Perspective

Let’s Take it to the Clouds: The Potential of Educational Innovations, Including Blended Learning, for Capacity Building in Developing Countries

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Abstract
In modern decentralised health systems, district and local managers are increasingly responsible for financing, managing, and delivering healthcare. However, their lack of adequate skills and competencies are a critical barrier to improved performance of health systems. Given the financial and human resource, constraints of relying on traditional face-to-face training to upskill a large and dispersed number of health managers, governments, and donors must look to exploit advances in the education sector. In recent years, education providers around the world have been experimenting with blended learning; that is, amalgamating traditional face-to-face education with web-based learning to reduce costs and enrol larger numbers of students. Access to improved information and communication technology (ICT) has been the major catalyst for such pedagogical innovations. We argue that with many developing countries already improving their ICT systems, the question is not whether but how to employ technology to facilitate the continuous professional development of district and local health managers in decentralised settings.

Keywords: Blended Learning, Decentralisation, Low- and Middle-Income Countries (LMICs), Education, Health Managers

Introduction
A large number of low- and middle-income countries (LMICs) have decentralised their health system,1,2 making district and local leaders responsible for planning, budgeting, and managing health services. Decentralisation is intended to reduce current patterns of inequity3,5 and improve service delivery by encouraging the development of local solutions and accountability for local problems.6 However, at lower levels of the health hierarchy, many health managers lack the skills and competencies needed to run a health system, particularly those located in the most remote or poor locations.2 Moreover, better qualified personnel often refuse to work in such locations, and those interested in building their skills are the most likely to seek employment or training opportunities elsewhere.7

Continued professional development for rural health workers is therefore essential to improve health systems in LMICs, especially decentralised nations with insufficient and/or poorly qualified personnel.8 However, traditional face-to-face training can be prohibitively expensive and places significant emphasis on human and financial resources which are often unavailable in large or resource-constrained settings.8 In Indonesia, for example, a bottom-up approach to planning and budgeting health services would require a large scale capacity building program targeting 33 provinces, 497 districts/municipalities and 6651 subdistricts. Taking such planning and budgeting closer to the community would entail building the capacity of government officials in 77 126 villages. Alternatives to face-to-face training, particularly in rural and remote communities must be sought in order to train workforces constrained by financial burden as well as physical barriers.9

With the pressure to reduce costs, increase access and improve the efficiency and technical content of training, technology is now being utilised to provide learning solutions. While the concept of online learning is not new, as technologies become more sophisticated, so do the modalities employed. The introduction of new information and communication technology (ICT) over recent decades has paved the way for online learning platforms to grow and diversify with the needs of users.

Several platforms make use of ICT infrastructure, including standard online courses, massive open online courses (MOOCs) and blended learning. The use of such e-learning tools has resulted in the motto “anytime, anywhere, anybody” in relation to online education in high-income countries.10 They offer individuals the opportunity to engage in web-based courses which remove geographical barriers to learning whilst also reducing costs.11 Well-designed online courses with solid instruction design and that are part of an academic curriculum can be equivalent to standard face-to-face instruction.12 However, e-learning courses not offering clear
Blended approaches have been introduced in other areas of the private sector and government service provision. For example, many everyday tasks undertaken by government or private companies use ICT to improve efficiency, enhance service provision, and improve community access to and uptake of information, while still allowing for direct interpersonal communication as needed. While large e-government programs have generally been successful in high-income countries, they have been less so in LMIC, with a complete failure rate of over 30%, or more alarmingly, only a seventh of initiatives deemed successful.

Similar lack of success in an earlier study was explained by technical factors, such as late delivery of technical systems, software problems and lack of adequate training, along with a lack of political support, resistance to change, insufficient consultation with stakeholders, poor adaptation to the local context and mistrust. We should note, these problems must be considered when reforming public services in general; they are not exclusive to projects involving new technology.

Where to From Here?
Current technological advances are helping the formal education sector to develop new delivery modes that can meet, at low cost, the demand for continuing education and retraining of the global workforce. The question for governments, universities, colleges, and private businesses is not whether but how to employ technology to engage distant and mobile learners. Likewise, given the continuous need for capacity building of local health managers and the current costs and logistic barriers imposed by traditional face-to-face instruction, governments have no option but to exploit technological and pedagogical advances in the formal education sector. Web-based approaches can benefit staff in remote areas. In developing countries, already improving their ICT systems, the limitations of future development may relate more to work and political constraints, and the contextualisation, tailoring of and support for the content. Adequate and sustained investments by donors and governments in higher education institutions are required to take blended learning initiatives to scale. These investments should address not only the technical aspects of delivery, but also the capacity gaps for teaching staff. Robust instruction designs are crucial for the success of any online and blended learning courses, but current capacity in developing countries is limited in this regard.
Blended approaches to capacity building can provide adequate opportunities for interaction between groups of health managers and between them and their trainers or mentors at a reasonable cost. Such approaches will require strong support from government, donor and educational institutions; their buy-in is also crucial to achieve economies of scale and to facilitate learning and familiarity with such new platforms. Currently, the full potential of blended learning for both the education sector and as an approach to capacitate local health managers is yet to be realised. Different models should be piloted and evaluated in different settings to provide more information on the best ways to realise this potential.

**Ethical issues**

Not applicable.

**Competing interests**

The authors declare that they have no competing interests. Any opinions stated are those of the authors and not of their parent institutions.

**Authors’ contributions**

EJS conceptualised the research. HM undertook the literature search, collected the data, and synthesized the results. EJS and HM drafted the manuscript. SF and DH contributed to themes analysis and reviewed the draft manuscript. All authors contributed significantly to revisions and approved the final manuscript.

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**References**