


Building public health capacity through online global learning

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Abstract

Rising disease burden and health inequalities remain global concerns, highlighting the need for health systems strengthening with a sufficient and appropriately trained workforce. The current models for developing such a workforce are inadequate and newer approaches are needed. In this paper we describe a model for public health capacity building through online Global Learning, defined as “innovative, integrated, global opportunities for capacity building through online learning and shared experiences *between* and *within* Low- to Middle-Income Countries and High-Income Countries, in a continuous process that helps health care workers learn as they progress through their careers”. We demonstrate how two programmes, *Peoples-uni* and *NextGenU.org*, have implemented this model using a mix of low-cost and free online learning courses, a global community of volunteer tutors, mentors and peers, and appropriate high quality competence-based content.

Keywords: online learning; global health; capacity building; public health; student mentoring

Introduction

This paper identifies the need for a new approach to Public Health capacity building, describes the success of two online education initiatives, and presents an innovative model framework to transform educational practices through global learning to build Public Health capacity.

The need for a new approach

The Global Strategy on Human Resources for Health: Workforce 2030 recognizes the need to boost the global Public Health workforce (World Health Organisation, 2016). Traditional higher education models have proven insufficient and inappropriate to solve the workforce challenge and build capacity, particularly in Low- to Middle-Income Countries (LMICs). The *Lancet Commission on Health Professionals for a New Century* (Frenk et al., 2010) recommended:

“Redesign of professional health education is necessary and timely, in view of the opportunities for mutual learning and joint solutions offered by global interdependence due to acceleration of flows of knowledge, technologies, and financing across borders, and the migration of both professionals and patients” (p. 1923).

The British Council in its 2015 report *Connecting Universities - Future Models of Higher Education* (British Council, 2015) stated:

“As the traditional suppliers of higher education, universities today are operating in a rapidly changing environment. As well as coping with less resources, traditional learning has evolved: access to information is now freely available online; with smartphones, tablets and an array of digital tools at their fingertips, the habits and expectations of students have changed” (p. 2).

A number of new models of higher education have been proposed, including for LMICs (Nhando, 2015; Mintz, 2014; Epstein & Yuthas, 2012) using advances in technology, and building on the increasing availability of Open Educational Resources (OERs) and open source delivery platforms (Creative Commons, 2016). The development of free Massive Open Online Courses (MOOCs) has increased access for students, although exposure to LMIC audiences has been limited (Wildavsky, 2015), and MOOCs' consequent credentials and certification are still limited to those who pay. While recognising the limitations of MOOCs, Bill Gates in his 2015 letter includes a whole section focusing on online education titled: “Better software will revolutionize learning” and predicting a “future in which world-class education is only a few taps away for anyone in the world” (Gates, 2015).

Two examples of online education for Public Health capacity building

We have previously described our work on building Public Health capacity in LMICs and High Income Countries (HICs) through e-learning, using OERs and volunteer tutors (Heller et al, 2007; Heller, 2009; Galway, Corbett, Takaro, Tairyan & Frank, 2014; Frank et al., 2016; Clair, Mutiso, Musau, Frank & Ndeti, 2016), which have been identified as innovative models for global health education (Crisp & Chen, 2014; Ladner, 2014).

The *Peoples' Open Access Education Initiative* (Peoples-uni: <http://peoples-uni.org>) provides low-cost online education to help build Public Health capacity in LMICs (Heller, 2009). Modules for continuing professional development or as part of a Master of Public Health (MPH) course, are taught by an international volunteer faculty (including graduates of the programme) and courses are developed using Open Educational Resources. Students can choose from a range of modules on public health foundation sciences (e.g. Health Economics, Health Promotion, Evaluation, Epidemiology, Biostatistics, Health Inequalities and Social Determinants of Health), and topic-based modules (e.g. HIV/AIDS, Preventing Child Mortality, Injury Prevention, Non-Communicable Diseases, Communicable Diseases, Disaster Management and Emergency Planning). To date, 1691 students have enrolled, of whom 30% passed at least one module at the Masters level. In a partnership with a UK University, 128 students who had already passed two modules enrolled on the MPH programme – 94 (73%) graduated with an MPH and a further 18 (14%) gained a graduate Diploma or Certificate. Seventy percent of the students are from Africa and 12% from the Indian sub-continent. Student feedback is very positive, our website (<http://peoples-uni.org>) includes testimonials from a number of graduates (such as “*Peoples-uni is a new breathing of life for students from developing countries who can now enrol and learn about public health and contribute to the country needs where public health improvement is urgent*”). An active alumni group continues to work together to perform and support collaborative research (Heller, Machingura, Musa, Sengupta & Myles, 2015).

A sister site, *Peoples-uni Open Online Courses* (<http://ooc.peoples-uni.org>), offers self-paced learning in public health - it is freely available in any country. More than 2300 people have enrolled

on the site and in a report of the first 1174 students (Heller et al, 2017), 15% gained a certificate of completion. Students are spread between LMICs and HICs, although Africa remains the largest geographical source. A wide range of courses is available, many in areas not usually covered in traditional MPH courses, and some developed by or for other organisations.

NextGenU.org is the world's first organisation that provides credit for free. Accredited courses span from college-level pre-health sciences and community health worker training through medical and public health graduate training, medical residency programs, and continuing medical education. Courses are competency-based, and include online knowledge transfer, a web-based global peer community of practice, skills-based mentorships, and a free certificate. More than 5,000 users have registered from over 200 countries, and NextGenU.org expects to achieve its ultimate outcomes by July 2018: the first globally free degree, a Master's in Public Health, and Graduate Medical Education (a Preventive Medicine Residency). Founded in 2001, NextGenU.org globally launched its first full course in March 2012, Emergency Medicine (EM) for Senior Medical Students, created in partnership with Emory University's WHO Center for Injury Control, the International Federation of EM, and the Society of Academic EM. NextGenU.org's accredited partners, North American universities that are outstanding in each particular course topic, give learners credit for this training (or institutions can adopt them and use them with their students).

The NextGenU.org free model has been tested in North American medical and public health students (Galway et al, 2014; Frank et al, 2016), and in community health workers and primary care physicians in Kenya (Clair et al, 2016), with as much knowledge gain and greater student satisfaction than with traditional courses, and the creation of a community of practice that has learned to interact globally and productively. While the rates of completion by individuals is low and similar to that of MOOCs, when these NextGenU.org courses are adopted by institutions, there is essentially 100% completion.

Both Peoples-uni and NextGenU.org are committed to the quality of their educational approaches and have a number of structures and policies in place to ensure that teaching quality will be maintained over time. Partnering with other educational organisations that offer their own quality assurance is also a way of maintaining quality. Although both programmes evolved separately, and differ somewhat in detail, they each respond to a common need and to the opportunities for online learning in the digital age. Presenting them together in this way, in the context of a general model, we hope will encourage others to replicate and expand this approach.

The Global Learning model

We define Global Learning as “innovative, integrated, global opportunities for capacity building through online learning and shared experiences *between* and *within* Low- to Middle-Income Countries and High-Income Countries, in a continuous process that helps health care workers learn as they progress through their careers”. Educational programs are developed and delivered for relevant needs at various stages, with a progression from learning to leadership, as demonstrated in Figure 1 – the Learning Ladder. We have identified a number of key ingredients for online Global Learning, including Information and Communication Technology, the need for a global context and multidirectional learning, a focus on further educational developments, as well as lifelong learning through career progression. The features of these ingredients are described in Table 1.

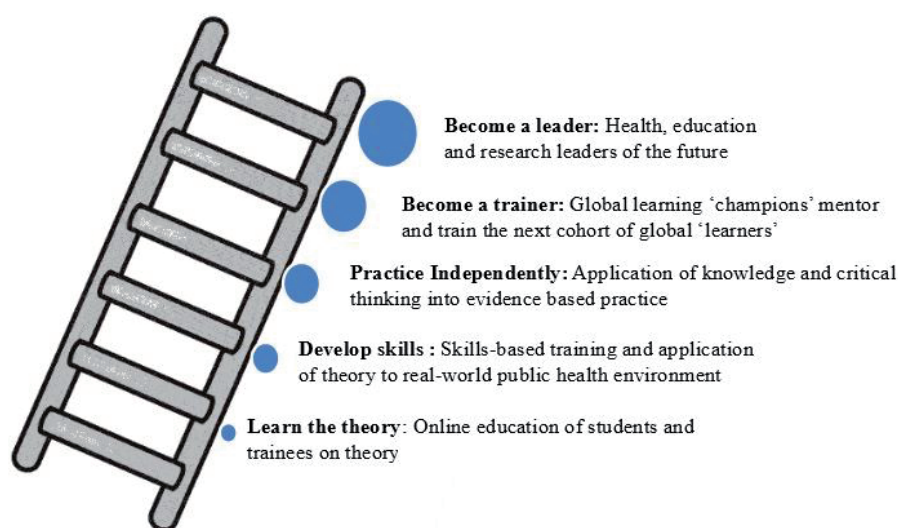


Figure 1: The Learning Ladder

Table 1: Key components and features of Global Learning

Key components	Features
Information and Communication Technology	Online learning; best international Open Educational Resources; collaboration and networking across boundaries, including student/teacher interactions
Global context	Global health challenges that are common to all settings covered; volunteer tutors from HICs* and LMICs**, costs affordable for HIC and LMIC students
Multidirectional learning	Learning between and within HICs and LMICs, and between local and/or global mentors/tutors and students and between local and/or global peers
Focus on further educational developments	New content, delivery channels and awards developed during program, and through new partnerships
Lifelong learning though career progression	Appropriate for career stage; <i>alumni</i> engaged in education, research and advocacy

* High-Income Countries.

** Low- to Middle-Income Countries.

Conceptual model

Our approach leans on a new conceptual model of education, relevant to the digital age, Connectivism, which:

“presents a model of learning that acknowledges the tectonic shifts in society where learning is no longer an internal, individualistic activity. How people work and function is altered when new tools are utilized. The field of education has been slow to recognize both the impact of new learning tools and the environmental changes in what it means to learn. Connectivism

provides insight into learning skills and tasks needed for learners to flourish in a digital era” (Siemens, 2005, n.p.).

Our model of Global Learning is an extension of Connectivism to offer an innovative and practical approach to the enormous problem of global Public Health human resource shortages.

How to deliver the model

Preliminary:

- Assemble cohort – shared interest/affiliation/geography plus desire to learn about Public Health
- Identify needs and availability

Develop knowledge and skills for independent practice:

- Provide access to online courses – self-paced or supported with facilitated discussions, mentorship and possible addition of face-to-face or flipped classroom
- During the programme and among *alumni*, students collaborate to learn from each other
- Offer certification/credit/academic award (MPH)

Develop skills as trainer and leader:

- Collaborative research among graduates
- Facilitate and develop further educational opportunities for the graduates
- Graduates join programme teaching staff and develop own educational products

The aim is to create an iterative process of education and feedback with increasing depth and widening range of delivery methods. Once started, feedback on future learning needs will enable the development of future content and delivery channels, enabling progress through the Learning Ladder, from healthcare student, to practitioner, then trainer and leader. This creates the possibility of globally, sustainably, and permanently transforming health sciences education, and filling in the enormous gaps in health worker capacity.

Outcomes of the model

The framework depends upon internet-based e-learning, and on a global network of volunteer tutors and students. It encourages collaboration, and allows education to cross both geographical and professional boundaries, facilitating learning between countries and across income settings, and allowing students to maintain their current employment, not depleting vital local manpower.

Volunteer tutors, including *alumni* of the original programmes, work as an online network, thus defraying costs and travel and minimising environmental impact, and time expenditure. This, together with the use of Open Educational Resources, allows lower investment in infrastructure.

Further opportunities include the possibility of more intensively supplementing e-learning with face-to-face mentored and peer-based education, where this is feasible and cost effective. Other individuals and organisations can be encouraged to collaborate and partner to develop further educational programmes.

Lastly, this framework allows us to explore how global learning can be built into current undergraduate and graduate education and training programmes in HICs (Galway et al, 2014; Frank et al, 2016; Jones, Beanland & Mathew, 2013). In this way, the model offers the potential for increased knowledge of global health problems amongst those working in high-income settings, as well as expanded and quality-assured opportunities for those offering their skills as volunteer tutors.

Challenges

There remain a number of challenges to the model. The traditional higher education system is often resistant to change, and the sustainability of educational programmes such as those we describe, which are sited outside the traditional system, is difficult to predict, and depend on the credibility offered to them by healthcare organisations and employers. The financial viability of free and low-cost courses also remains a challenge. A reliance on volunteers is a risk, as well as a strength, and efforts will have to be continued to ensure that the quality of the education is maintained over time.

Conclusions

The Global Learning model we describe: “innovative, integrated, global opportunities for capacity building through online learning and shared experiences *between* and *within* LMICs and HICs, in a continuous process that helps health care workers learn as they progress through their careers” creates the possibility of globally, sustainably, and permanently transforming health sciences education, and filling in the enormous gaps in health worker capacity. Debate and collaboration with others will allow global learning to be scaled up and adapted to support capacity building for health systems.

Acknowledgments

We acknowledge and are very grateful for the long and ongoing support of *Peoples-uni* and *NextGenU.org*'s volunteers, students and *alumni*. We thank Neil Squires and colleagues at the Faculty of Public Health for their advice and encouragement, Gill McLauchlan for her early work on developing the OOCs, and colleagues from the Global Health Exchange (GHE www.globalhealthexchange.co.uk) especially Ged Byrne, Helena Posnett and Anna Lee for their input into the thinking about the model. The GHE has provided financial assistance to the Peoples-uni, the Annenberg Physician Training Program is the provider of NextGenU.org's endowment.

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