Effective practices in providing online, in-service training to health professionals in low-resource settings

Karen Sherk Chio, MPH

Introduction

As doctors, nurses and public health professionals are promoted into management and leadership positions in resource-poor countries around the world, they are tasked with leading teams and managing drugs and financial and material resources. These responsibilities require a set of skills and knowledge different from that needed for their clinical work, and these skills are rarely taught in medical, nursing or public health school curricula. Health professionals are asking for training in management and leadership (Dwyer *et al.*, 2006) but often have limited time and few resources or opportunities.

This article describes effective practices in providing online, in-service training to health professionals in low-resource settings to meet these identified needs. Despite sometimes problematic Internet connectivity because of service interruptions, electricity outages or the lack of availability of computers, more than 4000 health professionals from 77 middle- and low-income countries in Africa, Asia, Latin America, the Middle East and Eastern Europe have successfully participated in virtual management and leadership development programs to strengthen their skills and organizations. This article examines how blended e-learning programs for health professionals can be effectively delivered in settings with problematic connectivity, supporting participants' efforts achieve results in health.

Interactive e-learning programs: a promising approach

In order to address the complex health challenges faced globally, ongoing capacity building for the health workforce is critical. Continuing medical education via interactive e-learning programs is a promising approach to building health professionals' capacity (Joynes, 2011; Raza *et al.*, 2009; Wutoh *et al.*, 2004). Wutoh *et al.* (2004) found that Internet-based and face-to-face learning programs for in-service medical education were equally effective in increasing participants' knowledge. This finding was strengthened by a 2010 meta-study of 50 online education studies (including 43 that focused on adult learners) conducted by the US Department of Education. The study found that 'learning outcomes for students who engaged in online learning exceeded those of

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❏ Karen Sherk Chio, MPH, Senior Program Officer, Management Sciences for Health, Cambridge, MA, USA. Email: kchio@msh.org

students receiving face-to-face instruction' (2010, p. xiv). More research is needed to determine the efficacy of such approaches in improving clinical practice (Joynes, 2011; Raza *et al.*, 2009; Wutoh *et al.*, 2004). Research on leadership development programs for health professionals via web platforms is in its infancy.

For countries with infrastructure challenges, Internet-based, in-service education for health professionals must be feasible before it can be an effective option. Although computer and Internet penetration in resource-poor countries remains much lower than in higher income countries (Communities Dominate Brands, 2011; Internet World Stats, 2012), e-learning as an approach to in-service education for health professionals is becoming increasingly viable as Internet access increases. In December 2000, an estimated 4.5 million people in Africa were accessing the Internet, but by December 2011, there were an estimated 139.9 million Internet users in the region (Internet World Stats, 2011). The quality and speed of Internet connections is also improving (BuddeComm, 2012). However, e-learning design needs to take infrastructure challenges into account, particularly frequent power outages, low bandwidth (such as dial-up connections) and inconsistent Internet access (Joynes, 2011).

Case study: successful elements of e-learning approaches for management and leadership development in low-resource settings

With funding from the United States Agency for International Development, Management Sciences for Health (MSH), a private, not-for-profit US-based organization, has developed a portfolio of Internet-based management and leadership programs, facilitated by organization development specialists. These programs are in areas such as leadership development, strategic planning, human resources management, business planning and board-level governance for the not-for-profit sector and aim to strengthen the leadership and management capacity of health teams and their organizations to improve health service delivery.

The first Virtual Leadership Development Program was offered in October 2002 to 11 teams totaling 73 people from eight countries in Latin America. The program resulted in all teams successfully applying the program methodology to address their own organizational challenges (Perry *et al.*, 2003). Delivering the program online made it possible to provide in-service training to more health professionals than was possible using a face-to-face training program and was also more cost-effective. Since 2002, MSH has refined and offered 50 online learning programs to more than 4000 participants from more than 480 organizational teams in 77 countries and in six languages. The programs are designed to improve performance in the challenging settings of low-resource health systems. In order to do so, they must meet the following three criteria: they must be accessible in these settings for busy health professionals; they must encourage team building; and they must allow for the practical application of program content with feedback and support from the program facilitators and fellow participants. The ways in which the program design supports these criteria is described below.

Programs must be accessible for busy health professionals

The program employs a blended learning approach
Like many online health training approaches (Joynes, 2011), the programs employ a blended learning methodology. Programs require 4–6 hours per week of individual commitment that does not require participants to leave their worksites. Individual work is blended with teamwork, Internet-based work is blended with face-to-face team meetings at the participants' worksites, web-based content is used along with printed program workbooks, and communication with facilitators happens via a variety of media such as the program web site, e-mail, telephone and text messages. The program, therefore, is not dependent solely upon the program web site or Internet connection, and participants are able to engage with the program materials and facili-

tators in a variety of ways. This allows participants in settings with problematic connectivity to be able to continue their program work offline through reading the workbook, engaging in face-to-face meetings and discussing issues with facilitators over the phone.

Additionally, this blended learning approach promotes individual and team learning, with the added benefit of strengthening teams as a result of working together toward a common goal throughout the program. The success of this blended learning approach is supported by the US Department of Education meta-analysis finding that collaborative online instruction is more effective than independent participation in online courses (US Department of Education, Office Planning, Evaluation and Policy Development, 2010).

The program platform is basic and easy to download
The platforms contain simple graphics that are easy to download over low-bandwidth connections and have a clear design that is simple to navigate. Bookmarking features allow participants to return to the last page they viewed the next time they log in, and sections of the site are clearly labeled so participants can quickly navigate throughout the web site. The web platform is supplemented by a printed program workbook.

Programs encourage team building

The program is delivered to teams rather than individuals
As Kozlowski and Ilgen (2007) argue, 'if teamwork . . . skills were ubiquitous, there would be enormous benefits to students and society alike' (Kozlowski & Ilgen, 2007, p. 61). MSH has found that a sustainable way to build organizational capacity is to work with intact work teams rather than to train individuals. With the current platform and staffing, one online program can reach up to 12 teams from as many as 12 countries. Up to 10 staff per organizational team can be trained, creating a critical mass of staff with new management and leadership skills and approaches. Teams apply their new skills to real workplace challenges during the program, which builds their capacity as a team, and can also improve workgroup climate. Improved work environments have been shown to positively influence the retention and performance of health workers (Joynes, 2011), which helps organizations to function more efficiently and productively.

Programs allow for the practical application of program content with feedback and support from the program facilitators and fellow participants

Content is practice based
MSH defines leadership as 'enabling groups of people to face challenges and achieve results in complex conditions' (Dwyer *et al.*, 2006, p. 2).To develop leadership and management practices among health professionals, the training approach must include a direct link to the challenges participants face every day in their jobs (Management Sciences for Health, 2005). Distance learning makes direct application of the program learning to the workplace possible, and this experiential approach is found in many models of adult learning theory (Joynes, 2011).

Each program is practice based and focused on developing a concrete program plan (such as an action plan, strategic plan or business plan) that teams implement to achieve results. This approach requires participating teams to immediately apply the skills they learned to the challenges they face at work. For example, in the Virtual Leadership Development Program, participating teams identify an organizational challenge and develop an action plan with facilitator support to address it. They implement the plan in the 6 months following program completion. This workplace-based learning has several advantages, including the immediate application of acquired knowledge and theory to increase competence and performance – avoiding the familiar 'transfer problem' in training and development (Grossman & Salas, 2011) – and lower absenteeism rates compared with face-to-face courses (Joynes, 2011).

The program includes rapid support and feedback from expert facilitators
Rapid expert support and feedback are considered key success factors for effective online program delivery (Moloney & Oakley, 2010). Developing a relationship between participants and their facilitators and encouraging interaction keeps participants engaged and allows teams to receive individualized feedback and support throughout the program. Facilitators work closely with teams on the development of their program deliverables to ensure that the final plans are actionable and appropriate and contain indicators that are realistic and measurable. Because plan development is completed online and iteratively, facilitators can seek review by technical experts and teams benefit from multiple reviews by people with various technical perspectives.

The program encourages exchange and discussion
Online programs include an asynchronous chat board feature that participants can use to exchange information about common challenges and other technical topics. For health professionals to fully benefit from virtual programs, it is important that they be able to participate in online discussions and complete their individual and teamwork assignments according to their own schedules. This enables busy professionals to accommodate full work schedules and still complete program work. As Underhill (2006) notes, 'the time lag built into asynchronous discussions allows for reflective thinking, a sign of a deeper approach to learning, which is the aim of most higher education courses' (p. 171). Additionally, each program also requires that participants post about their team meetings to share with the facilitators and other program participants.

Because the programs do not require any travel, they are a cost-efficient way to maximize program reach and promote exchanges and discussions among many teams and geographically dispersed organizations.

Results

Assessing the quality and impact of e-learning programs can be challenging, and 'a more systematic approach to evaluating the impact of distance learning on health worker performance and health outcomes' is needed (Joynes, 2011, p. 17). MSH consistently measures the program at all four levels of Kirkpatrick's evaluation – reaction, learning, behavior and result (Kirkpatrick & Kirkpatrick, 2006) – to demonstrate the effectiveness of e-learning approaches. Reaction is measured through end-of-program evaluations, and learning through concrete deliverables participating teams must produce to complete the program. However, MSH is most concerned with Kirkpatrick's Levels 3 and 4 of evaluation, behavior and results, in order to determine program impact.

Behavior is measured by noting changes in workgroup climate (what it feels like to work in a team), and results are measured by evaluating improved organizational performance or improved health service delivery as reported by participants as a result of implementing the plans developed during the program.

Improved workgroup climate

For the Virtual Leadership Development Program, a validated instrument to measure team climate,[1] is applied pre- and postprogram to measure the change in team members' perceptions of the way the team works together. By improving the leadership and management practices of a team, the workgroup climate can be improved, which can lead to improved organizational performance and improved services

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[1] The Workgroup Climate Assessment (WCA), a tool developed and validated by MSH to measure team climate, measures the change in workgroup climate for each team pre- and postvirtual leadership development program. For a team's score to be valid, the number of respondents in the first WCA must match the number in the end-of-program WCA.

(Management Sciences for Health, 2005). An internal review of the results of this instrument for 165 teams participating in 24 virtual leadership development programs offered between 2004 and 2010 demonstrated an average increase in workgroup climate of 11%.

Improved organizational performance and health service delivery

MSH collects and reviews teams' data 6 months after they complete a program. MSH also relies on self-reported data from team participants to determine the impact of most programs, as a systematic evaluation of every team and program offering is costly and beyond the resources available for many program offerings.

Teams in these online programs report important achievements as a result of their participation (Leadership, Management, and Sustainability Program, 2009; Sherk *et al.*, 2009). Program follow-up, 6 months after program conclusion, is focused on the extent to which teams achieve the desired results, that is, those laid out in their plans.

Examples of outcomes

The following are three examples of results achieved by teams participating in various online programs.

A virtual leadership development program in Eastern Europe, 2008
Despite the importance of integrated, holistic approaches to delivering health services, many national tuberculosis and human immunodeficiency virus (TB/HIV) coinfection programs in Eastern Europe and Eurasia are managed as separate, vertical programs. A virtual leadership development program offered in 2007 aimed to strengthen the capacity of government and nongovernment agencies to work together in the areas of TB and HIV.

Ten teams of 66 senior managers from Belarus, Kazakhstan, Russia and Ukraine participated, each representing national TB and HIV/AIDS programs. Teams identified a challenge they were facing and developed an action plan to address it, with the challenges falling broadly into two categories: alignment of agencies and organizations working in TB/HIV coinfection, and service delivery.

At the time of follow-up, a nongovernmental organization team from the Ukraine sought to increase the number of signatories on the resolution from the Second Conference on the National Response to the TB Epidemic, which numbered 15 at baseline. At follow-up, 75 nongovernmental and public sector organizations had signed. In the area of service delivery, the program enabled teams to exceed their patient targets for antiretroviral treatments and individualized multidrug resistant therapy (Breygin, 2009).

A team working on HIV challenges in Belarus reported an increase of 500 people (from 700 people at baseline to 1200 people at follow-up) receiving antiretroviral treatment following the implementation of their action plan (Breygin, 2009).

A virtual leadership development program for monitoring and evaluation teams, 2010
This program was offered in 2010 to teams charged with the monitoring and evaluation of family planning and reproductive health programs. Sixty-four participants from the 10 teams in five countries (Ethiopia, Kenya, Nigeria, Tanzania and Uganda) completed the program. At the time of follow-up, teams had made important progress on the action plans to improve monitoring and evaluation systems and service delivery (Chan, 2011).

A public sector team from Nigeria identified the challenge of coordinating training sessions for family planning health workers working in monitoring and evaluation despite the lack of funding and dedicated personnel. They set a goal of training nurse midwives in emergency obstetric care with an emphasis on monitoring and supervision of reproductive health activities. The team set a target of training two nurse midwives from one primary health center in each of the 57 local government associations within 6 months of the end of the program (zero trained at baseline, 114 total

target). They reported achieving 70% of their target (40 of the 57 local government associations had trained 80 midwives in total). The team reported that their quality of work had improved, that they were using data to plan and monitor programs and that they were practicing evidence-based planning backed by data (Chan, 2011).

Virtual business planning for health program, 2008
A team from a family planning organization in Peru that participated in the Virtual Business Planning for Health Program secured more than US$47,000 in funding from the Peruvian government to make spermicidal latex condoms available for low-income young adults (Monteforte, 2009).

Limitations of program evaluation and measurement

Like many organizations, MSH has limited resources to devote to program follow-up and measurement, especially with such a widely geographically dispersed pool of participant organizations. As a result, data on the progress teams make implementing their action plan and any resulting changes in organizational performance and service delivery are self-reported by program participants, are not independently observed or verified and are subject to reporting bias. MSH also faces limitations in conducting follow-up with teams 6 months postprogram. Sometimes it is impossible to get in touch with teams so there is no response at all. Sometimes even after receiving a response, the information is incomplete and despite several attempts at follow-up by telephone and e-mail, the response remains incomplete. Finally, some teams do not report progress on their program action plans because of changes in the personnel, strategic plans or other factors within their organizations or governments.

Conclusion

Blended, online, in-service training is a feasible option for reaching health professionals in low-resource settings. As new technologies become available in low- and middle-income countries, blended learning approaches constitute a viable solution to meeting the demand for continuing professional education in leadership and management in health. This methodology enables health professionals to apply the skills they learn to real challenges to achieve results and can be adapted to other training settings to rapidly scale-up management and leadership capacity building.

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