ESTABLISHING OPEN AND DISTANCE eLEARNING IN A MID-LEVEL MEDICAL TRAINING COLLEGE IN KENYA

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INTRODUCTION

A well-trained and available health workforce is critical to the smooth functioning of Kenya's health system. Innovative training methods are expected to increase admission capacity, extend a training institution's reach and reduce the cost of in-service training, while minimizing disruption of health services and family life as stipulated in the National Human Resources for Health (HRH) Strategy 2014-2018 and Ministry of Health (MOH) eHealth Strategy 2012-2017.

Toward these objectives, the FUNZOKenya Project, led by IntraHealth International and funded by the President's Emergency Plan for AIDS Relief (PEPFAR) through USAID, coordinated the process of establishing an eLearning unit within a mid-level, faith-based training institution, Mission for Essential Drugs and Supplies (MEDS), which provides essential medicines and supplies to hundreds of health facilities across Kenya and specializes in commodity management. This technical brief describes this experience and outlines how organizations can maximize available resources to set up functional open and distance learning programs that are aligned to their strategic goals.

BACKGROUND

Kenya's health workforce shortage has been well documented with 2013 estimates from the MOH indicating that the country has a health worker-to-population ratio of just over 15 workers per 10,000 people (MOH 2013), well below the 2010 World Health Organization (WHO) recommended ratio of 23 health workers per 10,000 population. The shortage has been attributed to many factors, key among them the small number of new graduates from training institutions (FUNZOKenya 2012). Concurrently, the burden of disease is growing with non-communicable diseases (NCDs) such as cancer, diabetes, and heart disease becoming a priority. This places additional pressure on a health system that is already struggling to cope with HIV/AIDS, tuberculosis, and malaria.

A training needs assessment conducted by FUNZOKenya identified priority training needs that should be addressed by the MOH including cervical cancer screening, prevention of mother-to-child transmission (PMTCT) of HIV, focused antenatal care (FANC), HIV paediatric care, commodity management, integrated management of childhood illness (IMCI), integrated management of adolescent and adult illness (IMAI), and monitoring and evaluation (FUNZOKenya 2012). It also emphasized the need to increase the number of new health workers graduating from the country's training institutions as an essential step in mitigating the health workforce shortage.

The MOH and county governments cannot afford to meet the training needs of existing health workers or support preservice education. Allocations from the national treasury to Kenya Medical Training

College (KMTC), the largest mid-level college that trains 80% of Kenya's health workers, have been dwindling and mainly cover personnel emoluments (KMTC 2013). The Higher Education Loans Board (HELB) that is responsible for financing post-secondary school education is in the same position. Health workers in hard-to-reach areas also experience difficulties in accessing training when opportunities are available. Often, health centers and dispensaries are manned by only one health worker. These facilities have to be shut when that health worker is attending training, leading to disruption of service delivery.

Over the last 10 years, Kenya has seen unprecedented growth in information and communication technologies (ICTs). This has largely been driven by the uptake of mobile phones; mobile and Internet penetration now stands at 90% and 85.3% respectively (Communications Authority of Kenya 2016). Kenya is touted as one of the leading innovation hubs in Africa and has championed major disruptive technologies such as MPesa, a mobile money transfer and payment service.

Technology presents the opportunity to rapidly deploy courses and train the health workforce quickly, at a fraction of the cost of traditional learning and without disrupting health services. Studies have indicated that online training is at least as effective as or better than face-to-face training (Redpath 2012; Driscoll et al. 2012; Hui et al. 2008; Zhang 2005). In addition, technology allows the expansion of admission capacity for learning institutions without the need of constructing costly buildings and other associated infrastructure.

APPROACH

To further the adoption of eLearning by Kenya's mid-level colleges and universities, FUNZOKenya supported MEDS in establishing in-service eLearning programs for health workers. MEDS had attempted to establish online programs in the past; however, commercial solutions were too expensive and they did not have the internal capacity to develop and offer eLearning courses. FUNZOKenya facilitated the development of an eLearning course

Figure 1: Open and Distance Learning (ODeL) Program development process (FUNZOKenya, 2013)
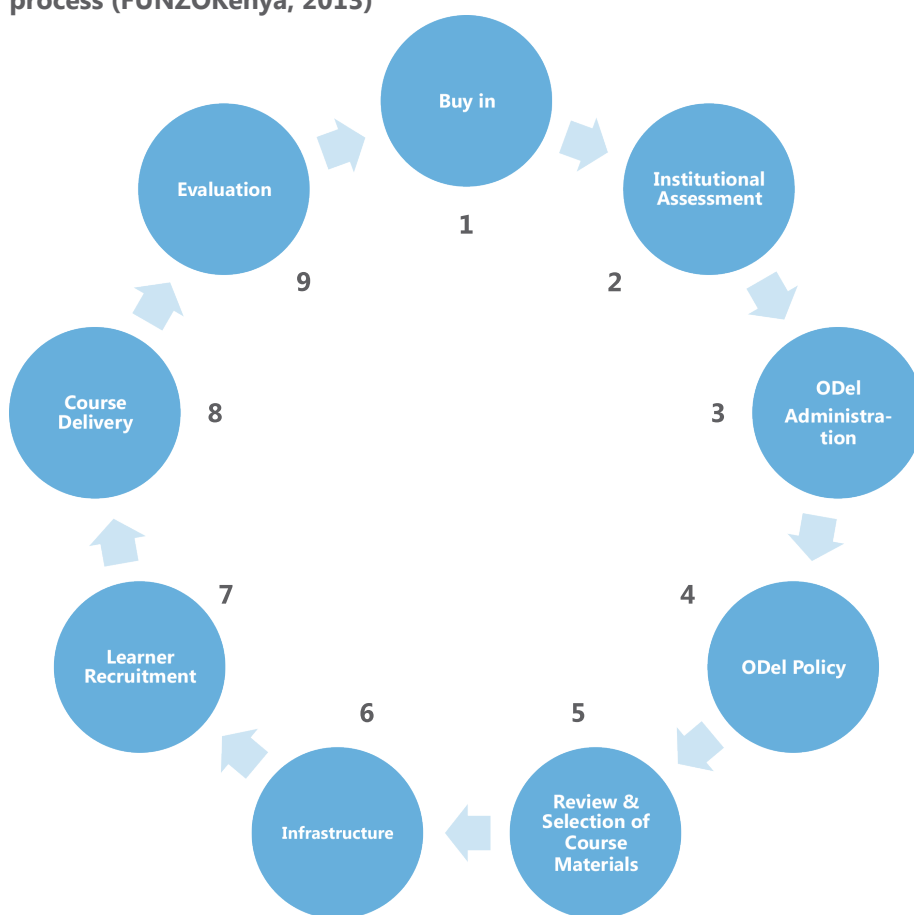
using the open and distance learning programs (ODeL) development process (Figure 1). This brief documents each step of the process as experienced by the project.

Management buy-in: As a first step, it is important to get senior management approval for establishment of ODeL programs. These programs utilize organizational resources and time, so the project had to first demonstrate how ODeL was in line with MEDS's strategic goals. MEDS was selected based on their key competencies in supply chain management, a gap identified by the 2012 training needs assessment (FUNZOKenya 2012). The project initiated an eLearning sensitization workshop to educate MEDS management on eLearning and what it would entail to establish eLearning programs, including required resources. MEDS management sanctioned the initiative and participated in the ODeL institutional assessment to inform the project on MEDS's readiness to offer online courses.

Institutional assessment: FUNZOKenya conducted an ODeL institutional assessment to establish MEDS's capacity and preparedness to offer online courses. The assessment examined MEDS's strategic plan and resources including staffing, infrastructure, existing course content, and willingness to embrace technology-based learning. The assessment revealed that all MEDS courses were face-to-face

with most course modules in PowerPoint format. The content did not have sufficient detail to allow conversion to eLearning. However, the institution had a fully functional and staffed ICT and training department with an annual budget and suitable infrastructure. In addition, management was eager to embrace eLearning. The development of the MEDS eLearning program was based on these findings.

ODeL administration: The project and MEDS identified two champions within MEDS's training department who would lead these activities. The selection was based on eLearning interest and level of computer skills. One member would lead content development and learning delivery while the other would handle administrative matters (e.g., learner recruitment and management). The content developer would also act as the subject matter expert as their academic background was in commodity management. This strategy was adopted since the organization did not have resources to recruit new staff and deemed it more prudent to use existing resources.

ODeL policy: MEDS embarked on the process of developing an ODeL policy to guide the development and implementation of online programs. MEDS referred to existing ODeL policies of local and international training institutions to inform its policy. As policy development can be a long process, it was decided that policy and course development move forward concurrently. The policy contains guidelines on organization of the MEDS eLearning department, eLearning development

and roles and responsibilities, course delivery approaches, and content development. MEDS's board of directors approved the policy.

Development of course material: The project partners sought to identify courses that were most suitable for eLearning conversion, selecting from priorities identified in the 2012 training needs assessment (FUNZOKenya 2012). A five-day laboratory commodity management course was identified for conversion, and the content rewritten in modular self-instruction format. The course can be taken over 40 hours within a period of three months.

The MEDS content developer was then trained on development of online modules and converted the course to eLearning. MEDS adopted the ADDIE content development model for instructional design, a tool that indicates the different stages of content development, represented by:

- **A**nalysis of the objective of the course and characteristics of the learners

- **D**esign, representing consideration of the activities to be included and the media to be used

- **D**evelopment, in which phase the course is built using authoring tools

- **I**mplementation, including testing the functionality of the developed course and inducting the facilitators that will support learners

- **E**valuation, which checks the suitability of the content.

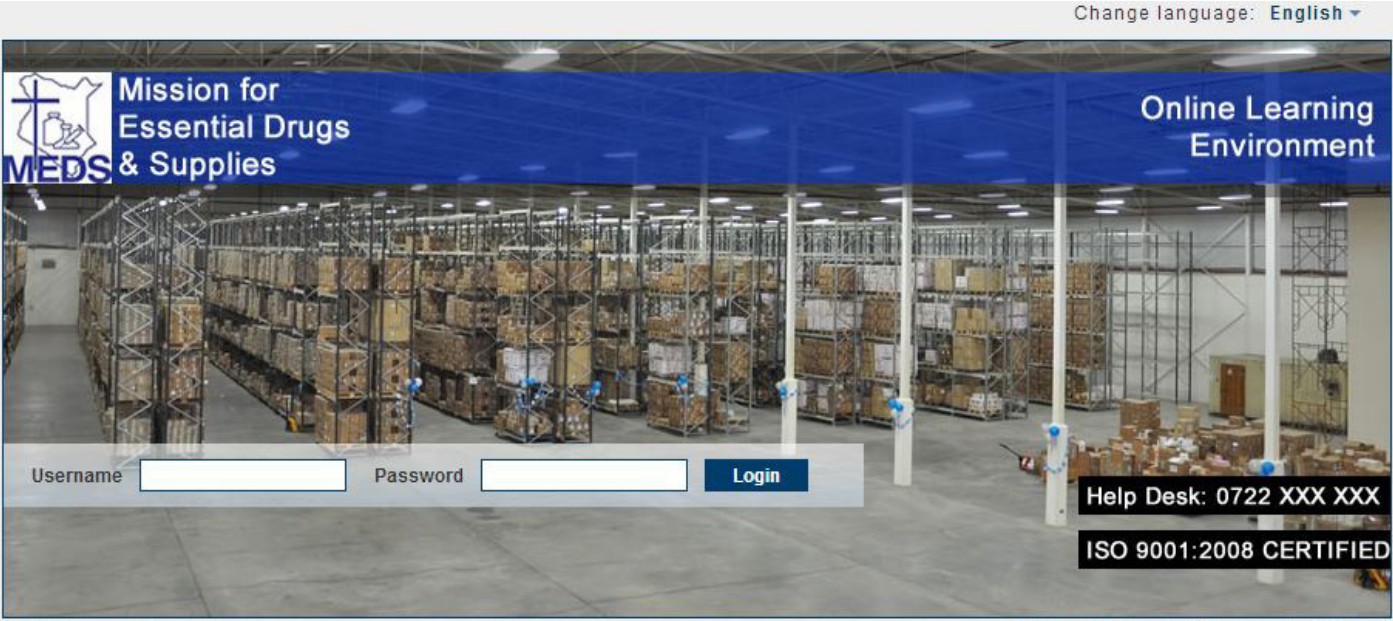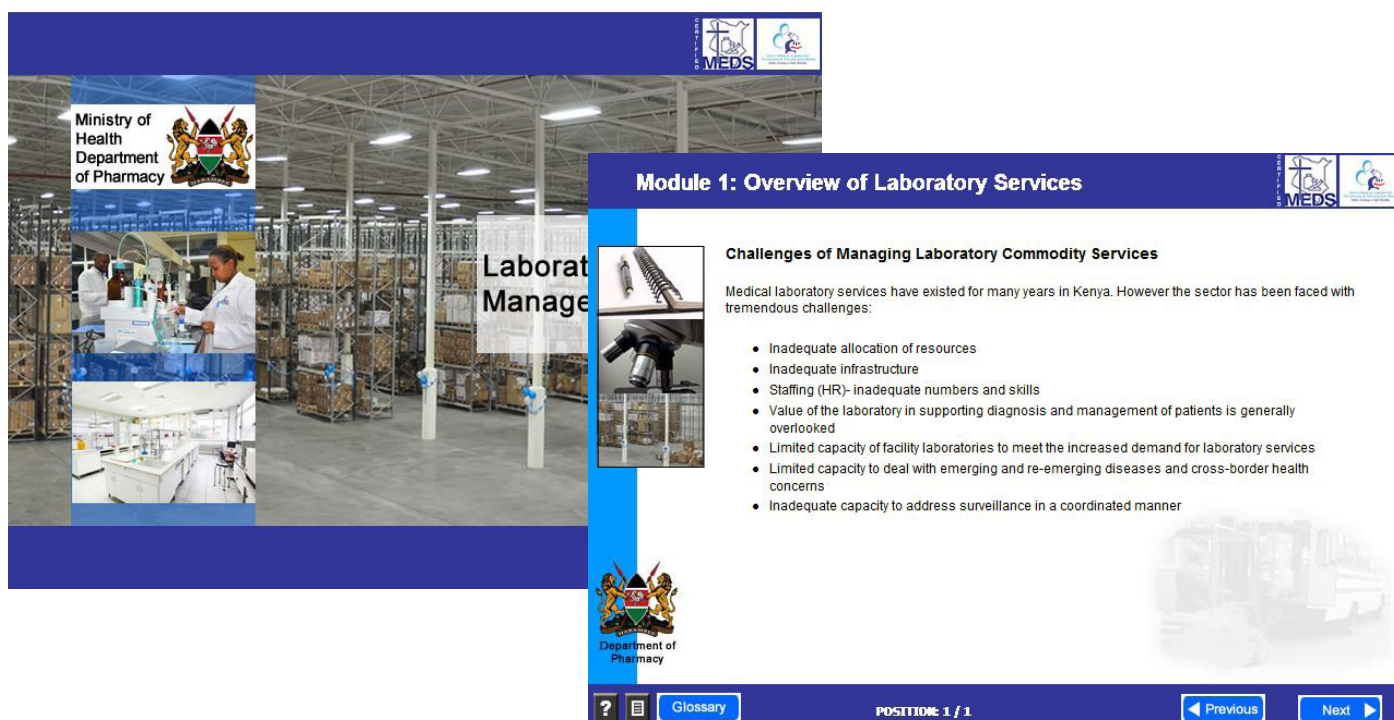**Figure 2: Screenshots of Laboratory Commodity Management Course**

Figure 3: Home page for MEDS eLearning portal

Infrastructure: To support the development of the initiative, the project initially provided MEDS with financial support to hire a learning management system (LMS). The LMS hosts the courses and delivers them to learners online, and also tracks learner progress and results. The system allows interaction between learners and faculty. The initial Internet service provider proved unreliable, so the Kenya Education Network, an institution that provides Internet and hosting services to universities and colleges, was contracted to host the open source Docebo LMS. The project also provided MEDS with the open source course authoring tool from CourseLab that supports conversion of courses.

Learner recruitment: In 2014, MEDS, through the county health directors, marketed the laboratory commodity management eLearning course. This was accomplished through one-on-one meetings with county health leadership teams and posters placed at strategic locations in health facilities. Through this effort, 47 laboratory commodity managers (12 female and 35 male), one from each county, were identified to undergo the training, which was paid for by FUNZOKenya. Knowledge of computer technology was a criterion for selection.

Enrollment, course delivery, and support: The 47 learners were enrolled in the course and provided with step-by-step user guides on how to access the course and helpdesk procedures in case they encountered issues. The tutor, through email
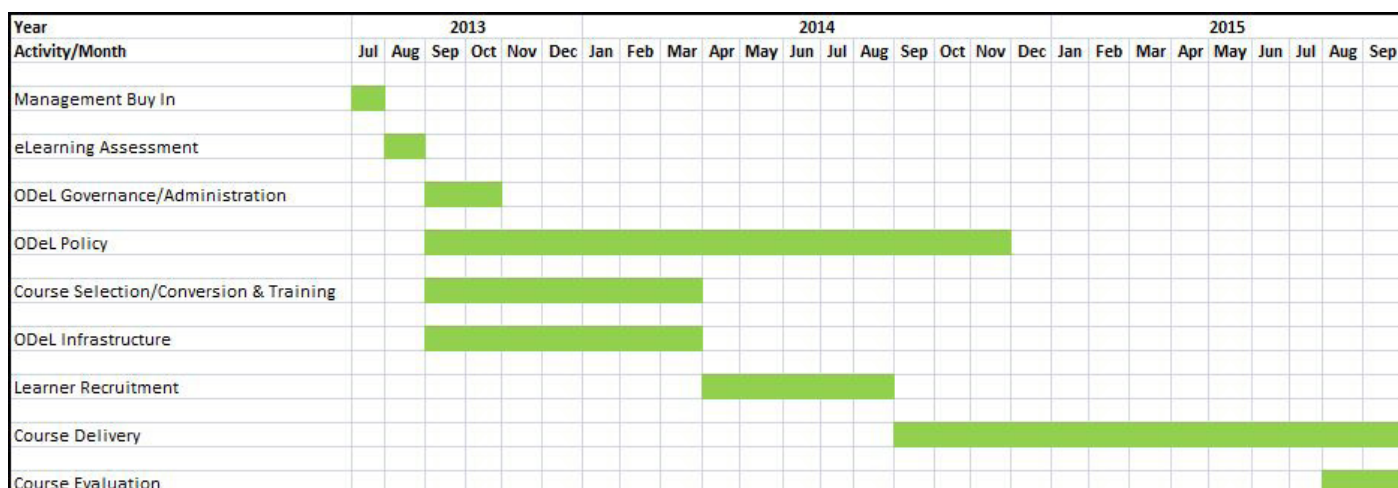
and phone calls, followed up with the learners to provide ICT and technical guidance on the content where necessary and ensure learners did not lag behind. After successful completion, all learners received an automatically-generated certificate.

Evaluation: The course contains a pre-test and a post-test, each with 20 multiple choice questions. A learner could only access their certificate upon attaining a pass mark of 75% or above in the post-test. The project conducted an evaluation in August-September 2015 to assess relevance and usefulness of the course. Seventeen respondents indicated the course was very relevant while one found it just relevant. All the respondents indicated participation in the course was time well invested.

RESULTS

MEDS was able to convert and offer a fully functional eLearning laboratory commodity management course with staff capable of developing eLearning courses and offering and managing online programs. The course's 47 enrolled health workers had an 87% completion rate over an 11-month period. Although some learners started the course immediately, others started months after enrollment, hence the 11-month duration, an indication that eLearning offers flexibility as opposed to face-to-face learning. Of those that completed the course, 39% were from marginalized counties and of the 15 learners that completed the course within the first three months,

Figure 4: MEDS Estimated ODeL Development Timelines

Year	2013						2014												2015								
Activity/Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Management Buy In	■																										
eLearning Assessment		■																									
ODeL Governance/Administration			■	■																							
ODeL Policy			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■										
Course Selection/Conversion & Training			■	■	■	■	■	■	■	■																	
ODeL Infrastructure			■	■	■	■	■	■	■	■																	
Learner Recruitment										■	■	■	■	■	■												
Course Delivery																■	■	■	■	■	■	■	■	■	■	■	■
Course Evaluation																										■	■

53% were from marginalized, hard-to-reach areas. The results of the post-test indicate a 37% increase in knowledge.

With the skills gained during the development of the first course, MEDS, together with the Outspan Medical College, was contracted to offer a reproductive health commodity management course to health workers in eight counties. MEDS converted the course to eLearning and enrolled 1,420 health workers; 50%, or 706, of the health workers completed the course in just six months. An assessment of the pre- and post-test results indicated an 18.6% increase in knowledge.

CHALLENGES

The content available initially was unsuitable for conversion since the information was in PowerPoint format and therefore did not have sufficient detail to enable the learner to understand the content without the aid of a teacher. The course had to be expounded and rewritten in a modular form suitable for conversion. This was a time-consuming process completed over eight weeks. Frequent server downtime at inception occasioned by power outages contributed to health worker dropout. In addition, learners complained about the high cost of, and in some cases unreliable, Internet access. Frequent server downtime was addressed by identifying an alternative Internet service provider to host the system. CDs were also provided to those without consistent Internet access. This, however, prohibits tracking of learner progress and interaction between learners and faculty.

DISCUSSION

With the increase in use of technology in other sectors, the use of technology for training has become more convenient especially for persons with limited time to travel to a physical classroom and those who find difficulty in leaving their workplaces for extra training. Health workers in far-flung areas are keen on taking online courses as this may be the only opportunity to improve their skills and help eliminate professional isolation.

The establishment of eLearning programs must be inclusive and begin with management buy-in and commitment to resource allocation. In addition, it is important to start with available resources. By showcasing what is possible, management can invest in new initiatives. The government and other telecommunication players should seek ways of reducing Internet charges and extending network coverage to hard-to-reach areas with a view to lowering the cost of education. The Kenya Education Network should be supported to play its role in providing bandwidth services to universities more effectively. With increased investment in digital education, the need for physical facilities and the huge outlay of capital required to set up such infrastructure will be reduced significantly. Through the eLearning support provided by the FUNZOKenya project MEDS has now partnered with other organizations; for example, the USAID Afya Jijini program to offer eLearning courses to health workers in Nairobi county.

CONCLUSION

eLearning is a viable mode of building health human resource capacity and will continue to play a crucial role in the development of health workers in Kenya. Applying technology in training will not only lead to an increased number of health workers but also better equip them with the skills they need to adapt and offer services in an ever-changing environment.

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