Principles to guide the effective use of technology to support capacity development in global health partnerships

Marion Lynch,[1] Jihoon Yoo,[1] Diana Mukami,[2] Waheed Arian,[3] Tom Bashford [ID],[4] Paul Hobden,[5] Pramod Luthra,[6] Mumtaz Patel,[7] Neil Ralph,[8] Niall Winters [ID],[9] Louise McGrath,[10] Ben Simms[11]

For numbered affiliations see end of article.

Correspondence to
Jihoon Yoo; jihoon.yoo@thet.org

INTRODUCTION

Health partnerships (partnerships between health institutions in the UK and the Global South that work together to cocreate responses to locally identified health system priorities) are a cornerstone of the UK approach to global health, as outlined in the 2007 report by Lord Nigel Crisp, and subsequent reports of the All Party Parliamentary Group on Global Health.[1 2]

In 2020, the COVID-19 pandemic pushed much of the Health Partnerships work online, removing the face-to-face element of teaching and support and creating new challenges and opportunities to build human relationships, clinical skills and service quality across borders. Online learning is not new and can be defined as 'the use of electronic technology and media to deliver, support and enhance both learning and teaching and involves two way communication using online content and processes'.[3]

Its use in global health has brought new challenges to the educational process, but also new opportunities to improve equity and social justice in health professional education[4] and the opportunity to rethink colonial approaches and unconscious bias that have negatively affected patient, population and planetary health.[5]

The call to examine the 'educational statues and white privilege that informed past approaches has reshone a light on: (1) the positive and adverse impact of development assistance, and the national and organisational support needed for successful outcomes;[6] (2) the positive and adverse impact of the globalisation of medical education[7] and the zero epistemological approach taken in the past[4]

Summary box

⇒ A lack of published principles to guide the use of technology for capacity development in Global Health Partnerships prompted the need to define the requirements for such support and examine the evidence base and experiences of those involved.

⇒ This led to the codevelopment with end users and subject experts of the principles and a set of guiding questions that would enable others to apply the principles to their practice. Through a three-stage approach, 10 core principles were cocreated with end users and an expert group.

⇒ The principles were developed iteratively and were informed by evidence on (1) the kind of knowledge that is created and valued multiprofessionally, (epistemology) and the way participants teach, learn and collaborate online (methodology)—effective learning, (2) the ethics and values that inform educational content, design and implementation focused on community building (axiology).

and (3) the positive impact of international capacity development partnerships.[8]

This has resulted in the development of 10 core principles to inform future approaches for the use of technology in capacity development interventions in global health. These principles build on a bank of the Tropical Health and Education Trust's (THET) resources that improve the quality, safety and equity of global health.[8 9]

Such guidelines enable those using them to move from the core common principles that define how they work to make decisions to implement specific projects and practice to improve learning and health. This paper describes the evolution of the guiding principles to support this shift to virtual capacity

Summary box

⇒ These principles provide a framing to evaluate the effectiveness of the use of technology in capacity development interventions. Their use will generate evidence of impact on quality and equality in learning and in health, inform which pedagogical approaches provide effective education, what cultural and ethical actions are needed to ensure justice and equity, and what organisational or infrastructural designs are needed to enable these to happen.

⇒ The systematic development of the 10 core principles anchors them in evidence and experience of global health and online learning, and supports the key steps for effective, ethical use of technology in capacity development interventions.

⇒ Appropriate and ethical approaches to the use of technology in capacity development can be supported using these principles and guiding questions.

development. Table 1 provides the questions users can ask themselves in order to apply the principles in practice.

HOW WE DEVELOPED THE THEMES AND PRINCIPLES

We used a three-stage approach to identify the evidence, expertise and experience, develop the principles and evaluate their utility.

Stage 1

A literature review on digital pedagogy and clinical education in global health enabled us to identify two key themes, (1) effective learning, how knowledge is produced and acquired in society; (2) ethical learning (noticing the values and beliefs that inform past, present and future approaches to learning) and (3) effective learning (noticing the individual skills, educational methods and organisational structures needed for people to learn). To support effective learning the international virtual learning environment needs to build on educational theories that, rather than attempt to control and manage the learning experiences, must instead empower the self-directive adult learner to accumulate learning experiences within the dynamic, complex and culturally different contexts in which they exist. Such an approach builds on two educational approaches informing 21st century health professional education. First the need to go beyond minimum competence.[10] Minimum competence is useful in stable environments, dealing with familiar problems and with predicable circumstances and is a person's current state and ability to do something successfully and efficiently.[11] We instead need to build capabilities using competences which allow people to problem solve across borders, in unfamiliar settings, working all the time to adapt to improve performance.[10]

Such capabilities require people to merge their knowledge, to make new thoughts and solutions, rather than follow past ways of working, sometimes called 'knotwork'[12] and creates comfort with uncertainty.

In order to achieve effective learning, we need vertical rather than horizonal development. Horizontal development adds to tools you already have (eg,

communication skills training or annual knowledge mandatary updates). Vertical development develops new mindsets and so changes the way people think and behave. Such approaches are being used in heath partnerships.[13] This transformative thinking enables people to be more adaptable, collaborative and able to span boundaries and networks. Such self-directed, learner centred transformative pedagogy is required for 21st Century complex healthcare, bidirectional learning and equitable partnerships. Second, we considered the theme of ethical learning. The ethical approach needs to acknowledge unearned and unfair advantage as well as unearned and unfair disadvantage and embrace an intersectional approach to inequity.[14 15] Such an approach can also expose power issues for patient involvement.[16]

Such an ethical lens provides critical allyship to draw explicit attention to systems of power and enable people to reflect on their own practice and organisations and how this unintentionally reflects and so reinforces inequality, then change it.[17]

The philosophical and practical challenges and opportunities facing global health informed the discussions and design. We critically examined the morality of these principles to ensure that their application was possible in all contexts and did not perpetuate past harmful biases.

We used an ancient triad to critically examined what is good, what is true and what is beautiful about the principles. By identifying the ethics used (good), that is, how we act, we acknowledge the role of technology in shaping human capacity building behaviours. We considered the moral interactions of humans and technology and how technologies mobilised to support capacity development can lead to particular outcomes. We do not see human beings as active and intention and material objects as passive and instrumental. Instead, we recognise that what people do is coshaped by the things they use,[18] in this case the virtual tools used. Such tools form a 'script'[18] that users follow and so have a type of agency themselves. This enabled us to acknowledge that technologies do help shape our existence and the moral decisions we take[18] and design the principles so that the virtual tools were moral too[4] and so build in morality[18] so that they may be used by all.

By identifying what is true we acknowledged the types of knowledge deemed valid and valuable. The challenge we face is that dominant discourses in medical education create an imaginary 'zero point' for knowledge rooted in assumed objectivity of white western men.[4] This zero epidemiology creates epistemic injustice and violence through the imbalance with some peoples' words deemed less worthy due to prejudice and some people with privilege unable to comprehend why those without are unable to act. This zero epistemology also privileges forms of evidence, methods and practices in healthcare creating what appears to be 'true' and natural[4] without noting how that truth came to be believed. This insight enabled us to acknowledge the knowledge used and

Table 1 Questions to ask when designing and delivering virtual learning

Principle	Key questions	Tools/ guidance/case study, etc
Monitoring and Evaluation		
1 Evaluate using complexity and realist approaches to create evidence of impact and good practice and support for implementation.	In your project intervention design and monitoring plan have you considered: What works, for whom, in what respects, to what extent, in what contexts and how—and what change you aim to see in relation to this?	Nonadoption, abandonment, scale-up, spread, and sustainability (NASSS) framework built on a complexity assessment tool (CAT) methodology.[24]
Pedagogy		
2 Coach for capabilities, facilitate vertical development and support innovation	▶ Will your project prepare learners to apply their learning in different circumstances? ▶ Will your project prepare learners to adapt how they apply their learning as circumstances change ▶ What approach does your project take towards innovation development? ▶ What motivates the learner and what are their key drivers? ▶ How will your project draw on the existing knowledge and skills of the participant? ▶ How has problem-based learning been integrated into the project? ▶ How have you constructed the environment to foster relationships and multidirectional exchange between the Subject Matter Expert, Learner and Facilitator? ▶ How have hard skills, attitudinal change, behavioural change and broadening of horizons been prioritised.	Understand any learning innovation as a complex intervention.[25] Understand issues, such as adherence to guidelines.[26] Understand the different approaches to innovation (eg,Transfer and Diffusion) but also the critiques of these approaches.[27–29] The use of Learner Personas tools.[30]
3 Create connected and compassionate learning communities	▶ How will your project bring people together to share and exchange learning? ▶ What steps will you take to build relationships between the people involved in your initiative? ▶ How will you ensure equity of participation? ▶ What drives the relationships and exchanges between participants (networking opportunities, knowledge exchange, social connection, resource allocation)—how has the intervention been designed to use these drivers to foster relationship building? ▶ What steps have been put in place to encourage exchange outside of the formal channels to build longevity of relationships and transition into the working world (eg, WhatsApp Groups, LinkedIn Groups)? ▶ Have you considered how to remove the practical frictions from distance/online group work? ▶ Is synchronous time (Zoom Calls or webinars) being used for engagement and exchange or for knowledge transfer? ▶ What tactics are being employed to appreciate the value of the personal experiences and insights that users share? ▶ How has the intervention been structured to close the feeling of isolation that can be experienced with online or distance learning? ▶ How is the individual made to feel part of the group and equally gain the feeling of being recognised by the group and the Subject Matter Expert?	Use participatory approaches.[31 32] Include tools such as photovoice.[33] Think through the ethical foundations of your work and consider taking a prioritarian approach.[34 35] Compassion Rounds face.[36]
4 Develop coaching/facilitating faculty to support digital literacy and signpost to resources.	▶ How will you strengthen local faculty? ▶ Does your project support mentoring? ▶ How will the learning be engaging for learners? ▶ How will learning equip the learners to put their new knowledge into practice and how will this be evaluated? ▶ Are the faculty equipped and trained in using online tools to engage with learners? ▶ Are the faculty comfortable with the different pedagogical approaches best suited to online delivery ▶ Has the intervention been designed to demonstrate what additional resources are required, for what and how their use will be evaluated? ▶ What support structures have been put in place for the faculty? ▶ For example, technical support resources, faculty meetings and review sessions, student feedback and evaluation process?	Understand approaches to supervision.[37] Understand the concept of supportive supervision[38] and the critiques of it.[39] Do not rely on information dissemination models of learning. Understand how to use learning theory in developing your intervention[40] Understand the various approaches to understanding changes in practice, drawing on implementation science.[41 42]
Culture		
5 Cocreate a person-centred approach focussed on inclusivity.	▶ Has the learning been chosen by the learners? ▶ Have you considered the full spectrum of stakeholders that should be included? ▶ Have the learners shaped the nature of the learning? ▶ Does the learning ensure a sense of belonging? ▶ Does the learning help develop a sense of uniqueness	See below for inclusion framework and inclusion framework for induction.[43]

Continued

Table 1 Continued

Principle	Key questions	Tools/ guidance/case study, etc
6 Build equity into the design through overt EDI and GESI approaches building mutuality and bidirectional learning.	► Who has been involved in the design and delivery of the intervention? ► Are different sectors of the community/society likely to benefit from the intervention? ► Are there any barriers preventing the intervention from reaching everyone? ► Have you considered the potential 'equity stratifiers' (ie, variables associated with differential access, uptake and/or outcomes)? ► How will you monitor the effects of your project on EDI and GESI?	[44–47]
7 Develop culturally transferable adaptable capabilities.	Does the intervention take into account the local context and what is relevant to local stakeholders? How can the intervention be adapted to the local context and is there flexibility in the approach? Have you unpacked what local context entails?For example, sex, disability, religion, social capital, socioeconomic status, local language, available infrastructure, sexual orientation, age, cost, geography, educational level, digital literacy, occupation, etc?	This is really important to get right. We need to make sure we have some flexibility built into the approach so interventions can be adapted.[47]
Organisational		
8 Align with organisational priorities including ecological sustainability.	► Does the intervention align with existing policies/ plans? If not, are there plans to adapt existing policies/plans? ► Consider the different systems in which your intervention is situated, from the local to the international (Policies and plans do not always align with actual priorities, and there will be an interplay between the needs of both the organisation(s) and the individuals involved. Projects necessarily involve trading off some of these against others, and this is best done explicitly rather than tacitly. Trade-off analysis is a useful tool for this and fosters the necessary multistakeholder approach). ► Consider: Who will use the system? here is the system? What affects the system?	[48]
9 Build a virtual learning organisation that improves quality.	How will learning be identified throughout the project and used to improve the project? (Quality is often discussed and rarely defined. Building on the Trade-off analysis above, there are often different measures of quality which matter more to different stakeholders or are more relevant to one or other sub-system: for example, safety vs financial cost. An alternative framing is to consider stakeholder needs and explore how these can be met in a balanced way—for example patients need safe care but hospitals need to be able to afford it. This same focus on needs applies to learning: what is needed by the various stakeholders and how will they know define when their needs have been met?). Consider: What are the needs? How can the needs be met? How well are the needs met?	WHO Toolkit[48 49]
10 Build an adaptive system.	Can your project adapt as the context and priorities change? How will it do this? Consider: What is going on? What could go wrong? How can we make it better? (This builds again on the concepts of needs. These are dynamic and change as an individual changes and as their context changes. This requires an iterative approach which re-examines each aspect of the project recurrently. This could be embedded in a Kolb learning cycle, a plan-do-study-act (PDSA) cycle or a knowledge to action cycle.)	[48]

EDI, equality, diversity and inclusion; GESI, gender equality and social inclusion.

produced has potentially biased parts and so mitigate against this.

What is beautiful includes the experience and response of the user. Any virtual experience needed to be morally sound, truthful and be 'felt' to be so too. The user experience therefore needed to be relevant and relatable to the users' reality. Trusted networks and human connections would make that so. We worked with partners across UK, Ethiopia, Somaliland and Zambia to frame the practical challenges and form the principles. This ensured the principle were developed with and by those who will use them, that social justice and ecological health were included and that epistemic injustice (prioritising one group over another) was avoided. As such the opportunity to use them in all contexts should be possible.

As with many global health interventions there is a risk that they will be seen as ethical capital for the global south. There is also a risk that they become a 'tick box' exercise. We have mitigated against this by providing a guiding process with questions to ask rather than rules to follow. This approach will enable partners to identify ethical and context appropriate ways to apply the principles in practice. This means they can assume multiple configurations according to the particular context and the aspirations and expectations of local communities.

To aid their ethical evolution the adoption of these principles will be observed through their inclusion in grant application and reporting processes. Their errors and adaptation will be noted through conversations with colleagues and in focus groups, and the content of case studies and conference presentations.

Their application may not initially require more resources, evaluation will tell. Instead their application may require more moral action, the expansion of the validity of knowledge used and the valuing of the users' experience.

This approach to principle-building has ensured that the intellectual and instrumental aspects of the principles, that is, the underpinning concepts and the practical application are relevant to the contexts in which they will be used, relatable to their users and may be redesigned as needed in situations, settings and societies to improve health.

Stage 2

An expert group of critical friends, including those from the global south, were asked if the themes identified resonated with their expertise and experience. Feedback from these groups valued the equity and diversity lens and the recognition of 'postmodern' and 'posthuman', for example artificial intelligence ways of learning and creating knowledge[19] within complex health systems. End users stressed the need for organisational support and necessary buy in from national and donor structures if such principles were to be used at programme, project and personal levels and practical support to influence power holders and implement the principles.

The practical challenge to move from principle setting to practical implementation was addressed by the expert group, through the setting of key questions to be answered by the user. Key to the utility of the principles was the context in which they would be applied and thus the questions aimed to enable people to develop their thinking and to apply the principles in their own context.

Stage 3

Stage 3 is the dissemination and discussion of the principles to ascertain how, why and where they work and if they are adding value to the efforts to improve equity, inclusion and the effectiveness of virtual capacity development initiatives.[20]

Evaluation needs to explore the contexts and the varying mechanisms that contribute to learning and to improving health, so our educational questions ask how, why and in what circumstances the use of technology in capacity development initiatives works rather than a binary yes, no and how many people were trained. Such realist evaluation approaches are used widely in global health and valued by end users and Ministries of Health.[21–23]

The process followed, and the evidence and expertise contributing to the principles and guiding questions are therefore systematic and transparent.

THE 10 PRINCIPLES ARE SUMMARISED BELOW WITHIN THEIR FOUR ANCHOR THEMES

The 10 principles are grouped within four anchor themes: Monitoring and Evaluation, Pedagogy, Culture and Organisational (figure 1).

Some of these theories are relevant in any type of capacity development between health partners. However, we have aimed to draw out how these relate to the use of technology in such capacity development partnerships, and that they be used to guide the development of new
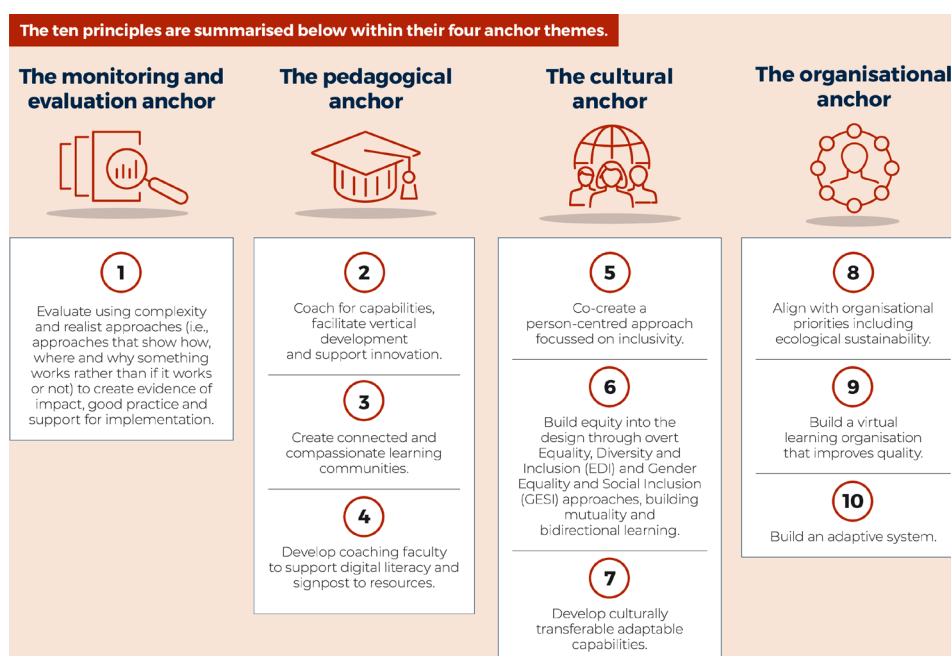

The ten principles are summarised below within their four anchor themes.

The monitoring and evaluation anchor

1. Evaluate using complexity and realist approaches (i.e., approaches that show how, where and why something works rather than if it works or not) to create evidence of impact, good practice and support for implementation.

The pedagogical anchor

2. Coach for capabilities, facilitate vertical development and support innovation.

3. Create connected and compassionate learning communities.

4. Develop coaching faculty to support digital literacy and signpost to resources.

The cultural anchor

5. Co-create a person-centred approach focussed on inclusivity.

6. Build equity into the design through overt Equality, Diversity and Inclusion (EDI) and Gender Equality and Social Inclusion (GESI) approaches, building mutuality and bidirectional learning.

7. Develop culturally transferable adaptable capabilities.

The organisational anchor

8. Align with organisational priorities including ecological sustainability.

9. Build a virtual learning organisation that improves quality.

10. Build an adaptive system.

Figure 1 The 10 principles.[50]

capacity development initiatives, support their delivery and be used as a framework for monitoring effectiveness.

The monitoring and evaluation anchor

1. Evaluate using complexity and realist approaches (ie, approaches that show how, where and why something works rather than if it works or not) **to create evidence of impact, good practice and support for implementation**.

    Consider 'What works, for whom, in what respects, to what extent, in what contexts, and how?' Share cases, share learning, use stories, share principles.

The pedagogical anchor

2. Coach for capabilities, facilitate vertical development and support innovation

    Use pedagogical approaches that move beyond individual skills or competence development to capabilities that can be applied to different scenarios and can be adapted to respond to complex or changing environments.

3. Create connected and compassionate learning communities

    People engage and are likely to learn more when they feel part of a community, are treated with compassion, and recognise how they can all give and take in the learning space. Promote informal as well as formal learning through forums like communities of practice and networks, such as THET's Pulse. Recognise shared knowledge and collective responsibility.

4. Develop coaching faculty to support digital literacy and signpost to resources

    Design an intervention that has pedagogical strategies for engaging learners, developing faculty and supporting putting learning into action.

The cultural anchor

5. Cocreate a person-centred approach focused on inclusivity

    Focus on what is wanted and needed from the perspective of the end user. Co-create with them. Be clear about how partners and learners are involved.

6. Build equity into the design through overt equality, diversity and inclusion and gender equality and social inclusion approaches, building mutuality and bidirectional learning.

    Underpin design by what is ethically sound to produce equity of access to learning. Recognise bias, privilege and built-in inequity in systems and behaviours and identify strategies to address these. Recognise the mutual contribution of and mutual benefit to all partners.

7. Develop culturally transferable adaptable capabilities.

    Acknowledge that context and culture are not common and that an intervention cannot be transferred from one setting to another without considering how technologies are embedded in new context and social and cultural implications for the associated networks and structures of doing so.

The organisational anchor

8. Align with organisational priorities including ecological sustainability

    Align with user's (organisations/systems) values. Build with available budget and in line with relevant policies (organisational and national).

9. Build a virtual learning organisation that improves quality

    Ensure strategies to capture and apply learning to improve quality are factored in.

10. Build an adaptive system

    Partnerships function in complex contexts, projects need to be designed with the possibility to adapt.

From principles to practice

To help people apply these principles, key questions to ask have been included. These questions help users to ground the work in the context as well as the content of their virtual capacity development intervention.

CONCLUSION

The need to develop and address inequities and barriers brought to the forefront by the COVID-19 pandemic is vital. Constrained by pedagogical approaches and available resources, and influenced by power and advantage, online learning approaches which support global health programmes have required review. With end users and stakeholders informing their development, this paper provides ten core principles for consideration when using technology in the design and delivery of capacity development initiatives. They allow the users to make informed decisions on interventions to improve the equity and quality of the virtual interaction and in turn the healthcare available.

The power to form and control the learning must sit with those who need to learn rather than those seeking to teach, with questions to support the principles, the authors propose an innovative and novel approach to ensure we take full advantage of this new borderless virtual capacity development landscape.

We invite comment on the principles and seek case studies of their use so they may evolve, as this is the starting point not the end point.

Author affiliations
[1]Tropical Health and Education Trust, London, UK
[2]Institute of Local Capacity Development, Amref Health Africa, Nairobi, Kenya
[3]Arian Teleheal Charity, London, UK
[4]NIHR Global Health Research Group for Neurotrauma, University of Cambridge, Cambridge, UK
[5]Chief Executive Office, Gateway, Cape Town, South Africa
[6]Associate Postgraduate Dean, Health Education England North West, Manchester, UK
[7]Postgraduate Associate Dean, Health Education England North West, Manchester, UK
[8]Technology Enhanced Learning, Health Education England, Leeds, UK
[9]Department of Education, University of Oxford, Oxford, UK
[10]Programmes, Tropical Health and Education Trust, London, UK
[11]Chief Executive, Tropical Health and Education Trust, London, UK

ORCID iDs
Tom Bashford http://orcid.org/0000-0003-0228-9779
Niall Winters http://orcid.org/0000-0001-8597-2914

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