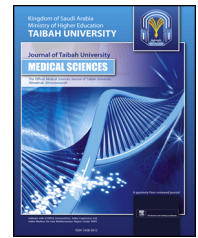




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Original Article

Developing an interprofessional education programme for a health science faculty in South Africa: A multi-method study

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المخلص

أهداف البحث: يحتاج الخريجون الجاهزون للعمل إلى أن يكونوا مجهزين بالخبرة، لذلك يلزم إجراء تغييرات حاسمة في مناهج المهن الصحية. وبالتالي، فإن الهدف هو مراجعة برنامج التعليم البيئي المصمم من حيث ملاءمته وتنفيذه لكلية العلوم الصحية في جامعة الشمال الغربي.

طرق البحث: استخدمت هذه الدراسة تصميمًا متسلسلاً متعدد الأساليب لتطوير برنامج التعليم البيئي لكلية علوم صحية في جنوب إفريقيا. تم إجراء مراجعة نطاق لتجميع هيكلية وتطوير وآلية تنفيذ برامج التعليم البيئي على الصعيد العالمي. تم تبعية تحليل برامج التعليم البيئي من مجموعة مؤسسات في القارات الخمس. بعد ذلك، تم استكشاف وجهات نظر الخبراء الدوليين بشأن تطوير وتنفيذ برامج التعليم البيئي في دراسة نوعية. وأعقب ذلك تحليل السياق الجامعي وتم تصميم تطوير مشروع برنامج التعليم البيئي، بناءً على البيانات التي تم تجميعها من جميع الدراسات الأولية. تم تقديم البرنامج إلى أعضاء هيئة التدريس لتقييم وتقديم المدخلات باستخدام تقنية المجموعة الاسمية.

النتائج: من خلال مراجعة النطاق، تم تطوير عشر خطوات لعملية تطوير برنامج التعليم البيئي. لتحليل الوثيقة النوعية، تم توفير دليل خطوة بخطوة وقائمة مهام لتوجيه المعلمين في وضع تصور لبرامج التعليم البيئي الخاصة بهم وتطويرها وتنفيذها ومراجعتها. وفي الدراسة الوصفية الاستكشافية النوعية، تم تحديد أربعة محاور بعد تحليل النصوص. تم تطوير برنامج تعليم بيئي اختياري مدته ثلاث سنوات ليكون بمثابة طليعة للدمج الكامل للتعليم البيئي في مناهج كلية العلوم الصحية أثناء إعادة بناء مناهج العلوم الصحية في المستقبل.

الاستنتاجات: إن برنامج التعليم البيئي الاختياري ذي الثلاث سنوات الذي تم تطويره، سيكون بمثابة برنامج طبيعي لدمج برنامج التعليم البيئي ذي الساعات المعتمدة في مناهج كلية العلوم الصحية أثناء بناء المناهج في المستقبل.

الكلمات المفتاحية: بحث متعدد الطرق؛ تصميم برنامج؛ التعليم البيئي؛ المجموعة الاسمية؛ العلوم الصحية

Abstract

Objective: Work-ready graduates need to be equipped with expertise and therefore, critical changes are required in the curricula for health professions. Here, we aimed to review the design of an interprofessional education programme (IPE) with regards to appropriateness and implementation for the Faculty of Health Sciences at North-West University, South Africa.

Methods: This study employed a sequential multi-method design to develop an IPE programme for a health science faculty in South Africa. A scoping review was conducted to synthesise the structure, development and implementation processes of IPE programmes globally. This was followed by an analysis of IPE programmes from institutions on five continents. Subsequently, the perspectives of international experts on the development and implementation of IPE programmes were explored in a qualitative study. This was followed by a university context analysis and the development of a draft IPE programme was designed based on the data synthesised from all preliminary studies. The programme was presented to faculty to evaluate and provide input by applying a nominal group technique.

Results: For the scoping review, ten steps to the IPE programme development process were developed. For the qualitative document analysis, a step-by-step guide and

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to-do list were provided to guide educators in conceptualising, developing, implementing and reviewing their IPE programmes. For the qualitative exploratory descriptive design, four themes were identified after the analysis of transcripts. An optional 3-year IPE programme was developed to serve as a precursor for full credit integration of the IPE into the faculty of health science curricula during future development of the health science curricula.

Conclusion: The optional 3-year IPE programme developed will serve as a precursor for the integration of a credit-bearing IPE programme into the Faculty of Health Sciences curricula during future development.

Keywords: Challenges; IPE programme design; IPE programme implementation; Multi-method; Nominal group; Review

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Introduction and background

Hitherto, most education institutions focussing on health professions train students in isolation, thus providing profession-specific knowledge and skills necessary for their professional practice.¹ Nevertheless, having isolated professional knowledge and skills alone limits the opportunity for interprofessional collaborative practice, which is essential for the best healthcare outcomes.^{2,3} The motive for introducing interprofessional education (IPE) into the curricula for health professions is not only to strengthen collaboration among health professionals but also to improve healthcare outcomes.⁴ IPE assists in diminishing the medical errors known to occur when there is a breakdown in communication and collaboration among healthcare professionals.⁵ It has been argued that IPE is an innovative approach to preparing health professions students to deal with healthcare problems in a collaborative manner.^{4,6}

Although there are many views relating to what IPE is, in this study, an IPE programme is defined as a set of interventions and experiences provided to health professions students to learn from, with and about each other to effectively function in collaborative healthcare teams for improved healthcare outcomes. Healthcare outcomes include delivering the highest quality of care to patients, families and communities; strengthened health systems; enhanced patient safety and satisfaction; better access to health; enhanced workplace practices and production; enhanced communication channels; and a reduction in the duration of treatment and costs.⁷

IPE programmes have been implemented at undergraduate and postgraduate levels.^{8,9} At undergraduate levels, IPE emphasises the integration of the interprofessional education and collaborative (IPEC) core competencies and other

components such as professional ethics, team management and research.⁸ At postgraduate levels, IPE focuses on specific health conditions and enhancing both knowledge and skills.⁸ Undergraduate and postgraduate IPE intend to develop interprofessional competencies through interprofessional expertise and values.⁸

Designing an IPE programme is somewhat complex as various stakeholders need to be satisfied and institutional nuances navigated with a lack of context-specific frameworks to guide the process. According to Reeves et al.,¹⁰ most studies on the implementation of IPE emanate from developed countries. Lapkin et al.¹¹ confirmed that data in developing countries are limited in terms of publication and availability. Barr¹² added that certain developing countries had implemented IPE; however, IPE was not present in its entirety. Also, research has indicated that IPE programmes do not share similar frameworks or content.⁸ Globally, IPE programmes have been shaped by the context (institution and community) in which they were developed and implemented. Also, advocacy from regional IPE networks such as the Africa Interprofessional Education Network (AfrIPEN) has yielded some response from institutions.^{13,14}

To achieve work-ready graduates equipped with the necessary expertise, critical changes need to be made in the curricula of health professions.^{7,15} At the North-West University (NWU), health professions programmes are implemented on three campuses: Potchefstroom, Vanderbijlpark and Mafikeng. The Potchefstroom campus hosts most of the health professions programmes.^{16,17} NWU supports groundbreaking teaching and learning and aims to become a world-renowned institution in Africa through engaged scholarship, social sensitivity and moral action.¹⁸ The demand to transform teaching and learning at NWU to be nationally relevant and internationally recognised through innovation inspired the development of this IPE programme.

Thus, the objective of this study was to review the designed IPE programme in terms of appropriateness and implementation for the Faculty of Health Sciences (FHS) at NWU.

Materials and Methods

A sequential multi-method research design was employed to develop this IPE programme.¹⁹ An innovative and flexible multi-method design, within the mixed research paradigm, involves a sequential, parallel or convergent combination of either qualitative and quantitative research methods or two or more qualitative or quantitative research methods in a single study.²⁰ Multi-method designs are broader than mixed-method research designs in that they could consist of two or more research methods from both positivist and interpretivist paradigms or one paradigm.²¹ The particular research methods used in multi-method studies constitute stand-alone studies whose results are innovatively combined.¹⁹ In sequential multi-method design, the results from previous phases serve as data or tools for the next phase of study. This multi-method study was designed in five phases. Phase one comprised a scoping review to synthesise the nature, development and implementation processes of IPE programmes globally. Phase two was a qualitative analysis of

documents that sought to analyse IPE programmes globally to guide institutions seeking to conceptualise, develop, implement and review their IPE programmes. Phase three consisted of a qualitative exploratory descriptive study and explored the perspectives of international experts on the development and implementation of IPE programmes, including the challenges faced. In phase four, the researchers utilised the results of phases one, two and three to design a draft IPE programme. In phase five, the draft IPE programme was reviewed by selected staff of the FHS for appropriateness and implementability.

Scoping review

The scoping review was directed by the enhanced framework of Arksey and O'Malley,²² as given in Peters et al.,²³ and was used to synthesise the nature, development and implementation processes of IPE programmes for higher education institutions. Conducting a scoping review meant that the length and breadth of data in a study field were summarised.²⁴ Searches were conducted on databases such as EBSCOhost, Scopus and PubMed, using Boolean combinations of the keywords. Data from 34 studies were extracted onto a data matrix table. Qualitative synthesis was conducted on the data that was charted on the data matrix.²⁵

Qualitative document analysis

In this phase of the study, the qualitative document analysis (QDA) method outlined by Wach et al.²⁶ was used to analyse IPE programmes globally to guide institutions to conceptualise, develop, implement and review their IPE programmes. The QDA is used to measure or review documents through evaluation and interpretation of document content for its depth in meaning and the advancement of empirical knowledge.²⁷ Searches were conducted on institutional websites that have implemented IPE globally.²⁷ The publicly available data was extracted onto an Excel sheet using the pre-determined list by El-Awaisi et al.²⁸ and was then analysed through thematic content analysis.

Qualitative exploratory descriptive design

The qualitative exploratory descriptive design sought to explore the views of IPE experts through key informant interviews (KII) on the implementation of IPE programmes and the challenges encountered.²⁹ Purposive sampling was used to select 28 experts for this study. Fifteen of the experts gave consent to participate and were subsequently interviewed. The interviews were audio-recorded with the consent of the experts; transcripts were drafted and used when thematically analysing the data by ATLAS.ti™ software. Following analysis, the data were initially shared to check the accuracy of the transcriptions.

Development and evaluation of the IPE programme

Data triangulation

The findings from the three phases (scoping literature review, QDA and qualitative exploratory descriptive design)

were synthesised and used to develop the IPE programme. Triangulation is a process in which the integrity and credibility of research findings are enhanced by comparing data sources, results, investigators and methods, ensuring that biases that are fundamental to each method, researcher, data source or research method are checked.^{30,31} Also, to ensure the scientific integrity of a comprehensive study of a complex phenomenon such as IPE, it is necessary to triangulate results from various sources for completeness.³⁰ The findings were then compared, consolidated and interpreted. The aim here was to secure credibility by determining the consistency of the data collection methods from the previous three phases.

Context analysis

Context analysis was conducted to position the IPE programme within the FHS. The health science undergraduate programmes compiled in NWU's 2022 Yearbook¹⁷ were analysed to ascertain common modules within which the IPE programme could be integrated. First, the researcher defined the programmes to be included. The researcher then mapped all the programmes available across the university's three campuses, presenting common modules across different health science undergraduate programmes implemented by the FHS in NWU (Table 2). A decision was then made to make the IPE programme compulsory or optional based on the contextual nuances.

Development of the draft programme

The development of the draft IPE programme involved a sequential multi-method research design.¹⁹ The triangulated results from the scoping review, QDA and KII were used, together with the contextual analysis, to develop the draft. The draft IPE programme was then reviewed by staff from NWU's FHS, who were purposively selected based on their expertise for appropriateness and implementability.

Evaluation of the draft programme

An exploratory qualitative method, using a nominal group technique (NGT), was used to gather solutions and suggestions from purposively selected experts from the NWU's FHS. Ten experts gave consent to participate; however, eight were present for the session. The aim of the nominal group discussion and the draft IPE programme was sent to the experts a week earlier for review. The Centers for Disease Control and Prevention (CDC) document on "gaining consensus among stakeholders through the nominal group technique" guided the NGT.³²

The session was audio recorded with the consent of the experts; the researcher then shared the draft IPE programme on a screen. A few minutes were given to the experts to reflect on their ideas and suggestions on each section of the draft programme. Each idea was presented and discussed among the experts who shared their opinions. Inclusions and exclusions of ideas were discussed and a consensus was reached through voting. The researcher analysed the data collected using deductive content analysis in which the sections of the programme served as the analytical framework. The results were used to finalise the programme for the faculty.

Results

Summary of results from phases one, two and three

Scoping review

It was found that IPE programmes were developed by employing models, theoretical frameworks and resources. After conducting the analysis, the researcher developed ten steps to the IPE programme development process. These steps comprised buy-in from the institution; form an IPE team; conduct stakeholder engagements regarding the IPE; learn from other institutions; articulate common IPE content of the various curricula; design the IPE programme/curricula grounded in framework, theory and ethical principles; share programme for stakeholder inputs; finalise and seek accreditation/approval for the programme; implement programme; continually engage stakeholder involvement in evaluation and improvement.

Qualitative document analysis

After analysing the data on IPE programmes from six institutions, a step-by-step guide and to-do list were provided to guide educators for conceptualising, developing, implementing, and reviewing their IPE programmes. We found that developing an IPE programme requires stakeholder and facilitator engagement to ensure contribution to the programme. IPE programmes in nature, scope and level differ in different contexts but include the fundamentals of the IPEC competencies. Common themes identified were classified into theory, practice and research. When IPE programmes were compared, the predominant purpose was to facilitate collaborations among students in the health professions to meet healthcare outcomes. IPE programmes required regular improvements and there was a trend identified with staff and student evaluations, whereas there were insufficient community evaluations.

Qualitative exploratory descriptive design

Four themes were identified: IPE at higher education institutions; faculty and student involvement; challenges and opportunities; and evaluation and quality improvements in IPE programmes. IPE components were a requirement in some programmes to be accredited, which meant that it became compulsory for staff and students to be involved. For integrating IPE and recruiting faculty, the deans of different health schools played substantial roles. The recruited faculty then championed the programme and regularly collaborated to develop and manage the programme. The findings suggested that IPE activities must be designed to incorporate the IPEC competencies.

Some experts encouraged community-based IPE activities and the delivery of IPE on virtual platforms was mentioned. Challenges identified were categorised as human, fiscal and logistical problems. Opportunities identified included the international collaboration of faculty and students, learning and resource sharing, increased research and publications, and engagements of individuals on related networks. In addition, conducting impact studies on communities and evaluating staff and students was recommended.

Development and evaluation of the IPE programme

Triangulation of findings

It was found that the WHO definition for IPE was the most prominently used. A multi-stakeholder collaboration was supported through idea generation, development and implementation of IPE, which was presented as either a module or programme. Themes such as collaboration, IPEC competencies, simulations and case studies, primary health care, roles and responsibilities, teamwork, sharing expertise, health promotion, communication, team management, IPE theory and IPE research were shared among the three phases. The themes were delivered through activities such as case studies, community projects, world café simulations and innovative activities such as the amazing race. Physical, financial and human challenges were pointed out in the consolidated findings. The importance of resources, student participation and keeping students interested was noted. Finally, substantially utilised assessments were surveys, questionnaires, pre- and post-measures, reflections, and exams. For further details, see [Supplementary Material \(SM\)](#).

Context analysis

Programmes included. Once the findings from the three phases had been consolidated, the health professions programmes at NWU were examined by employing the Faculty of Health Sciences Undergraduate 2022 yearbook.¹⁷ Each programme was critically analysed based on its outcomes and whether it captured the essence or concept of IPE. The researcher excluded some programmes based on the inclusion criteria: (a) must display IPE idea, concept or theme, (b) must be a minimum of 3 years in length for adequate exposure, and (c) programme must include more health modules than modules from non-health faculties. Therefore, 14 programmes that did not meet IPE requirements were excluded.

Cross-campus programmes. [Table 1](#) shows that only the Bachelor of Social Work and Bachelor of Health Sciences Honours in Psychology programmes are implemented across the Potchefstroom, Mafikeng and Vanderbijlpark campuses. The common programmes between Potchefstroom and Mafikeng campuses were Bachelor of Health Sciences with Sport Coaching and Human Movement Sciences and Bachelor of Nursing.

Cross-programme modules. The WVGW 222 module (know and understand the health world), previously WVGW 221, comprising some components of IPE (interprofessional group work and teamwork) was present in all health sciences programmes at the second year, second-semester level.

Competencies of IPE, concepts around IPE and patient-centred care were among the requirements when including programmes for developing a draft IPE programme. The researcher, under the guidance of the supervisory team, further analysed the modules within the FHS to identify which modules sought to teach common IPE concepts (interpersonal communication, teamwork and collaboration, problem-solving, diagnosis, community intervention, roles and responsibilities, ethics in healthcare, health promotion, patient-centred care and research).

Table 1: Health professions programmes on the three main campuses of the NWU.

Programmes	Potchefstroom	Mafikeng	Vanderbijlpark
Bachelor of Social Work	✓	✓	✓
Bachelor of Health Sciences Honours in Psychology	✓	✓	✓
Bachelor of Nursing	✓	✓	
Bachelor of Health Sciences with Sport Coaching and Human Movement Sciences	✓	✓	
Bachelor of Health Sciences with Physiology and Psychology	✓		
Bachelor of Pharmacy	✓		
Bachelor of Science in Dietetics	✓		
Bachelor of Health Sciences in Occupational Hygiene	✓		
Bachelor of Health Sciences in Biokinetics	✓		
Bachelor of Health Sciences Honours in Human Movement Sciences with Kinderkinetics	✓		
Bachelor of Health Sciences Honours in Human Movement Sciences with Sport Science	✓		
Bachelor of Science Honours in Nutrition	✓		
Bachelor of Health Sciences Honours in Physiology	✓		
Bachelor of Social Science with Psychology		✓	

Common IPE concepts across programmes. Table 2 shows that only WVGW 222 runs across all the health schools. One module (PSYC 121) was shared in five programmes and at best, only four schools shared specific modules. Thus, currently, at NWU, the existing context makes it difficult for IPE integration to be incorporated into the curricula. The researcher decided to determine common IPE concepts between those selected programmes and then develop the IPE programme through concepts as there was no common module running across the programmes. Figure 1 shows the interprofessional concepts that have been identified in the different modules.

Compulsory versus optional IPE programme for the NWU. IPE programmes were either compulsory^{7,33–37} or optional.^{35,36} Compulsory IPE programmes were mainly implemented in undergraduate health training. These were more formal and explicit in their nature (aim, target audience, experience, and assessment). Optional IPE programmes might be implemented also, although the duration, nature and timing of each programme might differ.³⁶ Furthermore, staff training and programme evaluations might not be as extensive as for compulsory programmes. In either structure, the development and implementation

aim was to improve collaboration between professions, improve teamwork skills, improve health outcomes and quality care and increase learning from other professions.³⁸

Compulsory IPE programmes provided some benefits. Firstly, the institute could close the gap between siloed learning and health professions schools and students could work together in the interprofessional activities^{35,39} and assessments.^{35,40} Facilitators could be innovative in designing creative and fun activities and challenge student thinking.³⁵ Students were exposed to competencies and knowledge required in clinical practice and enhanced their skills to plan and implement those plans effectively as an interprofessional team.⁴¹ Students could collaborate in a safe and secure environment to provide optimal healthcare services to patients with complex needs.⁴¹ They could work together and appreciate the roles and responsibilities of other professions.⁹ Healthcare outcomes could improve as patients were provided with better quality care.³³ Lastly, the programme would serve as an enrichment opportunity as students would be equipped with the expertise when they graduated.⁴²

However, there were specific challenges associated with implementing a compulsory IPE programme. For instance, buy-in from the faculty might be a challenge as staff from

Table 2: Shared modules across the different health schools at the NWU.

No.	Common module	Dietetics	Human movement sciences	Nursing sciences	Occupational hygiene	Pharmacy	Physiology	Psychology	Social work
1	WVGW 222	✓	✓	✓	✓	✓	✓	✓	✓
2	PSYC 121		✓	✓			✓	✓	✓
3	PSYC 321		✓				✓	✓	✓
4	PSYC 221		✓				✓	✓	✓
5	PSYC 212		✓				✓	✓	✓
6	PSYC 111		✓				✓	✓	✓
7	FLGX 213	✓			✓		✓	✓	✓
8	FLGX 113	✓			✓		✓	✓	✓
9	PSYC 322						✓	✓	✓
10	PSYC 311						✓	✓	✓
11	FLGX 328				✓		✓	✓	✓
12	FLGX 313				✓		✓	✓	✓
13	FLGX 329	✓					✓	✓	✓
14	FLGX 224	✓					✓	✓	✓

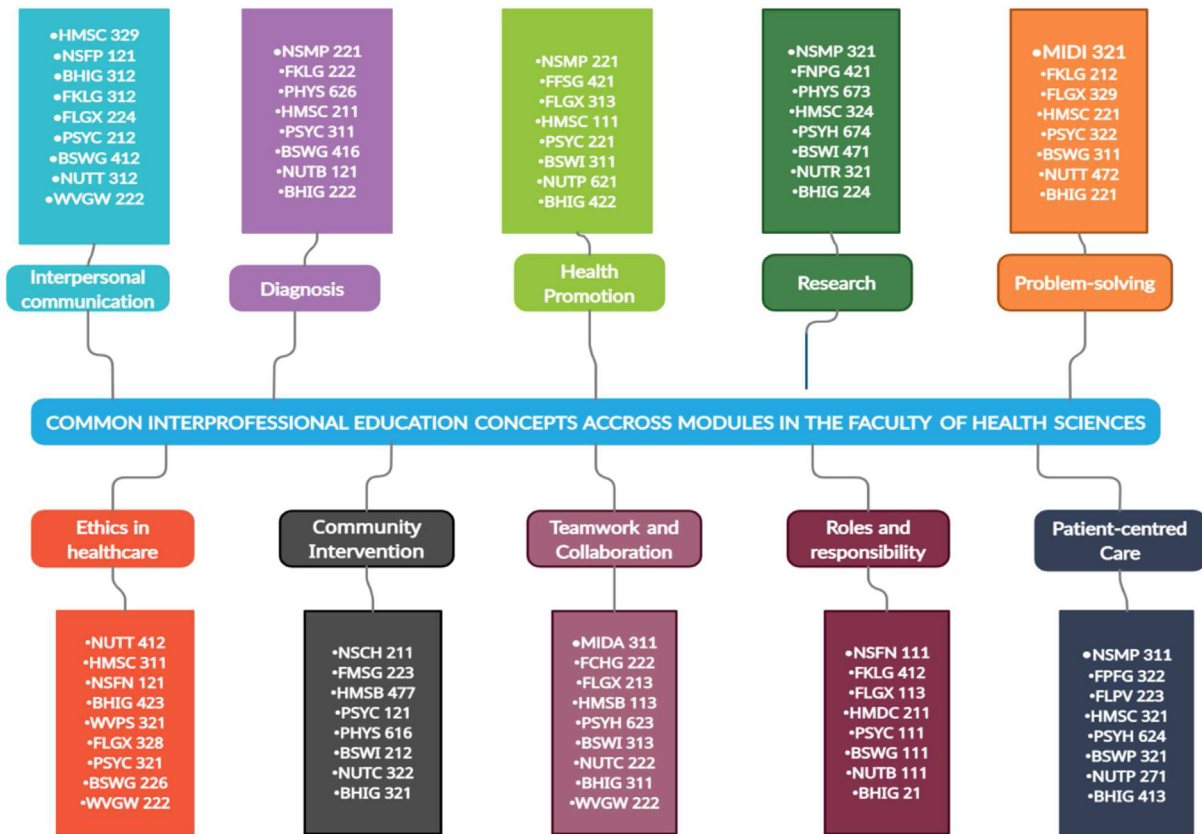


Figure 1: A consolidation of the NWU's health professions modules to implement the key concepts through IPE activities (Note: Descriptions of the module codes are given in SM.)

certain health schools might not want to include an IPE programme for their students or might be resistant to its benefits. Health schools might not want to give up accreditation to make room for an IPE programme. Re-design of the curricula might need to occur to implement the programme and avoid logistical challenges, which NWU does not presently allow. Health students might not find the time to take up another compulsory programme with their already packed schedules. In terms of the IPE activities, they would need to be structured to accommodate most, if not all professions. Limited resources, such as finance and staff, would be another challenge, as a dedicated IPE team would need to carry out the programme. Staff would need to handle clerical work, be ratioed according to the student group, and design reliable and parallel assessments to IPE standards.

The researcher determined that a compulsory programme was not suitable for NWU after discovering the various challenges that NWU may encounter with attempting to implement a compulsory IPE programme. The decision that a compulsory programme would not be appropriate was based on the evidence collected and the analysis and synthesis conducted. The programme would be non-credit scoring and run throughout the year. Students could be issued certificates of completion. It could be established as an optional module and eventually be implemented as compulsory once mass curricularisation occurs. By this time, the benefits of IPE would be apparent, and the programme would have gained support.

Draft programme

The design of the IPE programme for the FHS at NWU was systematic in nature. Findings from the scoping review, QDA and KII were used to design the programme for the FHS while considering the context critically. The idea was to ensure that extra work was not added to the content of the undergraduate health professions curricula but to use existing content to achieve IPE outcomes innovatively.

Due to the context of NWU, an optional programme was developed. The programme was developed in 3-year levels, and each level in the programme content included common concepts, the modules that reflected those concepts, the outcomes and assessment criteria of each level, the proposed IPE activities and the resources needed to carry out those activities. The draft programme proposed how to implement the programme, i.e., who implements the programme, the policy and legislation to follow, promotion and administration of the programme, proposed hours required, suggested resources for the activities and reviewing of the programme.

Programme evaluation

Depending on the nature of the IPE activities, experts agreed that activities taking place in smaller groups would be best. Some concepts might be more relevant to larger groups (from the three campuses) who could participate online, whereas smaller groups could be in-person. Experts agreed that face-to-face meetings would be more effective. Still,

contextual nuances, such as financial implications and challenges with transporting students, would not permit participation from all the professions in a small face-to-face group.

For IPE 1, the experts agreed that students should be taught theory to understand their scope of practice before interprofessional teamwork. A common activity for IPE 1 could address, for example, communication, so that students could learn communication components and how to communicate with others. Implementing IPE in 3-year levels would be ideal as there was not much student representation in the fourth year. For IPE 1, the outcomes 'e' and 'f' were merged, and the outcome 'g' and assessment 'g' were swapped (see [Table S1 in the SM](#)). The outcomes and assessment criteria for IPE 2 and IPE 3 remained unchanged. Only one activity (world café) for IPE 1 was supported and the experts agreed to move the other (clinical simulation) activity to IPE 3. The activities for IPE 2 included community intervention, health promotion and research. The activities for IPE 3 included the amazing race, a case study and clinical simulation. The resources, according to the agreed activities, remained unchanged. The experts agreed that the IPE unit responsible for the programme should determine and finalise the allocation of hours needed for each activity.

"I also agree with the increments, but I don't think we are in a position to suggest any number of hours; I think that will lie with the admin, especially as I think it was (expert 5) who mentioned the module credits and program credits, will play a large role here which we don't have a say about, so I think we should leave it for them to finalise" – Expert 2

The experts supported including individuals in senior positions in the discussions and getting an awards programme such as the annual Institutional Teaching Excellence Awards (ITEA) to get staff to volunteer. The volunteering staff then source students and administer the programme. Additionally, staff could be invited to join through IPE symposia or workshops. To guide IPE policy and legislation, experts supported using the World Health Organization's⁷ *Framework for Action on Interprofessional Education and Collaborative Practice* and the *Interprofessional Education Collaborative*⁴³ *Core Competencies for Interprofessional Collaborative Practice*.

"The implementation of the programme would be fine if the directors and line managers are included in the discussion as well" – Expert 3

Students could be encouraged to register for the IPE programme on the Learning Management System (LMS). Experts agreed that the IPE unit, that would be established to run the IPE programme, must use what is available at the university, and for transport and refreshments, the unit could apply for funding. The teaching and learning approaches in the different clusters would be built using the following: team-based learning (TBL) and case-based learning (CBL), simulation-based learning (SBL) and problem-based learning (PBL). Self-directed learning (SDL) was added as IPE 1 would be theory-based.

The experts agreed that students should complete a customised evaluation tool for the programme. Posting the survey on the LMS or requesting staff to take a few minutes

to ask students to complete the surveys was supported. The experts agreed on these evaluation approaches, emphasising the challenge associated with obtaining student responses. Experts noted the importance and need for the programme and the challenges with implementing the programme, and that sufficient data would be required to prove the feasibility of the IPE programme.

"I enjoyed the nominal group session; it was nice to discuss it like this and get agreements and see different viewpoints and good luck; yes, it is not easy to implement the IPE, but I think it's very important and we need it, we really need it, especially in the faculty of health sciences so good luck" – Expert 7

The IPE programme for FHS-NWU

The programme (see [SM](#)) aimed to provide students with the opportunity to learn with, from and about each other by developing interprofessional knowledge, skills, and attitudes through theoretical and practical underpinnings for Interprofessional Education and Collaborative Practice (IPECP). There were nine outcomes that the programme aimed to achieve with ten concepts divided into 3-year levels, i.e., IPE 1, IPE 2 and IPE 3, with exclusive outcomes and assessment (for learning) criteria. Thus, first-year students experience IPE 1, second-year students experience IPE 2 and third-year students experience IPE 3. IPE 1 comprised the concepts of interpersonal communication, roles and responsibilities, ethics in healthcare and teamwork and collaboration with a world café activity. IPE 2 incorporated the concepts of community intervention, health promotion and research with community diagnosis and public health campaign as an activity. IPE 3 comprised diagnosis, problem-solving and patient-centred care with three activities, i.e., amazing race, case study and clinical simulation.

The programme implementation addressed the individuals responsible for the programme, the policy and legislation that would govern the programme, the programme promotion and administration and resources for IPE 1, 2 and 3. The allocation of hours would be at the discretion of the IPE unit responsible for the programme, who would then determine the necessary hours for the successful completion of each activity. The programme requires regular evaluations from both staff and students to refine the programme and implement the relevant suggestions.

Discussion

This study was motivated by the insufficient interprofessional education opportunity provided by the current health professions curricula of NWU. The development and implementation of an IPE programme would create an opportunity for NWU health professions students to better prepare for a collaborative practice work environment to optimise healthcare and health outcomes.⁷ This study employed a sequential multi-methods research design, supported by a scoping review, document analysis, key informant interviews, programme development and evaluation

through a nominal group discussion to develop an inter-professional education programme for the Faculty of Health Sciences, NWU.

A 3-year optional (non-credit bearing) IPE programme was developed with the concepts of interpersonal communication; teamwork and collaboration; problem-solving; diagnosis; community intervention; roles and responsibilities; ethics in healthcare; health promotion; patient-centred care; and research. Although there was strong advocacy for compulsory, credit-bearing IPE programmes,⁴⁴ the NWU context does not allow for it at the moment. It was recommended that the optional programme should be slowly integrated into credit-bearing modules during major programme reviews and redesign of the curricula. James et al.⁴⁵ and Brooks et al.⁴⁶ also found that implementing an optional IPE is an essential starting point.

We found that the multi-campus nature of NWU and the lack of many health professions programmes on the Mafikeng and Vanderbijlpark campuses made it impossible for the two campuses to have on-campus, face-to-face, inter-professional activities. Furthermore, the distance between the three campuses and the cost of transportation, in addition to the risks of travelling to and from campuses made it difficult for face-to-face IPE programmes. These circumstances necessitated an innovative online interprofessional group activity. The increased capacity of NWU staff and students for online teaching and learning during the COVID-19 pandemic provided an opportunity to harness an online IPE programme.

There are disproportionate numbers of health professions student groups in each programme, which means the different professions' students could not be matched equally, thus creating a situation where each professional group is not represented in equal proportion in one small group or is left unmatched. Great effort is required to ensure that no professional group dominates another and no student is left behind.

The content of the programme was arranged to ensure that first-year students, who would have not been fully socialised into their professions, engaged with theory and general IPE skills development (see [SM](#)). The second-year students engaged in research, which, to an extent, informs problem-solving. The third-year students then participated in clinical application activities using what they have learnt in IPE 1 (theory) and IPE 2 (research).

From the nominal group discussion, it was suggested that it would be difficult to attract faculty participation due to the optional nature of the programme. Innovations such as an award for participation should be instituted to motivate faculty to join. The experts supported the institution of a dedicated unit to administer the IPE programme. The unit would include the voluntary staff, invited through IPE symposia or workshops, and would also be responsible for sourcing the students and marketing the programme. We found that the programme should be evaluated by participating students and staff regularly. Staff should encourage students to complete the evaluation so that the programme could be improved. WHO⁷ added that substantial effort is still necessary to evaluate IPE and its initiatives with globally recognised best practices.

Conclusion

Globally, IPE programmes have been contextualised to meet the local and current health needs of the community. The Faculty of Health Sciences, NWU context was permissive of an optional programme despite the recommended compulsory (credit-bearing) IPE modules by international bodies. The optional 3-year IPE programme developed, however, will serve as a precursor for integration of a credit-bearing IPE programme into the Faculty of Health Sciences curricula during future redesign of curricula. Although the NWU context provides opportunities to surmount the common challenges to the development and implementation of IPE programmes, we envisage other contextual challenges during the full implementation of the programme and believe the leadership and academics will be motivated enough to implement the programme. We will recommend other institutions learn from the processes involved in this study to develop their programmes or adapt this programme for their context to increase the presence of IPE on the African continent.

Finally, the advocacy of regional networks such as AfrIPEN on the continent need to be intensified to stimulate the development and implementation of more IPE programmes. This will ensure a growing community of practice and sharing of expertise across the African context for the sustenance of the IPE programmes.

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Conflict of interest

The authors have no conflict of interest to declare.

Ethical approval

The Health Research Ethics Committee (NWU-HREC) at NWU approved this study with the following ethics number: NWU-00430-20-A1. The Research Data Gatekeeper Committee (NWU-RDGC) also granted their approval with the following reference number: NWU-GK-21-001. Informed consent was obtained from all participants in this study.

Consent

All participants involved in this study signed an NWU-HREC-stamped written informed consent prior to their involvement in the study.

Authors contributions

FD conceived and designed the study as a PhD student under the supervision of CDC and YH. FD, CDC, and YH analysed the data. FD drafted the manuscript under the guidance of CDC and YH. CDC and YH critically reviewed

the draft manuscript and made significant inputs. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jtumed.2022.11.001>.

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