A journey through interprofessional education: Students' perspectives of teamwork in a transforming curriculum

A Hendricks,[1] MPhil Health Sciences Education; **N Hartman,**[1] PhD Health Sciences Education; **L Olckers,**[2] PhD Public Health and Family Medicine

[1] *Department of Health Sciences Education, Faculty of Health Sciences, University of Cape Town, South Africa*
[2] *School of Public Health and Family Medicine, Faculty of Health Sciences, University of Cape Town, South Africa*

Corresponding author: A Hendricks (hndabi001@myuct.ac.za)

Background. Student engagement in curricular transformation is topical at the University of Cape Town (UCT), including in its Faculty of Health Sciences (FHS). Teamwork, which is essential to contemporary interprofessional healthcare, is an objective of transformative health sciences education. This study offers a contemporary contribution from the perspective of students to earlier work on shared learning at UCT FHS.
Objectives. There is a paucity of research literature on this study's target population. Therefore, a qualitative design was used to explore first-year health sciences students' perceptions and experiences of teamwork within an undergraduate shared learning programme.
Methods. The primary data collection method was focus group discussion. Two additional qualitative methods, free-listing and pile-sorting, were used to expand upon data collected in the focus groups. Results were analysed thematically.
Results. The study sample (*N*=32) included first-year audiology, medical, occupational therapy, physiotherapy, and speech and language pathology students. The findings revealed that although their experiences of teamwork varied, students had a comprehensive perception of what teamwork entailed in their educational context. Therefore, the findings were used to generate a heuristic for teamwork learning for undergraduate health sciences students.
Conclusion. The study positions students to contribute tangibly to the curricular transformation process at their university. Students' perspectives of teamwork may be useful in the future design and delivery of entry-level interprofessional courses aiming to instil teamwork skills.

Health professionals are often required to collaborate with one another in the management of patients and clients. The interactive nature of this type of work includes the need for interprofessional teamwork, which has become increasingly relevant in health sciences education (HSE).[1,2] Following a global shift in HSE toward the implementation of explicit teamwork pedagogies,[3,4] contemporary HSE curricula at many universities worldwide now include some type of shared learning programme. Shared HSE curricula typically bring students from various health professions together, with the objective of fostering the teamwork skills required for collaborative practice.[5] This is most commonly done under the banner of interprofessional education (IPE),[1] where health professional students learn interactively, rather than in parallel.[6]

A need to problematise constructions of teamwork in HSE contexts has been identified.[7]

Few studies have looked at entry-level students' experiences of interacting with others, or the relationships between students from the various professions.[8] In particular, there is scope to explore the meaning of teamwork from the perspective of first-year health sciences students. At the University of Cape Town (UCT), curriculum transformation discourse is topical and challenges the use of 'traditional epistemologies, theories [and] methodologies' that exclude students as rightful participants in the change process.[9] Thus, one of the intended outcomes of this study was to offer insight into students' perceptions and experiences, to potentially inform the future design and delivery of shared learning or IPE courses, effectively involving students in the transformation process currently underway at UCT.

Background

At UCT's Faculty of Health Sciences (FHS), a shared learning programme implemented in the first year of study for health sciences students takes the form of two semester-long courses. Based on adult education principles, 'Becoming a professional' (BP) in semester 1 and 'Becoming a health professional' (BHP) in semester 2 aim to instil overarching skills required to function effectively as a healthcare professional and member of a healthcare team. Multiprofessional groups of students studying audiology, medicine, physiotherapy, occupational therapy, and speech and language pathology come together with a facilitator each week for small-group, experiential learning.[10] To introduce working in a healthcare team, learning activities include working in small teams of 5 or 6 to produce two public health themed presentations.

At its design and implementation in the early 2000s, BP and BHP were avant-garde amid a temporal context in which academics and clinicians challenged the then new, transformative instalment of 'medical education' at UCT. '[T]he importance of the programmes, especially in the face of the lack of hard evidence of the benefits of interdisciplinary education' was questioned.[11] At a time when the IPE field was relatively young,[12] BP and BHP were conceptualised and designed within the domain of multiprofessional education (MPE), the historical and conceptual antecedent of IPE.[1,13] With the proviso that BP and BHP were 'not just another' rendition of parallel learning associated with MPE, these courses took 'the first tentative steps towards a radical reconceptualisation of multiprofessional education that values the journey of shared knowledge construction and learning as much as it

does the outcomes'.[11] Teamwork learning is a desired outcome of shared learning programmes, and this article reports on first-year students' perceptions and experiences of teamwork within the context of the second-semester course, BHP.

Methods

The study was approved by the University of Cape Town Faculty of Health Sciences Human Research Ethics Committee (ref. no. 429/2019).

Research paradigm

As teamwork is innately a social activity experienced in relation to others, one of the assumptions underpinning this study was that students' perspectives of teamwork may be co-constructed. Thus, the study was positioned within an interpretivist paradigm in which reality is subjective but also co-constructed.[14]

Research design

A qualitative approach was used to gather preliminary data in this exploratory study. In line with the research questions, sampling was purposive (only registered BHP students at the time of data collection were invited to participate) and convenient (students self-selected to participate). The primary data production method of focus group discussion (FGD), an appropriate method for exploratory research,[15] was used to explore students' perceptions and experiences of teamwork in BHP. Two additional qualitative methods, free-listing and pile-sorting, were used within the FGDs to expand the data. A similar format for each FGD was used; however, there was no predetermined agenda to configure the topics for discussion.

Research questions

Students' perspectives were explored in relation to the following research questions:
- What were students' perceptions of what teamwork is?
- Based on their perceptions of what teamwork is, what were students' experiences of teamwork within the BHP context?
- In light of these perspectives on teamwork, what factors did students consider as facilitators or inhibitors of teamwork?

Data production

Two broad questions were asked at the beginning of each FGD to elicit students' perceptions of what teamwork is. Participants were asked to free-list their responses to the questions 'what is teamwork?' and 'what does teamwork require?' These responses, written on cue cards, became the topics for the ensuing discussions. Students were then asked to consider whether they experienced teamwork in their BHP course activities. A pile-sorting exercise was used in the next part of the discussion, as students considered their experiences within BHP in relation to their perceptions of teamwork. Their free-listed responses were sorted into two piles, one for aspects they had experienced and the other for those that they had not experienced. The sequence of these additional methods gave students an opportunity to first unpack what they perceived teamwork to be, before discussing whether they had experienced any of the parts of teamwork in BHP. This format effectively enabled participants to generate the topics for and flow of discussion themselves. Students were also asked to consider what they thought facilitated and/or inhibited teamwork in BHP.

Data analysis

Interpretivism acknowledges that research is a conversation between participants and the researcher, and therefore researcher subjectivity, inherent to the paradigm, can be seen as a useful resource.[16,17] Thus the method of thematic analysis, which relied on interpretations, was appropriate in this study. A combination of *in vivo* and process coding was used in the analysis of the data. Deductive thematic analysis was applied initially using the research questions as broad categories. Overarching themes were then interpreted inductively from the codes and categories.

Having been previously applied in HSE contexts,[18,19] contact theory was used as a theoretical framework in the interpretation of findings. Contact theory, which originated from the 'contact hypothesis', postulates that when individuals from different groups have opportunities to come together under certain conditions, positive outcomes may result. On the contrary, contact between distinct groups could also bring about adverse effects.[20,21]

Results

Study sample

Each of the student groups who participated in BHP were represented in the study sample, as depicted in Fig. 1. Thus, the results of this study were co-constructed by students from each profession required to enact teamwork in this context. Of the five FGDs conducted, four included two or more professions, while one FGD included only one profession. This was due to the convenient sampling procedure in which students self-selected to participate. Where students self-selected to participate but numbers were insufficient for a FGD, one joint and two individual interviews were also conducted.

The professional degree programme in which the student groups were registered was the only marker of difference in the study. Although demographic diversity in terms of gender, race, ethnicity and socioeconomic factors is pertinent to the context of this South African university, excluding these and other diversity markers was a deliberate delimitation in this study in accordance with its focus on interprofessionality.
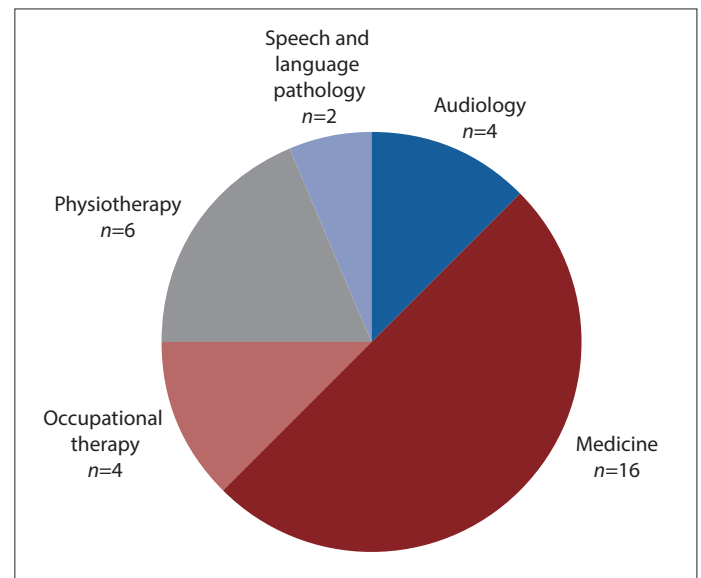

Fig. 1. Research participants per health professional degree programme.

Study findings and discussion

Words and phrases written on cue cards at the beginning of the FGDs (and interviews) are depicted in the pyramid in Fig. 2. Data that were replicated often are represented in the top of the pyramid, and the least frequently recorded words at the narrow end. The pertinence of data to the interpretive account during data analysis was not considered solely in terms of frequency, however, as both novel and replicated data were considered in relation to 'whether it captures something important in relation to the overall research question'.[17]

The FGD and interview data were coded, categorised and themed in multiple iterations. The codes and categories were organised into three broad themes: the purpose of teamwork; the persons involved; and the teamwork process (Fig. 3).

Teamwork has purpose

Students' perceptions of teamwork included having a sense of purpose, working towards something deliberate and being motivated in that action. Students experienced this purpose as having to work together on their BHP coursework, particularly two team-based presentation assessments. These presentation assessments were an important reference point for students in reporting their experiences of teamwork. The immediate purpose of teamwork for students was to answer the presentation questions, fulfil the rubric and achieve their desired marks. The presentation assessments represented a common goal because students had the collective motivation to pass. While their experiences of deliberate action were largely for the purpose of scoring marks, students communicated an understanding that the purpose of the presentations was to learn to work with others, ultimately for future work in interprofessional healthcare teams:

'When you're working as part of the team like in a hospital or a clinical setting, it's not just your marks that are on the line or the fear of … failing … its patients' lives … that's on the line.'

Since the performance of working together was being assessed, there appeared to be a tension between the purpose of teamwork and students' motivations for scoring marks. Students raised concerns that this tension resulted in 'fake teamwork' being enacted during the assessments. However, it would be superficial to ascribe 'fake teamwork' to student motivations for high scores alone. As participants noted, their assessors only saw what was presented to them, and were not privy to what was 'actually … going on' in the student teams:

'Our facilitator had said "try and link" so … [we] mentioned … "as my colleague so and so has already mentioned" … [everyone laughs] so that it looks like unified and that you did the work together … and we all wore … one colour to show unity … But otherwise, doing the actual work, there was no teamwork at all.'

In BHP, teamwork was overtly assessed by facilitators using a presentation rubric, and indirectly assessed by a peer assessment in which students were required to rate each other's contributions to the team presentation. Although a rubric was used, facilitators were empowered to score teamwork according to their subjective judgements of whether or not the rubric criteria for teamwork were demonstrated. Thus in this particular IPE course, the manner in which students were assessed appeared to be an inhibiting factor to teamwork learning.

The logic of this particular finding seems to infer that a 'reverse' assessment practice may be viable. That is, the summative assessment of teamwork by facilitators could be allocated a smaller weighting (shifting assessment power away from facilitators), with a higher weighting allocated to the student-based peer assessment. This more transformative assessment practice not only lends agency to students but may result in greater alignment between the outcome being assessed (teamwork among students) and the assessment practice (peer assessment among students).

Students seemed to recognise this lost opportunity, based on their perception that relationship building is a requirement for teamwork. Students noted that relationships take time to build, and that while BHP created opportunities for relationship building, this was not always a priority, suggesting that the purpose of the presentation assessment had not been achieved.

'[the presentation must be done] for the … course requirements to be met and … to pass the course on a superficial level. But on a deeper level to appreciate a multiprofessional team … and to … build relationships.'

Teamwork involves persons

The idea that everyone has a particular role in a team was pervasive. Students noted that a team is made up of individuals, each having a specific
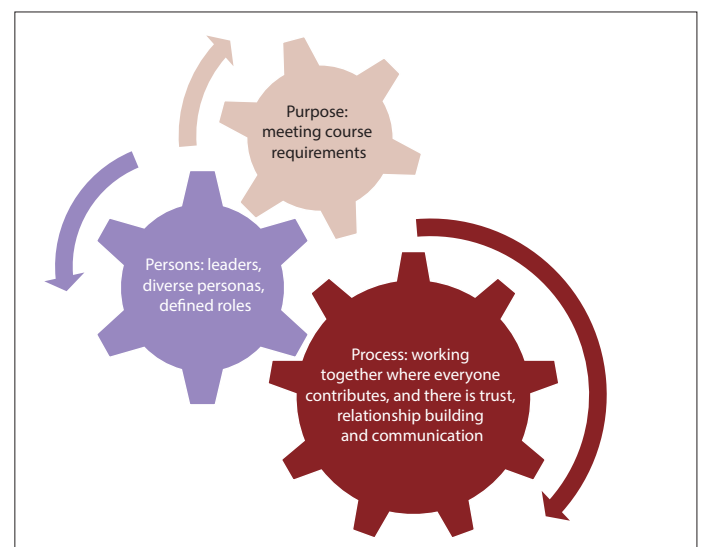

Fig. 2. Pyramid depicting students' written responses to the questions 'what is teamwork?' and 'what are the parts of teamwork?' in a free-listing exercise.

Fig. 3. The three Ps of teamwork in 'Becoming a health professional' course.

role. These 'defined roles' were constructed in terms of the different tasks required for the team presentations and the delegation of those tasks. Students also recognised an inherent diversity within teams. Members represented different professions, but also brought their own unique strengths, weaknesses and idiosyncrasies to the team. Students perceived team members as having different contributions to make, to add value to the end product. Students seemed to appreciate that differences between individual team members must be exploited, and that teams must utilise their inherent diversity:

'The more versatile the group is, the more inputs … can come from different perspectives. And that's actually a very … good attribute for a group. As long as you respect those differences you can actually work with them and have a better outcome of whatever it is you're trying to accomplish.'

Although students appreciated that there were differences between the health professions represented in BHP, they noted that professional diversity was not part of the presentation brief. Since the interprofessional nature of healthcare teams was not salient in the presentations, students perceived differences between team members as being largely personality based:

'We did have different … professions in our team, but I don't really think the … professions … played that big a role in what we did with our presentations … or our teamwork … I think mostly the personalities is what contributed to the differences.'

Personality attributes (of both students and facilitators), particularly leadership qualities of students, were perceived to be pertinent to teamworking. The role of leadership was deliberated in each of the FGDs. There was a sense that leadership is an inherent part of teamwork and that some people are 'natural leaders' who will tend to take on leadership roles:

'It's like a natural instinct … somebody always will … rise up to the position and be a little bit more authoritative over the group … it's a natural thing … somebody will just be a little bit … more assertive than everybody else.'

Being able to work within a defined role that matched individual capabilities, interests and one's introverted or extroverted personality style was considered an important part of teamwork.

Teamwork is an experiential process
Unsurprisingly, a range of experiences of teamworking was evident, ranging along a continuum. On the one end was 'zero' teamwork, which included solo work, where one person reported having worked alone, and independent work, where each team member worked by themselves:

'We didn't work together at all … [and] I ended up doing the whole thing … everyone just read what I wrote … it was really unfair.'
'People did like come up with ideas and stuff like that, but since they were not listened to then we decided to like individualise the work … and then the day of the presentation there was no consistency at all.'

On the other end of the continuum were positive experiences of teamworking, where students reported successful interactions:

'I think this is probably the best group I got to work in … in BHP today we had to … reflect on our group presentation and there wasn't one negative

from anyone … everyone was … laughing and smiling … it was honest.'
'We all shared our information … It wasn't like you're doing your own thing and then just coming together at the end … we all ran through our presentation parts and then we would … say what's working, what's not working.'

Students highlighted that teamworking required an element of trust, and that trust was broken down when others did not do their part. Students noted the difficulty of being expected to work in teams with others whom they didn't know very well, making it hard to be trusting:

'We couldn't choose who we'd be with … you're not … with friends where you know you can trust them. You know they always do their work. So, in a situation like that … I don't have that much trust.'

In terms of team process, communication was a prominent theme in the data. Open communication which showed 'respect, empathy … for a person … a team member' was noted as a facilitator of teamwork. Communication was identified as the part of teamwork that allowed the other parts to be enacted: a way to achieve the interactivity of working together, to facilitate the exchange of collective resources, to designate each team member's defined role, to enact leadership and ultimately to achieve a team's common goal:

'Communication is … the first thing … the most important out of all because … that's how you can actually do all of these … other things … so communication's priority.'

Realising the study aim
This study sought to answer the broad question 'what is teamwork?' from the perspective of the students who participated in this study. The knowledge contribution generated by this study is essentially a synthesis of how these students operationalised teamwork, through their perceptions and experiences of a shared learning course. This synthesis is presented as a heuristic (Fig. 4). Themes generated during data analysis became the conceptual components for the development of the heuristic (examples of this analytical step are shown in Table 1).

By definition, a heuristic is not 'a fit for all', rather it is a tool to navigate learning. Thus, it offers guidelines for how to do teamwork, and presents discussion points for students to engage with as they negotiate how their teams will function. In light of the present study's findings, the 'Students teamwork heuristic' offers 'an evidence-based tool' for growing teamworking[22] and a concrete guide for explicit teamwork training[4] for entry-level health sciences students.

Contributing to curriculum transformation
IPE courses present opportunities for students to create unique patterns of interaction rather than maintain prevailing power differentials that may hinder the eventual goal of collaborating in healthcare teams.[8] By engaging with the 'Students' teamwork heuristic', a learning tool co-developed by BHP students, students may be empowered to negotiate and forge their own patterns of team interactions.

Involving students in curriculum development is a hallmark of transformative pedagogies. Students were included in the initial design process of BP and BHP, signalling a promise of transformation.[11] An intended outcome of this study was to generate a student-centred contribution to the future design and delivery of BHP, and more broadly, to
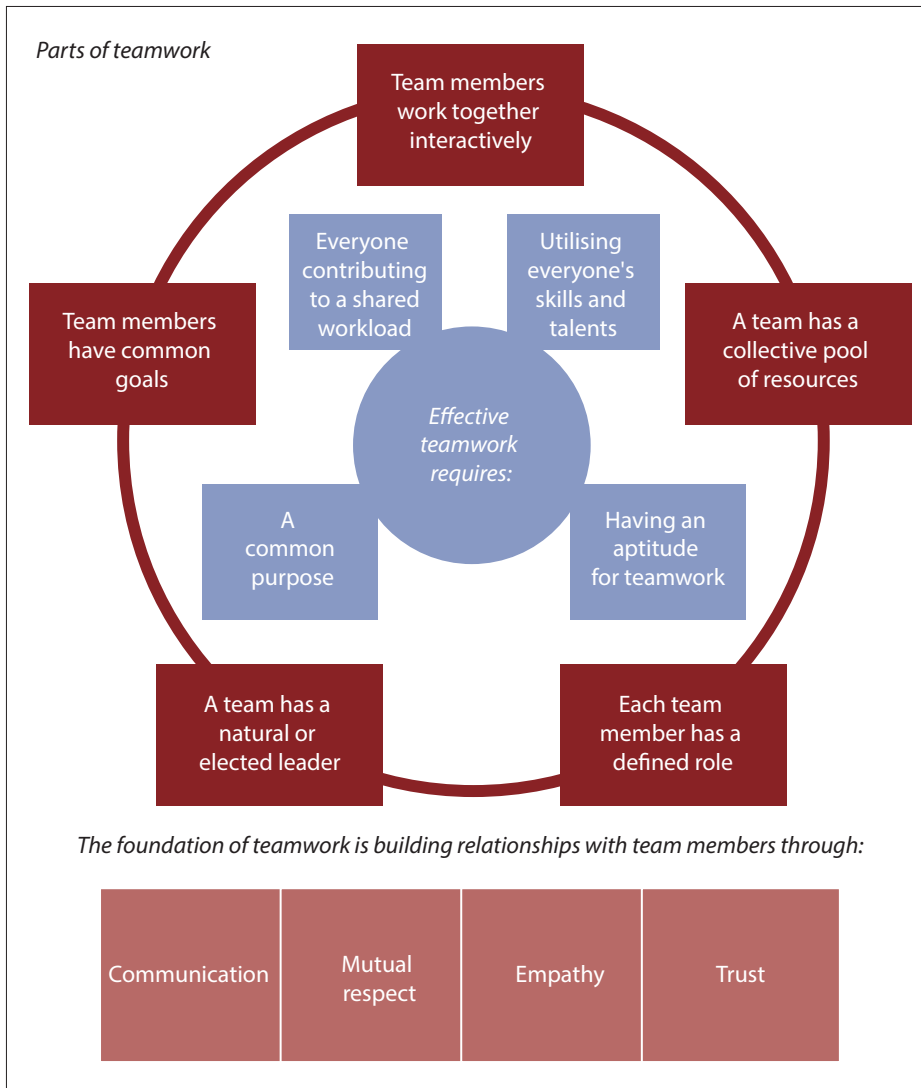
Fig. 4. 'Students' teamwork heuristic'. (Blue = parts; red = requirements; pink = foundational components.)

involve students in the contemporary curriculum change discourse at UCT FHS. Thus, this study's findings present a further opportunity to trouble outdated power structures of traditional curriculum development, effectively continuing the transformative spirit of BP and BHP's initial design vision.

Conclusion

The significance of this study is that it contributes a contextualised operationalisation of teamwork from the perspective of first-year health sciences students, a novel contribution to the interprofessional literature. The heuristic developed as a result of engaging with students in this empirical study places students firmly in a position 'to play a critical role' in curriculum transformation at UCT FHS.[9]

The study findings suggest that BHP begins to build a foundation for the implementation of IPE courses beyond first-year level. As noted more than a decade ago, the vertical integration of IPE, including teamwork training for collaborative practice throughout subsequent years of undergraduate study, remains a challenge at UCT FHS.[10] As participants in this study noted, building trusting relationships for teamworking takes time, highlighting the importance as well as the necessity of vertically spiralled IPE programmes within HSE. With a focus on teamworking as a building block for future collaborative practice, further research could investigate the utility value of the 'Students' teamwork heuristic' as an IPE learning tool for undergraduate health professional students.

Table 1. Conceptual components of the heuristic with corresponding data extracts and sample codes		
Data extract	**Sample code**	**Heuristic component**
'We didn't work together at all … we set a date for when everyone was supposed to do their bits by, but no one stuck to it … I was the only one who was done … [and] I ended up doing the whole thing … everyone just read what I wrote … it was really unfair.' 'We all shared our information with one another. It wasn't like you're doing your own thing and then just coming together at the end … we all ran through our presentation parts and then we would … say what's working, what's not working. And then we all corrected what we did wrong and kept what we did right.'	Working together; integration; communication	Working together interactively
'A common objective … in this case [for the presentation] it was gonna contribute 15% towards all our final marks … so … maybe having a common objective whereby it benefits us all in the same way.' 'If one person wants to do well and the others just want to like get by or pass, it affects the entire team's performance.'	Purpose of the team; common goal is a success factor; motivation	Common goals
'It's like a natural instinct … somebody always will … rise up to the position and be a little bit more authoritative over the group … it's a natural thing … somebody will just be a little bit … more assertive than everybody else.' 'The first time we had to … discuss what we were gonna do there were a couple of people who were kind of leading the discussion and just making sure that we … stuck to the point. But then the more comfortable we got with each other … that kind of fell away and everybody was just contributing freely and … equally to what we needed to do. And we didn't need a leader, I guess.'	Leaders rise up naturally; some people have leadership qualities that emerge	Leadership

The role of assessment specifically in relation to teamwork learning is another area for further study. While this project focused on students' perspectives, further research with a more inclusive approach (including educator and other stakeholders' perspectives) may offer a broader view of assessment practice in this context.

Contact theory was used in a very narrow sense in this study. Contact theory is complex, containing a web of interconnected mediators and moderators (how and when contact between different groups can bring about changes in relations between groups) identified in the literature.[23] None of these mediating or moderating factors were considered in this study. Linked to this is the delimitation of discounting demographic diversity markers in the study sample. Is teamworking just the sum of multiple versions of reality of participants and concomitant analytical outputs, as presented in this interpretivist study? Expanding the application of theory may have offered a broader answer.

1. Paradis E, Reeves S. Key trends in interprofessional research: A macrosociological analysis from 1970 to 2010. J Interprof Care 2013;27(2):113-122. https://doi.org/10.3109/13561820.2012.719943
2. Reeves S, Xyrichis A, Zwarenstein M. Teamwork, collaboration, coordination, and networking: Why we need to distinguish between different types of interprofessional practice. J Interprof Care 2018;32(1). https://doi.org/10.1080/13561820.2017.1400150
3. Frenk J, Chen L, Bhutta ZA, et al. Health professionals for a new century: Transforming education to strengthen health systems in an interdependent world. Lancet 2010;376(9756):1923-1958. https://doi.org/10.1016/s0140-6736(10)61854-5
4. Earnest MA, Williams J, Aagaard EM. Toward an optimal pedagogy for teamwork. Acad Med 2017;92(10):1378-1381. https://doi.org/10.1097/acm.0000000000001670
5. World Health Organization. Framework for action on interprofessional education and collaborative practice. Geneva: WHO, 2010.
6. Hammick M, Olckers L, Campion-Smith C. Learning in interprofessional teams: AMEE Guide No. 38. Med Teach 2010;31(1):1-12. https://doi.org/10.1080/01421590802585561
7. Reeves S. The need to problematise interprofessional education and practice activities. J Interprof Care 2010;24(4):333-335. https://doi.org/10.3109/13561820.2010.492748
8. Engel J, Prentice D, Taplay K. A power experience: A phenomenological study of interprofessional education. J Prof Nurs 2016;33(3):204-211. https://doi.org/10.1016/j.profnurs.2016.08.012
9. University of Cape Town. Curriculum Change Framework. Cape Town: UCT, 2018.
10. Olckers L, Gibbs T, Mayers P, Alperstein M, Duncan M. Early involvement in a multiprofessional course: An integrated approach to the development of personal and interpersonal skills. Educ Prim Care 2006;17(3):249-257. https://doi.org/10.1080/14739879.2006.11864069
11. Mayers P, Alperstein M, Duncan M, Olckers L, Gibbs T. Not just another multiprofessional course! Part 2: Nuts and bolts of designing a transformed curriculum for multi-professional learning. Med Teach 2006;28(2):152-157. https://doi.org/10.1080/01421590600603137
12. Xyrichis A. Interprofessional Science: An International Field of Study Reaching Maturity. London: Taylor & Francis, 2020.
13. Barr H. Interprofessional Education: Today, Yesterday and Tomorrow: A Review. London: Higher Education Academy, Health Sciences and Practice Network, 2005.
14. Samuel MA. The Research Wheel. 3rd edition. Durban: University of KwaZulu-Natal School of Education, 2017.
15. Stalmeijer RE, McNaughton N, van Mook WN. Using focus groups in medical education research: AMEE Guide No. 91. Med Teach 2014;36(11):923-939. https://doi.org/10.3109/0142159x.2014.917165
16. Henning E, van Rensburg W, Smit B. Finding your Way in Qualitative Research. Pretoria: Van Schaik, 2004.
17. Braun V, Clarke V. Reflecting on reflexive thematic analysis. Qual Res Sport Exercise Health 2019;11(4):589-597. https://doi.org/10.1080/2159676X.2019.1628806
18. Michalec B, Giordano C, Dallas S, Arenson C. A longitudinal mixed-methods study of IPE students' perceptions of health profession groups: Revisiting the contact hypothesis. J Interprof Educ Pract 2017;6:71-79. https://doi.org/10.1016/j.xjep.2016.12.008
19. Carpenter J, Dickinson C. Understanding interprofessional education as an intergroup encounter: The use of contact theory in programme planning. J Interprof Care 2016;30(1):103-108. https://doi.org/10.3109/13561820.2015.1070134
20. Allport G. The Nature of Prejudice. Reading, MA: Addison-Wesley, 1954.
21. Pettigrew TF. Intergroup contact theory. Ann Rev Psychol 1998;49(1):65-85.
22. Salas E, Shuffler ML, Thayer AL, Bedwell WL, Lazzara EH. Understanding and improving teamwork in organisations: A scientifically based practical guide. Hum Resource Manag 2015;54(4):599-622. https://doi.org/10.1002/hrm.21628
23. Dovidio JF, Love A, Schellhaas FM, Hewstone M. Reducing intergroup bias through intergroup contact: Twenty years of progress and future directions. Group Proc Intergroup Relations 2017;20(5):606-620. https://doi.org/10.1177%2F1368430217712052