

Chapter Title: MOOCs for public health: a case study

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Book Title: Online and Distance Education for a Connected World

Book Editor(s): Linda Amrane-Cooper, David Baume, Stephen Brown, Stylianos Hatzipanagos, Philip Powell, Sarah Sherman, Alan Tait

Published by: UCL Press. (2023)

Stable URL: <https://www.jstor.org/stable/j.ctv2wk7261.24>

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MOOCs for public health: a case study

Sally Parsley and Daksha Patel

An urgent increase in the provision of both pre- and in-service healthcare training is needed for the 20 million additional healthcare workers required to deliver the Sustainable Development Goals (a shared blueprint for achieving the United Nations' 2030 Agenda for Sustainable Development) (UN General Assembly, 2015). This is a challenging prospect in many health systems that face ongoing and severe shortfalls in clinical staff, training financing, institutions and faculty (WHO, 2016). Massive open online courses (MOOCs) can provide low-cost access to professional development training to hundreds or thousands of learners at a time and may provide a way forward if MOOC producers can balance three long-standing and closely intertwined educational challenges of quality, efficiency and equity (Daniel et al., 2009; Laurillard and Kennedy, 2017).

This case study shares the experiences and lessons learned by one MOOC producer in response to this global training challenge by collaboratively developing a MOOC to deliver a specialist healthcare curriculum at scale across many countries and contexts to health teams that would otherwise not have access to the training. The study discusses how the project addressed the challenges of quality, efficiency and equity and shares evaluation findings on the patterns of participation in the course (efficiency), impact on eye care delivery (quality) and cascading of the training beyond the platform (equity).

Key lessons learned

- Global health MOOCs must connect global knowledge to local relevance for health worker participants. In the Global Blindness

MOOC, relevance was actively created through a shared approach in knowledge production and the inclusion of the local expert voice.

- Long-term, multi-level collaboration and partnerships can be used to drive quality and equity for global health MOOCs.
- The open educational resources (OER) and training partnerships did support further cascading of teaching and learning at the local level.
- Significant numbers of learners and stakeholders wanted formal accreditation for the course.
- Maintaining communication with learners and stakeholders beyond the MOOC platform is essential to promote equity and drive quality improvement and insight into practice.

The Global Blindness MOOC: getting started

Globally, 253 million people are visually impaired or blind and 1 billion have a near vision impairment; 90 per cent of these live in low- and middle-income countries (LMICs) and 80 per cent have visual impairment from avoidable causes that could be prevented or treated with a simple operation or pair of spectacles (Bourne et al., 2017). There is international agreement on how to close this gap: health systems should adopt team-based, public health approaches to deliver comprehensive health services and an associated outline training curriculum. However, many health systems face severe shortfalls in the eye health specialists, training institutions and faculty needed to develop and deliver the training. For example, in 23 countries (mainly in Africa) there is still less than one ophthalmologist per million population compared to 49 ophthalmologists per million in the UK (Resnikoff et al., 2012).

To address this situation, the International Centre for Eye Health (ICEH) at the London School of Hygiene & Tropical Medicine (LSHTM)¹ obtained funding to develop ‘Global Blindness: Planning and Managing Eye Care Services’, the world’s first public health eye care MOOC. This six-week online course was piloted in 2014, launched in 2015 and has run 12 times as of 2022. The course is now delivered on demand with professional accreditation certificate.

The project aimed to increase the scale and equity of participation in this training in three key ways. Firstly, the course was designed to be relevant, accessible and applicable by the whole eye health team across many health system settings, particularly limited resource settings with the greatest need for, and least access to, the training. Secondly, external

funding enabled the course team to develop the content in agreement that the training would be free to all participants. Finally, additional activities aimed to facilitate the cascade of the training beyond the MOOC platform, for example, open copyright licences on the course materials, partnerships with training institutions and educator webinars.

A core course team of four was led by an experienced public health eye care academic with support from a design and production lead, part-time academic and a marketing and finance administrator. The team decided early on to drive success by focusing on educational quality:

- Global health MOOCs were, at that time, largely untried and there was uncertainty on the efficacy of MOOC learning, with various concerns raised in the literature: MOOC pedagogy can focus on passive consumption of content, they have high dropout rates, they may have limited reach in settings with low internet coverage and expensive data, global content may not be relevant locally and learners are required to have strong capabilities in using digital technology and engaging in self-directed learning (Laurillard, 2014; Liyanagunawardena et al., 2013; Onah et al., 2014).
- Delivering a high-quality course would drive demand for this component of the ophthalmic training curriculum.

To drive equity in who could benefit from the course, the team actively sought collaborations with eye health experts, leaders and educators from around the world throughout the project. Evidence from the development sector has shown that, without active management by stakeholders, digital innovations tend to increase inequalities of access and concentrations of power (World Bank, 2016). A key first step was recruiting a steering group with global expertise of eye health and distance learning to guide the project.

Delivering the Global Blindness MOOC: a focus on quality

The course team adopted four key strategies to deliver quality throughout the project's activities and outputs:

- clearly defining the MOOC learners and stakeholders
- taking a learner-centred approach to the MOOC design
- extensive collaboration with stakeholders
- evaluating quality throughout (see Figure 15.1).

Table 15.1 Global Blindness user types: target learners and key stakeholders.

Target learners			
Members of health teams responsible for eye care service delivery at local level:		Non-governmental organisation (NGO) staff	
<ul style="list-style-type: none"> Managers of eye health units and teams Clinicians working in remote and limited resource settings 			
Future eye health managers and leaders:		People with eye disease and families	
<ul style="list-style-type: none"> Providers with an interest in public health approaches Ophthalmic residents and nurses in training programmes 			
Stakeholders			
Leaders and decision makers	Local trainers and managers	Funders LSHTM and ICEH faculty and leadership	Platforms Global eye health experts

Table 15.2 Three examples of Global Blindness users' goals and needs.

User type	Goals	Needs
Target learners	<ul style="list-style-type: none"> Gain relevant knowledge and skills to improve eye health services Develop career 	<ul style="list-style-type: none"> Open registration and flexible access Relevant and applicable learning Recognition/certification
Local trainers and managers	<ul style="list-style-type: none"> Provide relevant, applicable and affordable team training 	<ul style="list-style-type: none"> Good fit with health system's training needs Regular, low-cost, MOOC provision Easily adaptable OER materials
Health system leaders and decision makers	<ul style="list-style-type: none"> Provide training to all who require it in the health system 	<ul style="list-style-type: none"> Accreditation Good fit with health system's training needs

outcomes (ILOs), types of activities, feedback and assessment methods and hours of study required.

- Weekly learning designs visualised learners' journeys through short chunks of content and activity. This helped ensure activities aligned with the ILOs, that the learning was scaffolded and that an engaging variety of opportunities for active learning, reflection, self-assessment and feedback, note taking and dialogue were in place.
- Learning was designed to be relevant to, and applicable by, a diverse range of learners. A recurring, hypothetical case study highlighted common factors affecting many limited resource settings. Other techniques to promote inclusion included translations, plain English, non-culturally specific graphics and weekly facilitators from various contexts.
- The design was informed by evidence. For example, by applying findings on effective implementation of multimedia to support learning from video (Mayer, 2008).
- The design considered the platform affordances and constraints: for example, by leveraging the conversational learning theory embedded into the platform by encouraging note taking and discussion throughout, or by addressing the lack of bulk download and offline syncing by providing zipped content to download from the LSHTM website. Some issues could not be fully resolved; for example, data privacy regulations limited the teams' ability to follow up with learners after the course.
- OER: to promote longer-term use and contextualisation, an open copyright licence was applied to all course materials.

During the MOOC creation stage the team provided subject matter, pedagogical and editorial support to collaborating experts writing the content. Once these scripts and storyboards were finalised, the team reviewed them against the learning design before creating the final digital content and activities and uploading them to the platform. A final check of all activities and the learner journey from both the educator and learners' perspectives was carried out to ensure all the design elements were in place as planned.

A pilot course design was developed and tested across three limited resource settings in collaboration with Ministry of Health (MoH) personnel, eye health students and practitioners in Kenya, Botswana and Ghana. It found that participants from remote settings did engage and that the transnational and inter-professional content was relevant and applicable. These findings informed the scale up of the course on the

MOOC platform, which also went through a final testing process to ensure the platform's quality assurance standards were met.

Extensive collaboration with stakeholders

As well as driving equity, collaborators were vital in delivering quality throughout the project's activities. Forty-four stakeholders from 16 countries, including 11 LMICs, worked with the course team as funders, steering group members, learning designers, content creators, educators and facilitators.

MOOC production: Collaboration with stakeholders throughout the analysis, design and creation stages ensured authentic, applicable learning experiences relevant to eye health teams across the multiple contexts and countries. Collaborators:

- reviewed the needs analysis findings (for example, identifying target learners)
- reviewed the course objectives and learning outcomes
- advised on the weekly learning designs
- advised on design and pedagogical decisions and best practices in open and distance learning
- facilitated the pilot study for the course
- volunteered as educators and weekly mentors during each course run
- marketed the course with their local networks.

Cascading the training and supporting capacity building: In 2016 and 2017, the team explored the potential for repurposing with local training institutions through collaborative partnerships, including south–south partnerships between educators and learning technologists in Kenya with the College of Ophthalmology of Eastern, Central, Southern Africa (COECSA) and in South Africa with the University of Cape Town (UCT).

The partnerships aimed to promote global linking, alliances and consortia between educational institutions and allied actors, including professional society organisations, and enable knowledge sharing and capacity building around eye health training.

A professor from UCT said:

In Sub-Saharan Africa, we have limited health workers and big health needs. So, if you can adapt open training for local context, it can contribute to using the available health workers and trainers more efficiently and more effectively. Finally, when you get to

develop your staff, expand capacity and it extends your ability to run other training.

Building interest in the training cascade: To promote understanding among ophthalmic educators of the potential added value of the MOOC to their practice, the team collaborated with eight eye health and open educators to deliver two webinar series on developing open educational practices and building digital literacy skills for teaching and learning online (ICEH, n.d.).

Providing feedback: Collaborators shared useful information with the team throughout the project, both on the barriers and enablers to MOOC impact and on the collaboration processes themselves.

These collaborations were made possible by an actively maintained network of eye health leaders, decision makers and experienced practitioners who are alumni of the MSc in public health eye care. Although quality was the main driver for the approach, a secondary and important factor was to explore ways to build equity among eye health training institutions and address concerns that global MOOCs may exacerbate current power imbalances in the production of globalised knowledge (Czerniewicz et al., 2014; McKiernan, 2017).

Evaluating quality throughout

The team used three main data collection methods to gain insights into the patterns of course engagement and perceptions of impact on service delivery, training cascade and ways the MOOC could be improved:

- Platform analytics and pre- and post-course surveys provided anonymised data on learner demographics, patterns of engagement and perceptions of course experience and satisfaction.
- Perceptions of impact on practice were assessed using an online 'follow-up' survey sent by the MOOC platform provider one year after the first course run to all enrollees (August 2016).
- The team also collected informal feedback and case studies from stakeholders and collaborators on their views on course engagement, practice impacts and improvement ideas throughout the project.

The team obtained ethical permission from LSHTM and followed legal requirements to ensure data privacy and protection.

Insights gained were acted on by the team. For example, lack of engagement from West Africa drove the first translation into French. The

team followed up on learners' challenges in obtaining certificates with the platform provider, both for individuals and as a general issue. Repeated requests for formal accreditation of the learning have informed strategic decision making around future decision making (see the 'In summary' section later in this chapter for more detail).

Is it working? Evaluating the Global Blindness MOOC

Participation and satisfaction

There were 11,380 enrolments on nine runs of the Global Blindness MOOC (between 2015 and 2019). Sixty-one per cent were based in 139 LMICs, 64 per cent were employed in the health and social care sector and 55 per cent were women.²

Participation followed a typical MOOC 'funnel pattern' (Clow, 2013), which remained consistent across the nine runs. Sixty per cent of enrollees logged in to become learners, 45 per cent of learners completed week 1,³ 30 per cent fully participated,⁴ and 19 per cent completed the course.⁵

Learners generally indicated high levels of satisfaction in their feedback. Ninety-five per cent reported in the post-course survey that their course experience had been excellent (58.4 per cent) or good (36.5 per cent) (runs 1 to 3, n=329). Satisfaction with the training's relevance and applicability to practice were common themes:

This is a wonderful resource. Thank you for providing this course. I really appreciate your efforts in collecting the information and distilling it into clear, concise, manageable sections. The material will be very useful in helping me with clinics, my teaching and research. The information you provided is both up-to-date and specific. I really enjoyed the course and the format was perfect. I completed the first few weeks in a rush and then had to take a break due to work commitments and now I have a window to finish the course. This online platform is ideal for so many. Thanks again!! (Feedback on step 6.13, run 3, 2017)

I am truly grateful to the whole team for bringing such good learning material together. It is very handy, lucid and with the creative commons license – makes it accessible to all at zero cost. Cheers to the whole team. (Post-course survey, run 9, 2019)

Some learners did also report challenges. Recurring themes include finding the time to study, paying for the completion or upgrade certificate, inadequate internet access, lack of translations and lack of experience or confidence with online learning.

Travelled to the city twice a week [to participate] due to network challenges. ('Follow-up' survey, 2016)

This is my first online course and it's been a bit challenging. I hope to get better at it on my next study online. ('Follow-up' survey, 2016)

Several themes emerged from learners' and stakeholders' suggestions on how to improve the course: formalise the accreditation, address issues around paying for and obtaining a copy of the certificate and further tailoring of the course to meet learners' needs, in particular:

- translations
- more content localisation
- more facilitation
- extended course run times.

My humble suggestion is to take examples also from Asian countries too that could make someone like me practicing [sic] in developing countries like Nepal more useful. (Feedback on 'impact' survey, 2016)

Perceptions of impact

On eye health service delivery

Individuals: One hundred and thirty-nine participants on the first run of the Global Blindness MOOC responded to the 'follow-up' survey one year later (3.9 per cent response rate); 94 per cent worked in eye health and 82 per cent lived in an LMIC.

Eighty-five per cent reported being able to apply their learning from the course to their practice. In particular, 61 per cent had used their learning when planning eye care services and 50 per cent when assessing a community's eye care needs.

Global Blindness course has really help[ed] me a lot to run [the] Vision 2020 Program, Post [Ebola Virus Disease] EVD survivor Program in Liberia (I got this assignment); after this course with

International Medical corps and now in Eritrea I am working with [Fred Hollows Foundation] FHF to train cataract surgeon and ophthalmic officers, [and] ophthalmic nurses for [the] T Surgery in Trachoma program. ('Follow-up' survey, 2016)

I have tried to improve on outreach activity and presently am writing a proposal that will enable us to do [a] screening of university students before the start of [the] next academic year. The course has been a motivation factor for my career. ('Follow-up' survey, 2016)

Regional level: In addition, the team has had informal feedback from the MoH official responsible for eye health service delivery in Kenya that participation had inspired three cataract surgeons managing eye health clinics in remote areas to make significant improvements, verified by the MoH, to their cataract surgery performance rate.

On-training cascade

Institutional level: Working together and with the course team, the COECSA and UCT partners successfully adapted and localised the MOOC for their own training contexts:

- Creation of a blended learning diploma in community eye health accredited by the Health Professions Council of South Africa and UCT.
- Continuing professional development accreditation assigned by COECSA to a localised version of Global Blindness delivered using Google courses to eye health teams in ten countries in the COECSA region.

Individual educators and training managers: Fifty-four per cent of the respondents to the 'follow-up' survey had used their learning to teach others about eye care and 70 per cent reported having used the OER for learning or teaching:

- 50 per cent had downloaded and referred back to the OER
- 47 per cent had shared them with others
- 45 per cent had used them as teaching resources.

Informal feedback from educator stakeholders echoed many of the themes shared by learners, but also provided additional insights into

further actions to improve the project's activities and process, especially around collaborations, which could further improve uptake, engagement and impact of the course at the local level.

Impact example: Dr Sabherwal's experience

Informal feedback from several participants showed that, for some at least, the MOOC led to a number of longer-term impacts on their professional practice. The experiences of Dr Sabherwal illustrate this well:

I studied the Global Blindness course while practising as an ophthalmologist in Delhi. I appreciated the flexible format which meant I could work and study at the same time. It was my first opportunity to learn about eye care planning and management.

Learning from global experts and with other eye care professionals from different countries, cadres and local settings exposed me to many new experiences and ideas. It inspired me to think about how we could address some of the patient barriers we were seeing in a free rural outreach cataract programme. Around 25 per cent of the people offered surgery did not arrive at the hospital afterwards. A patient survey identified that many were afraid of a poor-quality surgical outcome and that, as we were carrying out surgeries during harvest, there was no-one to escort them to hospital. We addressed these barriers by counselling patients and their relatives about surgical quality and re-scheduled the timing of surgeries.

Taking the Global Blindness course helped me reflect on and improve our eye care outreach programme. It also led me to become more interested in the public health approach to eye care and I came to London to study the LSHTM Masters in Public Health Eye Care in 2017. After successfully completing this, I took a new role at a not-for-profit eye health institute where my main responsibilities now include community ophthalmology and public health eye care research as well as my clinical work.

Part of my role is providing practical training to the institute's excellent community team of programme managers and

administrators. I encourage them to enrol in Global Blindness and run a supplementary weekly teaching hour where we relate the content to our own context, in Hindi if required. I also use online meeting software to widen the classes to include staff at our 4 remote secondary centres and a community team from another non-profit eye hospital about 500km away. The response has been great with lots of questions regarding the basics and it is really satisfying to share these concepts with people working in the field. The good reception for this training has led me to start to develop our own curriculum to train eye health programme managers.

(Adapted from [Ramasamy et al., 2017](#): 9–10)

Limitations of the evaluation methodology

The limited resources and methods available to the course team mean that significant gaps remain in the team's insight as to the learning experience and its application to practice by the majority of Global Blindness participants. In particular:

- Only small numbers of self-selecting learners and stakeholders took part in the post-course and 'follow-up' surveys or provided informal feedback directly.
- The external platform provision combined with open registration constrained the evaluation's ability to gain insights useful to health system stakeholders; for example:
 - Which eye health teams were participating, to what extent, what learning was being achieved and what was being applied? Did application lead to performance improvement?
 - Which technical and socioeconomic factors were constraining and enabling participation and application of learning ([Cox and Trotter, 2017](#); [Littlejohn et al., 2019](#))?

In summary

Despite the limited methodology and scope of insights gained, the evaluation findings do indicate that carefully and collaboratively

produced MOOCs, such as Global Blindness, can deliver a high quality of education at scale to health teams across multiple contexts, including limited-resource settings. The localisation partnerships demonstrate capacity building and increasing equity at the health system level through a locally managed training cascade. The Dr Sabherwal example encapsulates the kinds of long-term and multifaceted practice impacts that this open approach to online education can inspire among individual health leaders at the local level.

Ongoing communication with multiple collaborators was an extremely important tool in driving quality and equity in the project – helping the team identify stakeholders’ needs, adjust activities in response and, where the team was unable to respond immediately, informing discussions and planning for future developments (for example, sharing learner data ethically and legally across organisational boundaries).

Ways forward

The current donor funding stream for the Global Blindness course ended in 2021 and a new training model is needed to enable it to continue to run. Based on the evaluation findings and on a survey of 173 eye health decision makers largely based in LMICs (March 2019), the course team is developing an approach that maintains focus on equitable widening of participation in health worker training but relies less heavily on donor funding. The model has two main strategies:

- continuing to manage Global Blindness and other public health eye care online courses developed by the team as open access MOOC / OER
- developing learner pathways and assessments building on LSHTM’s eye health open courses to create a formal professional practice postgraduate certificate in public health eye care.

This development will contribute to addressing learner and stakeholder requests for more support for localisation, input into decision making around the course management and formal accreditation. It also aims to provide a way forward for eye health training managers and national stakeholders to gain deeper insight into the coverage and impact of this training within their health systems and better inform their eye health human resources strategy.

Acknowledgements

The authors would like to thank the learners, colleagues, collaborators and funders who have contributed to helping improve eye health service delivery around the world through the Global Blindness course. In particular, we would like to acknowledge funders Seeing is Believing and the Queen Elizabeth Diamond Jubilee Trust, ICEH and LSHTM leadership, the LSHTM technology-enhanced learning and multimedia teams and, in particular, the Global Blindness steering group, course team, content contributors, educators, facilitators and localisation partners.

Notes

- 1 See <https://iceh.lshtm.ac.uk/> for more information.
- 2 LMIC figures extrapolated for runs 1 and 2 as IP data collected only on runs 3–9. VPN masking was not accounted for in IP data. N=704 for gender and n=631 for employment area.
- 3 Viewed ≥90 per cent of the learning activities in week 1.
- 4 Viewed ≥50 per cent of the course.
- 5 Viewed ≥90 per cent of the course.

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