


# Virtual interprofessional education for the African continent: AFRI-VIPE

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This article details how multiple universities came together in 2019 during the Africa Interprofessional Education Network (AfrIPEN) conference in Nairobi, Kenya, to create an interprofessional, multi-continent, multi-university opportunity to give their students an asynchronous and synchronous virtual interprofessional experience through a programme known as VIPE (virtual interprofessional education). The programme, which was created after the conference, was entitled AFRI-VIPE (Africa virtual interprofessional education). From that conference, four AFRI-VIPE events have been implemented to date. Asynchronous material was created, and synchronous sessions were held that utilised problem-based learning to reinforce the Interprofessional Education Collaborative (IPEC) core competencies. Students' competency attainment was assessed using the Interprofessional Collaborative Competencies Attainment Survey (ICCAS), and analysis of those data showed significant improvements across all six interprofessional subscales for students at both North American- and African-based institutions, as well as across professional groups. All data were kept anonymous. Challenges experienced during AFRI-VIPE included the difference in time zones, student attrition, connectivity and survey response rates. Through their participation in the VIPE model, students and facilitators from a variety of countries and professions appreciated the opportunity to learn with, from and about other students through exposure to authentic case studies.

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There has been an increase in interprofessional education (IPE) offerings worldwide, primarily based on the recognition that preparing health professionals to engage in team-based collaborative care results in

increased health outcomes for patients.<sup>[1,2]</sup> The Framework for Action on Interprofessional Education and Collaborative Practice<sup>[1]</sup> makes a strong case regarding IPE as a necessary step in preparing a 'collaborative practice-

ready' health workforce that is better prepared to respond to local health needs.<sup>[1]</sup> Global health and wellbeing (Sustainable Development Goal 3) is recognised as a current global health challenge; hence, the World Health Organization (WHO) and its partners regard IPE and collaborative practice as an innovative strategy that will play an important role in mitigating the global workforce requirements.<sup>[1]</sup>

Pedagogically, learning from, with and about each other aligns with a number of learning theories – commencing with Vygotsky's<sup>[3]</sup> socioculturally orientated constructivist learning theory, where learning is essentially an interactive social and relational experience that is collaborative in nature rather than an individual one, through to modern influence in the adult learning and management literature having to do with establishing psychologically safe and high collaborative environments where learning and performance thrive.<sup>[4-7]</sup> Collaborative ways and benefits of learning also occur during the experiential and constructivist learning with others.<sup>[8]</sup> Preparing students with IPE training contributes to employability and influences graduate attributes by preparing them for career readiness.<sup>[9,10]</sup> Most universities' internal quality assurance processes and external professional regulatory bodies also require healthcare courses as evidence of the inclusion of IPE during initial accreditation and reaccreditation of academic programmes.

## The Africa Interprofessional Education Network

The committee of international health provider educators emerged after participation in the Africa Interprofessional Education Network (AfrIPEN) conference in Nairobi, Kenya, in August 2019. The committee's intent was sparked when educators from Yale University and New York University (NYU) shared their own work with their *virtual IPE*, which they entitled VIPE. The first VIPE, which consisted of online asynchronous and synchronous content, was held in 2018. It comprised five universities in North America (University of Southern California: Suzanne Dworak-Peck School of Social Work; George Washington University: Milken Institute School of Public Health; University of Southern California: Division of Biokinesiology and Physical Therapy; New York University: Steinhardt School of Culture, Education and Human Development; and Georgetown University: School of Nursing and Health Studies).

Members of this core consortium met many educators at AfrIPEN, who expressed an interest in extending VIPE across the African continent. Subsequently, Africa (AFRI)-VIPE was conceptualised and an interprofessional committee was formed.

At the initial stage of development, virtual learning activities were rare, and facilitators, as well as students, were unfamiliar with using online platforms. AFRI-VIPE laid the foundation for online activities that became the norm from 2020 onwards. This article describes how AFRI-VIPE aimed to empower students and staff across continents to participate in a virtual interprofessional team experience, which began at a critical turning point during the COVID-19 pandemic.

## Methodology

A quantitative study was conducted, using an online survey on the Qualtrics platform (Qualtrics, USA). The outcome measure was the Interprofessional Collaborative Competencies Attainment Survey (ICCAS), a self-reported measure of competencies in interprofessional care administered retrospectively as a pre-test/post-test.<sup>[11,12]</sup> There were six subscales for which we calculated

the means, and then calculated a grand mean for the overall scale. Data were reported in aggregate form.

Ethical clearance was received from all participating institutions working under the same shared review board guidance (ref. no. Yale IRB#:2000033005). Participants consented to using Qualtrics. All ethical considerations were adhered to.

## The AFRI-VIPE process

### Initial steps

Creating an international, virtual and multi-university activity is an interprofessional collaboration. The first step was creating an interprofessional committee and finding mutual time across continents that suited all parties involved. Subsequently, a timeline was devised for the creation of the event. The committee decided to meet once a month for 1 hour to discuss and develop the activity.

### Interprofessional committee tasks

Monthly meetings were scheduled over Zoom between committee members to discuss the progress of AFRI-VIPE development for the four yearly events. The committee was composed of 24 interprofessional members. It was further divided into subcommittees to ensure efficient completion of tasks. The first committee completed tasks that included: documenting the roles and responsibilities of various professions in specific countries; creating a case scenario; developing a script; creating video interviews of different professions; training and recording the simulated patient (SP) to portray the case; developing the break-out questions, creating a facilitator guide and moderator questions for the synchronous session; creating the pre- and post-surveys that assessed student IPE competencies; and describing the roles of various health professionals. The second subcommittee focused on all aspects of technology, including technology platform capabilities; pre-registration links; shared learning management systems; logistics; online survey tools; and interprofessional student break-out rooms. A faculty (faculty is synonymous with university lecturers in Africa) moderator led and managed all aspects of co-ordination and troubleshooting. After the subcommittees had worked on a task, it was reviewed at the monthly meetings so that all members were collaborative in the overall process.

### Describing roles and responsibilities of professions

The task of describing the roles and responsibilities of each profession was reviewed nationally and internationally. Committee members gathered information about their professions in their respective countries, typically sourced from professions' official websites. A document entitled 'Roles/responsibilities of disciplines' was made available to student participants in the asynchronous VIPE content. To house all asynchronous content a shared learning management system was created on a website (Table 1).

### Creating video resources – professional interviews

Part of the asynchronous content included newly produced videos, where professionals were interviewed. Interview questions included: a brief biography; an overview of educational preparation; degrees; career pathways; and how the profession interacts in and out of the acute healthcare setting. These resources gave students a first-hand account of being able to listen to who the members of the interprofessional team were.

## Preparation for problem-based learning

VIPE utilises a problem-based learning (PBL) approach with students, which is intended to give students from each participating profession an opportunity to utilise their developing expertise in a collaborative problem-solving environment.<sup>[11]</sup> Interprofessional PBL groups, consisting of the ideal size of 10 - 12 students representing one or more of each participating profession, were purposively constructed to allow for collaborative learning.<sup>[13]</sup> Facilitators of these groups used a predeveloped guide comprising >50 open-ended questions relating to the case to prompt discussion. These questions were grouped around themes, such as: patient clinical needs; behavioural and social aspects; family dynamics; community health situation; and health policy implications.

## Case creation

The case can be viewed as the foundation of a PBL IPE event. Faculty involved in the VIPE design process have come to understand that the case must be developed with each profession in mind from the outset.<sup>[6,14]</sup> The process commenced with a collaborative 'interprofessional brain-storming' session intended to obtain the basic ideas of the primary ailment of the patient, and ensured that multiple professions would be able to offer input into treatment planning. The AFRI-VIPE committee continued to refine the case in each of the monthly meetings. This included developing the various facets of a person's life that may be impacted by a health emergency. The cases included psychosocial aspects, such as personality attributes; family members; living conditions; community life; and the social determinants of health.

**Table 1. Roles and responsibilities of participating professions in AFRI-VIPE**

1. Pharmacist – North America
2. Physician assistant – North America
3. Clinical officer/clinical associate – multiple locations
4. Advanced practice registered nurse – North America
5. Speech language pathology practitioner – North America
6. Public health practitioner – North America
7. Social worker – North America
8. Professional counsellor – North America
9. Occupational therapist – North America
10. Physical therapist – North America
11. Law enforcement – North America
12. Nurses – North America
13. Child life specialist – North America
14. Social worker – UK/Zimbabwe
15. Psychologist – SA
16. Biokineticist – SA
17. Environmental health practitioner – SA
18. Medical laboratory scientist – SA
19. Pharmacist – SA
20. Registered nurse – SA
21. Emergency medical care practitioner – SA
22. Radiologist – SA
23. Social worker – SA
24. Dietitian – SA
25. General practitioner/medical officer – SA

AFRI-VIPE = Africa virtual interprofessional education; SA = South Africa.

The case of the hypothetical patient was first presented in a written scenario format and housed within the asynchronous materials. Once finalised, the AFRI-VIPE committee enlisted the support of a SP to be filmed and recorded to illustrate the case.

## Creating video resources – simulated patient

Based on the background information given in the case scenario and with the consultation of an SP facilitator/educator, a script was created for AFRI-VIPE. The AFRI-VIPE committee conducted their work with the SP on the recommendations set forth by the Association of Standardised Patient Educators (ASPE), an organisation that supports the use of human participants as SPs in clinical educational and training programmes.<sup>[15]</sup> ASPE specifies Standards of Best Practice (SOBP) for effective and ethical use of an SP in the VIPE,<sup>[16]</sup> which were followed in the training and filming stages of the SP.<sup>[17]</sup> In creating an authentic portrayal of the case study, the expertise of the local IPE and collaborative practice, facilitators were used during the filming of the case.

## Determining student learning outcomes

The learning activity was deliberately designed to include all four of the essential components of IPE: students from varied professions would learn with, from and about each other and they would have the opportunity to practise the core competencies of interprofessional collaboration in the context of teamwork.

To contribute to the growing body of knowledge related to IPE, a meaningful framework was needed to provide a consistent and generalisable mechanism for the evaluation of outcomes. To achieve this goal, the identification of measurable and comparable student learning outcomes was based on the Interprofessional Education Collaborative (IPEC) core competencies for interprofessional collaborative practice.<sup>[9]</sup> The four core competencies (values/ethics; roles/responsibilities; interprofessional communication; and teams and teamwork) and their 39 associated sub-competencies expressed in behavioural terms, provided the framework for planning and evaluating this case-based IPE activity.<sup>[9]</sup>

Faculty authors of the case studies selected the following interprofessional competencies and sub-competencies to guide the design of the IPE activities (Table 2).

**Table 2. IPEC sub-competency topics in AFRI-VIPE**

- Values/ethics sub-competency (multi-continent IPE)
- VE3. Embrace the cultural diversity and individual differences that characterise patients, the population and the health team.
- Roles/responsibilities sub-competencies (roles may vary among countries)
- RR1. Communicate one's roles and responsibilities clearly to patients, families, community members and other professionals.
  - RR4. Explain the roles and responsibilities of other providers and how the team works together to provide care, promote health and prevent disease.
- Interprofessional communication sub-competency
- CC4. Listen actively and encourage ideas and opinions of other team members.
- Team and teamwork sub-competency
- TT4. Integrate the knowledge and experience of health and other professions to inform health and care decisions, while respecting patient and community values and priorities/preferences for care.

IPEC = Interprofessional Education Collaborative; AFRI-VIPE = Africa virtual interprofessional education; IPE = interprofessional education.

## Recruitment

### Student recruitment

After institutional review board approvals were obtained, committee members sent emails and letters to students in their various graduate and undergraduate programmes to invite them to participate. In-person recruitment was not possible in many cases during the COVID-19 pandemic. Some committee members included participation in their coursework so that students received credit. Other committee members invited students to participate without providing additional course credits. Students responded to committee members' requests for participation through email, phone calls or the Google sign-up form. When students responded to the invitation, their name, programme/profession (i.e. nurse, medical practitioner, speech-language pathologist) and email address were placed in a central document. The information was then used for sending out the Zoom registration, university-specific research ethics forms and consent, and surveys. After student participants completed these documents, they were divided into groups before the VIPE event to ensure geographically and professionally diverse representation in small-group discussions during the synchronous event.

### Facilitator recruitment and training

In a similar manner to student recruitment, committee members recruited faculty from their universities to participate in the VIPE as facilitators. The facilitators were supplied with the case study and asynchronous materials, along with a facilitator guide to help them prepare for their role. When the event drew closer, a Zoom registration link was sent to them to ensure they were pre-registered and pre-assigned to a small group for the VIPE. Virtual facilitator training was also implemented before the event.

### AFRI-UIPE event

The duration of the AFRI-UIPE events was 2 hours. Each AFRI-UIPE event started with a brief introduction to IPE, followed by participants dispersing into virtual break-out rooms, led by a faculty facilitator. The facilitators, all trained before the event, used PBL and enforced elements of psychological safety. The participants engaged in conversations about their professions and answered questions from the other students. This encouraged sociocultural learning and the co-construction of knowledge.<sup>[3]</sup> After the break-out groups, all participants returned to the main room to discuss the previously assigned break-out questions within the large group with one person reporting out.

## Results

An invitation to participate in the research study was extended to AFRI-UIPE participants at the end of each virtual IPE experience. Only responses with completion of  $\geq 90\%$  of the instrument were included in the final data ( $N=240$ ). Most students ( $n=207$ ; 86%) were from North American institutions and the remaining students ( $n=33$ ; 14%) were from African institutions. Participants independently completed the ICCAS instrument online. The results were analysed using a series of  $2 \times 2$  mixed model analysis of variance (ANOVA), with continent as the between-subject factor and pre- and post-scores as the within-subject factor. The means and standard deviations (SDs) are presented in Table 3, and below we highlight the significant interactions where the difference between pre- and post-scores differ for North American and African students. The pre-to-post

change scores are presented in the text for ease of comparison between the African and North American participants.

## Research results

The overall effect of the ICCAS was significant ( $p < 0.001$ ), as was the interaction between the ICCAS and student's continental location in either Africa or North America ( $p = 0.006$ ). This shows that the pre-to-post change for African participants was greater ( $M_{\text{change}} = 0.99$ ) than the pre-to-post change for North American participants ( $M_{\text{change}} = 0.60$ ).

On the communication subscale, the main effect of the ICCAS was significant ( $p < 0.001$ ), as was the interaction between the ICCAS and continent ( $p = 0.009$ ). This reflects that the pre-to-post change for African participants was greater ( $M_{\text{change}} = 0.88$ ) than the pre-to-post change for North American participants ( $M_{\text{change}} = 0.46$ ).

On the collaboration subscale, the main effect of the ICCAS was significant ( $p < 0.001$ ), while the interaction between the ICCAS and continent was not significant ( $p = 0.06$ ). A pre-to-post change for African participants was marginally greater ( $M_{\text{change}} = 1.24$ ) than the pre-to-post change for North American participants ( $M_{\text{change}} = 0.86$ ).

On the roles subscale, the main effect of the ICCAS was significant ( $p < 0.001$ ), while the interaction between the ICCAS and continent was not significant ( $p = 0.07$ ). A pre-to-post change for African participants was marginally greater ( $M_{\text{change}} = 0.97$ ) than the pre-to-post change for North American participants ( $M_{\text{change}} = 0.66$ ).

On the patient/family subscale, the main effect of the ICCAS was significant ( $p < 0.001$ ), while the interaction between the ICCAS and continent was not significant ( $p = 0.14$ ). This reflects that the pre-to-post change for African participants ( $M_{\text{change}} = 1.02$ ) was not statistically greater than the pre-to-post change for North American participants ( $M_{\text{change}} = 0.74$ ).

On the teamwork subscale, the main effect of the ICCAS was significant ( $p < 0.001$ ), while the interaction between the ICCAS and continent was not significant ( $p = 0.09$ ). A pre-to-post change for African participants was marginally greater ( $M_{\text{change}} = 0.95$ ) than the pre-to-post change for North American participants ( $M_{\text{change}} = 0.60$ ).

On the conflict subscale, the main effect of the ICCAS was significant ( $p < 0.001$ ), as was the interaction between the ICCAS and continent ( $p = 0.001$ ). This reflects that the pre-to-post change for African participants was greater ( $M_{\text{change}} = 0.98$ ) than the pre-to-post change for North American participants ( $M_{\text{change}} = 0.41$ ).

## Discussion

This VIPE model that was predominately used in the USA for accreditation standard purposes has proved to be valuable across the African continent. Much like their North American counterparts, African health sector students were observed to have the greatest improvements in terms of their teamwork and collaboration within the larger IPEC competency framework. These similarities in student outcomes further confirm the lead faculty members' belief that a cross-professional and cross-cultural IPE experience can prove valuable to students from different national and academic settings.

## Lessons learnt

Considering the nature and complexity of this event, there were numerous challenges that had to be overcome. We discuss these challenges, together with some suggestions for other academic programmes, considering a distributed VIPE model.

**Table 3. Pre- and post-test ICCAS scores – all participants**

ICCAS	Participant group	Pre-mean	Pre-SD	Post-mean	Post-SD
Communication	Overall	5.75	1.01	6.27	0.98
	Africa	5.24	1.38	6.13	1.49
	North America	5.83	0.92	6.29	0.88
Collaboration	Overall	5.27	1.32	6.18	1.02
	Africa	4.97	1.61	6.21	1.26
	North America	5.32	1.27	6.17	0.98
Roles	Overall	5.68	1.05	6.38	0.87
	Africa	5.37	1.44	6.34	1.19
	North America	5.73	0.97	6.39	0.82
Patient/family	Overall	5.62	1.21	6.39	0.97
	Africa	5.38	1.36	6.40	1.19
	North America	5.66	1.18	6.39	0.97
Teamwork	Overall	5.56	1.11	6.23	0.85
	Africa	5.33	1.30	6.28	1.18
	North America	5.60	1.08	6.22	0.78
Conflict	Overall	6.04	1.01	6.53	0.76
	Africa	5.45	1.58	6.43	1.18
	North America	6.14	0.86	6.55	0.68
Overall	Overall	5.67	0.92	6.33	0.78
	Africa	5.29	1.31	6.28	1.15
	North America	5.73	0.83	6.34	0.70

ICCAS = Interprofessional Collaborative Competencies Attainment Survey; SD = standard deviation.

## Pre-event challenges

### Creating a timeline for multiple countries

Finding a time zone across multiple continents was a significant challenge, as many of the healthcare students participate in clinical experiences that cannot be missed. A 10h00 Eastern Standard Time was chosen to accommodate as many students as possible from across North America and Africa.

### Ethical approval at multiple universities

As students at multiple universities were recruited to participate in this study, committee members at the various institutions submitted to their research ethics committees or institutional review boards for ethical approval. Depending on the university, this was sometimes a time-consuming process for the AFRI-VIPE team, as many institutions had lengthy requirements and the review process ranged up to 6 months for approval. It is recommended to start this process early and understand the unique and individual needs of each institution.

## Event challenges

### Power outages and WiFi coverage

During the events, students often lost internet connection due to loadshedding (a deliberate seizure of electricity to control usage, across the African continent). We also encouraged all participants to be on camera, which took significant bandwidth and added to connectivity challenges. We found that when facilitators set students up in computer laboratories at the university to participate, we had the best level of engagement and participation. The authors suggest using university WiFi whenever possible to have a stable connection.

## Number of students participating

Another challenge was the number of students participating, because each had to be put into a specific group based on their profession/field of study for each group to have a well-balanced interprofessional team. Due to the power limitations over the course of the AFRI-VIPE events, we would have some students unable to attend, although they had initially confirmed their attendance. The authors recommend having faculty at each institution encourage the students to participate, give credit or a certificate. Encouraging more faculty facilitators to join is also recommended, as students will know that their instructors will be looking for them.

## Post-event challenges

### Survey feedback

Despite multiple attempts to have students fill out the ICCAS document, many students did not. Ideas to improve upon this include giving the students participation points, a certificate of attendance, and allotting time at the end of the event.

## Conclusion

In conclusion, a multi-country international VIPE collaboration is possible. It takes a dedicated team and team leaders to collaborate, develop and implement the event. The committee was able to use sociocultural learning theory and a PBL approach to bring students from around the world to learn from, with and about each other.

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