

that requires faculty in health economics, health policy, gender issues in health, anthropology, health management, epidemiology and biostatistics. There are reports claiming that health economics are neglected in the south Asia region.³ There are also severe shortages of good faculty in other public health disciplines. Human resources for health in general, and for public health in particular, are facing major challenges in developing countries and there is an urgent need for national governments to invest in human resources.⁴ It has also been argued that investment in human resources must be considered as part of a strategy to achieve the Millennium Development Goals.⁵ Another challenge is to create career paths for public health professionals, in order to enhance the quality of the public health system.

Future plans for the programme are: (i) to increase both student and faculty strength; (ii) to network with other public health institutions, such as the public health foundation of India and the Indian Council of Medical Research schools of public health; and (iii) to develop a plan to pool faculty and other resources for teaching and research in public health. ■

References

1. mciindia.org [homepage on the Internet]. New Delhi: Medical Council of India; 2007. Available at: <http://www.mciindia.org>
2. Reddy KS. Establishing schools of public health in India. In: Matlin S, ed. *The global forum for research for health*, vol. 2. *Poverty, equity and health research*. London: Pro-brook Publishing; 2005. pp. 149-53.
3. Varatharajan D. Special issue on South Asia: health economics is neglected in this region. *BMJ* 2004; 328: 288.
4. Chen L, Evans T, Anand S, Boufford JI, Brown H, Chowdhury M, et al. Human resources for health: overcoming the crisis. *Lancet* 2004; 364: 1984-90.
5. Anand S, Barnighausen T. Human resources and health outcomes: cross-country econometric study. *Lancet* 2004; 364: 1603-9.

The role of information and communications technology

James A Merchant,^a Thomas M Cook^b
& Cliff C Missen^c

Although each of the questions posed by the authors of the base paper deserves extensive discussion and decisive action, we will limit our comments to the issue of “scaling up public health education and training in low- and middle-income countries”. In particular, we would like to comment briefly on our experiences in using information and communications technology (ICT) to address this issue.

Many public health institutions in developed countries take state-of-the-art ICT for granted and assume that institutions in other countries have, or should have, a high level of

ICT “literacy”. They also often assume the same level of access to the vast amount of information on the Internet. Both of these assumptions are incorrect about institutions in the majority of developing countries. Indeed, 80–85% of the world’s population has no access to the Internet, and, consequently, has no access to, or use of, educational materials as configured in developed-country institutions, assuming those materials are even appropriate for their needs.

Institutions in developing countries need ICT that is low-cost, requires a minimal level of training and experience, and has been proven to be both dependable and effective under conditions in developing countries. After much trial and error, we are currently devoting our efforts to a combination of two proven technologies that are now in use in more than 50 developing countries. These technologies are used to augment and support, but not supplant, ongoing health education programmes for multiple levels of health workers, policy-makers and the public. Although the specific configuration at each location is determined by local training needs and existing resources, each site has two core components. The first is an on-site digital library that provides (multiple) users with instantaneous, off-line access to millions of documents, web sites and educational/curricular materials. Materials in these digital libraries are instantly available 24 hours a day, every day, at virtually no cost to the users. These libraries not only serve as a source of current, comprehensive health information, even in remote “unconnected” locations, but an update mechanism allows dissemination (“publishing”) of locally produced materials to other institutions in the global network.

The second technology is the use of online, real-time connections to outside resources by means of web-conferencing designed specifically to work even over slow, low-quality internet connections, where available. This technology provides live connections to courses, teachers, and consultants from partnering and twinning institutions in developing and developed countries. Using this system, institutions can interact on the basis of specific topics (e.g. malaria, HIV/AIDS, emergency preparedness), specific health disciplines (e.g. nursing, community health work) and/or countries/regions (e.g. east Africa, Indonesia) to meet identified local needs for health information and education. Because of its readily adaptable technology, the network of institutions can be easily expanded to include as-yet-unidentified professional organizations, governmental bodies, policy-makers, nongovernmental organizations (NGOs) and others.

Together these technologies provide the information infrastructure for sharing knowledge and resources on a regional, national and global basis. In the end, the focus is not about technology, but about what technology can help accomplish. ■

^a College of Public Health, University of Iowa, Iowa City, IA, USA.

^b Centre for International Rural & Environmental Health, 158 IREH Oakdale Campus, University of Iowa, Iowa City, IA 52242, USA. Correspondence to Thomas M Cook (e-mail: thomas-cook@uiowa.edu).

^c Widernet Project, School of Library and Information Science, University of Iowa, Iowa City, IA, USA.