

USING THE SKOOOL™ HE PLATFORM: eLEARNING IMPLEMENTATION GUIDE

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FOREWORD

The eLearning Modules for Midwives and Frontline Health Care Workers resulted from a partnership between UNFPA, Intel, Jhpiego, and the World Health Organization (WHO). The modules aim to build frontline health care workers' expertise in essential lifesaving skills to prevent maternal/newborn deaths. In addition, because the modules are electronic, learning institutions can collect learner performance data, which can be used to improve performance management and quality control.

Designed to be easy to use, with evidence-based training methods incorporated, the modules present case studies that guide the user through real-life (normal and emergency) situations that occur during pregnancy and childbirth. For maximum impact, the modules should be disseminated as part of a comprehensive eLearning program or blended into the existing curriculum to enhance in particular, the lifesaving skills. This implementation guide provides high-level guidance on designing and implementing an eLearning program using the modules.

The four partners involved in producing the modules each had a different role. The modules are based largely on WHO's *Integrated Management of Pregnancy & Childbirth* (IMPAC) manuals, which focus on the signal functions necessary for health care workers to address the top causes of maternal mortality. Jhpiego, an international nongovernmental organization with expertise in capacity-building and health systems strengthening, provided innovative training solutions and multimedia content for the modules. UNFPA provided overall project management, coordination, and implementation support as well as technical expertise in sexual and reproductive health and midwifery and operationalization at the country level. Finally, Intel contributed to the partnership by engineering the no-charge skool™ Healthcare Education platform that allows eLearning modules to be accessed on Windows-based platforms, with or without internet connectivity, along with interpretation of learners' usage characteristics.

The module content was reviewed by UNFPA, Jhpiego, and WHO technical experts. In addition, a technical advisory group with members from the International Federation of Gynecology and Obstetrics (FIGO), the International Confederation of Midwives (ICM), and the International Council of Nurses (ICN) reviewed the technical content of the eLearning modules.

INTRODUCTION

WHY eLEARNING?

Electronic learning, or eLearning, can be as effective as or even more effective than live instruction. It can also be more efficient if effective techniques are used—especially for the development of knowledge and critical thinking and decision-making skills.^{1,2} The current availability of low-cost mobile devices such as netbooks and tablets provides the opportunity to extend eLearning to the frontline and to support health workers in improving their decision-making and performance. eLearning is easily adaptable to local contexts and languages.

Blended learning is a “combination of off- or online learning and face-to-face instruction.”²

eLearning is “instruction delivered on a digital device such as a computer or mobile device that is intended to support learning.”³

It is important to keep in mind that eLearning is one component of a blended learning strategy that supports the development of target competencies and must be aimed at the right constellation of health workers. Other components of the strategy may include demonstration, practice, mentorship, and simulation. This guide focuses on implementation of eLearning and the advantages that eLearning offers to a comprehensive education and training strategy. Table 1 summarizes some of these advantages.

Table 1. Traditional training vs. eLearning

Common Training Methods	Challenges with Common Training Methods	Strategic Advantages of Multimedia eLearning
In-Service Training		
Off-site/ workshop training	Removes workers from their job site , sacrificing valuable human resources and pressuring trainers to reduce training time, which can result in sub-optimal changes in performance.	eLearning lessons can be accessed readily by all health workers at a time when they are needed most (urgently), based on identified performance gaps in the workplace.
	Knowledge transfer is low and continues to deteriorate over time; demonstrable change in practice is less than ideal.	Workers can receive continuing updates, consider recent evidence, and maintain skills through ongoing exposure to training content.
Onsite training	Limited reach: Training does not reach the majority of health workers attending births; single cadre training does not promote teamwork.	eLearning has the capacity to reach higher numbers and a greater range of health workers.
Cost	Training is expensive , with little return on investment.	eLearning provides a basis for low-cost follow-up after in-person training to help reinforce new skills, and allows practitioners to take responsibility for facilitating ongoing learning.

¹ Bluestone J et al. *Effective In-Service Training Techniques, Frequency, Setting and Media: Evidence from an Integrative Review of the Literature*. Baltimore: Jhpiego, 2012.

² Means B, Toyama Y, Murphy R, Bakia M, Jones K. *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies*. U.S. Department of Education, 2010.

³ Clark RC and Mayer RE. *E-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning*. 3rd ed. San Francisco: Pfeiffer, 2011.

Common Training Methods	Challenges with Common Training Methods	Strategic Advantages of Multi-Media eLearning
Pre-Service Education (PSE)		
Enrollment in PSE programs	Limited numbers of health care workers trained	Midwives trained remotely are more likely to serve hard-to-reach populations. Training can be extended to where it is most needed, encouraging retention and representative distribution of the health care workforce.
Curriculum	Keeping content updated	Students can be trained on the most up-to-date evidence, improve understanding of critical concepts.
Clinical practice	Clinical placements limited and may include limited exposure to critical clinical situations	Students can view video or animated demonstrations and develop clinical decision-making skills in a safe and stress-free learning environment. Clinical conditions that are rare but highly critical can be simulated through an eLearning environment, improving necessary decision-making and clinical skill mastery.
Simulation	Limited opportunities for practice through simulation	eLearning promotes virtual simulation, which increases opportunities for knowledge transfer and clinical decision-making practice, thus maintaining or increasing competency and confidence through regular exposure that is traceable through the skool™ HE system.
Quality of training materials	Validated materials or training approach not always available.	Prototype eLearning modules use internationally validated materials involving multiple global experts and stakeholder groups (ICN, ICM, FIGO, WHO, UNFPA, Jhpiego).

PURPOSE OF THIS GUIDE

The guide was created to enable ministries and stakeholders, including educational institutions, administrators, professional associations, and councils that are interested in supporting or expanding health care worker education via eLearning, to mainstream training on key lifesaving functions. eLearning does **not** replace skills training or facility-based learning, which are face-to-face experiences that learners need to obtain practice and receive feedback. Therefore, the proposed approach for pre-service training promotes a “blended learning” approach in which eLearning is complemented by classroom training and hands-on skills development. For in-service training, the e-modules can be used for refreshing or updating existing training and can be complemented by hands-on experience as needed.

This guide focuses on the skool™ Healthcare Education platform (skool™ HE) as an example of an open-source learning platform for eLearning implementation. Skool HE is free-of-charge eLearning software from Intel that enables use and tracking of multimedia course content. It records assessment information from embedded quizzes, allowing administrators to measure and evaluate course usage and understanding. In addition, users can create their own local-language course content via third-party tools and distribute them with skool HE.

With the skool HE platform, learning can take place either online or offline using mobile computers, netbooks, and tablets. Implementation does not require use of the Internet. This implementation guide will give you an overview of how to implement elearning using skool HE, the resources and eLearning modules that are currently available, and how to plan new elearning content.

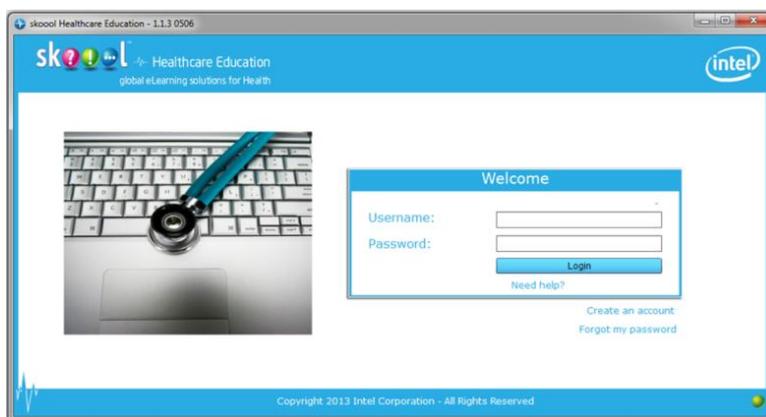
A module on content creation (see the “Create eLearning” link under “Learning Opportunities” on <http://reprolineplus.org/learning-opportunities>) enables countries to develop their own curriculum in local languages with local graphics, using the global elearning modules as prototypes. Because elearning requires the use of mobile computing devices, it is essential that the trainers and the trainees have basic computer literacy and are able to operate these devices. A very simple module called PC Basics has been developed by Intel to enhance health care workers’ computer literacy with the Microsoft Windows operating system and is available either preloaded or from <http://skoolhe.com/index.php/installation/12-modules-2>.³

³ This guide is specifically for implementing elearning using the skool HE platform. There are other platforms for using the modules that have been developed by UNFPA/Jhpiego. Contact Jhpiego at info@jhpigo.org for more information.

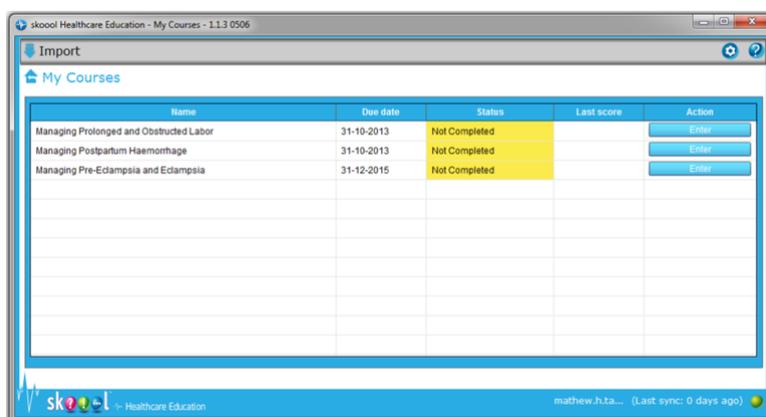
ACCESSING THE SKOOOL HE PLATFORM

If you do not have the UNFPA/Jhpiego USB with skool HE, you will need to:

1. Visit the skool HE website at www.skoolHE.com, select *Installation*, and follow the instructions. You will need to download Adobe FlashPlayer and Adobe Reader if they are not already installed on your computer or device. Then you can install the skool HE application.
2. Create an account by providing your e-mail address and following the link in the e-mail you receive to set your password.



3. Return to the skool HE application and log in.
4. Next, download one or more of the UNFPA/Jhpiego eLearning Modules (.skl files) onto your computer: Return to skool HE, select *Import* and browse to your downloaded .skl files and select them.
5. Now you can view the courses you imported via your skool HE program.



CURRENT MODULES

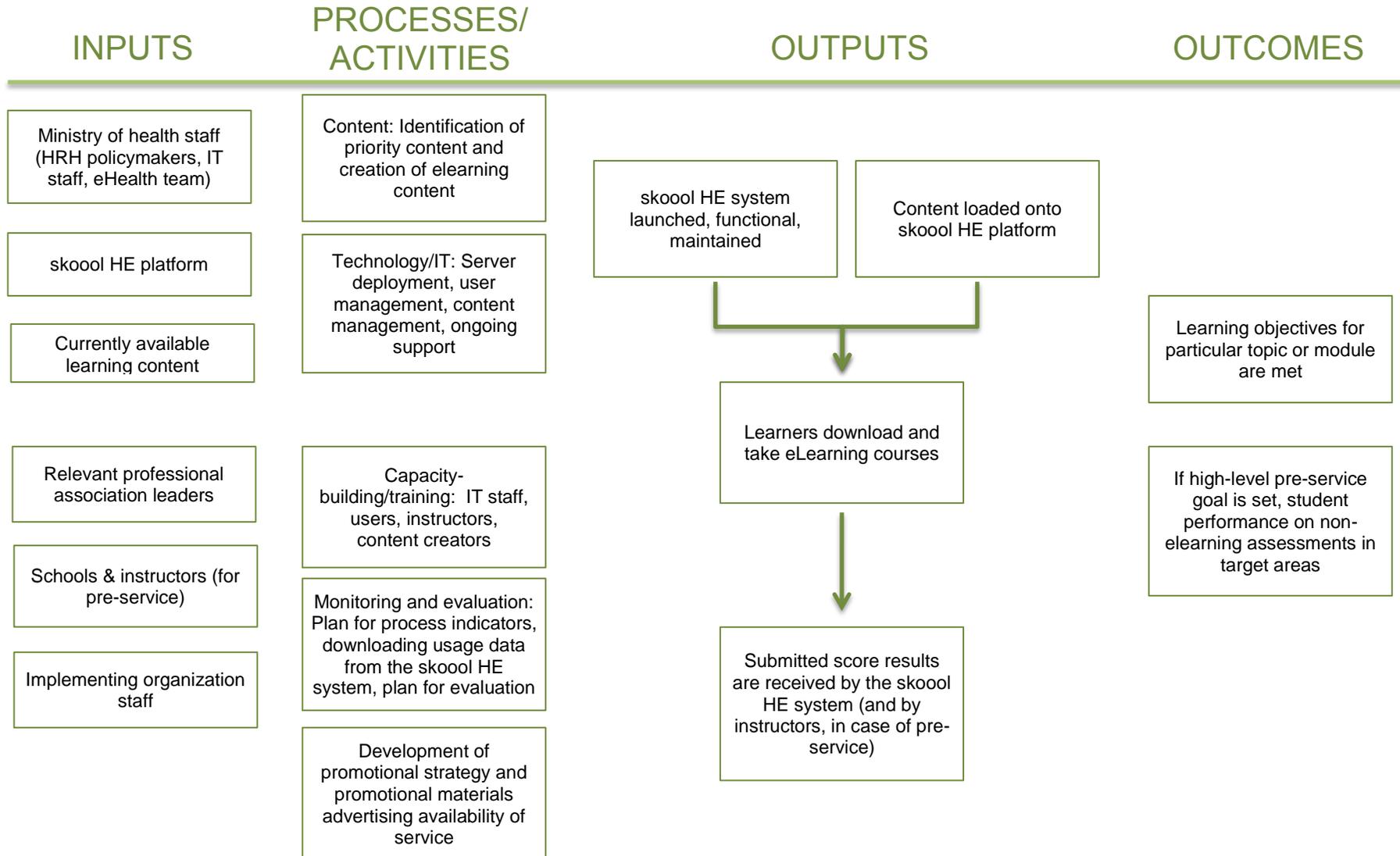
As of January 2014, there were nine modules available for immediate download and use. The modules target the main causes of maternal mortality, and are intended for use by midwives and others with midwifery skills. Visit <http://www.reprolineplus.org> or the skool HE website to view all the modules available for use and installation:

<http://www.skoolhe.com/index.php/installation/12-modules-2>

APPLYING AN eLEARNING IMPLEMENTATION MODEL

Figure 1 details the overarching inputs, activities, and expected outputs and outcomes associated with implementing an elearning program.

Figure 1. eLearning Implementation Logic Model



This model can be applied in a variety of educational contexts. A few examples are listed here:

PRE-SERVICE TRAINING

Flexible Device-Based System

A tablet- or device-based system is one in which every learner or health worker in the field has access to a personal low-cost netbook. This system would allow pre-service learners or health workers in the field engaged in continuing education to have access to the modules 24/7 on personal devices to supplement other learning activities and prepare for or reinforce clinical practice. Instructors or health center administrators/associations can monitor their students' or health workers' number of attempts and quiz scores.

Pre-Service School-Based System

In a school-based system, elearning modules and skool HE are loaded on laptop and desktop computers or local area networks in school-based computer labs. Learners study the modules as part of their course work, to supplement other learning activities and prepare for or reinforce clinical practice. Instructors monitor their learners' number of attempts and quiz scores.

Pre-Service Training Sites in Remote Areas

Clinical training sites in remote settings can be outfitted with devices that have preinstalled e-modules and skool HE uploaded. Alternatively, the content can be downloaded via flash drives. Clinical preceptors can access modules for essential skills updates and facilitate learning for students placed in these sites. Students can access the modules to reinforce lessons in the classroom and make sense of clinical practice experience.

In-Service Training

A local health facility has elearning modules and skool HE uploaded to desktop computers. Local practitioners who have a role in maternal/child health care use the modules under mentorship of district-level trainers for locally identified needs such as orienting new providers, addressing identified gaps in performance, and routine competency maintenance. The modules can also be used as part of a trainer development process.

Continuing Professional Development

Practitioners receive assistance uploading the skool HE platform and modules to their personal devices (computer, tablet, or mobile) and work with the local regulatory body to determine the standard continuing education unit (CEU) and requirements for re-licensure. Regulators have determined that elearning content meets the requirements for continuing education for health care professionals and have established a monitoring system for giving credit to those who have successfully completed the modules to a preset standard. Professional associations can be encouraged to develop elearning content relevant to local needs and supported in developing systems to manage content delivery.

General Considerations for Applying the eLearning Implementation Model

- Public health context (What gap is being addressed by elearning?)
- Health system infrastructure
- IT infrastructure and support
- Resource availability

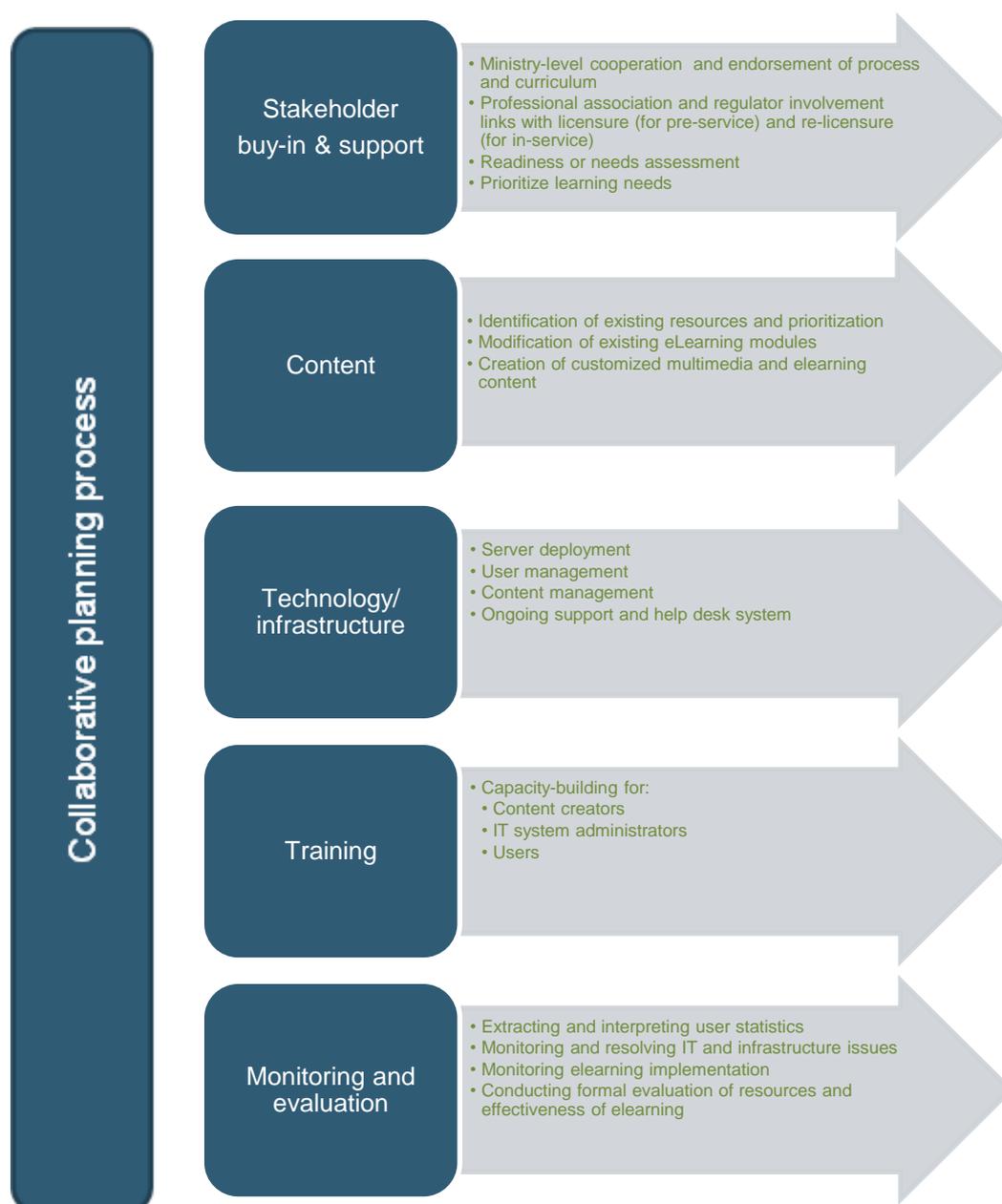
Essential components of any system:

- Host location (desktop versus portable devices)
- Target audience (students and current practitioners)
- Implementers (regulatory boards/councils, ministries of health/education, educational institutions, health care facilities, NGOs, faith-based organizations, and other private-sector groups)
- Infrastructure (hub-and-spoke dissemination of elearning resources versus alternatives)

PLANNING AN EFFECTIVE eLEARNING PROGRAM

Figure 2 outlines the components involved in planning an effective eLearning program. The planning process must be collaborative, beginning with generating stakeholder buy-in and support and involving stakeholders in the entire process. Content should be relevant to local needs and translated/adapted appropriately. Technology must be accessible and acceptable to users. Training for end users, implementers, and IT support personnel is an essential component of eLearning implementation. As with all programs, monitoring is essential for measuring results and must be planned for each stage of the process. Periodic evaluations are necessary to implement changes and to improve program effectiveness.

Figure 2. Collaborative Planning for Effective eLearning



STAKEHOLDER BUY-IN AND SUPPORT

Before implementing your eLearning program, consider the current policy and regulatory environment in your country. What is the current policy on eLearning in your country, state, or institution? What are the regulatory requirements for creating and approving eLearning courses for use in education or training? Review existing national or institutional documents for guidance before embarking on eLearning or blended learning.

Ideally, ministries of health, human resources, education, and management and information systems (or a combination thereof) should be engaged. At the relevant ministry level, relate eLearning to national health strategies and metrics for human resources for health. Identify requirements for approval or evaluation of eLearning or blended learning programs and for the involvement of information technology support personnel in assessing and planning for implementation.

Professional councils, professional associations, and accrediting bodies are important partners in health care workers' education and should be able to provide direction and accreditation for eLearning courses and program planning. Connect with accrediting organizations and link your eLearning program to certification, licensure, or re-licensure requirements for continued health professional education.

Create a Task Force

Create a task force from the larger body of stakeholders who have sufficient authority, competency, and experience to define the goals and plans for implementing eLearning or blended learning. The task force should be created and led by the ministry of health or ministry of education, with engagement from the ministry of information technology (if it exists), and its members should be partners in and key stakeholders of eLearning. The task force will provide high-level direction, identify and leverage available funding, and plan and support capacity development for eLearning. It can also help identify a technical working group to participate in providing technical support, reviewing and creating eLearning, and monitoring and evaluating progress.

Conduct a Needs Assessment

Identify documents and recent findings regarding the country's eLearning readiness. If none exist, conduct a needs assessment to identify infrastructure, personnel, and processes that need to be addressed to implement eLearning. Review eLearning, eHealth, and other related policy or strategy documents or guidelines that might provide direction or guidance.

As a first step, the task force should identify key areas in health workforce development where eLearning can be implemented (i.e., in-service, pre-service, continuing professional development). The next step is to identify the best locations, partners, and institutions for the initial rollout plan for eLearning and blended learning using any suitable platform such as Intel's skool HE platform. The needs assessment should identify the following:

IT infrastructure (supporting use of computing devices)

- Availability of electricity
- Availability of internet access (for regular synchronization of results)

Implementing institution or facility (enabling content distribution and supporting end users)

- Is there a dedicated IT employee or other support staff?
- What are her or his qualifications (education and work experience), IT interest areas, and expertise?
- What days or hours is the IT staff member on duty?
- Is there a computer lab?
- What common hardware, software, internet, and networking problems (if any) would the IT personnel need to support?
- If there is a computer lab, is there a designated “help desk” system for getting support?
- Does the IT staff know who to turn to if he/she needs assistance with troubleshooting? Is there a point of contact at the ministry?

Users

- What are their attitudes about eLearning?
- What motivates them to complete eLearning?
- What is their comfort level with eLearning and use of computers, tablets, or netbooks?
- What is the cost of connectivity or time invested in eLearning that they need to bear? (See the ICTD eLearning Readiness Checklist listed in the Resources section of this guide.)

Establish eLearning Program Goals

Identify any existing eLearning goals outlined by the ministry of health or ministry of education. If they do not exist, work with the ministries and the task force to identify measurable goals, target audience, and the delivery method for initial implementation.

Defining Program Scope

Based on the goals, identify priority topics, target audience, and delivery method, and determine whether eLearning will support the initial education of health care workers through pre-service training or continuing education through in-service training.

Selecting Key Health Priorities

Identify the health topics or area of performance you wish to address through eLearning. What are the current national health priorities? Are there existing content modules available on the skool HE platform that will address these priorities? If so, this will allow you to implement and get experience with using the platform. Additional content can be created using the existing modules as prototypes with the help of the content creation toolkit.

Audience

Identify your target audience so that you can select appropriate content for their skill set. What is their level of computer literacy and readiness for eLearning? What preparation and training will be required?

Delivery Method

Will you use PCs in computer labs, or netbooks or tablets? Who will support the IT needs and manage the delivery and updating of content? Which delivery method is most cost-effective and sustainable?

Create a Plan

Based on your program goals, scope, and audience, and with direction from the task force, create a high-level plan for the following areas.

Schedule

Plan what you will do when. Plan how you will roll out eLearning initially so that you can evaluate and make adjustments in the content and processes before going to scale. Examine what content is available. Is it suitable for the local context, or does it need to be localized? Can it be created in the country by using the content creation toolkit and deploying with a suitable vendor? Are there suitable systems integrators who can roll out an eLearning program that includes installation, maintenance, and support? Are there local content creators who could localize or create new additional modules that are required?

Budget

In collaboration with the task force, identify budget inputs such as hardware, software, staff time, communication fees, training costs, and monitoring and evaluation costs. (Appendix A shows the materials and human resources needed for eLearning implementation.)

Monitoring and Evaluation

Based on your program goal and scope, identify monitoring and evaluation indicators (see Monitoring and Evaluation section, below). How will you evaluate your program and measure its success? Plan to monitor and evaluate both short- and long-term activities.

Content

Based on your program goals and priority health topics, determine whether you can use existing skool HE content or need to create new content. Sample modules are available for download (for a current list, see <http://www.skoolhe.com/index.php/installation/12-modules-2>).

The “Create eLearning” module is listed on the “Learning Opportunities” page of the ReprolinePlus website (<http://reprolineplus.org/learning-opportunities>) and is also available on the skool HE platform website (<http://www.skoolhe.com/>). On the skool HE site, click on the “Authoring eLearning Content” link for links to free software and guidance on eLearning content best practices, including “Create eLearning Now,” a multimedia eLearning module that provides an orientation on creating eLearning materials for use in the skool HE platform.

Technology/IT Infrastructure

eLearning requires an IT infrastructure for both implementation and user support. “IT infrastructure” refers not only to physical elements of technology, such as computers and software, but also to the systems, processes, and people that support the full functioning and productive use of those elements for the eLearning system. Technology-related activities occur concurrently with other implementation activities, and it may be useful to include the dedicated IT staff or IT technical advisory group in stakeholder meetings and other cross-cutting startup and implementation activities.

Identifying Relevant IT Staff

To support the technology infrastructure, three groups of staff will be needed:

Ministry-Level IT Management / eHealth Policymakers

Most ministries of health have a dedicated IT team that supports the IT needs of the ministry. They may or may not have an eHealth team or an Information and Communications Technology for Development (ICT4D) team that focuses on applications of technology to support health care delivery in-country. It is critical to include both ministry-level IT management and, if present, eHealth policymakers in the early planning, start-up, and implementation of the eLearning system. Ministry-level IT management and any eHealth policymakers can provide input on availability of staff to support the ongoing eLearning system, information on bandwidth, connectivity, and IT capacity at the school level. Much of this support could be provided virtually. For sustainability, an appropriate level of IT and technical support is necessary.

Central System Administrators

Central system administrators are the central IT staff who will deploy and maintain the eLearning server, manage user accounts and groups, manage some aspects of the eLearning content, and provide support to local school-level IT staff. Ongoing central system administration responsibilities typically are not too burdensome and can be performed by the ministry-level IT team. The size of this team will vary depending on the scope and parameters of the project. In some cases, where a ministry-level IT team is too busy, it may be necessary to outsource some of the work or hire new IT staff. Server installation and administration can be supported or performed by skool HE Hosting and Implementation Partners. These partners are companies that have the ability to deploy, maintain, and support skool HE clients and servers. In addition, some have the skills to modify and extend the software if desired.

Local/School-Level IT Staff

If eLearning is implemented as part of pre-service education, IT staff located at the school will support students and instructors in installing and using the skool platform, importing the eLearning modules, syncing their data with the central server, and providing general troubleshooting and assistance.

Skool HE Server

Detailed instructions on how to select, install, and initially configure a skool HE server are available in the *Intel skool™ Healthcare Education (HE) Platform Administrator's Guide*. See:

<http://www.skoolhe.com/images/downloads/skool%20Healthcare%20Administrators%20Guide%20v%201.1.3%200506.pdf>. Alternatively, the server can be cloud-hosted by one of the skool HE Hosting and Implementation Partners.

If in-country hosting is required, procurement of the server hardware should begin immediately, per the hardware and software server system requirements listed in the administrators' guide. The administrators who set up and deploy the server must have a working knowledge of LAMP installations and, if not already experienced with Drupal, will need to learn the basics to understand its use in the skool HE platform.⁴ Alternatively, skool HE can be implemented using a Moodle server with a newly available skool HE plug-in.

User Management

Central system administrators will have the ongoing task of creating user roles, defining the roles, and assigning content to user accounts. On the skool HE platform, there are four main roles for users:

- Administrators (the central system administrators themselves, who deploy and maintain the skool HE server)
- Group facilitator/leader (usually the instructor at the school, who will manage a group of users and observe assessment results)
- Content editor (manages and uploads content to the skool HE server)
- End user (the general consumer of eLearning content—i.e., the student)

Each new account on the skool HE server will be assigned one of these roles. After the skool HE server is deployed, creating and managing user accounts is relatively straightforward. The Intel skool Healthcare Education (HE) Platform Administrator's Guide explains the details. See:

<http://www.skoolhe.com/images/downloads/skool%20Healthcare%20Administrators%20Guide%20v%201.1.3%200506.pdf>

Content Management

Some modules for the skool platform may already be available in “packaged” form (i.e., zipped in a format that can be uploaded to the skool HE server). However, if content is created by instructors in-country after initial deployment of the eLearning system, the central system administrators may need to perform this “packaging” process and load it onto the skool HE system.

- The step-by-step details of content management, packaging modules, and deploying modules for use on the skool HE system are explained on page 16 of the Intel skool Healthcare Education (HE) Platform Administrator's Guide:
<http://www.skoolhe.com/images/downloads/skool%20Healthcare%20Administrators%20Guide%20v%201.1.3%200506.pdf>

⁴⁴ It is not necessary for project implementers to understand technical terms like “LAMP” and “Drupal” to manage this project. The administrator's guide contains detailed information on these topics.

Help Desk Troubleshooting Processes

Before deployment of the eLearning platform, the central system administrators should work with skool HE Implementation Partners and local/school IT staff to define help desk or troubleshooting processes for users and for administrators. (For some general tips on setting up a help desk, see Google Apps Documentation & Support, “Set up your help desk”: <http://support.google.com/a/bin/answer.py?hl=en&answer=150561>. This is an example using Google apps, but the basic framework helps in thinking through setting up any help infrastructure.)

The ministry-level IT system administrators may already have a help desk system that can be adapted for use with the eLearning system. Mapping out the flow of a help request—similar to an organizational chart showing who reports to whom or a data flow diagram—is useful in identifying gaps in support for students and teachers, as well as for central system administrators should something go wrong.

Testing

Implementation testing should be performed on a small scale to ensure that server deployment, user account creation, and content management are all running smoothly. However, rigorous software development testing has already been conducted by the creators of the eLearning system. First, central system administrators should test the system among themselves, assigning themselves user roles and attempting to log on, access a module, and submit results to a module assessment.

After successful simple testing, the central system administrators should work with local and school IT staff to remotely test the system. Is the school IT staff person able to access a user account, view an assigned module, and submit results to an assessment? Simple tests like these will help identify problems early on.

Training

Plan training based on the needs assessment findings and current IT infrastructure and computer literacy. Training may be needed for the following roles:

Content Creators

Content creators are instructional designers, educators, or subject matter experts. They are responsible for identifying and creating the objectives, assessment items, activities, references, and resources for eLearning courses. Content creators may or may not package materials for skool HE, but they will provide the materials for the course in collaboration with IT support personnel.

Facilitators

Facilitators are the educators, trainers, faculty, or personnel who facilitate eLearning or blended learning. They are responsible for monitoring user progress and supporting users who have technical content questions. They need to be able to view user progress and identify users who need support or intervention. If they are facilitating blended learning, they may also be responsible for planning and facilitating the clinical practice portion of the course.

IT Managers and Personnel

IT staff are those who will be providing ongoing support for facilitators and users of the modules. They need to be trained using the skool HE administrator's guide. They also need to set up a support system or help desk so that IT-related problems can be identified and addressed. The IT personnel will need to upload modules, update content when needed, and monitor and track files and versions of eLearning materials used. Appendix B is a sample job description for an information and communication technology advisor.

Users

A user is anyone who will be completing an eLearning course. Users need an orientation to be able to open the skool HE platform, import and delete modules, and complete the eLearning modules and pre- and post-course quizzes.

Assess individuals' readiness for training both individually and collectively through a combination of surveys and one-on-one and team meetings. Discuss the skills needed to implement eLearning, including the ability to create content, set up and administer courses, and track and support users as they complete their instruction. You can prepare the team for training by reviewing the eLearning courses on the skool HE platform and other sources; attending free webinars from eLearning technology vendors; and passing out articles on eLearning that would be applicable in your environment. You should also assess your team's level of interest in developing eLearning skills and making a shift in how training goals are accomplished. This process will tell you what skill gaps you will need to fill to have a successful program.

Monitoring and Evaluation

The tables below list suggested indicators to be monitored throughout implementation of an eLearning program. You may update or revise them based on your country's priorities, and you should establish baselines and targets for each indicator you use.

Content Indicators

Outcomes	National-level indicators	School-level indicators
Content priorities identified; content selected, adapted, or developed	<ul style="list-style-type: none">• Number of modules available	<ul style="list-style-type: none">• eLearning modules available
Implementation research plan developed to determine usability, satisfaction level, and cost	<ul style="list-style-type: none">• National-level steering committee approves plans	

Platform Indicators

Outcomes	National-level indicators	School-level indicators
Needs assessment completed	<ul style="list-style-type: none"> Needs assessment draft 	
Needed supplies and equipment procured	<ul style="list-style-type: none"> Servers, hardware, and software in place and functional 	<ul style="list-style-type: none"> Hardware and software installed
IT infrastructure and support in place (e.g., servers, training on eLearning use, and maintenance)	<ul style="list-style-type: none"> eLearning modules installed on devices Servers operational IT staff trained to maintain system Average time to respond to service call 	<ul style="list-style-type: none"> IT staff hired

Process Indicators

Outcomes	National-level indicators	School- or facility-level indicators
IT infrastructure/support and maintenance available	<ul style="list-style-type: none"> Average time eLearning is "offline" Average time to respond to service call 	<ul style="list-style-type: none"> IT staff hired Average time eLearning is "offline" Average time to respond to service call
Facilitators and users trained to use eLearning	<ul style="list-style-type: none"> Number trained in use of eLearning 	<ul style="list-style-type: none"> Number trained in use of eLearning
Users actively using eLearning modules	<ul style="list-style-type: none"> Proportion of users who have completed 80% of eLearning modules by end of testing phase eLearning pre- and post-test pass scores of users 	<ul style="list-style-type: none"> Proportion of users at each school who have completed 80% of eLearning modules by end of testing phase Pre- and post-tests of users at each school on eLearning modules
Results of implementation research on usability, user satisfaction, and costing available and disseminated	<ul style="list-style-type: none"> Level of satisfaction of users and facilitators Unit costs defined Proportion of users and facilitators using eLearning Proportion of users and facilitators using 80% of modules per year Number of reported technical problems with eLearning systems 	<ul style="list-style-type: none"> Level of satisfaction (users and facilitators) Unit costs defined Proportion of users and facilitators using eLearning Proportion of users completing 80% of modules per year Number of reported technical problems with eLearning systems modules per year
Evaluation of student outcomes	<ul style="list-style-type: none"> Average user scores pre and post test 	<ul style="list-style-type: none"> Average user scores pre and post test
Scale-up plan developed based on lessons learned	<ul style="list-style-type: none"> Scale-up plan drafted and approved 	

IT and Infrastructure Indicators

Outcomes	National-level indicators	School-level indicators
<ul style="list-style-type: none"> All schools have needed hardware and software for eLearning 	<ul style="list-style-type: none"> National procurement mechanism for eLearning established 	<ul style="list-style-type: none"> Schools have IT equipment and supplies to provide eLearning
<ul style="list-style-type: none"> All schools have ongoing IT support and maintenance 	<ul style="list-style-type: none"> National eLearning servers are not out of service for more than one week every quarter 	<ul style="list-style-type: none"> Proportion of students whose eLearning modules are not functional for two weeks or more

User indicators

Outcomes	National-level indicators	School-level indicators
<ul style="list-style-type: none"> Routine monitoring of eLearning usability, level of satisfaction, and performance outcomes 	<ul style="list-style-type: none"> Proportion of students and tutors using eLearning Increase in number of students Proportion of students and tutors completing 80% of modules per year Percentage increase in average score per module (pre-test/post-test) 	<ul style="list-style-type: none"> Level of satisfaction of students and tutors Proportion of students and tutors using eLearning Proportion of students and tutors completing 80% of modules per year Percentage increase in average score per module (pre-test/post-test)

Conducting a Formal Evaluation

After initial implementation of the eLearning program is complete, conduct a formal evaluation to identify any training, IT, content, or process issues that need to be addressed. (Resources on standards and guidelines for assessing eLearning programs are listed at the end of this document.) Generally, the formal evaluation should include the following:

- A review of course evaluations (school level)
- Measurement of user knowledge change (pass rate per module)
- Evaluation of platform use by tutors and students (complete at school level and national level)
- Measurement of national indicators (number of users, number of resources, etc.)
- Process evaluation (is the program meeting targets?)
- Assessment of the level of satisfaction and acceptability (among students and tutors)

IMPLEMENTING THE PROGRAM

Actual implementation will require planning (including application for research, if applicable), training, implementation testing, dissemination, formative evaluation, ongoing user support, and addressing any technical issues. Here is a short summary of each step.

PLANNING

In preparation for eLearning implementation, it may be appropriate to develop a research plan and submit to local ethical review boards, in order to disseminate or present results of the eLearning program to a wider audience.

TRAINING

Train everyone who will be involved, including IT staff, facilitators, and users. Be sure to include guidance on how to access the help desk, call line, and other IT support. Facilitators and users must be able to get their questions answered easily, get any technical problems solved, and receive support for their implementation.

IMPLEMENTATION TESTING

Test eLearning modules with a small group to identify issues/problems. Adjust as necessary. Then test using skool HE with a small user group and some facilitators to identify and solve any process or technical issues.

DISSEMINATION

eLearning materials can include large files if they include video and multimedia. You might need to download and import the modules onto devices initially, while you train facilitators or IT staff. See the skool HE administrator's guide for more details on downloading and importing files.

Use stakeholder meetings, professional association meetings, media, and other forums both to distribute eLearning materials and to share information about the eLearning program and how to access information or participate. As you monitor and evaluate results, disseminate findings that are approved by the task force.

ONGOING SUPPORT

Ready support for facilitators, users, and IT personnel is critical, especially in the early stages. There must be a telephone number, e-mail address, or access to live support to ensure that technical issues and other questions are addressed and answered. Facilitators should monitor on a regular basis, such as weekly, to determine how users are progressing and answer any questions. This includes managing the help desk or the support system established to document problems that you have addressed.

RESOURCES

- skool™ HE website: <http://www.skoolhe.com/>
- Current list of skool™ WHO/UNFPA/Jhpiego Midwifery Modules:
<http://www.skoolhe.com/index.php/installation/12-modules-2>
- Intel skool™ Healthcare Education (HE) Platform Administrator’s Guide:
<http://www.skoolhe.com/images/downloads/skool%20Healthcare%20Administrators%20Guide%20v%201.1.3%200506.pdf>
- Google Apps Documentation & Support. “Set up your help desk”:
<http://support.google.com/a/bin/answer.py?hl=en&answer=150561>
- FuturEd Distance Learning Guide: <http://www.futured.com/pdf/distance.pdf>
- Distance Education Quality Principles, University of Wisconsin-Madison:
<http://depd.wisc.edu/html/quality3.htm>

APPENDIX A: MATERIAL AND HUMAN RESOURCE REQUIREMENTS FOR eLEARNING PROGRAM INITIATION

The sample budget table below reflects a sample eLearning project that targets six pre-service midwifery schools, reaching approximately 600 students and 30 faculty members.

eLearning Implementation Materials and Human Resource Requirements (Year 1)				
Budget item	Description	Unit number	Unit cost	Estimated cost (\$)
Staffing	(% of full-time status)			
<i>Project Staff</i>				
Project management • Oversee program • Manage staff	100%	1		
ICT advisor • Work with IT stakeholders to launch, manage, and monitor pilot implementation of eLearning platform	100%	1		
Education and training advisor • Expertise in local training system • Lead trainings, workshops	50%	1		
Subject matter review • Local expertise in content area	30%	1		
Content creator • Expertise in instructional design • Digitize content	50%	1		
Optional: Contracted IT support for systems integration • Implement, maintain, and support skool HE platform	(50%)	1		
Monitoring and evaluation staff	25%	1		
<i>Short-term expert consultation</i>				
ICT advisor	50%	1		
Education and training advisor	50%	1		
Monitoring & evaluation advisor • Data tracking, analysis, and interpretation	50%			
Subtotal				
Total Personnel				

eLearning Implementation Materials and Human Resource Requirements (Year 1)				
Budget item	Description	Unit number	Unit cost	Estimated cost (\$)
Travel		(Trips)		
Technical support visits	International	2		
Local technical support for quarterly visits	Local	4		
Subtotal				
Activities		(Participants)	(Days)	(Per person per day)
2-day training for local IT staff on eLearning system	10	2		
3-day training for tutors on eLearning	18	3		
1-day eLearning orientation meeting for stakeholders	45	1		
2-day detailed training for tutors and IT tutors on skool HE platform	45	2		
5 days of eLearning content development (for malaria)	35	5		
Revision of current eLearning content	35	1		
Dissemination of final eLearning package	60	1		
Subtotal		248	15	
Equipment, supplies, materials		(unit number)		
Laptops or netbooks		250		
USBs for file transfers (loaded and branded by Dischounds)		250		
Fed-Ex international shipping costs				
Translation of existing content		(module)		
Translating/localizing storyboard				
Repackaging graphics/storyboard, including technical review for accuracy				
TOTAL				

eLearning Implementation Materials and Human Resource Requirements (Year 2)				
Budget item		Unit number	Unit cost	Estimated cost (\$)
Staffing				
		(Staff)		
Project management	100%			
ICT advising	100%			
Education and training advisor	100%			
Subject matter review	100%			
Content creator	100%			
Monitoring & evaluation advisor	50%			
Optional: contracted IT support for systems integration	(50%)			
Short-term expert consultation				
ICT advisor	25%			
Education and training advisor	25%			
Monitoring and evaluation advisor	25%			
Travel				
			(trip)	
Technical support (international)		1		
Local technical support (local)		1		
Subtotal				
Activities				
	(Participants)	(Days)	(Per person per day)	
3-day update training on new materials	16	3		
1-day content creation training	20	3		
1-day validation	20	1		
Subtotal				
Equipment, supplies, materials				
Laptops or netbooks		0		
USBs loaded with updated versions/new modules		50		
Fed-Ex international shipping costs				
TOTAL				

eLearning Implementation Materials and Human Resource Requirements (Year 3)				
Budget item		Unit number	Unit cost	Estimated cost (\$)
Staffing				
		(Staff)		
Project manager	100%	1		
ICT advisor	100%	1		
Education and training advisor	100%	1		
Subject matter expert	50%	1		
Content creation	50%	1		
Monitoring and evaluation advisor	100%			
Short-term expert consultation				
ICT advisor	10%			
Education and training advisor	10%			
Monitoring & evaluation advisor	10%			
Subtotal				
Travel				
			(Trip)	
Technical support (international)		0		
Local technical support (local); one visit		1		
Subtotal				
Equipment, supplies, materials				
Laptops or netbooks (replacements)		5		
USBs for file transfers		50		
Fed-Ex international shipping costs				
TOTAL				

APPENDIX B: SAMPLE JOB DESCRIPTION FOR INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) ADVISOR

POSITION DESCRIPTION

Title: Information and Communication Technology (ICT) Advisor

Salary Grade:

Job Site:

Summary Scope of Work:

- The ICT advisor will provide management of and technical assistance for use information and communication technologies (ICT) in a pilot of an eLearning platform for pre-service education in six midwifery schools in Ghana.

Position Reports To:

Positions Supervised:

Responsibilities:

- Take the lead in working with relevant program staff, health care worker tutors, school IT staff, and Ministry of Health IT staff to launch, manage day-to-day activities, and monitor the pilot implementation of an eLearning platform
- Conduct or lead, in collaboration with other team members, any training, meetings, or workshops held for the planning, design, implementation, or evaluation of information and communication technologies for program activities
- Collaborate with team members to ensure appropriate monitoring and evaluation of project information and communication technology activities, including provision of input into appropriate logical framework and indicator development
- Work collaboratively with other team members to ensure necessary program planning, development, resource availability, and management activities function effectively and efficiently
- Contribute to timely, accurate, and appropriate reporting of program activities and results to the donor, including progress reports, and annual reports
- Promote and support the dissemination of project information and experience sharing among the project team and with other country, regional, and headquarters-based staff
- Establish and maintain productive relationships with key stakeholders, including relevant department heads and staff, government officials, NGOs, and ICT companies
- Other duties as necessary and as assigned.

Required Qualifications

- University degree in an information and communication technology, management sciences, or public health field
- Minimum of three years' experience providing technical assistance for eHealth, mHealth, or ICT interventions

Knowledge/Abilities/Skills:

- Competent in the use of ICT to support one or more of the following:

- Health systems development and strengthening
- Health care service delivery
- Performance and quality improvement/assurance
- Training, supporting, and supervising health care workers
- Behavior change communication
- Experienced in:
 - Designing, developing, implementing, and evaluating technology-assisted projects
 - Coordinating program activities with governmental, nongovernmental, and private-sector partners
 - Collaborating with partners to provide technical assistance and implement program activities
 - Identifying and incorporating or adapting best and promising evidence-based practices
- Interested in keeping up-to-date with technologies and technology standards
- Possess an understanding of the constraints and benefits of different technologies
- Be self-motivated and proactive, and possess a positive attitude to work
- Require minimum supervision
- Excellent organizational skills, including the ability to handle a variety of assignments sometimes under pressure of deadlines
- Be cooperative, hardworking, flexible, and dependable
- Be able to communicate effectively, instilling trust and confidence
- Be pleasant and warm, and have an outgoing personality
- Possess excellent interpersonal and communication skills
- Be of high integrity and ability to respect confidentiality
- Be willing to take on extra responsibilities in order to achieve the goals/objectives set by the organization

APPENDIX C: SAMPLE JOB DESCRIPTION FOR eLEARNING SYSTEMS INTEGRATOR

Terms of reference/skillset requirements for systems integrator: Implementation, maintenance, and support of skool™ HE platform

- Pre-deployment:
 - Preload tablets/computers with relevant software such as skool HE platform, Moodle etc.
 - Understand Administrator's Guide Installation for client provided by Intel Corporation
 - Preload approved skool modules into skool platform
 - Install and maintain cloud-based or in-country Internet-based server
 - skool HE Server or Moodle Server
 - Support use of features: user accounts management, course assignment, content upload (manual provided by Intel Corporation)
 - Set up and maintain content hub sites
 - Set up file share at hubs (hospitals, clinics, etc.) from which users can download course content
 - Establish distribution method (Internet download or physical delivery of storage media) of course content, and train on-site resource to maintain.
 - Train administrators, IT managers and end users on use of skool or Moodle Server with skool HE plugin for account and content management, assignment and monitoring.
- During Deployment:
 - Establish and maintain end-user support
 - Phone, email, etc.
 - Ideally, utilize user support database and knowledgebase
 - Establish and maintain content distribution support
 - Establish and maintain administrators support

Skills

- Experience leading successful projects utilizing computers for health care and/or training
- Proven ability to manage cross-organizational and cross-functional resources to meet project goals and milestones

Computer Skills

- Microsoft Windows including configuration/administration of clients
- E-mail
- Microsoft Office (Word, PowerPoint, Excel)
- Strong knowledge on cloud-based server setup, configuration and maintenance such as Amazon or other (Windows or Linux server implementation)
- Skype
- WLAN, Wi-Fi knowledge to configure networks

APPENDIX D: SAMPLE JOB DESCRIPTION FOR eLEARNING CONTENT CREATOR

Terms of reference/skillset requirements to create eLearning content for skool™ HE platform

- Create eLearning content and digitize existing content:
 - Interact with subject matter experts, cross-functional team of graphics designs, users, etc.
 - Ability to use Flash/HTML5 tools, including but not limited to Adobe Captivate/Presenter, iSpring, Articulate, and additional tools
 - Live or animation videos creation; video editing and compression
 - eLearning pedagogy, assessment creation
 - Internet content creation (Flash and HTML5) products from Articulate, Adobe (Captivate or Presenter), and/or iSpring for courseware and assessments
 - Moodle
 - Adobe Acrobat PDF creation
 - HTML5 web page, form creation
 - Package content into skool compatible modules
 - Take feedback on content and incorporate and modify modules appropriately, working with subject matter experts
- Skills:
 - Excellent written and oral communication
 - Excellent organizational skills to enable milestone reporting, raise issues/concerns, manage others
 - Understand pedagogy to create effective eLearning experiences
 - Expert proficiency in tools as indicated above

