RESEARCH NOTE

Open Online Courses in Public Health: experience from Peoples-uni [version 2; peer review: 3 approved]

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Abstract

Open Online Courses (OOCs) are offered by Peoples-uni at http://ooc.peoples-uni.org to complement the courses run on a separate site for academic credit at http://courses.peoples-uni.org. They provide a wide range of online learning resources beyond those usually found in credit bearing Public Health courses. They are self-paced, and students can enrol themselves at any time and utilise Open Educational Resources free of copyright restrictions. In the two years that courses have been running, 1174 students from 100 countries have registered and among the 1597 enrolments in 14 courses, 15% gained a certificate of completion. Easily accessible and appealing to a wide geographical and professional audience, OOCs have the potential to play a part in establishing global Public Health capacity building programmes.

Keywords

online learning, developing country, Public Health, open online courses

Open Peer Review

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Invited Reviewers

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28 Apr 2017
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report report report

1. Jane-frances Obiageli Agbu, National Open University of Nigeria, Lagos, Nigeria
2. Michael Rowe1, Department of Physiotherapy, Faculty of Community and Health Sciences, Bellville, South Africa
3. Chris Zielinski, University of Winchester, Winchester, UK

Any reports and responses or comments on the article can be found at the end of the article.
Introduction

Peoples-uni was developed with the mission “To contribute to improvements in the health of populations in low- to middle-income countries by building Public Health capacity via e-learning at very low cost” (http://www.peoples-uni.org/content/overall-objectives). From 2008, formal courses have been run online, and it has been possible for students to gain academic credit towards a Master of Public Health award. A small fee is charged and an international group of volunteer tutors from 51 countries facilitate online discussions and set and mark assignments – to date 1256 people, from 80 countries have enrolled, 464 have passed at least one module and 111 have graduated with a Master of Public Health. With the aim of extending these offerings, reaching a wider audience and contributing further to global health and health system strengthening, an additional site was established for free Open Online Courses (OOCs) in 2014 (http://ooc.peoples-uni.org). This educational innovation is also designed to contribute to leadership development through lifelong learning among health professionals. While there are similarities with Massive Online Open Courses (MOOCs), there are a number of differences, including resources to be read rather than video recorded lectures. This report summarises the experience so far with Open Online Courses (OOCs).

Methods

A number of courses were developed and placed on the Moodle open source educational platform at http://ooc.peoples-uni.org. Development of the site was led by RFH (first author of this paper), in consultation with other volunteers from Peoples-uni, and in response to requests from external organisations and individuals. Choice of the courses was to some extent serendipitous, and depended on an assessment of gaps in conventional courses and opportunities to provide courses for, and receive input from, others. Most of courses were developed by Peoples-uni volunteer academics and IT support staff, with input and review from various experts to ensure relevance of the course material. One of the courses reported here was developed using e-learning course materials from the University of Nottingham (Basic Epidemiology), two others were developed for the UK Global Health Exchange (http://www.globalhealthexchange.co.uk), to provide basic Public Health knowledge to health professionals planning to volunteer overseas, another to provide open access for educational materials developed by an international collaboration in exercise and health, and another by an international collaboration in medical ethics.

Access is by self-enrolment with nomination of a username and password for future use. All resources are Open Educational Resources, free of copyright restrictions. A common format is used with learning objectives, links to or copies of key parts of online resources, and metadata to direct students through the resources. Rather than online discussions facilitated by tutors (as in the Peoples-uni academic stream and many MOOCs), questions on the content and implications of the resources are posed for students to reflect upon, and forums are enabled for students to post these reflections for other students to see. Quizzes were developed to test the knowledge gained, and a certificate of completion is automatically generated if various criteria are met such as accessing resources, completing the quizzes, posting to a forum or providing feedback. There is no specified timetable and students pace themselves through the course. There is no charge for enrolment or for the certificate. Courses are published under a Creative Commons Attribution 4.0 International License.

Information about the courses was offered to students and graduates of the Peoples-uni academic stream and was posted on various social media sites. Two courses were provided to participants planning to travel overseas through the Global Health Exchange, and in one case information was distributed to deans of Australian and New Zealand medical schools to encourage medical students to learn about the Public Health implications of climate change.

We report here the first two years of experience with the Peoples-uni Open Online Courses, including information from the questions asked on registration about student demographics and how they planned to access the courses. Formal feedback was not a requirement generally, although some courses provided the option for feedback, and we report some of these comments. No ethical approval was required for publication of de-identified student demographics.

Statistical analysis

Data on student demographics at registration were obtained by SQL enquiries using the configurable report facility in Moodle. Data on whether the student had obtained a certificate were obtained by a SQL query against the Moodle database, supplemented by course data obtained from the course databases in Moodle. Descriptive analysis of frequency counts was performed using the R statistical package.

Results

The data reported here relate to those who enrolled as students on 14 self-paced courses up to December 2016, with variable start dates from June 2014. 1174 students registered, from 100 countries - some of these students enrolled in more than one of the 14 courses available and we report on 1597 course enrolments by these students. Table 1 shows the number of students per course, the number who gained a certificate of completion, and the criteria for a certificate. Courses have been added over the years, so the time
Table 1. Numbers of students enrolled in each course, and the number of students who gained a certificate. The criteria for a certificate are also shown.

<table>
<thead>
<tr>
<th>Course title</th>
<th>N students</th>
<th>N (%) gained a certificate</th>
<th>Criteria for a certificate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Health – for the GHE*</td>
<td>292</td>
<td>53 (18%)</td>
<td>Take 4 quizzes</td>
</tr>
<tr>
<td>Public Health - the basics**</td>
<td>52</td>
<td>8 (15%)</td>
<td>Access 7 sets of resources, take quiz</td>
</tr>
<tr>
<td>Disease in developing countries**</td>
<td>18</td>
<td>6 (33%)</td>
<td>Access 6 sets of resources, take quiz</td>
</tr>
<tr>
<td>Prevention – for the GHE*</td>
<td>80</td>
<td>13 (16%)</td>
<td>Access 3 sets of resources, post 3 reflections</td>
</tr>
<tr>
<td>Basic Epidemiology from the University of Nottingham</td>
<td>404</td>
<td>59 (15%)</td>
<td>Access 8 sets of resources, pass quiz</td>
</tr>
<tr>
<td>Climate change and Public Health***</td>
<td>212</td>
<td>23 (11%)</td>
<td>Access 7 sets of resources, take 2 quizzes</td>
</tr>
<tr>
<td>Refugee health</td>
<td>144</td>
<td>24 (17%)</td>
<td>Access 6 sets of resources</td>
</tr>
<tr>
<td>Human rights and Public Health**</td>
<td>53</td>
<td>10 (19%)</td>
<td>Access 6 sets of resources, send feedback</td>
</tr>
<tr>
<td>Exercise and health</td>
<td>54</td>
<td>3 (6%)</td>
<td>Post 4 reflections, pass 1 quiz</td>
</tr>
<tr>
<td>Medical ethics</td>
<td>62</td>
<td>9 (15%)</td>
<td>Take 5 quizzes, send feedback</td>
</tr>
<tr>
<td>Medical professionalism****</td>
<td>85</td>
<td>16 (19%)</td>
<td>Access 5 resources, take 1 quiz</td>
</tr>
<tr>
<td>Clinico-epidemiology conference****</td>
<td>72</td>
<td>10 (14%)</td>
<td>Access 6 sets of resources, take 1 quiz</td>
</tr>
<tr>
<td>Global Health Informatics</td>
<td>47</td>
<td>9 (19%)</td>
<td>Access 6 sets of resources, take quiz</td>
</tr>
<tr>
<td>Patient Safety</td>
<td>22</td>
<td>0</td>
<td>Access 11 sets of resources and take 11 quizzes</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1597</td>
<td>243 (15%)</td>
<td></td>
</tr>
</tbody>
</table>

*: Offered to participants in the Global Health Exchange programme
**: Later subdivisions of the Public Health for the GHE course
***: Information about launch of this module sent to deans of Australian and NZ medical schools
****: Previously offered as timetabled courses with online facilitated discussions

The period over which students can enrol varies. The criteria for the award of a certificate can be seen to vary, and although the overall percentage of students that were awarded certificates was 15%, there was some small variation between courses. Seven students each enrolled in 9 courses or more – they were responsible for 49 (20%) of the 243 certificates gained.

As part of the enrolment process, a number of questions were asked of the students. The responses are shown in Table 2 and Table 3.

Table 2. Demographics of 1174 students registered in Peoples-uni Open Online Courses.

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Numbers (% of those with information)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male 551 (49%)</td>
</tr>
<tr>
<td></td>
<td>Female 575 (51%)</td>
</tr>
<tr>
<td></td>
<td>Not specified 48</td>
</tr>
<tr>
<td>Date of birth</td>
<td>1940–1959 94 (8%)</td>
</tr>
<tr>
<td></td>
<td>1960–1969 161 (14%)</td>
</tr>
<tr>
<td></td>
<td>1970–1979 284 (25%)</td>
</tr>
<tr>
<td></td>
<td>1980–1989 413 (36%)</td>
</tr>
<tr>
<td></td>
<td>1990 or later 193 (17%)</td>
</tr>
<tr>
<td></td>
<td>Not specified 29</td>
</tr>
<tr>
<td>Location</td>
<td>Africa 294 (27%)</td>
</tr>
<tr>
<td></td>
<td>Australia/New Zealand 255 (24%)</td>
</tr>
<tr>
<td></td>
<td>UK 197 (18%)</td>
</tr>
<tr>
<td></td>
<td>Indian subcontinent 131 (12%)</td>
</tr>
<tr>
<td></td>
<td>North America/Europe 110 (10%)</td>
</tr>
<tr>
<td></td>
<td>Asia/Middle East/Latin America 93 (9%)</td>
</tr>
<tr>
<td></td>
<td>Other/Not specified 94</td>
</tr>
<tr>
<td>Occupation</td>
<td>Medical practitioner 314 (28%)</td>
</tr>
<tr>
<td></td>
<td>Nurse/Other health professional 338 (30%)</td>
</tr>
<tr>
<td></td>
<td>Other 186 (17%)</td>
</tr>
<tr>
<td></td>
<td>Student 282 (25%)</td>
</tr>
<tr>
<td></td>
<td>Not specified 54</td>
</tr>
</tbody>
</table>
Table 2 shows that the largest single group of students came from Africa. Students were evenly distributed between males and females, mostly born between 1970 and 1989; 58% were health professionals and 25% were students. Table 3 shows that the majority of students enrolled as a result of a recommendation and that this would be their first experience of online learning (63 and 68% of those responding, respectively). Only 20% found the site by an internet search, the majority would be able to spend only up to 2 hours a week on the course, although 21% of those responding claimed to be able to spend 4 hours or more per week. The majority of those responding, 83%, planned to access the courses by computer rather than phone or tablet.

Some comments from feedback forms are shown in Box 1. The responses were generally positive, although suggestions for improvement were made. Four additional courses were developed in partnership with other organisations, and were offered with a timetable of expert tutors facilitating online discussions. 127 students enrolled in these, of which 18 (14%) gained a certificate. Two of the courses were later adapted as self-paced versions, and appear in the course list in Table 1 in their later iterations.

Discussion

Our experience demonstrates that a volunteer-led organisation can develop and offer OOCs which are accessible by a global audience. A wide range of topics have been covered, beyond those usually found in award courses in Public Health, and more courses have since been posted on the site further to those included in this report, whilst others are under development.

Students were equally spread between genders, mostly aged around 25–40, and included a high proportion from developing countries. Certificates were gained by 15% of participants, and there were no obvious differences in course characteristics that explained the small variation in proportion of participants gaining these certificates between courses. The major predictor of gaining a certificate among those we examined was the number of courses taken by a student, with just 7 students gaining 20% of the certificates.

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>Number (% of those with information)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How did you hear about the course</td>
<td>Recommended by someone else*</td>
<td>527 (63%)</td>
</tr>
<tr>
<td></td>
<td>Searching the web</td>
<td>164 (20%)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>146 (17%)</td>
</tr>
<tr>
<td></td>
<td>Not specified</td>
<td>337</td>
</tr>
<tr>
<td>Previous study</td>
<td>Previous MOOC or online course</td>
<td>142 (21%)</td>
</tr>
<tr>
<td></td>
<td>Previous Peoples-uni student</td>
<td>77 (11%)</td>
</tr>
<tr>
<td></td>
<td>First time on this type of online course</td>
<td>473 (68%)</td>
</tr>
<tr>
<td></td>
<td>Not specified</td>
<td>482</td>
</tr>
<tr>
<td>Time you can spend per week</td>
<td>Less than 1 hour</td>
<td>115 (14%)</td>
</tr>
<tr>
<td></td>
<td>1–2 hours</td>
<td>349 (41%)</td>
</tr>
<tr>
<td></td>
<td>3–4 hours</td>
<td>202 (24%)</td>
</tr>
<tr>
<td></td>
<td>4 hours or more</td>
<td>181 (21%)</td>
</tr>
<tr>
<td></td>
<td>Not specified</td>
<td>327</td>
</tr>
<tr>
<td>Will access courses</td>
<td>Mostly via phone</td>
<td>79 (9%)</td>
</tr>
<tr>
<td></td>
<td>Mostly via tablet</td>
<td>68 (8%)</td>
</tr>
<tr>
<td></td>
<td>Mostly via computer</td>
<td>724 (83%)</td>
</tr>
<tr>
<td></td>
<td>Not specified</td>
<td>303</td>
</tr>
</tbody>
</table>

* : Includes access recommended by the Global Health Exchange

Box 1. Comments taken from feedback forms included in some of the courses.

- "The idea was great. Its an easy to learn method faster and quite informative."
- "very interesting and fruitful courses"
- "Thank you for the course. It is a broad overview of may different areas in medical ethics."
- "Really enjoyed the course - very interesting"
- "Good outline and overview of selected topics"
- "overall is a good course"
- "It is a very good course, and I am very happy with the results."
- "The course is well structured."
- "I have taken previous courses in these modules offered online and this one seems a bit too hands-off for a course. It reads more like a manual that certainly attracts interested people but does not provide overly a learning experience. I presume that mini quizzes, crossroads-exercises that block advancement unless completed and the like would create a teaching scenario better."
- "this course has been very very rewarding, it has enlightening my knowledge knowing that the Public Health is essential in line with the rights of everyone involved. I believed that more emphasis be made on low-income countries like mine (Liberia)."
- "Great course - really enjoyed it"
- "i am working in Central African Republic and I am an immunization specialist. I am working with ...... and I think that after this course, it mandotory for me to make sure that evrchildren in the refugees camp get his polio vaccines correctly."
- "what I like most about this course was the simple break down in the course delivery, and the in which all lessons were well structured, also a clear explanation of every terminology."
- "The course was good, very basic and a good introduction."
- "short and informative for a basic introduction to the difference aspects of public health"
- "Its very educative"
The qualitative feedback reported here is selective and may well not be representative of the general experience of the students, however the majority were positive about their experiences. We are utilising both the positive feedback and constructive suggestions to work to improve the course experience.

The format for the Peoples-uni Open Online Courses differs from that of MOOCs in a number of ways, although the basic methodology of online learning remains the same. The courses we report here contain mainly written content with hyperlinks to the resources, rather than the ‘talking head’ videos which are the staple of MOOCs (although this reliance on video lectures has been criticised). This allows us to utilise Open Educational Resources (OER) and access excellent educational material instead of having to develop it anew. In contrast to the usual MOOCs, students can enrol at any time, there is no specified timetable and students pace themselves through the course. Forums are available, but designed for reflection rather than discussion, and a certificate of completion is available according to various criteria such as taking a quiz and downloading resources (see Table 1). Our model excludes interaction between students and tutors, but allows greater flexibility in timing and access to education.

MOOCs have been offered by many educational organisations. The majority of their students are from North America or Europe, an experience common to most. The Johns Hopkins School of Public Health has a long history of open access education, and they report experience with a number of MOOCs. The School reports a median completion rate of 11%, consistent with 12.6% reported by Jordan and higher than the Coursera experience of 4%. To date, we have had approximately half of our students from developing countries. Our certification rate of 15% is consistent with the MOOC experience, although not many comparisons can be made in terms of course length, complexity, audiences and topics.

MOOCs have been subdivided into xMOOCs, based on traditional university courses but without teacher-student interactions, and cMOOCs where collectivists of teachers and learners work together to explore content. There are a number of other described variants, of which Self Paced Open Courses (SPOCs) are most closely related to the Peoples-uni type of course.

In pedagogical terms, those who enrol on the OOC courses are independent learners, who will be exposed to the hierarchy of thinking reflected by knowledge, comprehension and application in Bloom’s Taxonomy. While the methodology used provides students a view of Bloom’s higher levels of analysis, synthesis and evaluation, we recognise that without in depth student/teacher interaction it is unlikely that competence in these areas will be achieved, and they are not tested by the quizzes we have used to assess the educational outcomes. The OOC approach only aims to provide an environment for learning, rather than adding student/teacher interactions, thus could be considered in traditional learning theory as cognitivism, although the newer term, connectivism, might be a better reflection given the digital nature of the learning environment.

Based on our experience, it would appear that the Peoples-uni type of programme has a place on the educational spectrum. We see OOCs as being a major component of a modern framework for public health capacity building through global learning. The approach responds to current worldwide pressures in public health and workforce development to use low-cost models based on online learning, international volunteer tutors, teaching throughout career progression, and providing timely and appropriate content. We recognise the limitations of the descriptive analysis presented here as a measure of effectiveness, and hope to be able to design and perform a more rigorous evaluation of this educational approach.

We have also offered this platform to other providers and, in keeping with the social enterprise model of Peoples-uni, have developed courses for other organisations and their audiences. There are currently more than 20 courses available on our site; we welcome others who wish to utilise this platform in collaboration.

Conclusions

Open Online Courses, offered by Peoples-uni on http://ooc.peoples-uni.org to complement the courses run on a separate site for academic credit on http://courses.peoples-uni.org, provide a wide range of online learning beyond that usually found in credit bearing Public Health courses. Accessible to a wide geographical and professional audience, and providing a certificate to those who persist in the learning process, they complement MOOCs in being available for self-paced learning at any time. They have the potential to play a part in establishing global Public Health capacity building programmes.

Dataset 1. De-identified data collected showing numbers of students at Peoples-uni enrolled in each course, and the number of students who gained a certificate, from June 2014 to December 2016

http://dx.doi.org/10.5256/f1000research.10728.d151763

These data were used to create Table 1.

Dataset 2. De-identified data collected on student demographics at Peoples-uni from June 2014 to December 2016

http://dx.doi.org/10.5256/f1000research.10728.d151764

These data were used to create Table 2 and Table 3.

Data availability

Dataset 1: De-identified data collected showing numbers of students at Peoples-uni enrolled in each course, and the number of students who gained a certificate, from June 2014 to December 2016. These data were used to create Table 1.

DOI, 10.5256/f1000research.10728.d151763

Dataset 2: De-identified data collected on student demographics at Peoples-uni from June 2014 to December 2016. These data were used to create Table 2 and Table 3.

DOI, 10.5256/f1000research.10728.d151764
Author contributions
RFH wrote and edited the manuscript, RZ and AB performed the data analysis, RM and OO provided intellectual input and reviewed and edited the manuscript.

Competing interests
No competing interests were disclosed.

Grant information
The author(s) declared that no grants were involved in supporting this work.

Acknowledgements
We thank Associate Professor Jane Heller for statistical help.

References
3. MIT Media Lab: Why there are so many video lectures in online learning, and why there probably shouldn’t be. 2015. Reference Source
4. UNESCO: What are Open Educational Resources (OERs)? Reference Source
9. Davidson C: MOOC, SPOC, DOCC, Massive Online Face2Face Open . . . (Uh Oh!): Age of the Acronym. Reference Source
Open Peer Review

Current Peer Review Status: ✔ ✔ ✔

Version 2

Reviewer Report 08 May 2017

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✔ Michael Rowe

University of the Western Cape, Department of Physiotherapy, Faculty of Community and Health Sciences, Bellville, South Africa

I believe that the authors have addressed the comments I made on the previous version of the note.

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 03 May 2017

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✔ Jane-frances Obiageli Agbu

School of Health Sciences, National Open University of Nigeria, Lagos, Nigeria

Paper approved. Corrections noted and appreciated.

Please check line 8: Introduction...an n additional site (just wondering if the 'n' is a typographical error

Competing Interests: No competing interests were disclosed.
I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

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**Version 1**

**Reviewer Report 20 April 2017**

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Chris Zielinski
Partnerships in Health Information (Phi) Programme, Winchester Centre for Global Health, University of Winchester, Winchester, UK

Interesting and useful paper. My quibbles are

1. With the numbers. In the abstract is says “1174 students from 100 countries have registered”. In the introduction, it says “1256 people, from 80 countries, have enrolled.” From the data presented (and the repetition in the Results paragraph) it appears that the first of these is correct – although I have some doubts given the round numbers (100, 80) of countries cited.
2. In methods it merely states that “A suite of courses was developed” – it would be interesting to know by whom the suite of courses was developed and when. Some background would be welcome.
3. The second paragraph in the Results has some lapses in language (“a number of questions were asked to the students”, “the majority of students came as a recommendation from someone else”. The whole paragraph should be redrafted.
4. There is a typo in Box 1 in the longest quote – at the top of the column “but does not” should be “but does not”.
5. There is some repetition throughout – for example, the second paragraph of the discussions repeats some of the second para of the results.

**Competing Interests:** No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

**Author Response 26 Apr 2017**

Richard Heller, People's Open Access Education Initiative (Peoples-uni), Manchester, UK

Response: The confusion has arisen due to the fact that the statement “1256 people, from 80
countries, have enrolled. It reflects enrolments in our courses for academic credit as part of the introduction to Peoples-uni, and are not results from the study we report in this paper. In order to try and clarify this issue, we have redrafted the section in the Introduction.

We have also added a new first paragraph to the Methods section, and redrafted paragraph 2 in the Results section.

Competing Interests: No competing interests were disclosed.
added a sentence suggesting the need for a more rigorous evaluation to measure effectiveness.

Competing Interests: No competing interests were disclosed.

Reviewer Report 20 March 2017

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Jane-frances Obiageli Agbu
School of Health Sciences, National Open University of Nigeria, Lagos, Nigeria

This study on "Open Online Courses in Public Health: experience from Peoples-uni" is very insightful as it shares findings of a unique Public health course offered by Peoples-uni.

Observations
Grammatical expression was a bit poor. I suggest paper should be reviewed by an English expert for better clarity.
Flowery languages in the text should be discouraged (eg..."an army of volunteer tutors", "a sister site", "a suite of courses was developed" etc.

Result: This statement is not clear "Some students enrolled in more than one course and we report on enrolments in 1597 courses" Is this referring to student population or number of courses enrolled in?

Furthermore, please take note of typographical errors (eg, OOCs instead on MOOCs).

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 26 Apr 2017
Richard Heller, People's Open Access Education Initiative (Peoples-uni), Manchester, UK

We have made changes to clarify some of the wording and language.
Competing Interests: No competing interests were disclosed.