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Reaching Consensus on the Design of an Online Health Professions Education Faculty Development Course for Sub-Saharan Africa

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ABSTRACT

Faculty development practitioners should be encouraged to create a sustainable and accessible environment for capacity building in health professions education (HPE). Nine experts in the sub-Saharan African region followed two rounds of a modified Delphi process to achieve consensus on the components of an online health professions education faculty development programme. As a result, four components to consider in the development, implementation and evaluation of online faculty development programmes were identified: environmental, curricular, activities and research. These components support further research into developing a contextually relevant and sustainable online health professions education faculty development model in the region.

Introduction

Faculty development for health professions educators (HPE) requires a contextualised approach to achieve the expected benefits of professional growth in teaching, leadership, research and management roles (Frantz, Rhoda, Murdoch-Eaton, Sandars, Marshall & Burch, 2019; Steinert, 2000; Van Wyk & Van Zyl, 2020). Contextualisation of programs for professional development of HPE should be grounded in theory and practice (Butler, Leahy, Hallissy & Brown, 2017) and based on relevant experience and expertise (Abimbola, 2019) to promote sustainability and applicability (Frantz et al., 2019). Faculty development programmes focused on offering these benefits, if not sustainable, are at risk of being lost in an endless cycle of pilot projects – "pilotitis" – particularly in the context of online or e-learning where interventions are not sustained and expanded following an initial project (Barteit, Guzek, Jahn, Bärnighausen, Jorge, & Neuhann, 2020). In an environment where technology is increasingly becoming ubiquitous, the risk of limited or no innovation in pedagogical skills and approaches is a reality when sustainability is not prioritised (Fox, Yeung, Law, Uyen & Yeung, 2005; Reeves & Lin, 2020).

While focusing on professional growth, the intended outcome of faculty development programmes has a macro implication on improved graduate and population health outcomes (Burch & Norcini, 2019). This could imply that specific needs and expectations of the graduates and population served by HPE should be considered in the design of faculty development programmes. Building communities of practice that support this contextualised approach could benefit the professional development of the recipients of such programmes (Keiller, Nyoni & van Wyk, 2022). Additionally, the changing global educational environment requires educators experienced in the meaningful use of technology, both for themselves and their students' training (Butler et al., 2017).

There have been recommendations for HPE faculty development to harness the potential of technology to improve access and build communities of practice (de Carvalho-Filho, Tio & Steinert, 2020). These communities of practice should support HPE faculty in their interactions in a way that fosters a sense of belonging and emphasises learning (Keiller et al., 2022). This recommendation demonstrates the increased focus on an education system that embraces and supports the Fourth Industrial Revolution (4IR) (Butler-Adam, 2018). While much about the nature of 4IR is uncertain, educators are expected to move between the digital domains in their personal and professional lives, communicating with one another while using technology to assist and manage life (Kayembe & Nel, 2019). However, in the sub-Saharan African context, educators and organisations continue to

struggle to embrace the Third Industrial Revolution, making any calls to move toward 4IR less feasible or innovation in that regard unsustainable (Uleanya & Ke, 2019). The challenges include local innovation, government preparedness, giving teachers access to pedagogical assistance, and online communities of practice and online content (Kayembe & Nel, 2019; Uleanya & Ke, 2019). Within the context of these challenges, there is still a preference for face-to-face contact to develop communities of practice (Abigail, 2016). These challenges have been further fuelled by the real-time disruption of face-to-face education, training, and faculty development due to the COVID19 pandemic (Goh & Sandars, 2020). The fragmented and slow adoption of effective online learning and technology in education was evident in countries within sub-Saharan Africa both before and during the pandemic (Mhlanga & Moloi, 2020; Uleanya & Ke, 2019).

The reality of implementing digital educational innovation, regardless of the successes reported (Baepler, 2010; Tekian, Harden, Cook, Steinert, Hunt, & Norcini, 2020), is that the financial, technological, and access limitations of education in the sub-Saharan African region has been, and continues to be, a point to consider (Barteit, Jahn, Banda, Bärnighausen, Bowa, Chileshe, Guzek, Jorge, Lüders, Malunga & Neuhann, 2019; Crea & Sparnon, 2017). We explore the potential for online HPE faculty development within this study, conscious of the limitations mentioned above. The aim is to move toward a sustainable, contextually relevant, online faculty development opportunity in sub-Saharan Africa (Barteit et al., 2020; Spencer, 2016). As demonstrated in earlier work, utilising buy-in and consensus building for programme design with a particular focus on the local context (Steinert, Cruess, Cruess & Snell, 2005) carries multiple benefits to academic and societal communities. If faculty development programmes are not designed with the input of local expertise, the implementation, evaluation and effectiveness of these programmes could be affected (Lewis & Steinert, 2020). The research presented here emphasises the need for a localised, consultative process in designing these innovations.

Materials and Methods

Context

The approach taken within this study adds to the theoretical grounding of the work of faculty development practitioners within this field, bridging practise, context and scholarship in support of sustainability (Cruz, Dickens, Flaming & Wheeler, 2021; Spencer, 2016; Tekian et al., 2020). This paper argues that consensus should be developed using local insight to apply recommended practice

by local health professions educators (Abimbola, 2019). To support this argument, we presented experts within sub-Saharan Africa with an educational design conjecture based on the findings of a rapid realist review (Keiller et al., 2022) as the basis for model development. The authors sought to draw on local experience and expertise to add to the predominantly European and American literature on online faculty development in HPE (Abimbola, 2019; Cook & Steinert, 2013).

Traditionally, a Delphi study includes expert opinions from 6 to 12 panellists who are knowledgeable of and in the field in question (Habibi, Sarafrazi & Izadyar, 2015). Delphi studies draw on expert knowledge for developing a questionnaire in conjunction with published evidence (Hsu & Sandford, 2018). This questionnaire or instrument is utilised to reach a consensus on policy-related material amongst these experts (Green, 2014). The research presented in this paper adopted a Modified Delphi Approach (Habibi et al., 2015). The modification was specific to the method of questionnaire development. The authors developed a questionnaire using the findings of a Rapid Realist Review. This review (Keiller et al., 2022) identified what works, in what circumstances, and for who in the context of online HPE faculty development in low- and middle-income countries. The context, mechanism and outcomes through which these online HPE faculty development courses were advanced are presented in the Conjecture Map below (Figure 1).

Data and Participants

The authors identified panellists (n=18) within the sub-Saharan Africa region for participation in the study by evaluating projects submitted to the sub-Saharan African Foundation for Advancement of International Medical Education and Research by their members from 2008 to 2019. Within this population, six countries in sub-Saharan Africa were represented. These experts had conducted research in HPE in the last ten years, focusing on technology either in the subject or methodology of their study. A response rate of 56% (n=10) was achieved for the invitation. One respondent declined to participate in the Delphi study. Nine health professions educators provided informed consent to participate in the study (Table 1). As it relates to size, diversity, and suitability, the panel's composition is appropriate for the study design (Landeta, 2006). The first author anonymised the detail of each panel member prior to data collection.

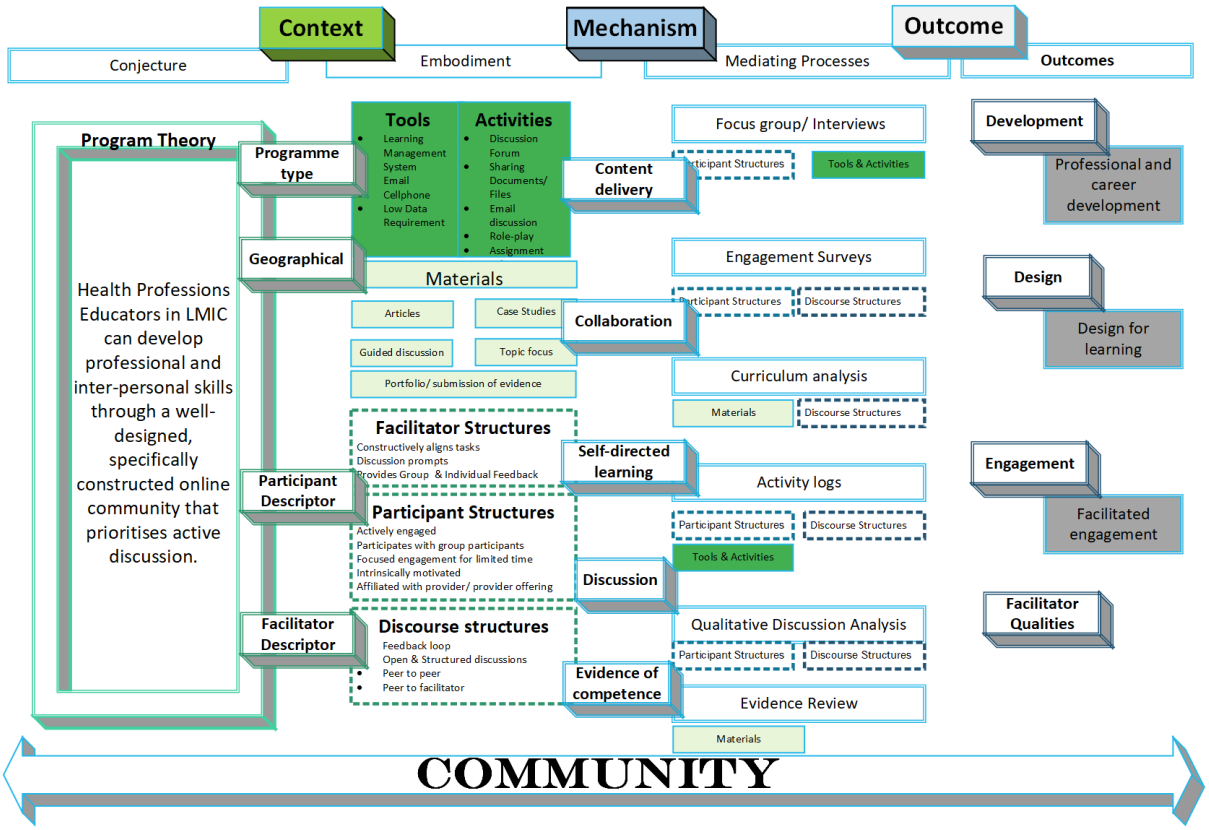

Figure 1. Conjecture map representing the educational design hypothesis for the development of a contextually relevant programme in online HPE faculty development

Table 1. Composition of expert panel

Panellist	Country	Professional Discipline	Number of years in HPE (Known)	Research conducted in Technology-enhanced learning
1	South Africa	Physiotherapy	11	Yes
2	South Africa	Medicine	12	Yes
3	South Africa	Pharmacology	4	Yes
4	South Africa	Occupational Therapy	10	Yes
5	South Africa	Dentistry	2	Yes
6	South Africa	Medicine	4	Yes
7	South Africa	Medicine	3	Yes
8	Uganda	Medicine	8	Yes
9	Nigeria	Medicine	9	Yes

Data Analysis

The questionnaire presented each component of the Rapid Realist Review-informed Conjecture Map (Figure 1) to panellists as 45 statements via RedCap. Statements were presented to panellists and were categorised to align with each component of the Conjecture Map. The scale utilised a three-point Likert-type approach. Panellists indicated their level of agreement (2), uncertainty (1), or disagreement (0) with each statement. Statements referred to the intended outcomes of a course and the mechanisms for observation and data collection in researching these outcomes, known as mediating processes in a Conjecture Map. Tools and activities that could be used for online faculty development courses in HPE in the region represented the embodiment of a course as per the Conjecture Map.

In Round 1, panellists provided an alternative statement and or suggestion for improvement of the statements provided where they disagreed with or questioned the wording of an incomplete sentence. Interquartile range was used as an accepted measure of ensuring rigour in determining consensus during this Delphi study (von der Gracht, 2012). The median served as an additional reliability indicator for each statement, given this study's small number of panellists. In Round 1, statements with an Interquartile range (IQR) of <1 and a median of >66,7 were considered as having reached consensus (n=11).

In Round 2, statements for which consensus was not reached in the first round were modified based on the alternatives provided by the panellists. Consensus was thereby achieved after this round. One panellist withdrew during Round 2 due to illness. A median of >63 and IQR of <1 (n=20) determined consensus within this round. Consensus within the panel was thus achieved on 31 of the 45 original statements related to the design of online faculty development courses for HPE in sub-Saharan Africa. The statements for which consensus was not reached were removed from the final list of components to inform design considerations for online faculty development for HPE in sub-Saharan Africa.

Ethics

Ethical clearance for this study was provided by the Health Sciences Research Ethics Committee of the University of the Free State (UFS-HSD2020/1516/2411). All panellists provided informed written consent to participate in the study while no personal identifiers were included in collecting or

analysing the data. In addition, panellists were informed of their right to withdraw at any point during the study. Data were collected and stored securely on the RedCap database owned by the University of the Free State. Any data analysed by the authors were stored in a password protected cloud storage environment. A moral, ethical framework for scholarly work within higher education was applied to this study (Stutchbury & Fox, 2009).

Results

Variance in Consensus on Conjecture Map for Online Faculty Development for HPE in sub-Saharan Africa

Consensus was achieved on 24% (n=11) of the statements presented to the panel in Round 1. Each of the remaining 35 statements was revised based on the recommendations from panellists. In Round 2, 91% of the revised statements achieved consensus across the panel (Table 2, on the pages that follow). The statements on which consensus was not reached were omitted.

This consensus, supported by the qualitative responses (see appendix) from the panellists, provided the authors with recommended components for online HPE faculty development programmes in sub-Saharan Africa delivery and evaluation. All statements and recommendations from panellists were collated and aggregated in a word cloud to identify the key focus of recommendations for changes to the components of an online health professions education faculty development course. These statements, when combined, demonstrate the focus of the recommendations by the experts (Figure 2) on participants, engagement and discussion.

The analysis of these recommendations has supported four components to consider in developing, implementing, and evaluating online faculty development programmes for health professions educators in sub-Saharan Africa. First, environmental aspects relate to technology considerations. Secondly, these should be supported by a focused curricular design which is time sensitive and prioritises engagement for intrinsically motivated participants. Thirdly, the activities within these programmes should utilise a discursive approach with authentic feedback on evidence provided by the participants for their learning. Finally, the panellists concurred that a mixed-method approach to data collection with a predominantly qualitative data focus could help evaluate the curriculum of these programmes and the participant outcomes (Figure 3).

Table 2. Delphi Consensus

Original Statement	**Round 1**		**Round 2**	
Embodiment	Median	IQR	Median	IQR
In an Online HPE Faculty Development course, a Learning Management System *should/could/should not* be used.	66,7	1	87,5	0
In an Online HPE Faculty Development course, email *should/could/should not* be used.	77,8	0	75	0,25
In an Online HPE Faculty Development course, mobile phones *should/could/should not* be used.	33,3	1	75	0,25
In an Online HPE Faculty Development course, a limited reliance on internet data *should/could/should not* be used.	33,3	1	100	0
An Online HPE Faculty Development Course *should/could/should not include* a discussion forum.	55,6	1	87,5	0
An Online HPE Faculty Development Course *should/could/should not include* sharing documents/files.	77,8	0	100	0
An Online HPE Faculty Development Course *should/could/should not include* discussion via email.	22,2	0		
An Online HPE Faculty Development Course *should/could/should not include* assignment submissions.	66,7	1	62,5	1
An Online HPE Faculty Development Course *should/could/should not include* case studies.	55,6	1	100	0
An Online HPE Faculty Development Course *should/could/should not include* scholarly articles.	88,9	0		
An Online HPE Faculty Development Course *should/could/should not include* guided discussions.	66,7	1	100	0
An Online HPE Faculty Development Course *should/could/should not include* relevant topics.	88,9	0		
An Online HPE Faculty Development Course *should/could/should not include* a portfolio of evidence.	77,8	0	100	0
A Facilitator in an Online HPE Faculty Development course *is responsible for/could be responsible for/should not be responsible for* constructively aligning tasks.	55,6	1	87,5	0
A Facilitator in an Online HPE Faculty Development course *is responsible for/could be responsible for/should not be responsible for* providing discussion prompts.	66,7	1	100	0
A Facilitator in an Online HPE Faculty Development course *is responsible for/could be responsible for/should not be responsible for* providing group feedback.	88,9	0		
A Facilitator in an Online HPE Faculty Development course *is responsible for/could be responsible for/should not be responsible for* providing individual feedback.	66,7	1	100	0

Table 2 continued

A Facilitator in an Online HPE Faculty Development course *should be /could be/should not be* external to the participants' organisation.	0	0	100	0
The participant in an Online HPE Faculty Development Course *is responsible for/could be responsible for/should not be responsible for* remaining actively engaged with all aspects of the course.	77,8	0	100	0
The participant in an Online HPE Faculty Development Course *is responsible for/could be responsible for/should not be responsible for* engaging with other participants in the course.	66,7	1	100	0
The participant in an Online HPE Faculty Development Course *is responsible for/could be responsible for/should not be responsible for* demonstrating focused engagement for a limited time.	66,7	1	100	0
The participant in an Online HPE Faculty Development Course *should be/could be/should not be* intrinsically motivated.	77,8	0	87,5	0
The participant in an Online HPE Faculty Development Course *should be/could be/should not be* affiliated with the organisation or facilitator providing the course.	0	0	87,5	0
An Online HPE Faculty Development Course *should/could/should not* include a feedback loop.	100	0		
An Online HPE Faculty Development Course *should/could/should not* enable open discussion.	77,8	0	75	0,25
An Online HPE Faculty Development Course *should/could/should not* enable structured discussion.	66,7	1	100	0
An Online HPE Faculty Development Course *should/could/should not* create opportunities for peer-to-peer discussion.	88,9	0		
An Online HPE Faculty Development Course *should/could/should not* create opportunities for discussion between participants and facilitators.	77,8	0	100	0
Mediating Processes				
Facilitator and Participant interaction data *can/could/cannot* be collected through Focus Group Discussions.	77,8	0	100	0
Facilitator and Participant interaction data *can/could/cannot* be collected through interviews.	77,8	0	100	0
Facilitator and Participant interaction data *can/could/cannot* be collected through engagement surveys.	77,8	0	87,5	0
Facilitator and Participant interaction data *can/could/cannot* be collected through reviewing activity logs.	55,6	1	62,5	1
Interaction with and using technology/tools and activities *can/could/cannot be* evaluated through Focus Group Interviews.	77,8	0	75	0,25
Interaction with and using technology/tools and activities *can/could/cannot be* evaluated through reviewing activity logs.	77,8	0	62,5	1

Table 2 continued

Interaction with and using technology/tools and activities *can/could/cannot be* evaluated through qualitative discussion analysis.	77,8	0	87,5	0
Interaction with and using technology/tools and activities *can/could/cannot be* evaluated through curriculum analysis.	66,7	1	87,5	0
Interaction with and using technology/tools and activities *can/could/cannot be* evaluated through reviewing assignment and portfolio submissions.	88,9	0		
Interaction with and using technology/tools and activities *can/could/cannot be* evaluated through administering engagement surveys.	88,9	0		
The materials/content of an Online HPE Faculty Development course *can/could/cannot be* evaluated through curriculum analysis	100	0		
The materials/content of an Online HPE Faculty Development course *can/could/cannot be* evaluated through reviewing participant portfolio/assignment submissions.	77,8	0	87,5	0
Outcomes				
Health Professions Educators in low- and middle-income countries can develop professional and interpersonal skills through well-designed online courses that prioritise active discussion. *(Agree/disagree)*	88,9	0		
Professional and interpersonal skills development of Health Professions Educators in low- and middle-income countries are dependent on training offered by first-world countries. *(Agree/disagree)*	77,8	0	100	0
Online HPE Faculty Development Courses *does/could/does not* enable Professional and Career Development.	55,6	1	100	0
Online HPE Faculty Development Courses *does/could/does not* enable the delivery of a course designed for learning.	100	0		
Conjecture				
Online HPE Faculty Development Courses *does/could/does not* enable creating an environment that facilitates active engagement.	0	0	100	0

Figure 2. Word Cloud representing qualitative recommendations from experts

Environmental	Curricular	Activity	Research

• Open-source LMS
• Email
• Offline access
• Mobile phone
• Internet access
	• Prioritise engagement
	• Constructive alignment
	• Case study
	• Time sensitive
	• Contextually relevant
	• Content expertise
	• Intrinsically motivated individuals
		• Discussion
		  • individual
		  • group
		• Portfolio
		• Feedback
			• Mixed-methods: Qualitative dominant data collection
			  • Engagement
			  • Development
			  • Experiences
			  • Curriculum

Figure 3. Components for Online Health Professions Education Faculty Development Programmes in sub-Saharan Africa

Discussion

In this study, the authors utilised expertise from sub-Saharan Africa to generate consensus on the design of contextually relevant and sustainable online health professions education faculty development programmes. This modified Delphi study demonstrates the potential that education design research methods and a theoretical approach can offer in reaching a consensus through engagement with local experts, considering the resources available within the context that the faculty development will be delivered.

The deliberate, comprehensive nature of the questions posed to the experts ensured that this educational design effort is focused on technology being secondary to theoretical and curricular considerations (Reeves & Lin, 2020). The results of this study reflect this, as the panel recommended favouring engagement and open-source tools to low bandwidth considerations and the use of less engaging media such as email. This demonstrates the benefit that having both an understanding of the needs and limitations from a local perspective has on decisions for faculty development practitioners (Abimbola, 2019; Barteit et al., 2019; Gusky, 2003).

Health professions educators in sub-Saharan Africa have historically had access to a range of faculty development opportunities (Blitz, De Villiers & Van Schalkwyk, 2019; Cilliers & Tekian, 2016; McLean, Cilliers & Van Wyk, 2008). However, most of these have been internal/institutional programmes or internationally-funded initiatives (Cilliers & Tekian, 2016; Tekian & Harris, 2012). As with faculty development across disciplines, the fragmented nature and exclusivity of programmes offered (Cruz et al., 2021) have led to a cyclical or recurring short-term pilot project approach to non-degree opportunities (Barteit et al., 2020). This is particularly evident with online or technology-mediated programmes and interventions (Barteit et al., 2020; Cook & Steinert, 2013; Tekian et al., 2020). In this study, the authors propose that the antidote to “pilotitis” is to ensure that the design of faculty development programmes is based on local insight and experience to increase the potential for contextual relevance. This was evident in the responses received, and consensus reached on both research and curricular design.

The findings of this study identified four distinct components that should be included in the design of online HPE faculty development programmes. It was evident that there is disagreement between this panel and the literature informing the survey related to programme design and research methods. Where literature encouraged the use of asynchronous email discussions and system data

use for research (Ahmed, 2013; Anshu, Sharma, Burdick & Singh, 2010; Dongre, Chacko, Banu, Bhandary, Sahasrabudhe, Philip & Deshmukh, 2010; Thakurdesai, Ghosh, Menon, Sahoo, Tripathi, Harshe & Andrade, 2018), the expert panel disagreed and recommended active engagement as the key enabler in these programmes. Their recommendations focused on qualitative methods for evaluating the success of programmes.

These examples of departure from literature-supported recommendations prompt the authors to ask questions related to adopting a deficit-model approach in which programmes are designed based on perceived lack of resources (Hora, Benbow & Lee, 2021) as opposed to the reality for faculty development in sub-Saharan Africa. While a focus on the 4IR implications for education has been noted (Crea & Sparnon, 2017), the contextually relevant experiences and recommendations from faculty developers and educators should be the driving force behind the development of programmes. We argue that this approach to educational design in faculty development will support improved access to knowledge and skill development as proposed by Louw (2019) and pave the way for sustainable growth within the field.

The authors acknowledge the limitations that this small panel's predominantly South African members could pose towards generalisability for the sub-Saharan African region. However, this is mitigated by the panel's experience and membership within an organisation representative of the region. Furthermore, they have been involved in multi-national studies within the organisation, giving them a level of understanding that applies to this study. In addition, the findings of this study will be validated with a broader group to ensure applicability to other countries within sub-Saharan Africa.

Conclusion

An evidence-based approach is supported through the consensus of HPE experts on the design, implementation and evaluation of online faculty development programmes in sub-Saharan Africa. The recommended components create a blueprint for further developing a model for online health professions education faculty development that practitioners in the region may utilise. In turn, it will facilitate the combination of complexity and promote inclusivity in these programmes (Barteit et al., 2020). In doing so, the capacity building provided by an inclusive and sustainable model could potentially serve health professions educators in their professional roles and facilitate their

participation as faculty development practitioners within their institutions (Frantz et al., 2019; Salajegheh, Gandomkar, Mirzazadeh & Sandars, 2020).

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Appendix

1. An Online HPE Faculty Development course that is hosted on an open-source Learning Management System provides participants and facilitators with a platform that is easy to use for creation, interaction and individual learning activities.

2. In an Online HPE Faculty Development course, the use of email should be limited to administrative communication and/or notifications of activities from content and engagement platforms.

3. Health Professions Educators should have the option to use their mobile phones to participate in an Online Faculty Development course.

4. Due to the nature of an Online HPE Faculty development course, participation requires some reliance on internet data.

5. A discussion forum promotes useful interactivity in an Online HPE Faculty development course.

6. In an Online HPE Faculty Development course, content should be shared via documents in a format that allows for offline access.

7. A Facilitator in an Online HPE Faculty Development course should be involved in the constructive alignment of the course.

8. An Online HPE Faculty Development course should be designed to maximise active engagement from facilitators and participants.

9. Case studies created by, or provided for Health Professions Educators, promotes reflective learning in an Online Faculty Development Course.

10. Facilitated and guided discussions in an Online HPE Faculty Development Course can initiate engagement and create opportunities for reflective learning.

11. A portfolio of evidence submitted by participants in an Online HPE Faculty Development course is a useful format to demonstrate knowledge integration and competency.

12. Facilitators and Participants share responsibility for prompting discussion in an interactive Online HPE Faculty Development course.

13. A Facilitator in an Online HPE Faculty Development course should occasionally be required to provide individual feedback.

14. Facilitators should have expertise in the content, and be aware of the local context of participants in an Online HPE Faculty Development course.

15. Facilitators should stimulate engagement between participants in an Online HPE Faculty Development Course.

16. The participant should demonstrate focused engagement for the duration of an Online HPE Faculty Development Course.

17. Even if not required by their employer, Health Professions Educators should be intrinsically motivated to engage in an Online HPE Faculty Development course.

18. Participants do not need to be affiliated through employment or membership with the organisation providing an Online HPE Faculty Development course.

19. Open/ non-structured discussions in an Online HPE Faculty Development course are usually beneficial for participants.

20. Structured discussion in an Online HPE Faculty Development course is usually beneficial for participants.

21. Facilitators and participants in Online HPE Faculty Development courses benefit from regular discussion with each other.

22. Focus group discussions are useful for collecting data on the facilitators' and participants' experience of their interaction in an Online HPE Faculty Development course.

23. Interviews are useful for collecting data on the facilitators' and participants' experience of their interaction in an Online HPE Faculty Development course.

24. Self-report engagement surveys completed by facilitators and participants, provide evidence of their interaction with each other in an Online HPE Faculty Development course.

25. Focus group discussions are useful for collecting data on the facilitators' and participants' interaction with and use of technology, tools and activities in an Online HPE Faculty Development course.

26. Qualitative discussion analysis can be used as a data collection method to investigate the use of technology/tools and activities in an Online HPE Faculty Development course.

27. Curriculum analysis of an Online HPE Faculty Development Course should include analysis of the tools, technology and activities that participants are required to use.

28. A well-trained and experienced reviewer will be able to use participants' portfolios and assignments to evaluate the materials / content of an Online HPE Faculty Development course.

29. Professional and inter-personal skills development of Health Professions Educators in low and-middle income countries requires a context-specific approach from local sources.

30. An Online HPE Faculty Development Course, if well designed, creates an environment which facilitates learning.

31. An Online HPE Faculty Development Course, if well designed, creates an environment which facilitates engagement.