculty members; has an institutional policy under development that will establish a peer review system for material prior to publication and that will reward OER material development with credit toward promotion; through a Gates Foundation

grant, secured software licenses and equipment (laptops, camera microphones, etc.) for OER creation; produced OER materials, including clinical case studies in obstetrics and gynecology with built-in self-assessment quizzes with feedback; and started materials in diet and oral/dental health. UG is preparing a local server on which it will host these materials.

- The UCT College of Health Sciences has held awareness raising seminars (including sessions facilitated by OER Africa) and dScribe and content workshops, coordinating with the newly launched university-wide OER@UCT effort (funded by the Shuttleworth Foundation); audited UCT health sciences learning materials for licensing status with their local dScribe team; begun the process of OER production and publishing with obstetrics and gynecology and occupational therapy learning materials; evaluated the use of OERca (web software described below) from U-M servers and, after providing feedback on its functionality, began the installation of a local copy of the current release.
- The UWC School of Public Health has held sensitization and production workshops (including sessions facilitated by OER Africa), hosted dScribe training, is working on a set of case studies (based on peer-reviewed research) and distance learning materials (e.g., measuring health and disease and health promotion approaches to alcohol problems), and is training librarians to support a repository of public health OERs. UWC has a server, [freecourseware.uwc.ac.za](http://freecourseware.uwc.ac.za), on which the materials will be placed when complete. The UWC Dental School has been conducting a detailed needs assessment and, as a result, is focusing on producing clinical skills training videos and on an objective structured clinical exam (OSCE) illustrated with photographs to enable students to self-assess their learning and competence, using scenarios of patients “in the chair.” The Dental School has also hosted sensitization and production workshops with the involvement of OER Africa and U-M. The UWC eLearning Group has now engaged in OER efforts at both the School of Public Health and the Dental School.

It is anticipated that there will be a need for further support to institutions in two areas:

1. support in the form of **direct grants** to institutions to, for example, extend the contracts of short-term support staff to cover the period of transition from initial project to institutionalizing new structures and processes (e.g., technical support, editing, copyright clearance, content searching) as well as some additional equipment procurement – all of which will vary from institution to institution.
2. support in the form of **ongoing inter-institutional and inter-organisational consultation** in response to needs. Here it is anticipated that there will likely be a need for further policy development, for example, to develop or refine internal/external quality assurance (including peer review), requirements for materials development, as well as further support from a curriculum review, learning design, and integrated assessment perspective.

It will be important to hold a second review workshop in 2010 to try to identify and aggregate lessons of experience from the institutionalizing process.

#### *dScribe Process Development*

The dScribe process was developed as a student-centric OER publishing system at the University of Michigan. In essence, dScribe is simply a structured process to review existing content in order to ensure that all copyrights are cleared, enabling the content to be released as OER. It leverages the existing student-faculty relationship to gather, vet, and publish course material as OER. For example, a student, after a two hour dScribe training session, will volunteer to collect the weekly PowerPoint presentations from his or her professor along with the syllabus, handouts, and other course materials. The student will review the PowerPoint slides and other materials and make recommendations for removing or replacing any images or text for which the professor does not have the rights to re-publish. The student dScribe reviews these recommendations with the professor who gives final approval before the materials are published on the institutional repository as OER. dScribes also work with faculty to create new learning materials, sharing information about how to build OERs from scratch and by using existing materials licensed for sharing and reuse. Examples include wikis, the clinical skills videos and animations mentioned in previous African-produced examples, etc. The dScribe project establishes a powerful new participatory paradigm in higher education by involving students in an active teaching and learning process. In this example, the student is familiar with the

course material because he or she is sitting in the class and understands the context of the materials. The student, in reviewing the materials, is putting him or herself in the mind of the professor, which can lead to a greater appreciation of the course materials than would be achieved by simply reviewing the materials in “study mode,” per exit interviews with student dScribes. Student dScribes have also found professors receptive to suggested changes in the materials that can make them more clear. This process is being developed to be portable and adaptable. For example, students are not required for the process. Individual faculty members or staff can and do follow the dScribe workflow processes without student assistance.

While the dScribe process can be operated manually by following the detailed steps of the documented workflow process, U-M developed a web-based, open source software tool called OERca (for OER content analysis) to automate steps, such as disassembling a PowerPoint presentation into its component images, tracking the progress of content clearing, and getting faculty member feedback on the work in process.

During the 2009 design phase, we learned about several challenges related to OERca deployment in Africa. For one, bandwidth constraints limit access to U-M’s servers for anything other than small files. Therefore, we propose a number of steps that will enhance the dScribe process’s applicability in Africa:

1. We will enhance manual and explore stand-alone (e.g., spreadsheet) alternatives to the OERca tool.
2. We will modify the U-M internally funded OERca development plan for the next release in 2010 to allow packaging for local installation, as requested by African institutions.
3. We will explore with the partners any requirements to add features to OERca to facilitate use in a distributed (OER network) environment, such as replicating the dashboard information that indicates the number of projects underway and the status of the clearing process. The actual OER content will likely not be replicated across sites.
4. We will provide consulting and support for sites that elect to either install OERca or run it from a remote location (in Africa or at U-M).
5. We will generate proposals for collaboratively developing, among the Network partners, future releases of OERca built on the identified requirements.

In addition, we will continue to refine the dScribe process:

1. We will make quality improvements to the processes, such as improving and better accommodating preferred localized incentives for student participation and streamlining the workflow based on user feedback.
2. We will facilitate easy customization of the process to local sites, including
  - a. integrating pointers to relevant legislation, case law, etc.
  - b. developing localized case books or reports on copyright legislation and practice
3. Capacity building will be provided through
  - a. enhanced training materials
  - b. delivery of workshops focused on “training the trainers” for developing local expertise
  - c. outreach, e.g., through a web page tutorial, to African Health OER Network participants without institutional support, including student-initiated efforts to create, adapt, re-use, and share OER
  - d. general mentoring provided by both U-M and OER Africa (an OER Africa staff person was trained in the dScribe process in 2009)
4. Assessment: Explore methods of understanding and capitalizing on the natural incentive structures that would lead students to participate in the dScribe effort as volunteers, to meet national service obligations, for credit, or for pay and for faculty to participate as OER providers.

### *dScribe Services*

Some faculties and institutions may have the desire and content expertise to participate in the OER network but not the capacity, at least at the onset, to undertake the clearing processes. In order to expedite the availability of their learning materials, we will set up a dScribe services function in the network. Based on the training described above, we will establish one or more sites in Africa that are willing to offer dScribe services to outside institutions. OER Africa has included funds in its budget to pay dScribes to offer this service to African universities, either within an institution to participating academics or between institutions, to provide support where some institutions may face capacity constraints.

### *Search and Discovery*

Initial efforts are underway to expand the search and discovery capabilities for OER. The format and structure of the content delivery is critical to taking advantage of existing and burgeoning tools such as OER Commons, DiscoverEd from Creative Commons, and upcoming Yahoo! and Google search tools. African Health OER Network participants wishing to share content with the global community will not only need stable platforms for OER content delivery but will also need to help create and conform to global standards for web publishing style guidelines, structured and machine-readable metadata (e.g., RDFa), and content and metadata delivery mechanisms (e.g., RSS, atom). In order to make these efforts applicable and accessible to the Network, we will:

1. Identify and partner with metadata experts, such as African and other medical librarians (including those from institutions that are part of the African Health OER Network), to collaboratively develop the following scenarios, selections of structure vocabularies, thesauri, search interface recommendations, etc.
2. Develop use scenarios of OER search for African academics and students;
3. Identify structured vocabularies and user-generated tagging infrastructure and a publishing style guide (e.g., the Unified Medical Language System or UMLS);
4. Build a Health OER instance of DiscoverEd integrated with other curator registries;
5. Research search interfaces for particular systems (e.g., portals, university library pages) and applications (Moodle, Sakai, Blackboard, etc.); and,
6. Develop metadata and metadata delivery guidelines.

### *Evaluation and Impact Analysis*

In 2009, we are conducting an evaluation of the work done to date. This work is being undertaken by an external evaluator, Professor Ken Harley, who is a highly respected academic and former Dean of the Faculty of Education at the University of KwaZulu-Natal in South Africa. His evaluation study will use interview and observation data, project documents, and produced OER to assemble a holistic emergent picture of successes, challenges, and lessons learned in respect of (a) institutional policy engagement and (b) Health OER publishing projects (the latter comprising the OER value proposition and curriculum issues). Similarities across the range of institutional types participating in the project could provide robust indicators of successes, challenges, and lessons learned. At the same time, it is recognized that any overall picture will need to be nuanced by institutional particularity. For example, different orientations to distance and contact teaching are likely to have produced different experiences and blockages across participating universities, and analysis will need to take account of these. The final report is expected to be complete by the end of January 2010 and will inform our planning for 2010 and beyond.

In order to attract new funding sources, we intend to measure the impact of OER development and deployment on institutional and individual attitudes and behaviors. Preliminary discussions with the OLnet partnership of Carnegie Mellon University and the UK Open University have revealed mutual interest in evidence-based approaches to documenting the impact of OER. Therefore, we propose the Network liaise with OLnet.

The Network assessment efforts will build the case for additional funding for research studies into health-specific outcomes in education, faculty productivity, and patient populations. To accomplish this, the network

will continue to assess, building on a pilot study in 2009, collaboration capacity of the network itself, which can be generalized to other networks. Coordinated with the program assessment noted above, we will study the early adopter experiences in building, using, and further adapting OER materials. The 2009 pilot study, titled “Creating a Productive, Efficient, and Sustainable Collaboration Model of Health OER” has received institutional review board approval at each of the five universities. Dr. Airong Luo and a local research partner at each university will distribute surveys, conduct interviews and focus groups, and observe faculty members and students during October. The interview protocol has such categories as “the nature of the work,” delving into OER task specifics; “common ground,” exploring inter-institutional collaboration styles; “collaboration readiness,” probing challenges, motivation, concerns, and trust; “management, planning, and decision making;” and “technology readiness.” The survey data will be compared, for example, with OER-related surveys conducted at U-M for the past two years and establish the basis of a intended longitudinal study.

In 2010, we will initiate pilot studies of the early adopters that will result in case studies and preliminary impact analysis of the evidence chain of OER efficacy through production, use in learning, and application that will inform follow-on studies. We will start by designing small studies/experiments to test hypotheses related to OER efficacy and fit them into a larger analysis. There is a study underway as part of the 2009 Design Phase that will feed into the specific plans for establishing this evidence chain. This study will be completed by January 2010 and is looking at a variety of potential measures of faculty productivity (e.g., Are student contact hours affected by OER deployment? If faculty are more efficient, what has happened with the newly available time?), faculty job satisfaction (which may drive OER production), faculty retention rates, scholarly publishing rates (e.g., learning materials submitted to peer review sites), student learning outcomes, initial take up and adaptation (What have the OER materials replaced in the current learning model?), diffusion (What is the take up of African-produced OERs by other institutions? What does this tell us about the demand side of OER?), and the ability to achieve large-scale interventions through the use of OERs (e.g., training in male circumcision to address AIDS transmission).

Measuring the impact of OER on learning outcomes faces the challenge of separating out the benefits of e-learning, which has had years of exhaustive study that we do not intend to duplicate. But, as e-learning and OER are often co-dependent, in some cases we may find building on previous e-learning research is effective. We may be able to study the availability of learning materials enabled by OER licensing on learning outcomes where, in contrast, the cost and media formats of other learning materials have meant learners often went without. We will also explore the portability of Health OER materials by, for example, deploying African-produced learning modules in U-M courses during 2010 and 2011 and gathering student and faculty feedback.

We anticipate data will be collected by surveys, observation, interviews, and from public health records. Given that we are starting with four African institutions that have, for the most part, launched their OER efforts in 2009, the sample sizes for early assessments will be small and will focus on qualitative analysis. Overall, the impact analysis efforts will have short, medium, and long term components, which will provide us the ability to provide early evidence during the 2010-2011 period (e.g., through case studies) and establish the basis for a longer term, mixed methods analysis into whether OER-enabled learning interventions can have an impact on patient care outcomes.

The partnership will, in summary:

1. Investigate the socio-technical aspects of collaborative practices across participant sites to understand the collaborative needs of faculty members, students, and administrators.
2. Identify social and technical principles that can lead to sustainable and effective collaboration on creation of OER learning resources by participants from developed and developing countries.
3. Make recommendations on how to overcome challenges caused by geographical distribution of participants, cultural and competitive barriers to collaboration, disparity of social and technical infrastructure of developed and developing countries, and diverse needs of participants both between developed and developing countries and among developing countries themselves.

4. Undertake pilot studies of the early adopters that will result in case studies and preliminary impact analysis of the evidence chain of OER efficacy through production, use in learning, and application that will inform follow-on studies.
5. Undertake a program review that builds on the formative assessment undertaken in 2009, the outputs of which will inform the unfolding of the project and future planning. In 2009 the program review centered on institutional policies and curriculum issues and was conducted through face-to-face interviews. Key questions in 2009 included “Since the project began, have there been steps to reduce policy barriers to OER development, and how effective have they been?”, “Are teaching publications recognized as ‘outputs’ for promotion or other purposes?”, “Has the Network led to use of materials across partners?”, “Has the use of OERs influenced the way you think about teaching?”, and, for students, “Did you experience the OERs as an integral part of the curriculum or as an extra 'add on' type of activity?” In the next stage we will track the ongoing progress in reducing policy barriers to OER development and use (including expansion from the colleges of health sciences to institution-wide awareness), experiences of faculty members and students in integrating OER production and use into the curriculum, and, with the increasing diversity of Network participants, compare and contrast the programmatic assessment data from different institutions and countries. OER Africa will assume the primary responsibility for finding a consultant from Africa who is knowledgeable in program evaluation and understands the needs and perspectives of all involved institutions. This person will undertake a project assessment based on criteria developed by the partner institutions.
6. Gather feedback from workshop participants. We will track feedback from the new institutions and compare that with what we have learned working among the core participants during the earlier phases.
7. Measure growth in use of the online facilities of the Health OER Network, and follow up with the users to determine how this use is adding value to their network.
8. Study faculty engagement. For example, faculty members will provide insight as to the support they require to adapt, adopt and co-create materials and whether they have adequate time to work on the project. We will explore what motivates faculty members and students to participate in OER efforts and how they will balance OER engagements with other responsibilities.
9. Query students as to the usefulness of and ease-of-access to the OER materials.
10. Measure institutional engagement, in part, by asking faculty members and senior leadership what they gained, if anything, from participation in this process. That is, what contributions do they feel this project made to their institution’s development, strategic objectives, sustainability, and organizational processes with regard to materials development, collegial support, professional development and recognition, and remuneration. From this assessment, we will continue to enhance a value proposition for participating in OER-based shared learning initiatives for institutions in both developed and developing countries.
11. Publish the dScribe clearing and publishing workflow online, as updated by the core and expanding participating institutions, for public comment and review the workflow at relevant conferences (e.g., OCW Consortium).

Approximately 14% of our overall budget will go to evaluation and impact analysis, including the program evaluation consultant, the analysis of faculty productivity and student outcomes, and the socio-technical study into institutional capacity for collaborative engagement.

## E. Outcomes

### *Networking Building Outcomes*

1. Document at least two case studies that provide a rich description of the African Health OER collaboration, complementing the impact analysis efforts.
2. At least 300 registered Network participants by December 2011. (Network participants are defined as individuals, such as academic or administrative staff and students, who will participate in the Network as contributors, users, or facilitators of health OER materials.)
3. Electronic signatures of at least 150 individuals and 10 faculties/institutions on the to-be-developed Statement of Commitment by December 2011.
4. At least 100 tagged OERs, combined with associated assets, cleared for release and added by OER Africa and U-M by December 2011 (defined as a resource that covers a discrete area of learning, such as a unit or module within a course, a complete lesson plan, a simulation, a video case study, and so on).
5. At least 50 tagged OERs uploaded/shared by Network participants by December 2010.
6. User profile facility upgraded by April 2010.
7. Peer feedback facility integrated into the website by July 2010. (This is intended to be an informal process used for getting comments in advance of submitting materials to a formal peer review system, such as MedEdPortal. Institutional support for faculty recognition and reward for submission and acceptance to MedEdPortal and similar peer review systems is part of the policy and sensitization processes.)
8. Integration of the African Health OER site with at least three global repositories by December 2011 to facilitate sharing of OER metadata with global repositories.
9. Annual meeting of the Network successfully concluded by September 2010.
10. Growth in website use, aggregated across the Network, as measured by unique visitors, page hits, downloads, and length of visits.
11. Generalized Toolkit on “Establishing a Successful OER Network,” bringing together lessons learned and tools generated during process into a dedicated page on the OER Africa website for transference into other domains of higher education and other education sectors as appropriate.
12. Evaluation report on success and impact of the Network activities during 2010 and 2011 submitted for publication in peer-reviewed journals (e.g., medical education and global health and development journals).
13. Successful deployment of mechanisms to create faculty interest in contributing resources.

We are designing the African Health OER Network to be a model network. Thus, we expect many of the institutional engagement outcomes can be generalized, which is why we benefit from OER Africa’s activities with other universities and in other disciplines and why OER Africa believes it can enhance its continent-wide efforts using lessons from this initiative. The areas of potential differentiation, such as patient privacy and societal norms around displaying medical images, could be examined for applicability to other domain, such as the visual arts. The workflow and software tools used in the OER clearing and publishing process are discipline-independent. All of the impact analysis can be broadly applied except for the specific instrument that we will design for measuring student learning outcomes, which would be health education specific.

### *Advocacy Outcomes*

1. Policy review workshops concluded with at least four new institutions/faculties of health in Africa.
2. Policy review reports concluded for at least four new institutions/faculties of health in Africa.
3. Strategies to establish OER institutional/faculty policies developed for at least two of these institutions.

### *Institutional Nurturing Outcomes*

1. Dedicated appointments made to drive OER development on conclusion of this phase of the African Health OER Network, in order to ensure post-project sustainability.
2. At least 15 OERs created/adapted and shared annually with the African Health OER Network by each institution.
3. Evidence of use of OERs produced by other institutions in programs offered to students at each participating institution.
4. New/revised policies on OER successfully in place at the four primary institutional partners.

### *dScribe Process Development Outcomes*

1. Localized and updated dScribe processes by July 2011.
2. At least one dScribe trained per institution by December 2011.
3. Successful installation of at least one instance of OERca version 2 (2010 release) in an African institution by December 2011.

### *dScribe Services Outcomes*

1. At least one African institution offering external dScribe services by July 2010.
2. At least three Network participants using dScribe services by December 2010.
3. At least three Network participants transitioned to self-sufficiency by December 2011.
4. Business case analysis for fee-based dScribe services complete by December 2011.

### *Search and Discovery Outcomes*

1. All OERs with metadata when published on OER Africa site.
2. Health OER DiscoverEd instance by December 2010.
3. Growth in search traffic measured.

### *Evaluation and Impact Analysis Outcomes*

1. Program evaluations done mid-project (by December 2010) and at completion (by December 2011).
2. Case studies from 2009 Design Phase published by December 2010.
3. Research-based evaluation of OER deployment studied in 2010 and submitted for publication by July 2011.
4. Understanding of the barriers to and enablers of inter-institutional collaboration around OER development and use (documented in short- and medium-term recommendations published to the broad OER communities). Pilot socio-technical analysis published by July 2010.
5. Broader socio-technical analysis fieldwork completed by July 2011 and submitted for publication by December 2011.

## **F. Intellectual Property Rights**

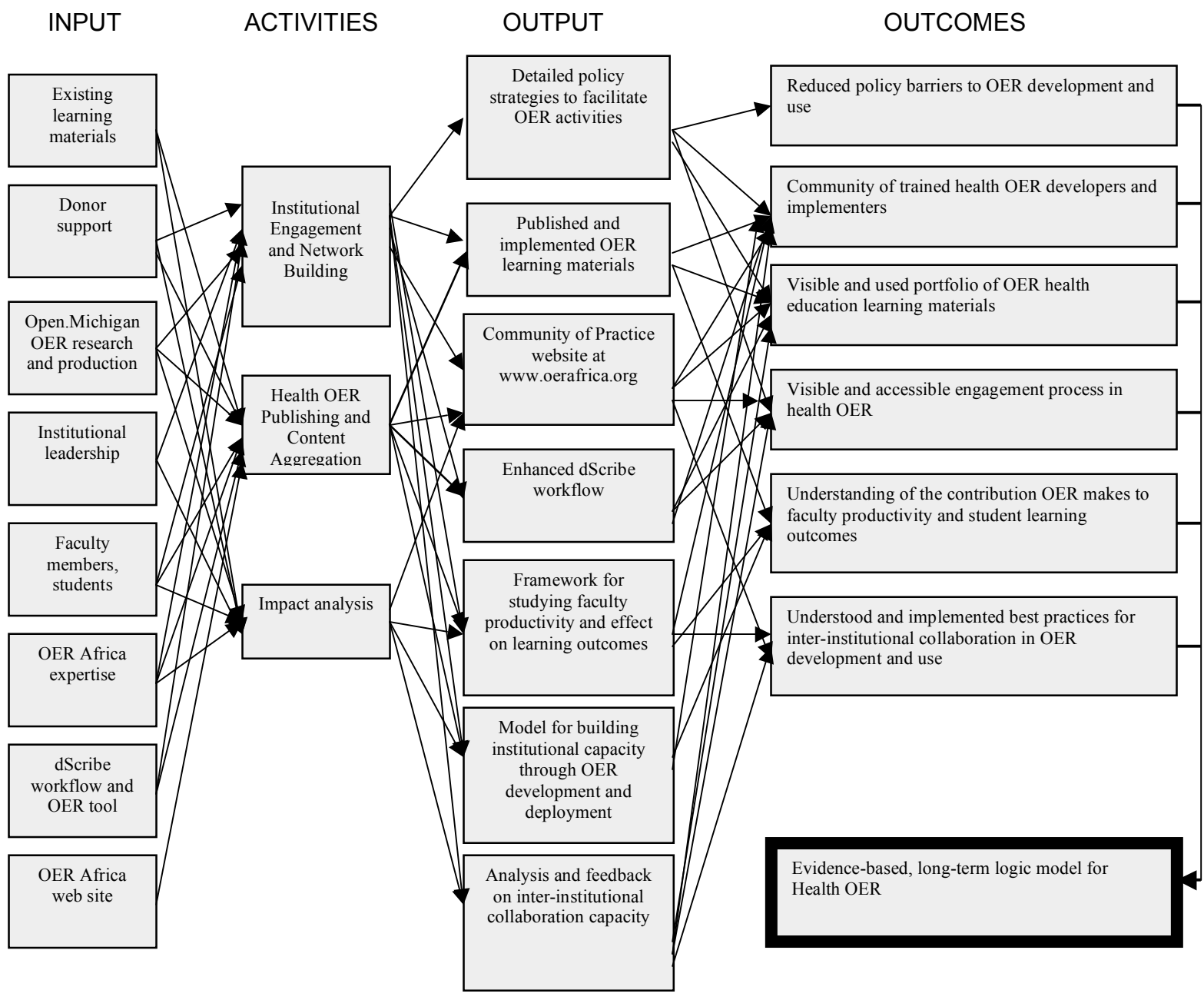
1. The respective authors (institutions and individual faculty members as determined by local policy) will hold the copyright for materials created in this collaboration.
2. Learning materials published through this effort will use the Creative Commons 3.0 License set (preferably BY-Attribution) or appropriate Creative Commons version as applicable by local copyright law. Any differences in national copyright law will be explored during the institutional engagement efforts so that we can support publishing materials with multiple authors and multiple licenses.
3. Supporting materials (reports, publications, workflow documents, etc.) will also be published using Creative Commons licenses.



### **G. Compelling Reasons for the Grant**

1. The grant will ensure that the OER infrastructure model successfully deployed during the 2009 Health OER Design Phase maintains momentum with the current participants and begins growing the African Health OER Network while we seek support for sustaining the network and its growing, critical mass collection of African-produced health OER content. Activities and outcomes will be scaled up as the network becomes more experienced and additional funding sources are identified.
2. The grant will start building the basis for an evidence chain that connects from faculty productivity and career satisfaction measures through efficacy in learning contexts to application of acquired knowledge in health care settings.
3. Lessons learned in building this network will be useful in building other subject-based networks in Africa.

**SECTION 3. LOGIC MODEL**



## SECTION 4. PROGRAM CHART

CATEGORY	INDICATORS	BASELINES	TARGETS AND TARGET DATES
<b>Activities/Outputs</b>			
◆ Network building	<ul style="list-style-type: none"> <li>◆ Number of registered participants</li> <li>◆ Signatures on the Statement of Commitment</li> <li>◆ Number of tagged and uploaded OERs</li> <li>◆ User profile facility</li> <li>◆ Peer feedback facility</li> <li>◆ Global repository links</li> <li>◆ 2<sup>nd</sup> annual meeting</li> <li>◆ Metrics of web use</li> <li>◆ Published toolkit</li> <li>◆ Publications</li> <li>◆ Faculty recruitment mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>◆ Core institutions and guests at first annual meeting</li> <li>◆ OER pilot materials created during design phase</li> <li>◆ Oerafrica.org/health and Open.umich.edu sites</li> <li>◆ First annual meeting</li> </ul>	<ul style="list-style-type: none"> <li>◆ Preliminary business case for potential donors by January 2010</li> <li>◆ One case study by December 2010 and two by December 2011.</li> <li>◆ 300 registered participants by December 2011</li> <li>◆ 150 individual and 10 faculties signed up to Statement of Commitment by December 2011</li> <li>◆ 50 tagged OERs on oerafrica.org site by December 2010; 100 by December 2011.</li> <li>◆ User profile registry by April 2010</li> <li>◆ Peer feedback facility by July 2010</li> <li>◆ Global repository integration by December 2011</li> <li>◆ 2<sup>nd</sup> annual meeting by September 2010</li> <li>◆ Jointly submitted publications by December 2010</li> </ul>
◆ Advocacy	<ul style="list-style-type: none"> <li>◆ Policy review workshops held</li> <li>◆ Policy review reports shared</li> <li>◆ Policy review strategies in place</li> </ul>	<ul style="list-style-type: none"> <li>◆ Policy reviews held by core institutions in 2009</li> </ul>	<ul style="list-style-type: none"> <li>◆ Policy review workshops (typically with five to ten participants) and reports with at least four new institutions by December 2011</li> <li>◆ Strategies to establish OER policies with two institutions by December 2011.</li> </ul>
◆ Institutional Nurturing	<ul style="list-style-type: none"> <li>◆ Dedicated institutional staff (academic or support) in place</li> <li>◆ Number of OERs created per institution</li> <li>◆ Use of OERs within institutions</li> <li>◆ New/revised OER policies</li> </ul>	<ul style="list-style-type: none"> <li>◆ Early adopter staff (and national service workers in Ghana)</li> <li>◆ OER pilot materials created during design phase</li> <li>◆ Initial policy workshops and analysis</li> </ul>	<ul style="list-style-type: none"> <li>◆ Staff named by April 2010</li> <li>◆ At least 15 OERs published per institution each year (2010 and 2011)</li> <li>◆ OER in use by December 2010</li> <li>◆ New/revised policies in place at four core institutions by December 2011</li> </ul>
◆ dScribe Process Development	<ul style="list-style-type: none"> <li>◆ Updated dScribe processes</li> <li>◆ Number of people trained</li> <li>◆ Installation of OERca outside U-M</li> </ul>	<ul style="list-style-type: none"> <li>◆ Current dScribe process</li> <li>◆ Current dScribes</li> <li>◆ OERca instance at U-M</li> </ul>	<ul style="list-style-type: none"> <li>◆ Localized and updated dScribe processes by July 2011</li> <li>◆ At least one dScribe trained per institution by December 2011</li> <li>◆ At least one African-based installation of OERca by December 2011</li> </ul>
◆ dScribe Services	<ul style="list-style-type: none"> <li>◆ African sites offering dScribe services</li> <li>◆ Sites subscribing to dScribe services</li> <li>◆ Subscribing sites transitioned to self-sufficiency</li> <li>◆ Fee-based services</li> </ul>	<ul style="list-style-type: none"> <li>◆ Current dScribe process</li> </ul>	<ul style="list-style-type: none"> <li>◆ At least one African institution offering external dScribe services by July 2010</li> <li>◆ At least three Network participants using dScribe service by December 2010</li> <li>◆ At least three Network participants transitioned to self-sufficiency by December 2011</li> <li>◆ Business model for fee-based dScribe services by December 2011</li> </ul>

◆ Search and discovery	◆ Tagged OERs ◆ Health OER DiscoverEd instance ◆ Inbound searches	◆ None	◆ All OERs with metadata when published on OER Africa site ◆ Health OER DiscoverEd instance by December 2010 ◆ Growth in search traffic measured
◆ Evaluation and Impact analysis	◆ OER Africa selects evaluator from Africa ◆ Evaluator meets with grant participants to understand the long-term goals ◆ Metrics (qualitative and quantitative) are agreed upon that will measure the goals ◆ Studies of faculty, students, and patient care ◆ Addressing socio-technical issues related to intra- and inter-institutional collaboration	◆ Formative program evaluation done in 2009 ◆ Framework for research evaluation done in 2009 ◆ Pilot socio-technical collaboration analysis done in 2009	◆ Program evaluations done mid—project (by December 2010) and at completion (by December 2011) ◆ Case studies from 2009 Design Phase published by December 2010. ◆ Research-based evaluation of OER deployment studied in 2010 and submitted for publication by July 2011 ◆ Pilot socio-technical analysis published by July 2010 ◆ Broader sociotechnical analysis field work completed by July 2011 and submitted for publication by December 2011

### **Intermediate Outcomes**

◆ Highly used community of practice web site that augments and highlights institutional and global repositories	◆ Best practices materials covering institutional policies, outcomes-based learning using OER, etc. ◆ Case studies from multiple health science domains ◆ Research publications on the effective use of OER-based learning materials ◆ Search capability across growing collections of health OER learning materials	◆ Oerafrica.org/health site	◆ 3-4 years
◆ Enhanced student learning	◆ Research results on improved learning outcomes correlated to OER access	◆ None	◆ 3-4 years

### **Ultimate Outcomes**

◆ Increased numbers of health care provider graduates and improved quality of training and performance	◆ Graduation levels for physicians, dentists, nurses, public health workers, etc. ◆ Scores on standardized board tests	◆ Currently there is more student demand than the system can support	◆ 10-15 years
◆ Improved outcomes for patient populations	◆ Health care statistics	◆ Sub-optimal patient/provider ratios	◆ 10-15 years

## SECTION 5. FINANCIAL INFORMATION

### 5.1 Detailed Budget Description

See accompanying spreadsheet for budget details.

#### Personnel

*Ted Hanss, MBA* will serve as principal investigator on this proposal and as the liaison to OER Africa, spending 20% of his effort on this project. The Office of Enabling Technologies will pay his entire effort towards this project. As the Director of the Office of Enabling Technologies, he directs the dScribe efforts (both regular staff serving as dScribe 2s and student dScribes), OER software tool development team, and assessment and evaluation activities. He will provide oversight for all aspects of the project and coordinate communication between teams, faculty, international colleagues, and the foundation. He will ensure that the project meets timelines and objectives stated in this proposal.

*Cary Engleberg, MD* spent September 2008 through August 2009 in Ghana working on content projects with colleagues at UG and KNUST. As part of the nurturing and advocacy efforts, Dr. Engleberg will continue the joint work underway, particularly the assessment activities, and make at least one trip to Africa to facilitate the inter-institutional collaborative efforts.

*Pieter Kleymeer and Garin Fons* are leaders of the dScribe processes, working for the Office of Enabling Technologies. Pieter and Garin have advanced degrees in information sciences, with special training in both information technology and intellectual property management. They train dScribes, train people to become new dScribe trainers, monitor and supervise dScribe activity at U-M, mentor dScribes at other institutions, develop and maintain the dScribe process, provide tracking and triage of educational objects under review, and provide statistical and financial data on ongoing processes. Kleymeer will spend 20% of his time on this project, including working with institutions on OERca user-based design requirements, while Fons will serve as a consultant, concurrent with his current position.

*Karen Kost* is a senior administrative assistant in the Office of Enabling Technologies. She will spend 5% of her University effort on this project, paid for by the Office of Enabling Technologies. Ms. Kost will provide administrative support for the project including internal and external communication, production of documents and reports, facilitating communications, maintaining financial records, providing disbursements, and generating financial reports for this project.

*Kathleen Ludewig* is a graduate student research assistant for the Open Educational Resources component of the Open.Michigan initiative. Kathleen is a “dScribe 2,” training and supervising dScribes 1s. Kathleen is developing training materials for dScribes and faculty members wishing to develop, use, and adapt OER. Kathleen spent eight weeks in Ghana and three weeks in South Africa during 2009 running policy and dScribe workshops and researching policy issues under the mentorship of Catherine Ngugi. The institutions are now running their own internal workshops using the materials she developed while in Ghana and South Africa. In 2010 and 2011 she will spend 65% of her time on this project, continuing to co-develop training materials with a focus on self-directed learning of OER policy and production issues.

*Airong Luo, PhD*, is a social scientist in the Office of Enabling Technologies and leads the socio-technical investigation into collaborative practices across participant sites. Based on her field work during the 2009 Design Phase, Dr. Luo will design and implement an updated study protocol drawing from such tools as survey instruments, interviews, and observation. She will provide feedback for improving collaborations during and make recommendations on the scaled up African Health OER Network efforts in 2010 and beyond. Dr. Luo will spend 25% of her time on this assessment effort.

*Susan Topol* is the University of Michigan OER Publication Manager and responsible for setting the strategy and approach for communications in all media. She coordinates with OER Africa on the [www.oerafrica.org](http://www.oerafrica.org) community of practice site, setting the standards for publishing text, graphics, and video materials from U-M and partners and providing an interactive work environment for the collaborative development and publishing of open educational resources. Susan will spend 20% of her time in this role.

*Ali Asad Lotia* and *Kevin Coffman* are software developers within the Office of Enabling Technologies with lead responsibility for OERca. Lotia and Coffman will spend 20% and 10%, respectively, of their time in 2010 adapting OERca for local installation in Africa and gathering requirements for future releases as part of a distributed model for OERca deployment.

*Benefits for the University of Michigan* are estimated at the customary University rate of 30% to cover all health, disability, and retirement benefits for individuals.

*OER Africa* will take responsibility for the following administrative tasks: establish and manage work contracts with the four African institutions and, as required, provide educational design support to institutions in the elaboration of their work programs and the completion of their respective institutional OER projects; facilitate sensitization and policy workshops as we expand the network; provide ongoing electronic support to content development projects, including support on the use of the OER Africa website in general and the African Health OER Community of Practice space in particular; and contract the project evaluator from a pool of African expertise, building on the program assessment performed in 2009. The OER Africa Project Director, Catherine Ngugi, will direct the project implementation efforts on behalf of OER Africa and serve as the liaison to U-M. Her effort will be concurrent with her current position and her time will be funded through an existing Hewlett Foundation grant. Budgeted resources are requested for the OER Strategist (Neil Butcher), the OER Africa Project Coordinator (Cathy MacDonald), the OER Africa website administrator (Monge Tlaka), and the OER Africa-arranged consultants noted below.

### **U-M Consulting**

*James O. Woolliscroft, MD*, is Dean of the University of Michigan Medical School, Lyle C. Roll Professor of Medicine, and Professor of Internal Medicine and Medical Education. Dr. Woolliscroft is an internationally recognized medical educator who has introduced innovations in clinical skills training, developed international academic programs, and participated in national education standards activities. Dr. Woolliscroft initiated U-M's Health OER efforts and will engage with his peers at collaborating institutions on strategic issues. His advisor efforts will be concurrent with his current position.

*Joseph Fantone, MD*, is the Associate Dean for Education at the University of Michigan Medical School. Dr. Fantone is the faculty lead for the Medical School's OER activities and, as part of his current capacity, will advise on the publication and use of OER materials within the Medical School's curriculum.

*Joseph Hardin* is Clinical Assistant Professor in the School of Information. Joseph has been the Director of the Collaborative Technologies Lab at the Duderstadt Center, led the University of Michigan Sakai open source software effort, and has worked with faculty, staff and students to develop both an understanding of open educational resources dynamics and practices and software to integrate open courseware generation into the practices of faculty and students using Sakai at U-M. As part of his existing capacity, Professor Hardin will advise on the research and development of dScribe workflow efforts for this project.

*Lynn Johnson, PhD* is professor and Assistant Dean for Informatics and Innovation at the U-M School of Dentistry, and will serve as liaison between dental faculty within the University of Michigan and between Michigan faculty and those of the African partners as part of her existing capacity. Dr. Johnson is the president of the Educational Research Group within the International Association for Dental Research. She represented the School of Dentistry at the 2007 conference at which the International Federation of Dental Educators and

Associations was formed. As part of her current capacity, she will advise on the dental projects already underway in Ghana and South Africa and on expansion of the Network to include new African dental schools. At this writing, the School of Dentistry's YouTube channel of OER videos is the third most watched educational channel after Stanford and MIT's university-wide channels. Dr. Johnson is working with the dental schools in the Network to ensure those videos are easily accessible locally (e.g., DVD, local servers). She is also planning collaboratively-led workshops in Africa to raise awareness and facilitate submissions from dental faculties to peer review OER repositories, for which we have requested travel funds.

### **OER Africa-Arranged Consultants**

*TBD Educational Design Lead.* We request approximately \$25,200 for both 2010 and 2011 for OER Africa to hire a consultant or consultants knowledgeable in educational design to advise the OER Health Network participants evidence-based approaches to effective OER learning design and strategies for incorporating OERs into the curriculum. We will look first for this expertise within the participating African organizations.

*TBD Project Assessment Lead.* We request approximately \$14,400 for both 2010 and 2011 for OER Africa to hire a consultant who is knowledgeable in program evaluation and understands the needs and perspectives of all involved institutions. This person will undertake a project assessment based on criteria developed by the partner institutions. We will look first for this expertise within the participating African organizations.

### **Institutional Grants**

The University of Ghana, Kwame Nkrumah University of Science and Technology, the University of Cape Town, and the University of the Western Cape will each receive a grant of \$30,000 per year to provide the resources necessary for their institutions to participate in the 2010 and 2011 activities. These funds are to sustain the infrastructure capacity established in 2009, such as policy research and review, dScribe content clearing, and content aggregation and publishing. Appendix 2 documents preliminary plans for each of the African institutions. A detailed memorandum of understanding with each institution will document the project deliverables and grant payment schedule.

### **Travel and Workshops**

We have budgeted for consultation visits at each of the core institutions with the objective of maintaining progress on policy development and OER production. We are planning workshops at the new Network participants based on the models designed and deployed in 2009. The first workshop is expected to be a one to two day event on institutional engagement in OER involving senior leadership (five to ten people per institution), which will also include a follow up meeting to present findings and provide support for policy adaptation. U-M and OER Africa will jointly participate in the institutional engagement workshops, with OER Africa leading on the broad institutional issues and U-M focusing on the topics specific to health content. OER Africa will staff the follow up meetings. The second workshop is a three day faculty development workshop, with approximately ten attendees expected per institution. The faculty development workshops will address evidence-based effective teaching and learning approaches, with OER processes being the means for acquiring, creating, and publishing enhanced curricular content. OER Africa will supply management and general pedagogical skills support for the faculty workshops and U-M will provide domain specialists. We will also recruit from KNUST, UG, UCT, and UWC to provide policy and OER production expertise for workshops, mentoring, or other styles of engagement as appropriate.

We will hold an inter-institutional workshop during the second half of 2010, building on the model for our first such workshop held in July 2009 in Cape Town. The travel expenses for African participants in that workshop will be covered by an existing OER Africa grant. Travel for U-M participants is requested in this proposal.

## **5.2 List of current foundation funders for this project**

In 2008, the Hewlett Foundation provided \$224,951 for the Health OER planning grant. The Soros Open Society Institute provided \$25,000 for a workshop on Health OER that was held on 27 May 2008 in Accra, Ghana. The Hewlett Foundation provided \$498,109 for the 2009 Health OER Design Phase. The Gates Foundation is supporting, through a two year grant, a partnership among the University of Michigan, KNUST, UG, and the Ghanaian Ministry of Health to address challenges in human resources for health across Ghana. Educational materials created within that partnership are being made available as OER and the grant is supporting laptop computers, cameras, and software for creating, using, and evaluating OERs.



## Appendix 1: Curriculum Vitae of Key Personnel

**Neil Butcher** is based in South Africa, from where he has provided policy and technical advice and support to a range of national and international clients regarding uses of educational technology and distance education, both as a full-time employee at the South African Institute for Distance Education (SAIDE) from 1993 to 2001 and as Director of Neil Butcher & Associates. He has worked with various educational institutions, assisting with institutional transformation efforts that focus on harnessing the potential of distance education methods and educational technology as effectively as possible. Neil has traveled extensively through Africa conducting research on distance education and educational technology for a range of organizations. He is currently working as an OER Strategist with SAIDE on its new OER Africa Initiative, which is funded by the Hewlett Foundation.

Neil has developed a range of instructional materials for various types of educators, including education policymakers, development agency staff, teachers, and universities. In the field of IT applications, he is leading the development of South Africa's national education portal for the Department of Education – [www.thutong.org.za](http://www.thutong.org.za). He has managed a range of online database and web development projects for various organizations, including a student portal for the Federation of Tertiary Institutions of the Northern Metropolis (FOTIM), Higher Education South Africa, International Association for Digital Publications, UNESCO, and the Southern African Regional Universities' Association.

**Kevin Coffman** is a Software Engineer at the University of Michigan Medical School's Office of Enabling Technologies. Kevin has a BAS in Electrical Engineering Technology from Siena Heights University. Prior to coming to U-M, Kevin worked almost 10 years for IBM in various roles testing mainframe hardware and software. With U-M since 1991, Kevin has worked on software development projects involving distributed file systems, security, smart cards, middleware, video conferencing, video security, and web services. Most of these projects involved open source software, including MIT Kerberos, the Linux kernel, and Linux utilities. He is currently the leader of the software development team writing tools to support the dScribe model.

**Cary Engleberg, MD, DTM&H**, is a Professor of Internal Medicine in the Division of Infectious Diseases and Professor of Microbiology & Immunology at the University of Michigan Medical School. In addition to his experience in medical education, he has extensive past experience in cross-cultural and international work. He began his medical career after his Internal Medicine Residency at the George Washington University as a Peace Corps Physician in Chad and Cameroon from 1977 to 1980. He subsequently earned DTM&H at the London School of Hygiene and Tropical Medicine and then served as an EIS Officer for the CDC in the Phoenix Area Indian Health Service. The CDC service also included epidemiologic projects in Bangladesh and Indonesia. Dr. Engleberg was trained in the subspecialty of Infectious Diseases at the University of Texas-San Antonio and secured his first faculty appointment at that institution in 1984. In 1986, he joined the faculty of the Departments of Internal Medicine and Microbiology & Immunology at the University of Michigan, where he was also Chief of the Division of Infectious Diseases from 1994 until 2005. As an NIH-sponsored researcher, Dr. Engleberg has conducted basic research on the pathogenesis of Legionnaires' disease and Group A streptococcus during most of these years. He is the author or co-author of 67 peer-reviewed research articles, 40 book chapters, and Editor-in-Chief of Schaechter's *Mechanisms of Microbial Disease*, a microbiology textbook for medical students.

During the past decade, his academic interests have gradually tended toward medical education, specifically toward case-based, interactive e-learning. He was a member of the first class of Medical Education Scholars at the University of Michigan in 1998-9. At that time, he had generated an interactive learning program on Vaccines using Authorware. This program has been regularly updated over the years and continues to be a required element of the M1 Microbiology and Infectious Diseases sequence at the medical school. In later years, he added Authorware-based instructional programs for teaching aspects of Parasitology and the evaluation of diagnostic tests. He is a recipient of the Kaiser-Permanente Award for Pre-Clinical Teaching based on his efforts as a lecturer and small group leader in this course. More recently, he was director and key

developer of a month-long course in Advanced Medical Therapeutics for the University of Michigan senior class. As of December 2007, this course became a required element of the medical curriculum for all graduates. A “Medicine at Michigan” news article describing the development of this on-line course is available at <http://www.medicineatmichigan.org/magazine/2007/fall/edutech/default.asp>, and a limited demonstration of the course content can be accessed at <http://med.umich.edu/lrc/medcurriculum/technology/therapeutics.html>.

From September 2008 to August 2009, Dr. Engleberg spent a one-year sabbatical leave in Ghana collaborating on the co-development and instructional use of Health OER materials with KNUST and UG.

**Garin Fons** is an Open Education Specialist at the University of Michigan Medical School’s Office of Enabling Technologies. He currently coordinates the Open.Michigan dScribe project within the participating Health Science Schools and at the School of Information; manages a variety of policy, intellectual property, and internal communication related initiatives; liaises with legal counsel, technology specialists, and software developers to develop both advisory and technical resources; and oversees the publishing the University’s OER materials on the U-M eduCommons website. Garin received his BA in History and Latin American Studies from Lewis and Clark College in 2005 and his Master of Science in Information from the University of Michigan School of Information in December 2007. While a master’s student, he helped lay the groundwork for the Community Informatics specialization and, subsequently, crafted a tailored degree in Community Informatics and Information Policy. Having worked as a Community Manager with the International Development Research Center’s (IDRC) telecentre.org initiative, Garin is particularly interested in the use of information and communication technologies for educational, economic and cultural development. He is also attentive to issues regarding information access, efficacy, and use in communities, continuing to play an active in the School of Information Community Information Corps and as a consultant with telecentre.org.

**Ted Hanss** is Director of Enabling Technologies for the University of Michigan Medical School. Ted directs the strategic application of leading-edge information and communications technologies to support the school’s missions, enabling new modes of curriculum delivery and enhancing research capabilities. Current focus areas include learning and research laboratories (from browser-based collaboration tools to uncompressed HDTV-based videoconferencing), next generation learning management systems, open educational resource initiatives, virtual worlds (e.g., the design and implementation of Wolverine Island, the University’s presence in Second Life), cyberinfrastructure, optical networking, data center design, and health informatics.

The Office of Enabling Technologies is the production base for the University of Michigan’s OER efforts. Within the Office are the dScribe efforts (both regular staff serving as senior dScribes and student dScribes), the OER software tool development team, assessment and evaluation activities, and the management of the open.umich.edu web site through which U-M’s OER materials are published.

Ted has a BS in Biology from Boston College, an MBA from the University of Michigan, and is enrolled in the doctoral program in the U-M School of Information. Ted has been with U-M since 1985, working on each new technology wave as it was introduced to the campus. He started with the campus personal computer roll-out and then progressed to Internet technologies, client/server computing, UNIX systems support, distributed computing, campus-wide identity and authentication systems, and campus portals. He has led a computer science research center, software development teams, IT operations, user services, human resources, and training and development programs. He has directly managed budgets of several million dollars per year and staff units of over 50 people. He has been the PI on over \$6.5 million in external funding.

Ted was an early advocate of “open.” In 1994, while Director of the Center for Information Technology Integration, he created the University of Michigan Open Systems Center as an R&D and training facility for educating higher education and corporate customers in standards-based distributed computing. He also conceived, created, and taught a course in data, voice, and video networking during the 1990s in the U-M

Business School where he posted all course materials for public access and re-use, with people outside of U-M following the course and engaging in discussion via email.

On assignment from U-M from 1997 to 2004, Ted was one of the first two staff at Internet2, a non-profit consortium of over 300 education, government, and industry members working on Internet futures. Ted was the Director of Applications Development and supervised applications area staff, planned and organized the applications activities, conducted technology assessment, and served as a central point of contact with Internet2 members and government and industry partners on applications issues. He conceived and implemented “Internet2 Days” as a means to raise faculty awareness, resulting in over 65 universities hosting these events. He also initiated Internet2-based arts performance events as a platform for several innovations, including the first live HDTV streams on the Internet, an Internet-based distributed recording studio, and remote master music classes.

With expertise in leading edge, Internet-based distributed computing, he has had significant involvement in national and international standards efforts and consortium activities. He is a frequent speaker on leading edge technology topics, having given scores of invited talks around the world. He has written four book chapters and several articles. He has been interviewed by CNN, National Public Radio, *The New York Times*, *Business Week*, and numerous trade publications.

**Joseph Hardin** is the Director of the Collaborative Technologies Laboratory in the Duderstadt Center and a Clinical Assistant Professor in the School of Information at the University of Michigan. Joseph is also currently on the Board of the Sakai Foundation, which provides a legal structure for the work of the Sakai Community as it constructs itself and constructs and uses the Sakai Collaboration and Learning Environment open source software - a modular collection of open source tools to support online education, research and collaboration. Over 150 colleges, universities, and commercial affiliates around the world have joined this effort (see <http://sakaiproject.org>). Joseph was the founding Chairman of the Board of the Sakai Foundation, and the Principal Investigator on both the Hewlett and Mellon Foundation grants that supported the formation and initial development of the Sakai software and community.

Joseph also has a deep interest in open content systems, material generation processes and use, giving numerous talks at OER and OCW conferences, organizing seminar series and working with projects at U-M and other schools around the world, including universities in China, Europe and South Africa. He has led the development of the Digital Scribe, or dScribe, efforts at the University of Michigan and within the Sakai Community which seek to combine the power of institutionally adopted VLE/CLEs such as Sakai with distributed workflows and participatory pedagogies to generate OER materials as a low-cost derivative of ongoing educational activities, in the process transforming the educational environment of those institutions.

Joseph has worked on the development of such open and online collaboration systems for a good while, both at the University of Michigan, where he led the development of the CompreHensive collaborativE Framework (CHEF) system, a forerunner of the Sakai system, and when he was Associate Director of Software Development at the National Center for Supercomputing Applications (NCSA) at the University of Illinois-UC, from the early to the late 90’s. There he led the Software Development Group (SDG) at NCSA that built a number of innovative visualization and internet tools, including the Mosaic browsers. He is also a founder of the International World Wide Web Conference and has taught graduate courses on the Semantic Web and a course on Open Source Software Systems and their Communities see <<http://www-personal.si.umich.edu/~hardin/>>.

**Lynn Johnson** holds a doctorate in Instructional Design and Technology from the University of Iowa with a cognate in computer science, and has over twenty years experience in developing and researching innovative educational technologies that support dental education. She currently holds the rank of professor in dentistry and Assistant Dean for Informatics and Innovation. She has focused her research in four areas: (1) interactive patient simulations, (2) the assessment of clinical problem-solving skills, (3) innovative uses of multimedia

applications for the instruction and evaluation of oral health care providers, and (4) the evaluation of the merit and worth of instructional products and methodologies. She has been the principal investigator on two grants funded by the National Institutes of Health (NIH) and an investigator on seven grants funded by NIH or the National Science Foundation. She is the primary or secondary author on over 40 peer-reviewed manuscripts and 14 peer-reviewed electronic scholarship products. She has served as a consultant to private industry including serving as the project manager for the Dental Interactive Simulation Corporation, a non-profit company developing computer-based simulations for the assessment of dental students and practitioners.

Dr. Johnson directs the dental informatics and information technology activities for the University of Michigan School of Dentistry including learning technologies, the patient information system, and the information and communications infrastructure. Her current research projects include an NIH funded grant to develop Web-based simulations of dental patients with genetic conditions. Using an evidence-based approach, students work collaboratively to resolve patient issues and provide oral health care. She is also currently active in two campus collaboration projects that may be of interest to this open education project—a digital asset management system (DAMS) project and podcasting. The DAMS project, known as BlueStream <<http://sitemaker.umich.edu/bluestream/home>> at the University of Michigan, is a campus-wide project to develop a cyberinfrastructure that will support the use of multimedia in teaching and learning. One functionality of BlueStream is the use of video analysis tools to search across the content of videos and other media. BlueStream ensures that only users with the appropriate clearances have access to the resulting media. Her work with podcasting demonstrates the power of using proven software development techniques. Podcasting at the University of Michigan was a student-initiated research project that used formative evaluation techniques to prove that audio is a useful tool for lecture review. The result of this research was an invitation from Apple, Inc. to be one of a handful of schools to help guide the development of iTunes U <[http://www.apple.com/education/profiles/michigan\\_dentistry/](http://www.apple.com/education/profiles/michigan_dentistry/)>.

Lastly, Dr. Johnson was a member of the September 2007 DentEd World Congress that culminated with the founding of the International Federation of Dental Educators and Associations (IFDEA). A core value for IFDEA is to bring together a community of dental educators to improve oral health world wide by sharing knowledge.

**Pieter Kleymeer** began working with the University of Michigan Medical School in January 2008 as an Open Education Specialist in the Office of Enabling Technologies. He currently focuses on the design and implementation of a student-centered model (dScribe) to publish open educational resources. His work also involves managing the design and development of software tools to facilitate faculty-student interaction and course content management, specifically to support the dScribe model.

Pieter came to the U-M Medical School upon receiving his Master of Science in Information from the University of Michigan's School of Information at the end of 2007. He received his BSE in Electrical Engineering from the University of Michigan in 2003. Pieter's graduate work centered on understanding the balance between economics, policy, incentive design, and communications technologies in the emerging world of widespread information access, manipulation, and use. Prior to his graduate studies, Pieter served the Federal Communications Commission in Washington, D.C., developing telecommunications and network security policy as well as leading outreach programs for network security best practices.

**Ali Asad Lotia** is a Software Engineer at the Office of Enabling Technologies at the University of Michigan Medical School. He is one of the developers of the OERca software tool that complements and facilitates the dScribe content clearance and annotation process. Before starting work on OERca, he was a developer on the open source iHDTV high-definition videoconferencing system hosted on SourceForge. Prior to his current position, Ali ran the computing infrastructure at the Department of Human Genetics at the University of Michigan Medical School and developed network performance measurement and analysis tools at Internet2. He has a BA in Linguistics from the University of Michigan where he did research on computational analysis of collections of unstructured text and named-entity recognition.

**Kathleen Ludewig** is a graduate student research assistant for the Open Educational Resources component of the Open.Michigan initiative. Kathleen received a B.S. in Computer Science and a B.A. in both International Studies and French, both from Hope College. Kathleen has several years of industry experience as computer science research assistant at Hope College, as a systems integration analyst for the consulting division of Accenture, as a programmer/analyst for the Michigan Digitization Project with Google Books, and as a policy fellow for Corporation for a Skilled Workforce, a nonprofit economic and community development organization. Kathleen has a strong interest in international development issues, particularly information access, workforce development, and economic growth. She will complete a dual masters degree (MPP/MSI) at the University of Michigan's Gerald R. Ford School of Public Policy and the School of Information in May 2010. Kathleen spent eight weeks in Ghana and three weeks in South Africa during 2009 running policy and dScribe workshops and researching policy issues under the mentorship of Catherine Ngugi of OER Africa.

**Airong Luo** is a Research Area Specialist at the Office of Enabling Technologies at the University of Michigan Medical School. Her work explores distributed collaboration and the technologies and social practices that make distributed collaboration successful. Her recent work at the Medical School has focused on assessing the faculty's needs for collaborative tools to facilitate research and education, especially in the Department of Family Medicine and the Medical Innovation Center. Her other current projects include examining a national collaboration of Type 1 diabetes researchers, the Brehm Coalition. She studies their existing work and their potential for future collaborative work, evaluating and recommending collaboration tools that fit existing and anticipated practices. She is also working on examining the collaboration needs of researchers funded by NIH Clinical and Translational Science Awards. In the past, she has worked for the Science of Collaboratories project, a five-year study funded by the National Science Foundation, to understand the technical and behavioral principles that lead to successful collaboratory design. Her April 2008 doctoral dissertation examined the impact and effectiveness of collaboratories for scientists in developing countries.

Dr. Luo holds a PhD in Information Science from the University of Michigan-Ann Arbor, an M.A. in Communication from Seoul National University (Korea), and an M.A. in English Language and Literature from Peking University (China).

**Catherine Ngugi** is the Project Director of *OER Africa*. Prior to holding this post, she established the African Virtual University's Research & Innovation Facility (RIF) in January 2005 and managed it until September 2007. During this period, the RIF hosted two OER projects and launched a Pan-African pilot study on the use of OER in African universities. Catherine holds an MA from the University of London's School of Oriental and African Studies (SOAS).

Catherine began her career in the private sector, working for a multinational manufacturer. In 1997, she relocated to Dakar, Senegal to work with CODESRIA (the Council for the Development of Social Science Research in Africa), where she initiated and coordinated a grants management system and designed the CODESRIA Endowment Plan. Upon joining Oxfam GB, she conducted regional training sessions (Senegal, Mali, and Mauritania) in project sustainability across the organization's regional group and facilitated the funding by SIDA (Swedish International Donor Agency) of the Oxfam GB West Africa Regional Girls Education Program.

Catherine is a Rockefeller Associate of the African Gender Institute, University of Cape Town and has worked as a consultant in higher education and the Arts to various international organizations headquartered in Nairobi. Her work has been published in the *Journal of African Cultural Studies*, and she has co-edited various publications including the eight country report on *Information and Communication Technologies (ICTs) and Higher Education in Africa* commissioned by the Centre for Educational Technology (CET) for the Educational Technology Initiative of the Partnership for Higher Education in Africa (PHEA).

**James Woolliscroft, MD**, is the Dean of the University of Michigan Medical School, Lyle C. Roll Professor of Medicine, and Professor of Internal Medicine and Medical Education. Dr. Woolliscroft received his B.S. summa cum laude in 1972 and his M.D. in 1976 from the University of Minnesota. He completed his Internal Medicine residency at the University of Michigan in 1980. In 1980, he joined the faculty of the Department of Internal Medicine and rose through the academic ranks being promoted to Professor of Internal Medicine in 1993. He has a joint appointment as Professor in the Department of Medical Education.

Dr. Woolliscroft is an internationally recognized medical educator. He has played major roles in medical student, resident and fellow education at the University of Michigan. His leadership has led to multiple educational innovations including the nation's first medical student clinical skills course using community facilities for the elderly as educational sites, introduction of a required multi-station comprehensive clinical assessment for senior students, development of the school's international academic program Global REACH, implementation of a structured clinical examination to assess incoming residents' skills leading to individualized learning agendas, and development of the institution's Clinical Simulation Center. He has also helped to establish standards for education and accreditation at a national level for medical schools as a member of the AAMC's Medical School Objectives Project External Advisory Group and graduate medical education as a member of the ACGME's Outcomes Assessment Project Advisory Group. Dr. Woolliscroft has served as chair of the Association of American Medical Colleges Group on Educational Affairs; the AAMC Research in Medical Education Committee; and as a founding member and President of the Clerkship Directors of Internal Medicine. He has also served on several National Board of Medical Examiners committees.

His research interests in medical education have resulted in numerous publications, invited presentations and visiting professorships across the U.S. and internationally. Dr. Woolliscroft was selected as the first Josiah Macy, Jr. Professor of Medical Education, an endowed professorship awarded through a national competition in 1996. In January 2001, he received a second endowed professorship, the Lyle C. Roll Professor of Medicine recognizing his work in enhancing the practice of medicine through education. He was chosen as a Fellow of the AAMC's Council of Deans in 2003-2004. In 2004 he received the SGIM Career Achievement in Medical Education Award. In 2008 he received the AAMC's Group on Educational Affairs Merrel Flair Award.

At the University of Michigan he has served in several administrative capacities including Associate Chair in the Department of Internal Medicine, Chief of Staff of the University of Michigan Hospitals, Associate Dean and Director of Graduate Medical Education and the Executive Associate Dean of the University of Michigan Medical School. He currently serves as Dean of the University of Michigan Medical School.

## Appendix 2: Potential Institutional Infrastructure Investments

To establish a preliminary understanding of the OER infrastructure needs by the core institutions engaged during the 2009 Design Phase, we asked each university to provide a list of potential project areas. This list will be used as the basis for collaboratively determining the investments made for 2010 and 2011 (US\$30,000 per institution per year). We asked them to focus on “OER infrastructure,” which we said is broadly defined to be the people and processes necessary to creating and sustaining an enabling environment for OER work within institutions (it does not refer to equipment/bandwidth in the usual sense that the infrastructure term is used). It could include staffing plans (e.g., graphic designer, dScribes, web repository administrator), institutional workshops and training on policy issues, and funding of research into OER effectiveness (building the evidence chain that we hope will validate our efforts and that will attract additional donors).

### *Kwame Nkrumah University of Science and Technology*

- A. We will employ two recent graphic design graduates as OER media specialists who will staff the OER development station and production studio. They will work with College of Health Sciences faculty to develop new OER material, revise existing ones, review all materials, determine and locate appropriate content and generally make all OER materials produced ready for posting on the local repository and the OER Africa Health website. They will also act as dScribes and dScribe trainers.
- B. We will designate a point person from the College of Health Sciences to be the official liaison to the Network, to work part-time collaboratively on building and growing the network by attracting new members and developing proposals that attract the interest and sponsorship of new donors.
- C. We will hire part of a Web Administrator to set up and maintain our local repository for publishing OER. He will also collaborate with web administrators from the University of Ghana, OER Africa and the other Health OER Network participants in enhancing the publication and sharing of OER material and resources.
- D. We will hire part of a project administrator to manage the day to day activities of the OER project and also coordinate the activities of all players involved across the various collaborating departments including but not limited to the College of Health Sciences and the Department of Communication Design.
- E. We will design and put in place an appropriate OER review system for KNUST as well as the process of engaging and training dScribes in collaboration with the Department of Communication Design, Quality Assurance Unit and the African Health OER Network.
- F. We will run two workshops each year for current and new academic staff within the College of Health Sciences introducing the OER concept and describing the institutional policies related to publishing OER as well as services available locally and from the Network for those who wish to use, modify, create and share OER.
- G. We will promote the collaboration between the College of Health Sciences and the Department of Communication Design in setting up curriculum and training for their graduates to gain skills required for OER production and publication as well as enhancing health OER content development.
- H. We will hold one national meeting in collaboration with our colleagues at the University of Ghana with the Ministries of Health and Education to sensitize them about the potential role of OER in health manpower training and the need for investment and support in this area.

- I. We will fund two academic staff and one research assistant to collaborate on a part-time basis with others in the African Health OER Network in conducting research into the effects of OER creation and use, including but not limited to such factors as faculty productivity, job satisfaction by academic staff, student access to learning materials, effectiveness of OER learning design, transfer of learning to practices, etc. We will publish the results in appropriate journal and conference venues.

*University of Cape Town*

In the Faculty of Health Sciences at the University of Cape Town (UCT), we plan to apply our institutional funds to the following tasks for the period 2010 – 2011. Please keep in mind that these plans will be reviewed and refined at the beginning of 2010 to fit with the overall project plan:

- A. We will hope to extend our current relationship with the dScribe students and dScribe 2 currently working on the project. Two will focus on collecting learning content from staff, how to create new material as OER and assisting staff in general with posting material as Open Educational Resources (OER) on our local repository and those international directories deemed appropriate for maximum exposure. One dScribe student with programming and HTML experience will focus on converting content into a more generic form, i.e., non-UCT specific.

If necessary, replacement dScribe students and/or dScribe 2 will be hired.

- B. Currently we are piloting a local instance of the OERca software, but this is on a temporary server. If successful, we will hire server space from our institution's central IT and give access to network partners if requested. We also need space to hold digital material currently used by teaching staff, the allocation of such space will be negotiated with central IT.
- C. We will employ a staff member on a two year contract, and possibly a research assistant, who will be the contact person for staff members in the faculty regarding all aspects of OER, act as official liaison to the Network, search for learning material available which could be used by teaching staff and contact staff regarding adding learning material to our repository archive.
- D. We will continue to assist staff through funding and/or incentives to create new OER.
- E. We will run two workshops each year for interested staff (local and national) regarding what OER are, Creative Commons licensing, institutional policies related to publishing OER and services available locally for those who wish to become involved in creating and sharing material as OER.
- F. We will hold one meeting in collaboration with our colleagues at the Universities of Stellenbosch, WITS and Western Cape to discuss lessons learned in the supporting and creation of OER.
- G. We will collaborate with others in the African Health OER Network in conducting research into the effects of OER use and creation which we will publish the results in appropriate journal and conference venues.

*University of Ghana*

At the University of Ghana, the \$60,000 grant will be used to expand the OER production capacity of the University and to produce more OER material.

Expansion of production capacity



- A. The University of Ghana will fully engage a multimedia expert who will be responsible for the collection of material in the appropriate media format to be converted into OER. This multimedia expert is currently working with the University on a contract basis. During this period, the multimedia expert will train members of the University of Ghana College of Health Sciences medical illustration unit to be able to collect material for production in the appropriate media format
- B. Two recent graduates will be employed and trained to serve as dScribes for the OER production process. At least one of these dScribes will be knowledgeable in the use of the software for the production of the OER material so that this person can work with the multimedia expert in packaging the material collected.
- C. An IT expert (web administrator) from the main university campus will be engaged to be responsible for posting our material on our local server and ensuring that the material can also be accessed from outside the university system. This person will be responsible for the maintenance of the server and any local networking needs.
- D. One faculty member from each identified subunit within the College of Health Sciences will be trained sufficiently to be able to facilitate the design of OER material within the identified subunit. This person will serve as the link between the subunits and the OER production. Training will involve the ability to use the required software and to help in the production of OER material.
- E. Two faculty members and a research assistant will be funded to provide some percentage of their time to work in the production unit, reviewing the material being produced and to establish a system of ongoing data collection and analysis in the use and production of OER.
- F. Special cameras will be purchased to help in the filming of dental, ophthalmologic and ENT examinations and procedures.

#### Production of more material

- A. There will be sensitization meetings and workshops organized within the identified subunits in the college to provide faculty members with ideas for OER production. These subunits will be tasked and helped to produce material that will cover an agreed on part of their curriculum by the end of the two year period. There will be two of such meetings per subunit per year.
- B. OER material covering issues related to medical education such as searching of databases and the internet for information, the setting of test material for the health sciences, research methods, etc. will also be developed in conjunction with the university library and education unit.

#### Integrating OER into educational framework

- A. There will be presentations at appropriate local and international conferences on the use of OER by the University of Ghana.
- B. There will be annual meetings with the leaders in educational policy development within the Ministry of Education and Ministry of Health to demonstrate the use and benefits of OER. The first such meeting will be at the end of the first year when enough material and data have been collected.
- C. There will be one conference organized for the key members of other faculties within the University to demonstrate the use and benefits of OER.
- D. There will be meetings between the provost and the vice-chancellor with the university leadership to highlight the benefits of OER with the aim to get OER production to become integrated into the university's budget. Similar meetings will be held with the leaders of other tertiary educational institutions within Ghana and the West African sub-region in order to get them to join the Network.

#### *University of the Western Cape School of Public Health*

The University of the Western Cape, School of Public Health (SOPH) and School of Dentistry will again share the grant in equal portions over the forthcoming two years.

At the University of the Western Cape's School of Public Health (SOPH), we intend to apply our institutional funds to the following activities:

- A. Build on our work in 2009 and develop a minimum of 10 more OERs over the period;
- B. Explore the development of an OER module or parts thereof through adapting existing OERs;
- C. Evaluate the process of development and usage of Public Health OERs;
- D. Engage an assistant in the use of dScribe programme for clearing SOPH's OERs;
- E. Continue to search for OERs relevant to Public Health education;
- F. Develop a peer review process for OERs at SOPH;
- G. Lodge OERs developed by SOPH in 2009 and during the coming budgetary period on the UWC Freecourseware repository;
- H. Contribute to the development of selected OER policies and processes at UWC.

### **Identified Training Needs**

- Orientation to OERs for SOPH staff including identifying them;
- Searching for OERs on the web;
- dScribe training.

#### **A. Build on our work in 2009, develop a minimum of 10 more OERs.**

During 2010 – 2011, the SOPH will engage in revising a number of core modules for the MPH: the opportunity therefore exists to further strengthen and update our MPH level distance learning materials with innovative, stimulating learning approaches in our learning resources. A materials developer will be hired to develop case studies and other learning elements alongside content experts. In addition, we plan to lodge one more existing SOPH distance learning module as an OER in the UWC Freecourseware repository.

#### **B. Explore the development of an OER module or parts thereof through adapting existing OERs.**

Engage experts from one or two other higher education institutions in the development of a priority distance learning resource for the Masters in Public Health. Collectively develop the module by adapting OERs and supplementing them with the expert group's own expertise. Document the process.

#### **C. Evaluate the process of developing Public Health OERs and explore their usage by lecturers and students in the SOPH's Public Health Programme.**

Engage in a research project to evaluate the process of developing OERs at SOPH and evaluate their usage by lecturers and students in relation to our Postgraduate Diploma and Masters in Public Health programmes; write a research report and work towards a conference paper and journal publication on the findings of this project during 2010 and 2011. The indicators for such research might include factors such as comparative materials development costs, costs of copyrighting reading materials, lecturer productivity, student satisfaction with learning resources and processes, student support experiences of OERs in mediating difficult content, reflections on the interactive processes of creating, sharing, adapting resources amongst subject experts through OER development processes.

#### **D. Engage an assistant trained in the use of the dScribe programme for clearing SOPH's OERs.**

#### **E. Continue to search for OERs relevant to Public Health education.**

An assistant will be engaged for two periods in the third and fourth quarters to undertake these processes in relation to 2009 and proposed 2010/2011 OERs. The assistant may require further training in dScribe clearing processes, or electronic problem-solving support from a resource body (e.g. University of Michigan, OER Africa).

#### **F. Develop a peer review process for OERs at SOPH.**

This element would serve to develop an in-department review process, which will serve both as a quality assurance process and an advocacy event within the department, showing work in progress.

#### **G. Lodge OERs developed by SOPH in 2009 and during the coming budgetary period on the UWC Freecourseware repository.**

OERs developed during 2009 will be lodged on the UWC Freecourseware site. A contribution for the improvement of this site has been budgeted.

#### **H. Contribute to the development of selected policies and processes at UWC.**

SOPH staff will contribute to UWC's OER policy development processes relating to quality assurance, repository procedures, teaching and learning practices.

##### *University of the Western Cape Faculty of Dentistry*

The vision for OER development in the Faculty of Dentistry at UWC for 2010/11 is twofold – to continue to support specific projects and to be involved in advocacy in the Faculty with regard to OER. The latter will involve:

- introducing the concept of OER and its potential as widely as possible in the faculty
- developing staff understanding and capacity with regard to OER.

In this regard, the specific projects will have two purposes:

- to showcase the potential of OER and to demonstrate OER development skills
- to frame specific projects that are inclusive enough in their broad purpose so as to “take on board” colleagues as they show interest.

Four projects are planned for the 2010/11 period:

- Project 1: The animated 3D movie Part II (to Part I developed in 2009) will be created. Part II will animate the rest of the Oral Biology syllabus (for BChD II students), excluding embryology and basic aspects of cell biology (which will be completed as Part 1).
- Project 2: This project will commence the digitalization of all radiographs in the Faculty so as to create an archive. This archive will be used to develop case histories and eventually develop case-based examination questions.
- Project 3: This project focuses on dental materials and techniques, and furthers a project commenced in 2009. The new project sets out to develop a collaborative module focusing on Crown and Bridge techniques, to collaboratively develop undergraduate dental materials and applied dental materials courses, to create illustrated case reports, to develop a collaborative module focused on complete dentures, and to collaborate to develop a step-by-step guide to complete immediate dentures.
- Project 4: This project will create/ produce motivational interviewing educational tools such as videos and literature/ PowerPoint presentations to instruct staff and students with regard to the value and use of motivational interviewing in oral health education.

Projects 2 and 3 have the potential to lead to collaboration and staff capacity development with regard to OER. Other materials in the Faculty (for example, clinical photographs) can also be digitalized and banked, and used for case histories and examination questions (i.e., linking to Project 2). Other disciplines using techniques (for example, orthodontics, oral surgery, maxillofacial surgery) and dental materials (for example, paedodontics) could also produce teaching and learning materials supported by what has been learnt through Project 3. These projects were specifically selected for their potential to attract new recruits to OER into Faculty-based collaborations.

Further to these projects, the Faculty will be focusing on the formalizing of OER practice. This will include the creation of awareness, capacity and policy through:

- Advocacy workshops within the Faculty.
  - These workshops should ideally be facilitated by colleagues from the Faculty of Dentistry at U-M who have experience and expertise in developing OER, and are able to present the opportunities such resource development offers.
- dScribe training.
  - Two postgraduate dentists will be employed to work as dScribes together with one of the existing developers in the Faculty. It is hoped that the dScribes will help faculty create new

OER materials and also help to locate existing OER material which will then be placed on the UWC OER repository. The dScribes should also provide a clearing service prior to publishing.

- Policy development.
  - Policy will need to be developed with specific reference to rewards for scholarship of teaching, ethics and informed consent for medical photography, peer-review and quality assurance. Assistance will be required in the way of workshops, capacity development and collaboration. It is hoped that colleagues at other institutions within our OER collaboration will assist us in this regard.

Finally, the products of our materials development will be disseminated – on the web and through research:

- We will publish our open education resources on the UWC OER repository i.e., <http://freecourseware.uwc.ac.za> as well as the e-learning site and place it on the S:drive to combat bandwidth issues. The resources will form part of a blended approach to learning.
- Research is to be conducted on the following issues in the Faculty of Dentistry:
  - use of OER by students and its effectiveness as part of the curriculum or as an adjunct
  - barriers to OER involvement from staff perspectives
  - access to learning materials
  - transfer of learning to practices
  - students producing content as part of reflection.

In order to realise this output, we have budgeted both for research assistance and for release of academic staff. This research should ideally be conducted as a collaborative effort with others in the African Health OER Network.

### **Appendix 3: Management Plan**

This project will run in a collaborative fashion with the provosts and deans of the participating institutions providing advice and input to the Network custodians or managers, U-M and OER Africa. Each university has a designated liaison who facilitates communication within his or her home institution and liaises directly with partner institutions. Throughout the document, the roles of U-M and OER Africa are articulated. The following summarizes the major responsibilities.

#### **OER Africa Roles and Responsibilities**

As part of the overall project, OER Africa will take primary operational responsibility for the following functions (with conceptual input and advice across all from the University of Michigan):

1. Coordination of policy reviews at African institutions, designed to remove policy and procedure barriers to OER adoption.
2. Management of the work contributions of participating African institutions to the successful content creation/co-creation/adaptation efforts. This will include, but not be limited to, establishing contracts with the participating institutions, managing collaborative activities between institutions, and ensuring that institutions deliver the results necessary for successful completion of the projects.
3. Management and growth of an African Health OER space on the OER Africa web platform, to facilitate sharing of project results between and beyond participating institutions.
4. Appointment and management of an African external evaluator (based on a set of terms of reference generated jointly with the University of Michigan and the other partners) who will take responsibility for establishment of an evaluation methodology that builds on the formative assessment conducted in 2009. During this network building phase there will be both a mid-project formative evaluation report and a final project evaluation report.

#### **University of Michigan Roles and Responsibilities**

U-M's focus will be on:

1. Providing input on the institutional engagement efforts specific to health-related content, based on U-M's experience from 2007 to present. This includes patient privacy, community standards around images, indemnification of faculty members (e.g., when referring to off-label use of drugs), endorsement concerns, and fair use/fair dealing in relation to OER.
2. Facilitating the curriculum-driven decision to deploy OERs developed during the 2009 partnership and externally for the purposes of evaluation and assessment of the efficacy and impact on teaching, learning, and application.
3. Enhancement and delivery of dScribe training (including training the trainers for the workshops) and ongoing dScribe mentoring and support.
4. The continued review and improvements of the dScribe workflow process.
5. Provision of the OERca software tool and requirements gathering for its further improvement.
6. Provision of discipline expertise as needed for the faculty development workshops.
7. Participating directly in content co-development through U-M faculty engagement in Africa as part of this and other U-M partnerships with African institutions.
8. Publishing resulting OER materials through international repositories (e.g., MedEdPortal).
9. Coordinating the work on the design of longitudinal studies of faculty productivity and student learning outcomes.
10. Undertaking the analysis and feedback on the socio-technical aspects to inter-institutional collaboration.