Peoples-uni: Developing Public Health Competences – Lessons from a Pilot Course Module

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***Abstract*—The People's Open Access Educational Initiative (Peoples-uni) aims to contribute towards public health capacity building in Developing Countries, through the provision of on-line education for public health practitioners. It is intended that this provision be of high quality, but low cost, and will utilise the diverse array of Open Educational Resources which are available. A key requirement for this is to identify appropriate public health competences that will need to be met through a Diploma/Masters level programme of education that is relevant and up-to-date, enabling practitioners to further develop their knowledge and skills. A pilot module on the subject of maternal mortality was delivered at the end of 2007. Competences to be met through this course, were dictated by the requirements for learning and building public health capacity. They were searched for in an array of resources – course/training providers' aims and objectives and professional bodies' key requirements for their practitioners. However, these existing published competence lists were from Developed Countries, and required modification for problem-based learning and setting (i.e. Developing Countries). Generally positive experiences from the pilot course module suggest that developing an on-line, accredited Diploma in Public Health is not an impossible aim.**

***Index Terms*—Competence, education, open-access, public health.**

I. INTRODUCTION

In 2007, the UK government announced its commitment to helping Developing Countries tackle their public health issues [1]. In its report, the government stated that it will be impossible to make progress against the goals of reducing child and maternal deaths and tackling HIV/AIDS, tuberculosis and malaria unless "developing countries are able to take the lead and own the solutions – and are supported by international, national and local partnerships based on mutual respect" [1]. The report went on to suggest that one way of achieving this could be through:

- Strengthening public health, health systems and institutions;
- Providing education and training for health workers;
- Making knowledge, research, evidence and best practice accessible to health workers, policy makers and the public alike.

Most Developing Countries face enormous public health problems that are impacting upon their economic development. For example, the prevalence of HIV/AIDS infection in Southern African countries is around 20-25% [2], though some commentators report figures as high as 40% in urban centres [3]. The burden of disease is carried by the 15-45 age group – the socially and economically productive group. Exacerbating health issues is poverty, with health becoming a low priority in comparison with the need for food and water, to name but two problems, so health and poverty become interlinked in a vicious circle.

A trained workforce of public health professionals is essential, but local universities report being vastly over-subscribed for face-to-face education, especially for those courses that deliver at Masters level. Fees for overseas universities, including e-learning programmes, are higher than can be afforded by most individuals. This limits the capability of both parties (practitioners in Developing Countries and providers in both the Developed and Developing Countries) to contribute to public health capacity-building. In addition, most education provided by providers in more Developed Countries is naturally more focused on their own society's problems – dealing with Western flavoured problems; and therefore focusing on solutions and models of service delivery best fitted to the Western world.

Increasing amounts of open source educational material, as well as delivery mechanisms, are now available through the internet. For example, the Open Courseware Consortium [5] features several detailed public health courses (e.g sexual health), though these are focused on the home countries of the universities providing them (i.e. rates of infection in the US/Europe/UK), rather than Developing Countries. Wiki-technology has allowed courses to be developed [6,7] but these are not to Masters level. Materials are available (e.g. open access journal articles and reports from governments and NGOs) but these do not have a coherent course of study built around them. In short, we have not been able to find examples where Open Education Resources (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 [8].

We now describe the Peoples-uni initiative.

The Peoples Open Access Education Initiative (Peoples-uni) was first established in 2006 by a group of individuals from around the world to develop a Diploma

course in public health, for practitioners working in Developing Countries. We are from an array of backgrounds: academia, including education and programme development; IT; the Diaspora who want to 'give something back' and public health – retired and working; and we are all volunteers. Despite an initial loose organisational structure, an application has been made for charitable status in the UK, and a set of Trustees identified. Course module development teams have been formed and international advisory and educational oversight groups created. With the aim of helping with the career development of individual students, the UK Royal society for Public Health has agreed to offer graduate certificate and diploma awards. This will be delivered and assessed at the Masters level, in a 'train the trainers' approach.

To ensure the rigour of the course the work has been driven by the need to identify appropriate competences. Once these had been established, could they be mapped against internationally recognized standards to ensure that the meaningful and useful public health training was being developed?

A number of questions were posed to allow us to assess the feasibility of the Peoples-uni and to be examined in the context of a pilot.

1. Is it possible from an organisational point of view to run a free, international, masters level course? What works? What does not?
2. Is the use of an online virtual Learning Environment (VLE) practicable for a widely distributed cohort in low-income countries? What can be done to help the learners?
3. Even if teachers are willing to share materials, are they willing to share teaching time? What organisational and design factors will encourage this?
4. Is it possible to provide international training in a field where competence descriptions conflict between states? How?

Can we develop a delivery system that is sensitive to the needs of a widely distributed student group?

II. METHODS

A first module in public health was developed by one of the course module development teams, and piloted between September and December 2007. The processes involved in its development were as follows:

1. Identify a health problem.
2. Identify the educational need (though our aim had always been to provide Masters level education).
3. Identify the competences required and map against existing lists of public health competences.
4. Identify the resources relevant to the competences.
5. Develop a set of focused discussion topics for tutors/facilitators to lead on-line groups, using a learning management system (currently Moodle).
6. Assess and accredit learned competences.
7. Repeat this process for a range of relevant problems in order to cover a complete set of competences to guide the public health course development.

Searches for competence lists were carried out in the following manner. Using MEDLINE and several internet search engines, with secondary searches, the terms used to identify appropriate lists were: "public health and competences" and "developing countries and competences". Our focus was upon lists produced by national, regional and/or international bodies.

III. RESULTS

In order to provide the following results with some context, we will pause here to explain the structure of the module that was piloted.

At *stage 1* of Peoples-uni, maternal mortality was selected as the public health problem, since maternal mortality is a key issue in Developing Countries. The United Nations reports that less than 1% of all cases of maternal mortality occur in the Developed World.

The module was delivered over ten weeks and divided into five two-week blocks focusing on a different topic, driven by appropriate competences. Delivery was through problem-based learning, and participants were required to read the provided materials and discuss questions raised to meet competences. There were three assessments (one formative) and discussions were facilitated by two content-expert facilitators who 'visited' at periods of their focus; and two general facilitators whose role was to keep conversations moving when participants grew quiet. This utilised the open source Moodle platform, hosted by a server based in Nigeria through the company Datasphir.

A. Competence Development

Competences took the following issues into account:

- Requirements and needs for learning and building public health capacity in Developing Countries;
- Focus on Maternal mortality and topics for providing knowledge and skills training;
- Experience and views of the module's developers and course facilitators.

In terms of mapping, numerous sets of competences were identified by our searches, but we focussed on those identified by professional organisations as being important for the practice of Public Health, rather than those included by universities in their courses. (In most cases, universities were providing training that met the requirements of the professional organizations, therefore using the same competences).

The majority of identified competences came from Developed Countries, although examples from the Pan American Health Association and two Asian sources were identified. Most were the results of deliberations of committees or of group decisions at conferences, while others were the results of Delphi surveys. The final result was identifying four lists of competences from four different countries:

- New South Wales Australian Department of Health
- Public Health Agency of Canada
- US Council on Linkages between Academia and Public Health Practice
- UK Faculty of Public Health

In the development of the pilot course module, we devised the competences according to an informal assessment of what competences would be required to

deal with the problem of maternal mortality, and examined how these mapped against the published competences.

B. Module Pilot

The Maternity Mortality module was delivered between September and December, 2007 to fit between the end of Ramadan and the onset of the Christmas and Eid festivals.

38 students enrolled on the module, after limited publicity, and their backgrounds ranged from clinicians, whose aim was to further improve their public health knowledge and skills, to policy makers and programme leads. They were all experienced practitioners, and they came from around the world: Pakistan; Turkey; Democratic Republic of Congo; India; Nigeria; Sudan; Ghana and the USA. (In the latter case, this practitioner was preparing for work in one of the Developing Countries).

C. Module Evaluation

One person left before starting due to work commitments, and 7 did not enter the course to enrol at all (although they received automatic e-mails of the discussion postings). 22 posted at least once to a Discussion forum, and an additional 5 posted to the Introduction (but not to the Discussions). 13 submitted at least one Assignment, and 19 completed a 10-item Internet-based evaluation questionnaire. The overall response was very positive, and a number of useful suggestions were made in response to our request for participants to share their views on gaps in the course, and how Peoples-uni should make improvements.

A summary of key results are shown in the Appendix.

The students were keen to have expertise in public health, with key motivations being the development of knowledge and skills. Academic credit was considered least important, in comparison with the other reasons to participate in the module, though credit was considered far from *unimportant*. General response to the course was positive, with most respondents reporting benefits and wishing to take more courses.

IV. DISCUSSION

A. Competences

The participants themselves did not focus on the need for *academic* credit, but in the job-market, public health practitioners need to be able to demonstrate relevant and current knowledge and skills. These requirements are, and need to be, generated by academics, employers, students, professional associations, etc. What is developed for use locally (in any area and delivered by any course) has to be consistent with agreed generic and specified competences; taking account of local methods, technologies and resources.

As mentioned, one of the problems with the identified lists of competences was that they came from Developed Countries. In fact, in matching these published competences to those identified by Peoples-uni, which aimed to focus participants' knowledge and skills development, we found major limitations. The four competence lists we examined were curriculum-based rather than tailored for problem-based learning, and are also more focused on policy implementation. The skills that they drive practitioners to develop are obviously focused on those that will be required for working in more Developed Countries.

Each published list featured sub-competences which were part of different domains or skills-defining areas. The number of areas/domains ranged from 7 to 11, while the number of sub-competences ranged from 44 (Canada) to 167 (UK). In addition, the difference between function and competence is frequently blurred in both the description of the competences and the discussion of how these can be achieved. Published competences require modification for problem-based learning and Developing Country settings.

Assessment of competence achievement was also an issue. For example, the UK's competences are related to the Faculty of Public Health's training programme for consultants and assessed through 'on the job' training, while participants in the Peoples-uni were not in any such formalised training environment.

It is essential that assessment, and most importantly *criteria* for assessment, is transparent both during the course and from the point that an individual considers enrolling on the course. Means of assessment is also an issue for great consideration. During the pilot, there was no use of computer assisted assessment as there are issues around how in-depth the assignment can be if it is to be 'graded' by computer. Peoples-uni endeavours to provide Masters-level education which means that assessments have to ask participants to prove their abilities at a deeper level than a 'tick box' quiz.

Discussions on the issue of accrediting the assessment are underway with the Royal Society for Public Health (UK) to explore the possibilities.

B. The Pilot Evaluation

The use of online learning also provides an opportunity not easily available through institution-based learning: the ability to discuss problems and solutions with colleagues from around the world. The participants' focus on developing public health knowledge and skills reinforces the need to develop appropriate competences. While learning is interesting, the usefulness of any newly acquired knowledge and skills to improve service-delivery is determined by whether it helps the participant become an effective and competent practitioner.

Regarding the online delivery method, the structure and format of the course delivery appears appropriate – files are kept small because of internet access issues. Many of the students access the Internet from internet cafes so ease of downloading materials is very important to them. This inevitably restricts some of the materials that can be provided and therefore impacts on how the competences can be assessed.

C. Access and Dissemination Issues

Internet access is improving in developing countries. However, it is not always easily accessible for the target practitioners for Peoples-uni modules. Discussions are ongoing to explore alternative means of delivery.

Should we ask individuals interested in enrolling to work through an 'introductory module' to Peoples-uni so that they can assess whether they will have the required, regular internet access to take part in discussions? (This would also help them to assess both, whether they can use

the functions of Moodle; and whether our approach with problem-based learning is appropriate for them). Should we find interested individuals in the various regions who can disseminate the course materials to other colleagues on the courses so that downloading time is reduced? Or should we look at sending every person who enrols a USB key with all of the course materials on?

Peoples-uni is considering how workable these options are and their impact on updating course materials. There are issues around costs – to the participants (in terms of downloading time and cost of that time, for example) and to the initiative in terms of provision and dissemination,

D. The Future

The pilot module (Maternal Mortality) has been a successful exercise – in exploring competence development and most importantly, as far as the participants were concerned, delivering useful public health education and skills development. Further modules are currently being developed, using the framework (as described in the Methods section) which has been proved to be an effective tool in building modules.

The framework has shown itself to be a useful and effective tool for developing education focused on competence progression. Obviously, this was only tested up to stage 6 of 7 – stage 7 being to: "*Repeat this process for a range of relevant problems in order to cover a complete set of competences to guide the public health course development*". However, work has now commenced on this stage.

It was suggested that this Diploma in Public Health Development focus on a generic, skills-development approach, and an appropriate range of modules would include:

- Research methods
- Health economics
- Disease surveillance
- Public health preparedness (disaster and emergency planning)
- Health statistics
- Evaluation of interventions
- Epidemiology
- Health policy

Remaining issues included the identification of volunteer course developers. At the time of writing, there are 60 individuals from 23 countries working in teams to have 12 modules ready for course delivery, commencing in September 2008. The original aim had been to work on six modules.

Our challenge here will be to ensure that we maintain the same rigour across all of the modules, so that none are 'easier' or less intensive than others. Assessment will continue to be a subject of much discussion – certain topics lend themselves more easily to assessment than others. For example, demonstrating knowledge and understanding of a subject may be simple to show by writing a report in an open software package. Demonstrating the skills required for delivering a project to improve people's awareness of health services may not be as straightforward. However, while there is certainly scope for creativity in assessment with new Web 2.0 resources, this does return us to the issue of accessibility and cost to participants in Developing Countries.

Other issues included the identification of resources and accreditation. There is a wealth of material available online. Our difficulty is likely to be deciding what not to include. Work is ongoing to ensure that the course will be accredited and that the aims of the Peoples-uni are in agreement with those of the accrediting body.

V. CONCLUSION

Peoples-uni course competences will be refined through an ongoing process by course developers, and by participants. In the future, it is anticipated that graduates of the initiative will take a leading role in development, delivery and determining competences. These are the people who know how the courses can best meet the needs of the public health practitioners and the populations they serve.

At this stage, we have answered some of the questions posed at the start of this paper – which lead us to conclude that building an affordable, online Diploma in Public Health is not an impossible aim:

- Peoples-uni has generated interest and support because of its aim of building education and skills development around Open Education Resources.
- Our educational model, which includes competence and problem based approaches, was felt to be appropriate and relevant by a majority of the respondents to the pilot evaluation.
- The organisation of learners (through the Moodle platform) worked well, and teachers were prepared to commit to the programme and share their knowledge.

However, the potential for success still relies on the continued volunteerism of our teams and recruitment of new volunteers at varying stages for different pieces of work. There are also issues over improving access to the materials, even though they are free, for participants who have limited access to the internet. This is being investigated.

The growth and development of Peoples-uni has been fast and exciting. We are still at an early stage and would appreciate and encourage all help, advice and collaboration.

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APPENDIX

Peoples-uni. Maternal Mortality course module: October – December 2007. Evaluation survey (19 responses)

Answers to the closed evaluation questions

1. How important were these potential reasons for you to enrol in this course module?	Very important	A little	Not at all
To get academic credit	10	6	2
To gain Public Health knowledge	16	2	0
To gain Public Health skills	15	1	1
To look at the resources	12	4	2
To join in a discussion with others	13	5	0
To get experience in e-learning	12	5	1

2. Please tell us a little about yourself.	Yes	No
I already have a masters degree in public health	3	12
I work in public health	15	2
I have a medical degree	10	6
I have a nursing degree	3	12
I have another degree as a health professional	7	8
I work for an NGO	7	10
I work as a teacher or academic	6	9
I work in an administrative role in a public health organisation	7	8
I work as a clinician in providing health services	5	10

3. Technical aspects: how did you find the following?	Good	Mostly OK	Bad
Internet access	8	9	1
Access to course module and Moodle (apart from problem at end of November)	11	5	0
Information on how to use the course materials and take part in discussions	10	8	0
Access to materials on module	9	9	0
Response to problems from course support team	16	2	0

4. Educational aspects: how did you find the following?	Excellent	Good	Bad	Did not look at them
Layout of course materials	5	9	1	1
Amount of resources provided for each Topic	6	8	1	2
Epidemiology Supercourse lectures	6	10	0	2
Johns Hopkins Lectures	8	8	0	1
Linked Journal Articles	6	10	0	2
Linked WHO documents	9	4	0	5

Other linked documents	4	6	0	6
Discussion forums	9	8	0	2
Assignments	5	9	2	2

5. Course benefits: Was the	**Excellent**	**Good**	**Useful**	**Not of use**
The general interest of the course	8	9	1	0
The academic value from the course	11	4	2	1
The practical value from the course	6	3	5	3
The input to the discussions from other 'students'	5	12	1	0
Input to the discussions from facilitators	11	2	3	1

6. The future:	**Yes definitely**	**Yes probably**	**No**
Would you enrol in more course modules?	12	4	0
Would you be interested in continuing to a Diploma or Masters degree?	13	0	3
Was this relevant to your job or career?	13	1	2
Would you recommend this to others?	12	3	0

7. When we run the course again, what do you think about these aspects? You may tick as many of these boxes as you wish.	
9	The course length should be kept as 10 weeks
1	The course length should be reduced
8	The course length should be increased
4	I would not be prepared to pay for the course module
8	I would be prepared to pay only if the course carried accreditation from an international agency
5	I would be prepared to pay even if the course did not carry accreditation from an international agency
10	I would be prepared to pay less than about US$100
3	I would be prepared to pay more than about US$100

8. If we were to develop more course modules, which of these do you think we should include. You may tick as many as you wish.	
14	Preventing child mortality
9	HIV/AIDS
9	Evaluation of interventions
8	Basic epidemiology
10	Basic health statistics
15	Research methods
7	History and theory of public health
6	Chronic disease epidemiology
6	Investigating infectious disease outbreaks
10	Disease surveillance
9	Other communicable diseases (diarrhoea, malaria, TB etc)
7	Common diseases and risk factors and how to measure causes and understand risk
5	The environmental contribution to disease causation and prevention in developing countries
11	Public Health Preparedness and disaster and emergency planning
9	Common disease problems and health policy
7	Partnership and inter-agency working
12	Health economics
9	Disease control programmes
	Other suggestions***

9. Changes for the future	**Yes definitely**	**Possibly**	**No**
Does the content need to be changed for local situations?	4	10	3
Would you be prepared to help make changes?	9	6	1
Would you be prepared to join in as a tutor or other role in the future?	10	6	1