Facilitating collaborative capabilities for future work: What can be learnt from interprofessional fieldwork in health

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There is growing pressure in higher education to develop graduates with the capabilities to work effectively in collaborative, interdisciplinary teams to solve the key issues facing humankind. For many years, health has been pioneering interprofessional education as the means to deliver professionals with capacity to work together to deliver high quality, cost-effective, client-centered care. This paper reports on an explorative case study where interviews were undertaken with ten students from different professions who had experienced interprofessional education at three different community sites. The learning was informed by an adapted version of contact hypothesis for use in interprofessional education combined with adult learning principles. Four interrelated metathemes were identified: space and time, informality and independence, which resulted in a more holistic approach to practice. Results suggest that the contact hypothesis, with consideration of contact variables, has the potential to improve the quality of interdisciplinary group interaction.

Keywords: Interprofessional education, fieldwork, work-integrated learning, contact theory

Although challenging to predict due to unprecedented, rapid global changes (Bakhshi, Frey, & Osborne, 2015; The Institute for the Future, 2017) future workplaces will likely require graduate capabilities (Davies, Fidler, & Gorbis, 2011) which are not yet a broadly attended to in higher education. Some of these capabilities are sense making, social intelligence, computational thinking, cognitive-load management, a design mindset, and the ability to work in trans-professional teams (Davies et al., 2011). Work-integrated-learning (WIL) is seen as a valid pedagogy (Patrick et al., 2008) which enhances the transition from university to work and improves graduate employability (Universities Australia, ACCI, AiGroup, Business Council of Australia, & ACEN., 2015). The impact of WIL on graduate work readiness has been investigated (Smith, Ferns, Russell, & Cretchley, 2014). However, research examining the emergent capabilities described above is limited. This likely reflects the rate of change as higher education struggles to keep abreast of the capabilities required for work that is—primarily due to technological developments—yet to be imagined.

One consistently predicted theme for future work, however, is the need for collaborative interdisciplinary capability (Davies et al., 2011). To address the key issues ('wicked problems') which face humankind it has been argued that interdisciplinary approaches are required (Brown, Harris, & Russell, 2010); no longer can a single discipline adequately find solutions to, for example, environmental degradation and global health issues such as diabetes (Banadaranaile & Willision, 2014). Graduates of the future, it is posited, need more than teamwork skills; they need to be able to work creatively (McWilliam & Dawson, 2008) with colleagues from different disciplinary and professional cultures with disparate epistemological traditions.

In health and social care, this shift to collaborative team based work is termed interprofessional practice (Freeth, Hammick, Koppel, Reeves, & Barr, 2005). To address significant health issues facing populations globally, and in recognition of the shortcomings of current practice models, health professionals are required to work in collaborative teams to deliver more effective, resource efficient services (Frenk et al., 2010). To achieve the capabilities identified for interprofessional practice (Brewer

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& Jones, 2013), interprofessional education has emerged. The World Health Organization (2010) defines interprofessional education as occurring "when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (p. 7). Despite the push for interprofessional education, the literature reveals it is not easy to embed into curricula with inflexible university structures, processes, policies and scheduling/timetabling issues presenting significant barriers (Lawlis, Anson, & Greenfield, 2014). Whilst many of these issues are logistical, cultural and structural challenges must also be addressed (MacMillan & Reeves, 2014). To overcome these barriers, and to ensure the learning experiences do not replicate multiprofessional education—where students from different professions simply learn alongside one another—a conceptual or theoretical framework is required to inform the approach, design and understand the learning process (Reeves, Boet, Zierler, & Kitto, 2015).

Study Context and Background to the Interprofessional Fieldwork Program

The study was conducted in the Faculty of Health Sciences at Curtin University in Perth, Western Australia. The Faculty has approximately 8,000 domestic students enrolled across 28 disciplines and offers a range of interprofessional student placements. These placements typically involve students from nursing, occupational therapy, physiotherapy, speech pathology, dietetics, pharmacy, social work and psychology. Students work as members of an interprofessional team, providing input into the planning, delivery and evaluation of health services and the completion of industry-driven projects. A typical week on placement involves student participation in team meetings, client case conferences, and debriefing sessions. The placements, which provide the context for this study, are Challis Community School, Juniper Aged Care (Annesley) and the Cockburn Integrated Community Health facility; all located within metropolitan Perth, Western Australia. Since 2011, health science students have provided health and social care services to the children at Challis School. A dedicated space comprised of a large group room and four consultation rooms is provided for students and university staff. Since 2014 students have provided services to residents in one of Juniper's high care dementia wards. The dedicated space for students and staff at Juniper consists of one large group room and a staff office. Cockburn is a large facility established in late 2014, which houses medical, social and community service providers. Here students and staff work from four dedicated consultation rooms, a small and a large group room, a debrief room and staff office. Approximately 10 students are on placement at any one time in each of the three facilities. Students are supported by a full-time supervisor (the Interprofessional Practice Coordinator) who oversees the learning experience and the health and social care services delivered by students. Additional supervision is provided by qualified practitioners from each student's profession who are experts in the area of practice (e.g., pediatrics or dementia care). Students are required to achieve the learning outcomes (typically outlined as a set of professional competencies) for their course during these interprofessional placements. In addition, students work to develop the interprofessional competencies set out in Brewer and Jones' (2013) Interprofessional Capability Framework. These competencies are organized within three domains: client centred services, quality and safety, and collaborative practice (role clarification, communication, team function, conflict resolution and refection) (see Figure 1). For more information on the interprofessional fieldwork program see Brewer and Barr (2016).

The design of the interprofessional fieldwork program, including the preparation of the interprofessional supervisors, was informed by the integration of contact and adult learning theories. Allport (1954, cited by Pettigrew, 1998) first proposed contact theory in the context of interactions between African Americans and the dominant white population in the United States. Also known as

FIGURE 1: The interprofessional capability framework which outlines the learning outcomes (Brewer & Jones, 2013).

contact hypothesis, contact theory argues several variables impact on the quality of interactions between members of different groups. Contact theory has been adapted for interprofessional education (Bridges & Tomkowiak, 2010; Mohaupt et al., 2012) to help address the hierarchies evident in health (e.g., doctors, nurses and allied health professions) (Braithwaite et al., 2016) and the siloed nature of health education (Abu-Rish et al., 2012). Carpenter and Dickinson (2016), for example, argue that six conditions must be present to facilitate effective interprofessional collaboration. All six conditions informed the design of the learning for the interprofessional fieldwork program explored in this paper (see Table 1).

While intergroup contact theory provides a useful framework to design the learning context (e.g., equal status, common goals, institutional support), it lacks detail on how to facilitate student learning. Taylor and Hamdy's (2013) model of adult learning was adopted to guide the student learning process. Taylor and Hamdy (2013) describe five phases of learning: dissonance, refinement, organization, feedback and consolidation. Staff within the interprofessional fieldwork program applied key strategies from Taylor and Hamdy's (2013) model to their interactions with students including: exploring students' prior knowledge and experience, assisting students to identify their own learning needs and their relevance to the placement, allocation of tasks appropriate to their profession to increase motivation, facilitating refection in action and on action, continuous formal and informal feedback from a range of sources (peers, supervisors, industry staff and clients/care givers).

The aim of the research was twofold. Firstly, to explore whether intergroup contact theory can be effectively applied to the design of interprofessional learning within fieldwork. Secondly, to determine which elements of the placement contributed to, or hindered, the development of collaborative capabilities. This research forms part of a larger study which includes focus groups (Brewer, Flavell, & Jordon, 2017), and behavioral observations of the same students. The research reported on here has application to interdisciplinary WIL beyond health and social care, providing insight into the value of contact theory to understanding how interdisciplinary fieldwork learning might be facilitated.

TABLE 1: Carpenter and Dickinson's (2016) six contact theory conditions for interprofessional education aligned with the fieldwork learning experience

Carpenter and Dickinson's (2016) six conditions	Features of the study's fieldwork program
1. Equal status amongst participants	• Specially trained facilitator emphasizes the valuable contribution of all professions, whilst acknowledging professional differences and similarities • Shared student space where students work together at one large table
2. Small group activities with common goals	• Students manage clients and projects collaboratively, focusing on the goals of the client/organization • Students work to develop shared interprofessional competencies
3. Explicit institutional support	• Faculty and industry leaders' endorsement of the program made explicit to students • University signage visible throughout the placement site • Dedicated space for university staff and students • Regular site visits from university, industry and government representatives
4. Positive expectations through good promotional material and recruiting student ambassadors	• Students allocated via the usual placement allocation process for each course to signal equal value to other fieldwork experiences • Induction processes (via learning management system and at site) include interprofessional education as a key health workforce priority and evidence of outcomes achieved through interprofessional education and practice • Program featured on faculty website and promotion campaigns
5. Promote generalization of learning to other members of different professions by having students take on their professional role	• Students work as members of an interprofessional team functioning in the role of their profession to deliver health and social services in the community
6. Balanced numbers of participants from different professions	• Wherever possible students are allocated to the placement in professional pairs to reduce marginalization

METHOD

Study Design

A small scale exploratory multi-site case study approach was adopted to provide a comprehensive understanding of the unit of analysis and answer the research questions (Yin, 2009). An exploratory case study is a relevant approach for the questions under investigation as it allows the study of social phenomena—in this case interprofessional fieldwork learning—in their original context (Mills, Durepos, & Wiebe, 2010) across several community health settings. Semi-structured interviews were undertaken with students who had participated in a placement at one of the three interprofessional fieldwork sites. This data collection method was deemed consistent with both the phenomena under investigation and the constructivist methodology informing the study. As previously established, the interviews reported on here were part of a larger study that included focus groups and observations involving students at the same fieldwork sites.

Participants

Ten students participated in the study (Table 2), four from speech pathology, two from counseling psychology and one student from nursing, dietetics, occupational therapy and social work. The student placement structure varied from two weeks full-time to 20 weeks part-time. Four students had completed a placement at Challis Community School and another four at Juniper Aged Care. One student had completed placements at both Challis and Juniper, and another had completed placements Challis, Juniper and the Cockburn Community Health Centre.

TABLE 2: Participant profession, year of study and placement length

Course	Students	Year of Study	Placement length
Nursing	1	Year 2 undergraduate	2 weeks full time
Dietetics	1	Year 1 masters	2 weeks full time
Occupational Therapy (OT)	1	Year 4 undergraduate	7 weeks full time
Social Work	1	Year 4 undergraduate	14 weeks full time
Counseling Psychology (psych)	2	Year 2 masters	20 weeks 2 days/week
Speech Pathology (speech)	4	Year 4 undergraduate	10 weeks 4 days/week

Procedure

A semi-structured interview guide was developed by the authors based on the outcomes of the previous observational study and focus groups with students during their interprofessional placements. The questions focused on gathering student perceptions of: the type and degree of collaboration they had with other professions; any factors which impacted on this collaboration; what collaborative capabilities were developed; and any differences between their interprofessional fieldwork and their traditional uniprofessional fieldwork. Approval for the study was obtained from the University's ethics committee. Health sciences' students who had completed a fieldwork placement

at one of the three sites were invited to participate. The invitation was extended by a research assistant either during a visit to the site or via email. Once written consent was obtained, interviews were arranged at a time and location to suit each participant. To manage potential conflict of interest, interviews were conducted by the research assistant who had no relationship with the students nor the fieldwork program being evaluated. Interviews were typically one hour in length and audio-recorded; all interviews were transcribed verbatim.

Analysis

Analysis of the interview data followed the six step procedure outline by Braun and Clarke (2006). The transcripts were read by the authors for accuracy and clarity (as the processes of data familiarization) with notes and initial codes recorded in relation to the research questions. Codes were categorized based on participant interactions, activities, and outcomes relating to the interprofessional placement. The data were then analyzed for themes independently. Throughout these phases, meetings were conducted to review the data. Minor adjustments were made, and a thematic map was developed. Akin to Guest, Bunce and Johnson's (2006) finding, saturation of the metathemes was reached before the tenth interview.

RESULTS

The analysis revealed four interrelated metathemes: space and time, informality and independence resulting in a more holistic approach to practice. As represented in Figure 2, the interrelated nature of the themes is important in understanding the findings. Detailed description of the metathemes themes are provided below.

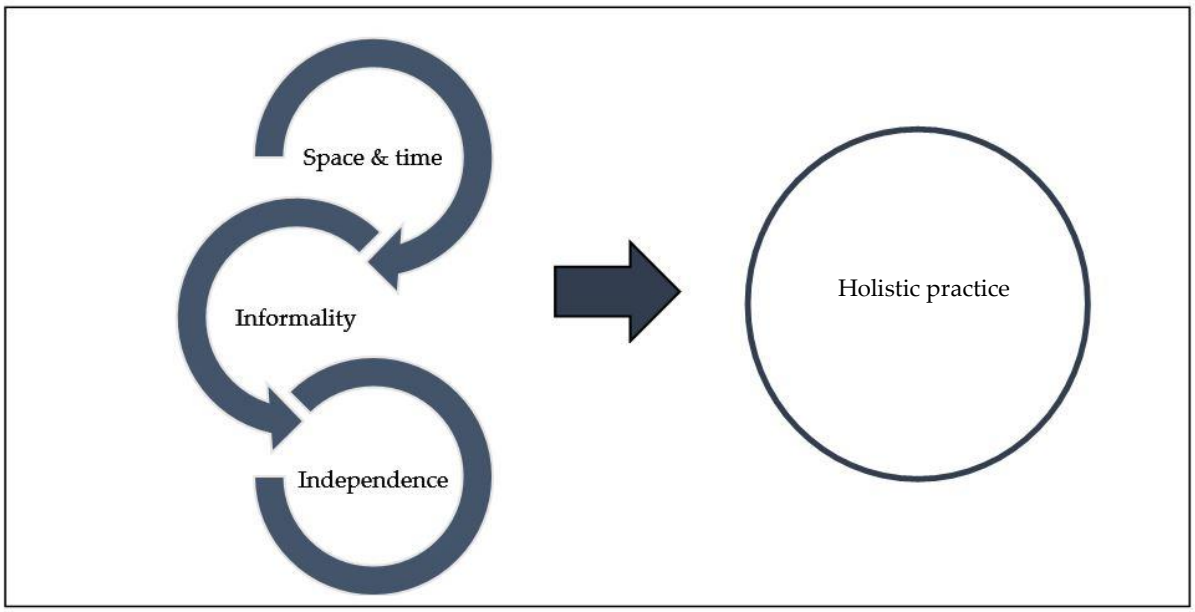

FIGURE 2: The four overarching metathemes and their interrelation

Space and Time

Participants in the study frequently identified the dedicated shared learning space at each placement site, and the extended time allocated to working together, as crucial to facilitating both their learning and the degree of collaboration.

The theme of shared space emerged both positively and negatively as, whilst some students reported the shared space being optimal, a small number of students found that the space limiting when they wished to focus on their own disciplinary projects. For example, one student from nursing and one from dietetics did not find the student room conducive to collaboration due to competing student agendas. In the words of the nursing student: "…we were all squashed in a room and it was difficult to really collaborate because everyone had their own agenda and everyone had their own study to do" (Participant 7, Nursing, Juniper).

Negative outcomes from the shared space, however, were very limited with most students reporting the benefits of being physically located together. According to students, the shared space facilitated communication, collaboration and more engaged learning (i.e. leading to further research and reflection on practice). A speech pathology student who had been placed at the Cockburn site stated that "Even though it was a different profession they might have other ideas and you'd think 'oh yeah I could probably relate this to speech, let's do some research" (Participant 5, Speech Pathology, Cockburn). The link between the incidental sharing of knowledge, and the services provided to clients, facilitated through sharing one space, was noted by several students. The shared space was identified by a number of participants as beneficial, with the following quote typifying the participants' comments:

> I think by being in the same room and having all the disciplines together it was really good to kind of provide that collaborative care for the residents and I think it just opened up all kind of avenues to how each discipline can help. (Participant 4, Speech Pathology, Juniper)

This collaborative working space was positively contrasted with some workplace settings such as hospitals where professions are typically located in separate departments. The following speech pathology student, for example, made reference to the beneficial nature of the shared space:

> You know if you're in a hospital you have the speech area and the occupational therapy area and the physio, whereas at this placement we're all in one room so …conversation is just going all day every day about different clients. (Participant 9, Speech Pathology, Challis)

Time in the shared space also emerged as a related theme. For example, having students from diverse health and social care professions together in close physical proximity for significant portions of the day was identified as a key factor in orientating students towards collaborative practice. Through observation, interaction, collaboration and reflection on an ongoing daily basis students were exposed to learning about differing approaches and practice to client care. The same speech pathology student quoted above emphasized the benefit of not just the space but having time together, stating that:

> Reflection has been huge as well because we're doing that all the time…(student) has been to their client and they come back in and…everyone's always saying 'How did you find that session?', 'What worked?'…reflecting not just on our own sessions but other people's sessions as well and then when we've done group sessions together that reflection creates learning opportunities and change (Participant 9, Speech Pathology, Challis)

Overall, therefore, students valued the shared and extended time together which they clearly identified as supporting collaborative learning.

Informality

The second interrelated theme that emerged was the informal nature of the placement learning environment where the traditional hierarchical relationship between the Interprofessional Practice Coordinator (who students often referred to as 'supervisor') and students was replaced with a more equal and collaborative relationship. The following comment typifies how students expressed their relationship with the fieldwork supervisor: "There was definitely a supervisor and student but it wasn't like they (Coordinator) were … 'I'm better than you, you've got to listen to me' … they worked beside you, not above you"(Participant 5, Speech Pathology, Cockburn).

The respectful nature of the relationship between staff and students was also evident in the nursing student's retelling of an incident where they had informed a supervisor from another profession of their concern about a client's management. The student expressed surprise that the staff member had contacted them to provide feedback, saying that "She rang me later on to say that I was right, to say that what I did and what I said was the right thing" (Participant 7, Nursing, Juniper).This reduction in hierarchies was also evident between different professions. The following words from one participant exemplifies both informality and equality: "…an awesome thing about the placement was that the other students were so open and they were so lovely and they didn't kind of act as if like they were superior" (Participant 1, Psychology, Challis).

Several students also commented on the impact of the informal placement culture on their level of anxiety. According to one participant placed at the Cockburn health facility:

> I think I felt more comfortable, like I wasn't as stressed or as nervous ... Maybe because I knew it was less formal I had to really take charge of it so then I was really pushed to sort of look for things or do the research rather than always going off on what the supervisor had told me. (Participant 5, Speech Pathology, Cockburn)

Independence

The shared, informal student space and culture at the placements also facilitated students learning independently from staff and interdependently or collaboratively with each other; for example: "… just working in that one open space altogether, we're always able to communicate, drop ideas, give each other feedback … everyone was just open to talk to one another" (Participant 8, Social Work, Challis). Similarly, two other students spoke of the value of feeling independent and able to support each other rather than being scrutinized by their clinical supervisors:

> …the setup of each of the placements was really good. Having own room just for the students, so we could feel like we could really talk to each other and not I guess feel like we're being monitored by supervisors. (Participant 4, Speech Pathology, Juniper Aged Care and Cockburn)

> … because we're all students and we're all equal it means you're very much forced into a friendship kind of thing and you kind of just depend on each other for emotional support as well as educational support and planning and therapy … Yeah it definitely makes it easier to get up every morning and go to prac. (Participant 10, Occupational Therapy, Challis)

Holistic Practice

Students made frequent reference to the collaborative nature of the placement enabling them to provide clients with more encompassing or holistic care both during the placement and, potentially, once they had graduated. The following quote from one student illustrates how learning about the practice of other professions improved client care:

> Well the key differences would be that you are liaising with the other disciplines regarding your clients at the IP (interprofessional practice) placements so I would get my speech clients but then the occupational therapy would also be seeing the speech client too so you would be able to view the client more as a whole because you're seeing their point of view and the thing that they're targeting with each child as well, you can target more areas. (Participant 9, Speech Pathology, Challis)

Holistic client care was identified by the students as being facilitated by the interprofessional placement which gave them the opportunity to develop their knowledge of other professions therefore extending their confidence in how to refer clients. According to one participant, for example:

> I'll have the confidence and the knowledge to know who to go to … about a client and also be more open to learning new things about the other health professionals so that … the client gets a holistic experience and service. (Participant 3, Speech Pathology, Challis, Juniper and Cockburn)

In addition, students also made many references to developing skills and knowledge beyond their profession which also supported more holistic care. The importance of shared goals, particularly related to the client's wishes or needs was also highlighted. The following two quotes illustrate the participants' perception that the environment supported learning with, from and about other health professions:

> … having the other disciplines involved such as the OTs (Occupational Therapists) and Physiotherapy. I'd say definitely it also gave me a broader knowledge of how they can help with the clients and kind of in therapy introducing their goals in with the treatment. (Participant 4, Speech Pathology, Juniper and Cockburn)

> .. we (students) all share clients and that kind of thing so it's really easy to go 'oh so why did you do that?' … I have watched speech students, I've watched social work students, I've watched physio students and you can just learn so much from that. (Participant 10, Occupational Therapy, Challis)

Overall, therefore, students perceived that the placement provided opportunities to learn about other professions' knowledge and skills resulting in a better, more comprehensive, service or care for the client. The final comment highlights the potential benefit from an interprofessional fieldwork placement to support generic skills: "I think it's been the best placement. I think it's really taught me a lot of skills above and beyond my discipline and I think I will become a better clinician having my experiences out there" (Speech Pathology, Challis).

DISCUSSION

As highlighted by Mohaupt et al. (2012) and Reeves and Hean (2013) our understanding of effective strategies for interprofessional education and the application of relevant theories is limited. The interprofessional fieldwork placements examined in this study were shaped by two theoretical approaches; Carpenter and Dickinson's (2016) intergroup contact theory informed the design of the learning context while Taylor and Hamdy's (2013) model of adult learning informed the learning process. The findings of this study are considered broadly in relation to the impact of designing interdisciplinary fieldwork learning based on these two theories.

The first three interrelated metathemes identified—shared space and time together in an informal and independent setting—appeared to generate a more relaxed atmosphere for learning and equal status between the students who were placed together in one shared room for substantial periods each day. Whilst the staff who supervised the students spent time in this shared space they did so for limited periods and interacted with students as facilitators of learning rather than experts (as a guide on the side rather than a sage on the stage), an approach recommended by Howkins and Bray (2008) and the student training wards in Europe (Jakobsen, 2016). Additionally, the use of an interprofessional practice capability framework to underscore the learning experiences (Brewer & Jones, 2013) ensured that the common goal of meeting client needs was central. This facilitative approach to learning, in combination with students functioning as trainee health professionals working on highly motivating, shared goals related to service delivery, encouraged students' independence from their supervisors and interdependence on each other. Of note, the independent learning, a key feature of student-led fieldwork (Jakobsen, 2016), has been identified as important to enhancing the student-client relationship and providing valuable learning experiences (Teherani, 2015).

The comments from students clearly illustrated the value of the placement culture and the shared space in assisting them to cooperate and communicate two critical elements of effective healthcare teams (Lloyd, Schneider, Scales, Bailey, & Jones, 2011). The cooperation and communication generated within this shared space appeared to challenge the traditional hierarchies evident between health professionals (Braithwaite et al., 2016) and promoted broader social groupings beyond student's individual profession with students functioning as an interprofessional team. Of note, Allport (1954) argues that intergroup cooperation and an absence of competition are key conditions to support improved attitudes towards those traditionally not perceived as being in one's social group. The positive impact of a shared space and time and informal interactions on interprofessional collaboration aligns with previous research of this fieldwork program (Brewer, Flavell, & Jordon, 2017) and research into health care teams (Oandasan et al., 2009; Seneviratne, Mather, & Then, 2009). The themes emerging from this study suggest that the placement learning experience met all of the criteria necessary to promote positive attitudinal change through intergroup contact, as found by others including Mohaupt et al. (2012). This attitudinal change included new ways of knowing and doing practice as health professionals (Orrell, 2011) including the adoption of a more holistic perspective on service delivery.

Whilst the placement relates to health care professions, the findings from this study have potential application to other interdisciplinary student groups where the desired outcomes are increased understanding of each other's professional practice and effective collaboration and communication with a focus on meeting the needs of the client (rather than disciplinary territoriality). In interdisciplinary settings beyond health care the client can be reimagined to include, for example, businesses, government and community groups where graduates come together to deliver creative interdisciplinary solutions to challenging problems. A possible application of an interdisciplinary

approach could include health, town planning and architecture graduates working collaboratively to design public spaces that support healthy communities (Urban Land Institute, 2015). Similarly, this study suggests with expanded knowledge of other professions, graduates from a range of disciplinary backgrounds who have experience in an interdisciplinary WIL setting would also likely have greater knowledge and confidence to incorporate aspects of other professions' approaches into their practice. These capabilities have been identified as essential for future work as humankind is faced with increasingly complex, wicked problems that require effective, collaborative, cost efficient interdisciplinary responses (Brown et al., 2010).

LIMITATIONS

The small scale study relies on participants' perceptions of the fieldwork learning experience and the elements of the program that facilitated their collaboration and learning. Other data sources, for example, observations of students' interactions and behaviors whilst on placement would have added depth to the exploratory case study. Similarly, interviews with the supervisors, clients and other staff at each placement site to determine the validity of self-reported student data would have been beneficial to support the findings. Further research exploring the relevance of contact theory to structure other forms interdisciplinary fieldwork beyond health is required to determine its usefulness in other professional and disciplinary contexts.

CONCLUSION

It was evident from students' comments that Carpenter and Dickinson's (2016) adapted contact theory combined with adult learning (Taylor & Hamdy, 2013) created an interprofessional learning experience where students reported functioning as collaborative teams who shared equal status, communicated effectively, learned about each other to achieve common goals in relation to client-focused service delivery. That is, the learning context facilitated the desired outcomes for interprofessional education set out by the World Health Organization (2010) with students having learnt with, from and about each other's professions to improve client care.

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