

Capacity-building for public health: <http://peoples-uni.org>

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Abstract The development of educational context around free and open-source materials available on the Internet has the ability to help build public health capacity in low- to middle-income countries. Inspiration to develop such a programme comes from the free and open-source software movement, where many hundreds of individuals have collaborated in the development of high-quality software freely available on the Internet, and its education counterpart of Open Educational Resource development. These reflect societal developments, especially those associated with Web 2.0.

In a partnership across the global and digital divides, the People's Open Access Education Initiative (<http://peoples-uni.org>) has been established to embrace three aspects. First, identifying open-access materials linked to the competences required to tackle public health problems, with subsequent modifications to the materials by teachers and students to reflect local issues. Second, teaching through online facilitation by volunteers in conjunction with members of local universities. Third, accrediting learned competences.

Situation analyses already performed suggest that the need for this education is great and that this solution may be feasible in many countries. Several partners have already agreed to be involved and exemplar course modules are being prepared. We call for volunteers to help take this initiative further.

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Une traduction en français de ce résumé figure à la fin de l'article. Al final del artículo se facilita una traducción al español. الترجمة العربية لهذه الخلاصة في نهاية النص الكامل لهذه المقالة.

Introduction

Most low- to middle-income countries (LMICs) have to cope with a wide range of health problems that interfere with their future economic development. Even in countries where the economy is booming, such as India, health inequalities are widening and health care is becoming unaffordable. Public health is a major priority, especially to address the spread of AIDS, tuberculosis and common infectious diseases, as well as the emergence of chronic disease epidemics. In several countries, improvements in child and maternal mortality have reached a plateau.

Health is improving more slowly in many LMICs than in richer countries, increasing international health disparities. A trained workforce of health professionals is essential but, for many

reasons, there is currently a lack of adequate capacity. This has been well articulated recently in many arenas, including *The world health report 2006: working together for health*.¹ In response to this, WHO has established the Global Health Workforce Alliance (<http://www.ghwa.org>), whose Scaling Up Education and Training Taskforce is co-chaired by the author of, and informed by, *Global Health Partnerships: the UK contribution to health in developing countries*.²

In the field of public health, it has been estimated that in India, for example, there is a need for 10 000 graduates of Masters of Public Health (MPH) courses each year for the next ten years (<http://www.phfi.org/home.asp>). Where local universities offer relevant courses, they may be unable

to meet the numerical need through provision of limited numbers of places on face-to-face courses. Fees for overseas universities are higher than can be afforded by most potential students in these countries. For both local and international courses, the need to travel for this education may be both costly and inappropriate in the context of personal or geographical restrictions. In particular, this may limit access for women and those health workers with low salaries. Capacity-building is thus essential, but inadequate at present.

An inspiration

The free and open-source software (FOSS) movement provides inspiration for an affordable and credible solution (<http://en.wikipedia.org/wiki/FOSS>). Many hundreds of individuals have

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contributed to the development of high-quality software which is freely available on the Internet. The Linux operating system (<http://www.linux.org>) and the Apache server (<http://www.apache.org>) are excellent examples. Quality is ensured by constant “peer review” by users who make changes to improve the software. The Apache web site states: “The Apache projects are characterized by a collaborative, consensus-based development process, an open and pragmatic software license, and a desire to create high quality software that leads the way in its field. We consider ourselves not simply a group of projects sharing a server, but rather a community of developers and users.” Can this be applied in the field of public health capacity-building?

In the education field, there are now parallel developments of Open Educational Resources (OERs) with an ever-expanding range of high-quality online resources that are freely available through the Internet. There is major international interest and commitment in the use of OERs, as demonstrated by the UNESCO International Institute for Educational Planning’s Open Educational Resources Community (http://oerwiki.iiep-unesco.org/index.php?title=Main_Page).

Web 2.0

Web 2.0 refers to the evolution of Internet use from the one-way transfer of information (Web 1.0) to collaboration and participation among users. In the context of education, students are not just recipients of education but are involved in collaboration in learning activities, expressed as eLearning 2.0 or Education 2.0 (http://en.wikipedia.org/wiki/Elearning_2.0). Education 3.0 is considered to be the extension to this, where open-access materials are created and adapted by various collaborating groups and individuals including the students.³

A new educational approach

Building on these needs and inspirations, we have proposed an educational initiative based on the open education resources available on the Internet. If we can develop an educational context around the open resources that are freely available, this might provide a low-cost solution to capacity-building in developing countries. This added context would include:

- a gateway or repository for accessing materials that are linked to identified competence development and can be modified to reflect local settings;
- the teaching or facilitation of learning through online-focused discussions;
- a system for accrediting learned competences.

We have termed this the People’s Open Access Education Initiative (Peoples-uni) and created a web site (<http://peoples-uni.org>).

Extending the concept

At an online discussion board run through Cawdnet Campus, which is associated with the Charity for African Welfare and Development (<http://moodle.cawd.net>), there was general agreement that such a system would be welcome, that it must involve local educational institutions, that different solutions are likely in different countries, and that a situation analysis to assess the feasibility of such an approach was a vital next step. Local educational institutions would benefit from an association with this initiative through access to new educational technologies, resources and expertise and through the ability to reach more students. Schools of public health in LMICs could be strengthened in this way, as well as contributing their own valuable local insights and expertise to the Peoples-uni.

Relevance to local populations can be achieved through attempting to replicate the experience of the open-source software movement, where users have provided adaptations and changes. Thus, we would envisage the provision of open-source materials on a server, linked to the competences the materials could be used to develop. The materials would be used and adapted by the teachers and students in LMIC settings by including situation-specific examples.

Situation analyses

Situation analyses are under way in several countries. Some of the findings are as follows:

In the Democratic Republic of the Congo, Katanga Province has nine million people and around 30 health workers trained in public health. A master’s programme in Public Health is in its third year. Supported by the

Belgian government, its intake was 32 students in the first two years. The limiting factors are likely to be Internet access and language, French being the official language.

In Ethiopia, a country of 75 million people, there have been approximately 250 MPH graduates from Ethiopian institutions in the past 10 years. In 2006, there were places for only 10% of applicants to Addis Ababa University’s MPH programme. There is support for the Peoples-uni from several sectors and individuals. The major limitation is current Internet access so, to overcome this, an Information and Communications Technology (ICT) resource centre should be developed.

In India, there are only a handful of MPH courses, although several new schools of public health are being planned. There are many bureaucratic restrictions to the development of new courses, but collaboration with current courses was welcomed by several universities contacted.

In Nigeria, there is a lack of public health capacity, particularly in rural areas. An existing ICT resource centre will be involved in the initiative, and several institutions and individuals have expressed willingness to collaborate.

In Sri Lanka, there have been 94 specialist graduates in community medicine from the Postgraduate Institute of Medicine since 1980, and all of these were doctors. In spite of the perceived need, there are no master’s courses for non-medical graduates. The ability to link with overseas institutions would be welcomed.

In the Sudan, there are few MPH graduates from current universities, and several individuals and institutions have shown support for this initiative.

What is needed?

Clearly we are at a very early stage in the development of this initiative and much work will have to be done to make it successful. Specifically, we will need to pay attention to the following:

Materials: The initiative requires the development of a repository of open-access materials, subjected to peer review and revision. The Cochrane Collaboration⁴ is a model for how this might be developed and managed, although the topics would be educational resources linked to identified competences rather than systematic reviews.

Educational technology would also be made available through this repository, such as formats for online discussions and e-portfolios to help with student-led education.

Teachers: Individual volunteers are needed to help identify these resources and to act as facilitators for online discussion groups. These might include retired academics who wish to continue to be active in education, health service personnel who wish to contribute their service orientation, university employees who wish to donate their time or resources to this project and members of the diaspora of various countries who wish to give something back to their country of origin. Partnership with academics from local universities would also add value.

Accreditation of learning: Local universities might offer accreditation through their usual procedures. Otherwise, a system of assessment of acquired competences would be required. National or international organizations might wish to implement a certification standard for this process or the outcomes.

Development of education approach: This will be a problem-based and competence-based approach according to the following sequence: identify the public health problem to be solved (such as maternal mortality); identify the educational need (such as a master's-level course for graduate health professionals – train the trainers); identify the appropriate competences to be acquired; find online materials which are relevant to these competences; provide tutor/facilitator support around focused discussion topics for group online learning; assess acquired competences.

Evaluation: An important element of the initiative has to be an evaluation, including the benefits to both teachers and students. Web 2.0 tools have been thought to be particularly valuable in education and its evaluation.⁵ As examples, the WikiEducator programme which we have used in our course development allows the contribution of course developers to be documented. This will allow course developers or facilitators to claim credit, such as for their Continuing Professional Development portfolios. The portfolio function of the Moodle platform we are using for course delivery allows students

(and teachers) to monitor and archive student outputs and achieved competences. Each of our course modules contains automatic Internet updates from peer-reviewed journals or other international organizations. We will not be performing peer review of each of the web resources to which we link, but each of these resources will be produced by professional organizations which have their own peer-review systems. Health Sciences Online (<http://hso.info>), which will provide many of our linked resources, has its own peer-review system for all the material on its web site.

Organization: Course modules will be developed by small groups who will maintain editorial control for the revisions requested from teachers and learners as the courses are run. The overall composition of the courses, and the way all relevant competences are to be covered and assessed, will be overseen by an academic subgroup separate from the management and steering groups. In view of the importance of developing and meeting competences, a separate group will engage with the academic group to discuss the pedagogic aspects of competence development, assessment and monitoring.

We plan a decentralized organizational structure with various individuals and organizations undertaking different tasks. We are calling this “volunteer-sourcing” – a variant of crowdsourcing, a term used to define an open call to the general public to outsource a task or problem (<http://en.wikipedia.org/wiki/Crowdsourcing>). While many of these tasks might be performed by volunteers, others will require funding (such as accreditation). Tasks to be undertaken, and for which organizations and individuals are asked to offer, might include to:

- join the steering, management, academic or competence groups
- develop/run a course module
- facilitate discussions as a tutor or content expert
- act as student mentor
- run a development meeting (nationally or internationally)
- offer secretarial help
- develop and run an accreditation system
- develop and run a system to enrol and keep track of those taking courses
- host a web site for running course modules/discussions

- advise on evolving educational and communications technology
- organize and offer training to facilitators
- approve/endorse/partner/sponsor this initiative.

Will it work?

Stimuli to suggest that this might be feasible include the wonderful achievements of the open-source software movement. Here many hundreds of people have worked collaboratively, without fees, to develop software which is offered both as an alternative and complement to the private sector. Proponents of this method of development claim that high-quality products are produced through enlisting customers as co-developers. In Eric Raymond's essay on free software development models, *The cathedral and the bazaar*,⁶ he contrasts the cathedral, a single closed institution, with the bazaar, which encompasses different approaches from which a coherent system can develop. We are in the camp of the bazaar, which is more chaotic and depends on organic growth, rather than the single university cathedral which is less open to change and the adoption of new ideas and technology. Quality is ensured by constant peer review by customers rather than by edict through arbitrary university processes. This does depend, however, on the ability to tolerate ambiguity and uncertainty. We would hope to be able to mobilize the kind of involvement seen among software developers. Other societal developments may be in our favour, with the movement sometimes termed the third sector, including non-institutional players in education such as the University of the Third Age (U3A) (<http://www.u3a-info.co.uk>).

Of relevance to public health and beyond, there are numerous (and growing) web sites that contain high-quality learning materials that are created by learners and organizations, such as the Global Health Education Consortium (<http://www.globalhealth-ec.org>), the Epidemiology Supercourse (<http://www.pitt.edu/~super1>), MERLOT (<http://www.merlot.org>), the Development Gateway (<http://topics.development-gateway.org/openeducation>) and the Public Health Agency of Canada (<http://www.phac-aspc.gc.ca/sehs-acss/index.html>). Another Canadian initiative has

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already identified and provided a portal to online health sciences resources (<http://hso.info>). Several universities are putting educational material online for open access, but they do not include either teaching or accreditation of learning (<http://ocw.jhsph.edu/>; <http://ocw.tufts.edu/Schools/1>; <http://openlearn.open.ac.uk/mod/resource/view.php?id=48>; <http://www.uic.edu/sph/prepare>). There are cutting-edge open-source technologies and infrastructure available online to help the learner access and benefit from educational resources (<http://www.tencompetence.org>).

With the development of improved access, Internet-based e-learning has the exciting potential to deliver high-quality learning resources in an increasing variety of settings. Despite concerns that the spread of the Internet to developing countries is too slow, there are other technologies that are available now⁷ and it is likely that ICT will develop in a way to allow the type of programme we propose. Several of the recommendations of *Global health partnerships: the UK contribution to health in developing countries*² are consistent with many of the features of the initiative we propose, such as the importance of partnerships, the use of ICT and volunteers.

There have been previous education programmes using the Internet, such as the Masters of Public Health from the University of Manchester (available at: <http://www.manchester.ac.uk/mph>),⁸ and

the Internet has been used to supplement more traditional MPH courses where face-to-face access can be difficult.⁹ The Internet has also been used for continuing medical education in areas related to public health.^{10–14} However, we have not been able to find examples where OERs are used as the basis for public health education, or where such education is planned outside the traditional university sector, in the way we propose.

In common with other Internet-based education resources, students will enrol in individual course modules and be directed to resources through web links. Weekly discussion groups will be led by facilitators, replacing the more traditional face-to-face tutorials. These are asynchronous, so that students and tutors can join in at any time convenient to them, and the facilitator summarizes at the end of the discussion period. Evaluation of learned competences is via submitted assignments, although we are also exploring the possibility of including student- and employer-led evaluations.

Sustainability

Downes has thoughtfully discussed the various models for sustainability of open-source education resources.¹⁵ This depends on more than just identifying funding models (which include financial and non-financial incentives) but on allocating development roles and their context, as well as the distribution and use of education resources.

Funding models may include user-pays, contributor-pays, donations or endowments and sponsorship as well as government or institutional support. The role of volunteers has been crucial in the open-source software movement, but, most importantly, what role will universities play?

Support to date

Support has already been offered by several individuals and organizations. In particular, the Commonwealth of Learning has helped by establishing a web resource for discussions and content development, and we have become associate partners in TENCompetence, a large European Union-funded programme to develop and distribute online education resources for competence development. The Charity for African Welfare and Development (<http://cawd.blogspot.com>), and Doctors Worldwide (<http://www.doctorsworldwide.org>) have both contributed ICT support. Discussions are taking place with several others.

Call for collaboration and volunteers

This is designed to be a truly collaborative initiative. We call for anyone interested to join in or offer advice. Please look at the web site (<http://www.peoples-uni.org>) and/or contact one of the authors. ■

Competing interests: None declared.

Résumé

Renforcement des capacités en santé publique: <http://peoples-uni.org>

Le développement d'un environnement logiciel éducatif autour des matériaux en accès libre et gratuit sur Internet pourrait contribuer au renforcement des capacités en santé publique des pays à revenu faible à moyen. Ce développement s'inspire du mouvement des logiciels libres et Open source, auxquels plusieurs centaines de personnes ont participé en mettant au point des programmes de haute qualité, accessibles gratuitement sur Internet, et de son équivalent dans le domaine de l'enseignement, l'Open Educational Resource development. Ces nouveaux outils sont le reflet des évolutions sociétales et notamment de celles associées à l'arrivée de Web 2.0.

Dans le cadre d'une collaboration entre organisations mondiales et réseaux informatiques, la Peoples Open Access Education Initiative (<http://peoples-uni.org>) a été mise en place pour réaliser trois

opérations. Premièrement, identifier des matériaux en accès libre en rapport avec les compétences requises pour faire face aux problèmes de santé publique, avec par la suite une modification de ces matériaux par des enseignants et des étudiants pour prendre en compte les aspects locaux. Deuxièmement, délivrer un enseignement, avec l'aide en ligne de volontaires et de membres d'universités locales, et troisièmement, accréditer les compétences acquises.

Les analyses de la situation déjà effectuées laissent à penser qu'il existe des besoins importants concernant cet enseignement et qu'une telle solution est praticable dans de nombreux pays. Plusieurs partenaires ont déjà accepté de participer à l'Initiative et des exemples de modules de cours sont en préparation. Nous recherchons d'autres volontaires pour poursuivre cette entreprise.

Resumen

Desarrollo de capacidad de salud pública: <http://peoples-uni.org>

El desarrollo de contexto educacional a partir de material de libre acceso disponible en Internet brinda posibilidades para potenciar la capacidad de salud pública en los países de ingresos bajos y medios. La formulación de programas de ese tipo se inspira en el movimiento en favor del software libre y de código abierto, en cuyo marco centenares de personas han colaborado escribiendo software de gran calidad al que puede accederse libremente en Internet, así como en actividades similares de tipo educativo que se inscriben en los llamados Recursos Educativos Abiertos. Estas iniciativas reflejan las nuevas formas de interacción social, especialmente las asociadas a la Web 2.0.

En lo que representa una alianza transversal a lo largo de las brechas global y digital, se ha creado la Iniciativa de Educación de Acceso Abierto para los Pueblos (<http://peoples-uni.org>),

que pretende abarcar tres aspectos. Primero, la identificación de material de acceso libre relacionado con las competencias requeridas para abordar los problemas de salud pública, con la subsiguiente modificación del material por los profesores y estudiantes en función de las circunstancias locales. Segundo, la enseñanza mediante facilitación en línea por voluntarios conjuntamente con miembros de las universidades locales. Tercero, la acreditación de las competencias adquiridas.

Los análisis de la situación realizados indican que este tipo de educación es muy necesaria y que la solución aquí presentada es quizá factible en muchos países. Varios asociados han aceptado ya participar, y están preparándose modelos de módulos de cursos. Pedimos desde aquí voluntarios que ayuden a seguir impulsando esta iniciativa.

ملخص

بناء القدرات في مجال الصحة العمومية باستخدام: <http://peoples-uni.org>

للجميع، والمرتبطة بالاختصاصات المطلوبة لمعالجة مشاكل الصحة العمومية، مع إجراء تعديلات لاحقة على هذه المواد من قبل كل من المعلمين والطلاب بما يتناسب والقضايا المحلية، وثانياً توفير عملية التثقيف من خلال وسائل مباشرة على شبكة الإنترنت من قبل متطوعين، بالاقتران مع أعضاء من الجامعات المحلية، وثالثاً اعتماد الاختصاصات التي تم تعلمها.

وتشير تحليلات الأوضاع التي أجريت بالفعل إلى أن الحاجة ماسة إلى مثل هذا النوع من التثقيف، وأن هذا الحل يمكن تطبيقه في كثير من البلدان. وقد وافق العديد من الشركاء بالفعل على المشاركة، ويجري حالياً إعداد نماذج للوحدات التدريبية الخاصة بمثل هذه الدورات. ونحن، بدورنا، ندعو المتطوعين إلى التقدم للمساعدة في دفع هذه المبادرة قدماً.

إن إعداد إطار تثقيفي يدور حول توفير مواد مجانية مفتوحة تكون متاحة للجميع على شبكة الإنترنت يمكن أن يساعد على بناء القدرات في مجال الصحة العمومية في البلدان المنخفضة والمتوسطة الدخل. ويأتي الباعث على إنشاء مثل هذه البرامج من وجود حركة البرمجيات المجانية والمفتوحة المصدر، حيث يتعاون مئات الأشخاص على تطوير برمجيات ذات جودة عالية، وإتاحتها على شبكة الإنترنت، وكذلك وجود المقابل لها الذي يتمثل في تطوير مصدر تثقيفي مفتوح للجميع، وهي مظاهر تبرز التطور المجتمعي، ولاسيماً تلك المرتبطة بالجيل الثاني من خدمات شبكة المعلومات الدولية. ومن خلال شراكة تخطت الحدود الفاصلة والفجوات الرقمية، أنشئت مبادرة إتاحة التعليم المفتوح لكل الشعوب <http://peoples-uni.org>. وهي تشتمل على جوانب ثلاثة هي: أولاً تحديد المواد التثقيفية المفتوحة

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