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Fiona Doolan-Noble
Curtin University

Sonya Morgan
University of Otago

Ian Crabtree
Otago Polytechnic

Ashley Symes
University of Otago

Margot Skinner
University of Otago

Eileen McKinlay
University of Otago

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Fiona Doolan-Noble,[*] Sonya Morgan,[~] Ian Crabtree,[^] Ashley Symes,[~] Margot Skinner,[#] Eileen McKinlay[~]

[*] Formerly Division of Health Sciences Centre for Interprofessional Education, University of Otago, 279 Great King Street, Dunedin 9016, New Zealand. Now Director Goldfields University Department of Rural Health, Curtin University.
[~] Division of Health Sciences Centre for Interprofessional Education, University of Otago, 279 Great King Street, Dunedin 9016, New Zealand.
[^] College of Health, Otago Polytechnic, Forth Street, Dunedin, 9054, New Zealand.
[~] Division of Health Sciences Centre for Interprofessional Education, University of Otago, 279 Great King Street, Dunedin 9016, New Zealand.
[#] School of Physiotherapy, Division of Health Sciences, University of Otago, 325 Great King Street, Dunedin 9016, New Zealand.
[~] Division of Health Sciences Centre for Interprofessional Education, University of Otago, 279 Great King Street, Dunedin 9016, New Zealand.

Abstract

Demand on education and health authorities to provide workplace based learning opportunities for students to acquire interprofessional collaborative practice competencies is increasing. This article outlines the acquisition of interprofessional competencies by pre-registration health professional students in a four-week interprofessional training ward placement. Four final-year health professional students (medicine, nursing, occupational therapy and physiotherapy), from two tertiary education institutes worked together on an assessment, treatment and rehabilitation ward for older adults based within a local tertiary hospital. Four competency domains were the focus for the placement: role clarification and appreciation; interprofessional communication; team functioning; and interprofessional coordination and shared decision-making. Sequential audio-recorded focus groups were undertaken with the students each week. Using template analysis, student reports on each of the four interprofessional competencies each week over the four-week period were explored. Findings demonstrated all students incrementally and differentially acquired the four competencies over the course of the placement. The period between week-two and week-three was a critical time for competency acquisition as the students encountered real-life clinical problems. The study contributes to a growing body of research demonstrating the potential for interprofessional training wards to enable competency acquisition for undergraduate health professional students, and that competency acquisition may be time sensitive.

I INTRODUCTION

Demonstration of competence in interprofessional collaborative practice (IPCP) is becoming critical, globally (Girard, 2021) and nationally (Lai, 2019). Increasing numbers of Australasian and New Zealand (NZ) health professional registration authorities require achievement of the competence for registration (Australian Medical Council, 2018; Nursing Council of New Zealand, 2016; Physiotherapy Board of Australia and Physiotherapy Board of New Zealand, 2015). The requirements established through these and other organisations demonstrates increasing commitment to interprofessionalism, educationally and in practice (Hean et al., 2012).

Health professions and policy makers agree interprofessional education (IPE) is an important approach to supporting the development of interprofessionally competent, collaborative, practice-ready health practitioners (Frenk et al., 2010; World Health Organisation [WHO], 2010). Such practitioners are more likely to work using a patient centred approach, improving the quality and safety of patient care through health professionals' enhanced ability to work collaboratively (WHO, 2010). Notwithstanding the recognition that building skills for effective collaboration is vital in healthcare, often the first time that health professionals work together is after graduation (Burgess et al., 2020).

It is agreed that IPCP competencies are ideally learnt through interaction with students of other professions: "when members or students of two or more professions learn with, from, and about each other to improve collaboration and the quality of care and services" (Centre for Interprofessional Education Division of Health Sciences University of Otago, 2020, p.1). Although there are a number of interprofessional competency frameworks (Thistlethwaite et al., 2014) the key competency areas are generally understood to be: communication, role clarification, reflective practice incorporating interprofessional ethics, principles and values, teamwork and team functioning, conflict resolution, collaborative leadership and followership, shared decision-making, as well as patient centred care (Bainbridge et al., 2010; Pullon & Symes, 2019).

IPE training wards in hospitals have been successfully established in many countries including Australia (Brewer & Stewart-Wynne, 2013), Holland (Visser et al., 2019), Sweden (Hallin & Kiessling, 2016; Wilhelmsson et al., 2009), Germany (Mink et al., 2019), Canada (Sommerfeldt et al., 2011), and the United Kingdom (McGettigan & McKendree, 2015). Research shows the context of the IPE training ward provides students with an authentic environment in which to learn with, from, and about each other, enabling the development of both their profession specific and IPCP competencies and skills (Brewer & Stewart-Wynne, 2013; Hallin & Kiessling, 2016; Morphet et al., 2014; Reeves & Freeth, 2002) and that these competencies and skills are sustained (Hylin et al., 2007). Students are generally favourable regarding the opportunity to learn on an IPE training ward with positive learning outcomes for students and high patient satisfaction rates (Oosterom et al., 2019). From a student perspective this is likely linked to the context of the real ward environment, which can offer enhanced opportunities for students to be socialised to other health care professions and their associated knowledge and values (Mink et al., 2019) and further, working with actual patients enhances students' appreciation of the "joint venture" of patient care (Hallin & Kiessling, 2016).

The aim of this paper is to explore in depth, the experiences of participating health professional students throughout an IPE training ward placement and to gauge the impact over time that this experience had on students' self-reported development of identified IPCP competencies.

A *Background*

This interprofessional ward (a space within a standard ward) was developed as an immersive-level activity for senior students through a collaboration between the University of Otago, Otago Polytechnic and the Southern District Health Board (SDHB). Immersive-level activities are the most complex level of IPE learning activities identified on the University of Otago's continuum of learning ranging from exposure-engagement-immersion, due to the learning activities being based in clinical workplaces and involving actual patients (Pullon & Symes, 2019). The theoretical

framework underpinning this work was social constructivist learning theory. This theory explains how students develop IPCP competencies by interacting with students of other professions to construct knowledge about IPCP. Interaction is often undertaken through communities of clinical practice: small learning groups who form social bonds with each other, supporting learning with, from and about each other (Jaye & Egan, 2006).

The learning outcomes of the placement (Table 1) focused on the demonstration of four IPCP competencies (Pullon & Symes, 2019).

Table 1
Four Interprofessional Collaborative Practice (IPCP) competencies used as learning objectives for the Interprofessional Education (IPE) ward with examples of learning outcomes (Pullon & Symes, 2019)

IPE Competency Domain	Examples of Intended Interprofessional Learning Outcomes
Role clarification and appreciation	Well-developed concepts of role and professional identity; their relevance to practice and interdependence in IPCP.
	Communication about own and others' roles in culturally respectful ways to other health professionals and to patients/clients/families/ communities.
Interprofessional communication	Effective communication (safe, open, respectful) between health professional students and practitioners across a range of professions.
	Effective personal and interpersonal communication strategies and processes within interprofessional teams.
Team functioning, including conflict negotiation and resolution	Knowledge of and skills for teamwork principles and the importance of common goals.
	Conversational mechanisms to repair conversations.
Interprofessional coordination and shared decision-making	Exchange of essential clinical information (health records, through electronic media).
	Ability to collaborate to reach a shared decision in relation to patient care, and when and where this is appropriate.
	Ability to identify and reflect critically on own perspectives in relation to a team.

The intention for this interprofessional placement was to provide students with an authentic practice-based learning environment in which they could develop the specified competencies through collaboration with peers, trained staff and supervisors, patients/clients, and their families. Background information about activities the students in the IPE ward setting took part in is summarised in Box 1.

Box 1: The Interprofessional (IPE) Ward and activities the students undertook

The Ward, ward staff, patients, and students

The ward setting in which the students worked consisted of a four-bed room with ensuite, situated within the Adult Assessment, Treatment and Rehabilitation Ward (ATR Ward). Prior to commencement of the placement, ward staff working with participating students were provided with the opportunity to participate in a series of three in-service IPE training sessions which covered principles of IPE and the specific purpose of the initiative.

The senior nurse responsible for the ATR Ward identified potential patients for the four-bed room, gave them an information sheet about the IPE training ward at the time of admission and sought informed consent.

Students from medicine, physiotherapy, nursing and occupational therapy took part in the IPE training ward as their professions would more likely meet the holistic health care requirements of those in the ATR Ward.

Student preparation and IPE ward activities

Students were recruited by three of the authors (FDN, IC and MS) involved in setting up the interprofessional ward. Prior to commencing the placement, students met with the placement coordinator (MS) and were given a placement manual and information on informed consent. The manual included objectives, outcomes, timetables and relevant pre-reading materials and other references. Students were advised that they would be expected to demonstrate their profession-specific competencies and meet any other assessment requirements set by their own programs in addition to the specified IPCP competencies.

Students worked from 7.00am – 3.30pm, Monday-Friday in each of the four weeks, thus enabling them to participate in regular ward activities including daily morning handovers, ward rounds, journal club and afternoon handover. End-of-day debriefs (15 minutes) were facilitated by a clinical educator from one of the four health professions. For weeks one to week three a Friday-afternoon themed learning session was facilitated by two academic staff, one from an included health profession and the other from the University of Otago Business School. Each session focused on a theme relevant to decisions made daily in the ATR Ward and to funding health services (e.g. making fiscal choices in health care; medicines funding and supplies; and the cost of hospital stays). On the final Friday afternoon, students jointly presented an interprofessional discharge plan for one of their patients, to academic and clinical staff. The project management of the IPE training ward was administered by AS.

II METHOD

This exploratory qualitative study included sequential audio-recorded student focus groups (Crawford et al., 2016) at the end of each of the four weeks of the IPE training ward placement. The purpose was to explore students' self-reported development of IPCP competencies over each week of the placement. Recognised competencies, which have previously been used to qualitatively study collaborative experiences in health care settings (Hepp et al., 2015) were used as the framework to examine students' learning. The study was undertaken in 2019.

A *Participants*

The participants were four eligible final year students from Medicine and Physiotherapy (at the University of Otago) and Nursing and Occupational Therapy (at Otago Polytechnic) who had agreed to take part in the IPE training ward placement. At an introductory session to the IPE training ward, students were invited to take part in the research associated with the IPE training ward. All four students gave written consent to take part in the research.

B *Data collection*

Two different academic staff facilitated the focus groups with students every week, except for the final week where one staff facilitator had facilitated previously (in week 2); seven academic staff in total took part in the focus group facilitation. Facilitators asked the same questions each week using a semi-structured interview guide, however the question guide evolved over time to include additional questions according to the changing experiences and perceptions of the students; these additional questions were decided by the facilitation team as a whole. The focus groups each lasted 30-45 minutes, and were audio-recorded.

C *Analysis*

Focus group audio recordings were transcribed to identify each student and their profession, allowing researchers to track what each individual student had to say from week to week about the IPCP competency learning objectives. Template analysis, a flexible approach to thematic analysis, was used to analyse the focus group transcripts because the approach allows for the use of a range of theoretical positions and *a priori* themes to inform data analysis (Brooks et al., 2015). Initial analysis confirmed the data mapped to the four preliminary IPCP competencies set as the learning objectives for the training ward. Thus, using the four IPCP competencies as *a priori* themes one researcher (SM, an IPE and health services researcher) coded all the content of each student's discussion per the weekly focus group. Data coded to each IPCP competency were then reviewed and the development of each competency analysed sequentially by week. A second researcher (EM, an IPE facilitator not involved in the study) peer-reviewed the sequential analysis and the interpretation was discussed between the two and revised accordingly.

The social constructivist theoretical stance of the research enabled the identification of the development and progression of the IPCP competencies through the participating students' reported accounts. In addition, it is important to recognise the subjectivity of the two researchers analysing the data as they came with previous experience of IPE research and facilitation. The remaining author team also came with views: three (FDN, IC and MS) were involved in setting up the interprofessional ward and recruiting students and had previously been involved in teaching some of these students via their respective training programmes. One author (AS) was involved in the project management of the IPE training ward.

D *Ethics*

Ethical consent for the study was obtained from the University of Otago Human Ethics Committee (H19/081) and endorsed by the Otago Polytechnic and the SDHB. A locality assessment was completed for the SDHB. Māori Consultation was undertaken and confirmed.

III RESULTS

Details of students' participation in each of the focus groups each week are summarised in Table 2.

Table 2
Qualitative data collection per student by profession

	Focus group participation by week			
Student profession	**Week 1**	**Week 2**	**Week 3**	**Week 4**
Medicine	1	1	1	1
Physiotherapy	1	1	0[a]	1
Nursing	1	1	1	1
Occupational Therapy	1	1	1	1
Total	4	4	3	4

[a] the physiotherapy student was unwell at the time of the third focus group.

Analysis of sequentially collected focus group transcripts demonstrated students incrementally acquired the four IPCP competencies over the four-week experience. A summary of the week-by-week development of IP learning competencies, and illustrative quotes of identified competencies is presented in Table 3.

There was variance in how much each IPCP competency was discussed by students each week and the number of weeks the discussion of each competency extended across. During the first week of the placement, students primarily described beginning to learn about each other's roles and responsibilities through working as an interprofessional team on the ward. Although they described seeing first-hand some clear benefits of their regular interprofessional communication (such as morning meetings and daily debrief sessions), their limited experience in working together to share/coordinate decisions as a team or negotiate conflicts in roles/responsibilities at this early stage of the placement was evident by the restricted discussion on each of these IPCP competencies. As time went on, students' discussion about each of the four identified IPCP competency areas developed and covered more depth. For instance, students' talk related to *role clarification and appreciation* progressively increased each week and was at its greatest in both week-three and week-four when the content was most nuanced and included how roles could work in real-life graduate practice. *Team functioning and conflict resolution* were also increasingly discussed each week (but not as much as roles) and peaked in week three when the first 'cracks' or challenges to team functioning occurred. Discussion about *interprofessional communication* continued to week-four but there were no new sub-themes/topics related to this competency after the end of week-two. Talk demonstrating *interprofessional coordination and shared decision-making* emerged in week-two and peaked in week-three when the students spoke of their shared approach by using the words 'we' and 'our' to describe their actions.

From the students' discussion, it was evident from the start of week-one they enjoyed working together. However, between week-two and week-three there was a critical point when the initial pleasure of working together (likened to "a honeymoon period") turned into harder work where deeper insights into team functioning and conflict resolution, and shared decision-making were gained. This critical point was sparked by a key event when the students collectively disagreed with the ward staff about a decision made to discharge a patient. As a result of this incident the student team described forming an invincible bond and drawing on each other's wisdom rather than that of those outside their student group. This was subsequently highlighted by their collaborative management of a patient on the ward in week-four who was making racist comments.

Table 3
Student development of Interprofessional Collaborative Practice (IPCP) learning competencies week by week

	Week one	Week two	Week three	Week four
Role clarification and appreciation	In week one all students described valuing the opportunity to meet the students from other professions and enjoyed learning about each other's different roles and responsibilities on the ward. For these two students the experience had challenged their stereotypical preconceptions: ***I'd never actually been formally introduced*** *to any of the nursing students or physio or OT students so that's been a really nice experience…**(on previous placements it was) never the two shall mix** - you'd be with your (own) team the whole day…rather than **seeing what other students do** (Med)* *I've always looked at a doctor and thought 'the doctor' (group laughter) but being with (the medical student), we did showers together…Like I thought that the doctor just writes prescriptions…**But seeing him** interact with the patient is…I'm thinking, oh he's got the quality of a nurse (group*	Through experiencing 'close-up' the roles of each profession by week two all students described developing an appreciation for: the unique skills of different professional team members, the contribution each makes and the interdependence of different roles. ***I didn't realise the amount of work and effort that goes in, from the OT and physio group****…So being able to see all the things that (the physio student) has to do and all the things that (the OT student) has to do, **it really makes me feel like there is a team effort to get the patient home and get them safe** (Nur)* *seeing them do their role…so you **learn more about what everyone else is kind of contributing towards getting the patient home** (Phty)*	In week three students discussed developing a greater understanding of and respect for each other's different roles/professions and knowing when and how to best tap into each other's expertise. Students also referred to trusting each other to perform their role (and share the workload). ***I now fully understand*** *what the OT does, and **so I know what some of the things are that I don't need to do**, because the OT can do it and that's what they are qualified to do,…**that's what they know to do best**…if I leave that to them, then time, money is saved doing that (Nur)* *it's like **gaining more respect, for each other's profession** as well…**knowing who to call on to, knowing you can** and it's ok to, like, they're not scary people…(OT)* It was apparent from students' discussions that by week three the student team were starting to experience role blurring and	In week four students continued to discuss roles at length and with increasing depth. All students reported having developed a clear understanding of each other's different roles in the team, and confidence in the scope of their own roles. Three of the students (OT, Med & Phty) described how the clarity in professional identity they had acquired through the experience had enabled them to feel confident working with other professionals in their real-life graduate practice and given them a clearer understanding of how they wanted to practice. ***being a part of this has made me now better understand who is more experienced in tasks****…. **I now understand...what the relationship is**, **because of the closeness we've had** in our collaboration (Nur)* *I think I've **gained a lot of knowledge and confidence in, like, (my professional) identity** if that make sense, **I know how I (want to) practice and how I***

	Week one	Week two	Week three	Week four
	*laughter)…He is so good with them**. I know that there are doctors that really understand what the patient is going through*** *(Nur)*		role differentiation. They were developing stronger opinions about role expectations within the team as well as how they wanted to work in future practice. *you know, it's good to understand each other's roles but realistically, **you kind of need that clarity of: this is where I sit, this is the expectations for me**…(OT)* *yeah, rather than kind of trying to assume…each other's roles, **everyone has their own role, but we come together as a unit** (Med)* *I think **this has given me a lot more confidence and independence in my own sort** of (practice)…so, it kind of shows you an **insight of what practice would be like, how you as a person…how you're (going to) fit**, and what you think is acceptable, and what you don't think is acceptable (OT)*	***fit in to a practice (team) and my role**…I've **(gained) more confidence in knowing my limits,…and what my role should be and (what is) out of my role description** (OT)* A few of the students (OT & Phty) reflected that having experienced conflict or uncertainty around roles and responsibilities a few weeks into the placement (around week three) had assisted them in learning to respectfully communicate and clarify role boundaries/scopes of practice with other team members. ***as the time went on, I think the clarity of our roles kind of blurred a little bit as well, which made it quite difficult to kind of prioritise**. Instead of me prioritising the physio things I wanted to do, I was often going and doing nursing things as well, and I wasn't entirely sure what I should be doing. **I think by this week, I've definitely kind of clarified that a little bit more with the team as well, just so that they know what I definitely should be focusing on doing…It was just kind of***

	Week one	Week two	Week three	Week four
				making sure, you know, where you stand in a team*...(Phty)*
Inter-professional communication	From week one students referred to regularly communicating with each other, often face-to-face through mechanisms established as part of the placement (morning planning meeting, daily debrief, themed learning sessions) and checking in with each other throughout the day. They perceived their team communicated more effectively than health professionals they had previously observed (where communication was primarily via patient clinical notes). *I think we communicate to each other a lot more than I have noticed previously in previous placements.* ***We always do huddles throughout the day and check in with each other. We've made a plan at the start of the day together and what we need to achieve and how we can each help each other*** *to achieve what that specific role might need to get done…****We talk to each other rather than communicate through notes****, which I think is a big difference…people communicate on the ward through notes…*	By week two students perceived they were communicating openly and effectively as a team and experiencing first-hand the benefits of this effective team communication (i.e. knowing where patients are at; creating a better work environment; developed communication skills and confidence). *it just feels like we're working together quite well...,* ***we can talk between the group quite easily,*** *you know (Med)* *(Before the IPE) I think I probably talked to a doctor like once or twice and that was within rapid rounds really. It was more just checking through the notes…And now****, I can see the difference, and the difference it makes for the patient and myself in my working environment really*** (OT) Some students described the experience as having developed their confidence to communicate with other professionals:	In week three there was little further discussion about communication within the team, however, students noted they had communicated effectively in the daily debriefs. *I feel like we've had some really good reflective sessions this week (Nur)*	In week four there was almost no discussion about communication within the team, the points noted had already been made in week one and two.

Week one	Week two	Week three	Week four
(face-to-face communication) is a bit ***more effective and better for the patient 'cause everyone's on the same page*** *rather than missing (reading) the note (OT)* *You know, so I like the way that* ***we come together at the end of the day****, even though it might seem a little bit like 'oh why are we doing this', but it* ***gives you that chance to just touch base*** (Med)	*I feel like the placement has been very beneficial to me and that has* ***really helped me with my communication****. (In the past), I would not want to be the person getting hand-over…****But now, it's just normal, I'm not scared…I feel confident enough to sort things out*** (Nur) *with the placement (I am)* ***getting comfortable talking to people from other professions****. On previous placements, I didn't really talk to them all that much at all…So it's a lot easier on this placement…****I guess get more comfortable talking to everyone else on the ward.*** *And it's just been a great kind of a team experience* (Phty) Students were also becoming aware of the importance of developing strategies to further improve team communication and anticipating applying these strategies more (i.e. performing huddles more regularly at critical times). *I think it's just easy to lose track of the days sometimes and you're like oh, you've been off doing the things (and)…we actually haven't had (a huddle)…So we don't*		

	Week one	Week two	Week three	Week four
		know necessarily where everyone is at specifically. So, I think next week, it ***might be good to try and do the (huddles) more****…(*Med)		
Team functioning conflict resolution	From week one, students reported they all 'got along well', supporting each other to 'learn the ropes' and gelled well as a team. However, descriptions of the group's dynamic and team functioning were limited at this early stage. ***I think that it works well as well 'cause we do all get along*** *(OT)* *I think* ***we work well as a team*** *to get things done (Phty)* The end of the day debrief sessions were seen as a useful opportunity to come together and support each other. *one of them (daily debriefs) this week…I'd had quite, like a busy day and I just,* ***I appreciated the ability to voice that to someone*** *(Med)*	In week two students' discussions showed learning of the knowledge and skills required for effective team functioning – including demonstrating respect for each other's different and sometimes competing responsibilities; and ensuring they were individually playing their part in the team. ***I think as a group, we're really good at making sure us as individuals do what we have to do at the same time****. Whether it be if you have to go off for a tutorial, or if you have to have time with your supervisor - like,* ***we are good at understanding and not relying on that person if they are away*** *(OT)* ***I think I could get a bit more involved*** *in that (discharge) as well, just* ***to take the pressure off the rest of the team a little bit more****. So, I think that's something I need to improve on myself (Phty)*	By week three students described their team as cohesive – reaching out to each other for support before turning to supervisors or outside support. *that's been one of my* ***favourite parts*** *of this whole thing, really,* ***has been the team****. You know,* ***that first week*** *it was kind of learning about what everyone does* ***and then, for me, since then, it's been kind of, like, enjoying the team working together****, like,* ***towards a common goal*** *(Med)* Students reflected this level of team functioning did not develop until this later stage of the placement once they had had the opportunity to experience and constructively address conflict using effective interprofessional communication. *at the start, it was so, like 'today was good, blah blah blah',* ***like sugar coating it almost. But there also was: 'No', we hadn't***	In week four students' discussion built further. As well as reiterating effective elements of their cohesive team functioning such as having each other's 'back' and coming together as a team to manage challenging situations with patients (e.g. when a patient made a racist comment), students reflected on factors they perceived facilitated their successful teamwork (i.e. similar levels of experience and compatible personalities). *I feel like we kind of worked it out (dealing with racist patient) between ourselves. Like we've* ***really (relied) on each other…//...****(*OT) *It was a little bit confronting at first.* ***But I think as a team, we kind of dealt with it very well*** *everything that we thought was an issue, we all agreed that was an issue, and* ***we***

Week one	Week two	Week three	Week four
	Students reflected that the respectful and non-hierarchical dynamic developing within the team created a more enjoyable work environment and enabled them to provide more effective care to patients. *it just **feels like we're working together quite well** and yeah, it just, it **seems to make things flow quite nicely**…just the working environment itself (Med)* *I feel like **it's a better working environment between us** because in our communication is**…we don't have that (hierarchy) between us and that makes me actually learn more about each other** and the patient and feel comfortable…working with everyone else, you know (OT)* *I'm just having fun as well. I'm just enjoying….being in a group … **I really just enjoy the team interaction. I think it adds a lot** …. we're able to kind of have **a bit of humour and, yeah, it kind of diffuses the situation…** (you can) **apply yourself better … when you're more relaxed**… I'm actually more involved in thinking more*	***been in it long enough to start seeing this stuff sort of un…or the cracks, I guess you would call them, and this week is definitely**.../...(OT)* ***Yeah, it kind of opened up a few cracks**, I guess, yeah, **so, I think it's been useful having the debrief sessions** in the afternoon, just because **it just brings everyone back together as a team at the end of the day** and it kind of leaves.../… 'cause **we aren't just leaving something for the next day** or like, you know (Med)*	***kind of bound together against (it)*** (Med) *…**recognising the importance of a team**…If I'm standing here and I see a patient a bit wobbly, I can go straight to (Phty student) and she can right away help me assess what I need to do to ensure that patient is safe. So, for me, that's what our collaboration is about, as well as why it's important (Nur)* *I feel like 'cause we all were like doing this together the first time, we all kind of had something in common, so, it kind of like eased (the) pressure off each other… yeah so it helped… And, like, personality wise…we all just get on and, like, if there was someone sort of different, it might not have worked out as well (OT)*

	Week one	Week two	Week three	Week four
		about the patient. I'm not like on edge, you know, thinking: 'oh I might be wrong' (Med)		
Inter-professional coordination & shared decision making	There were few examples characterising interprofessional coordination between the students in the first week of the placement. Students simply described their collaboration during the first week as drawing on each other's skills and sharing information with each other to solve problems and achieve tasks to meet patient needs. *I think we work well as a team to get things done (Phty)* Similarly, there were no examples given where students engaged in higher levels of interprofessional coordination such as shared decision-making; however, comments made by the nursing student suggested the students were starting to deliberate as a team to determine appropriate actions: *I feel like this has given me the opportunity if I need something assessed, if it's the patient's mobility or a wound that I might be concerned about, I just go and I get (med student), and we do it*	By week two it was apparent that students were coming together more effectively as a team and coordinating to collaboratively address challenging patient situations on the ward and prepare discharge plans. Students could see the benefits of utilising each other's complementary skills to address problems as a team. *I just think, it just feels like **we're working together quite well** and yeah, … **we're solving problems** (Med)* A few examples of interprofessional coordination were shared where students described utilising different approaches with patients on the ward to achieve a shared goal (e.g. seeking agreement from a patient to attend an exercise class; in relation to a patient resisting access to a service offered). *I was trying to get (the patient) to go to the exercise class in the morning, and she was like 'oh*	By week three students described high levels of interprofessional coordination including making shared decisions as a team. An example of team shared decision-making was illustrated by a situation on the ward where the students collectively contested a staff member's decision to discharge a particular patient. The students strongly advocated as a team for the patient not to be discharged in the face of opposing views from the ward staff. *Well, **I think we rallied together at the end of the day quite well** in terms of this one patient that we didn't feel very confident about sending home…..//…**we came together as a team and, (and), decided this is our approach**, (and)…she didn't end up going home, which I think was a good result (Med)* *I feel like **as the IPE team, we did a lot of advocating** for her. **And I think it brought us together more and showed,***	In week four there was limited additional discussion related to interprofessional coordination and shared decision-making. Students' comments reiterated the team's collaborative approach taken in week three regarding the patient they collectively agreed should not be discharged. *everything that we thought was an issue, **we all agreed that was an issue**, and **we kind of bound together** (Nur)* *we kind of **worked it out between ourselves** (rather than asking supervisors) (OT)*

	Week one	Week two	Week three	Week four
	right there…… he can get the house officer to prescribe something, ***we can get the problem fixed correctly****. Similarly, if I'm concerned about the patient's mobility****, I can talk to (OT or Phty student) and we can start working right*** *(Nur)*	*nah, I don't really wanna go"…//…(Phty)* *I was talking to her (the same patient) about the exercise group again* ***because I knew that (the physio student) was having trouble****, … and seeing why she didn't want to go, and then (I)* ***kind of took a different spin on it….*** *I said 'oh you know, like, they do trivia questions and stuff like that' and she said 'I like doing those things' and I said 'you could just go down and sit there' and (used) just the different approach, …* ***we took two different approaches to get the same...****(OT)* *…in context* ***with the team, having something to fall back on****, you know, saying like: 'oh it, didn't quite work, what do you think'? (Med)*	***like, us all working together*** *(OT)*	

Note: Med = medical student; Nur = nursing student; Phty = physiotherapy student; OT = occupational therapy student; and IPE = Interprofessional Education.

IV DISCUSSION

This study sought to explore the acquisition of four identified IPCP competencies by health professional students participating in a four-week IPE training ward. It was informed by social constructivist theory whereby the interaction between students of different professions within an authentic ward environment supported students to actively construct knowledge about interprofessional practice. This construction of knowledge through interaction was demonstrated in the study by the analysis of data from week-one to week-four. It became apparent that students incrementally developed and deepened their skills in *role clarification and appreciation; interprofessional communication; team functioning; and interprofessional coordination and shared decision-making.* Furthermore, the study shows that different competencies developed at different times over the course of the placement. Some IPCP competencies *(i.e. team functioning/conflict resolution and interprofessional coordination and shared decision-making)* took longer for the interprofessional team to start to develop than other competencies which emerged early on in the placement *(i.e. role appreciation and communication).* The findings align with international research demonstrating the potential of this and other interprofessional learning environments in facilitating students' acquisition of IPCP competencies (Brewer & Stewart-Wynne, 2013; Hallin & Kiessling, 2016; Lawlis et al., 2017; Mink et al., 2019; Morphet et al., 2014; Oosterom et al., 2019), however the timing in the acquisition of the different IPCP competencies has not being reported previously. The results suggest that a sufficient length of time is needed for students in an IPE training ward to develop certain IPCP competencies (some were reported in week one and week two, others were still being described and not expanded upon until week three) and to move past the initial 'honeymoon' period and experience possible challenges and thus deeper insights from working in an interprofessional team.

The development of IPCP competencies over the course of an interprofessional ward placement has received some attention in the literature to date and shown that IPCP competency acquisition can occur even within a relative brief placement (Bode et al., 2022; Brewer & Stewart-Wynne, 2013). Most studies have looked at competency acquisition over the course of the degree programme (Lairamore et al., 2018) or through exposure to a number of interprofessional learning activities (Brashers et al., 2016). In our study the scheduled opportunities within the interprofessional ward placement for interprofessional communication within the team and to observe/participate/interact in performing different roles (e.g. facilitated daily debriefs, themed learning sessions, and requirement of all students to participate in the morning handover and assist with patient care tasks), may have fostered the earlier emergence of these particular competencies (*interprofessional communication, role clarification*). It is also possible that some IPCP competencies (such as *team conflict resolution and shared decision-making)* involve deeper levels of group cohesion and teamworking skills and develop later. Research has highlighted the development of teamworking skills as complex, with time needed to successfully acquire skills (Hammond & Morgan, 2022) including the development of trust and openness (Reeves & Freeth, 2002). In our study, it was not until real-time and real-life conflicts occurred within the team, and challenging patient situations or disagreement with ward staff occurred that teamworking competencies such as conflict resolution and shared decision-making skills were seen in the data.

Students had a sustained focus on role clarification from week one in the placement, and they continued to deliberate and develop views of their own and other's roles over the course of the four-week placement. This IPCP competency was spoken about across the weeks far more than any other competency. Given all the participating students were in the final year of their respective programmes and by this stage would likely have observed other professions in clinical practice, the finding that students still talked at length about roles at week-four was unexpected. There may be several reasons for this: discussion of each other's roles may simply be of most interest to students; or they may realise role clarity is important in terms of recognising shared and different skill sets in order to work efficiently and safely with patients and also collaboratively (Bittner, 2018; De Brún et al., 2020; O'Rourke & White, 2011). It is also possible that this competency takes longer to acquire. Working health professionals are also known to have an

enduring interest in each other's professional roles (Bittner, 2018; Murray-Davis et al., 2022; Reeves et al., 2011).

Previous research does not provide definitive guidance regarding the optimal length of time for an IPE training ward placement. In our study it appeared that the critical learning of IPCP competencies was achieved by the end of week-three and week-four may have been a consolidating period. All students in our study valued the interprofessional learning opportunity and were satisfied with the length of the placement. They pointed out a shorter placement length would not have allowed them to develop the high-level collaboration that emerged within the team from around week-three, once they had had the opportunity to experience and constructively address conflict. This is consistent with a similar study where students reported that an interprofessional ward placement of two weeks was too short (Reeves & Freeth, 2002). The length of the placement in our study gave students time to experience real-life problems (with patients and each other) and to learn, practice and repeat the skills to attain the IPCP competencies.

This study was the first of its kind to be undertaken and reported on in Aotearoa New Zealand. The sequential data collection method used, whereby qualitative experiences were gathered from the same group of students at multiple time points and according to profession, was a key strength of the study. It provided a more in depth understanding of the student experience, the development of interprofessional practice and how IPCP competencies changed and developed over the duration of the four-week placement. The nuances of IPCP competency development would have been missed with a single post-IPE focus group alone. The main limitations of the study include: the small sample of four final year pre-registration students, meaning outcomes cannot be assumed to be true of a larger study and/or with a greater diversity of professions; the lack of uniformity in the focus group facilitators even though the same interview guide was used and additional questions decided by the facilitator team; and the involvement in the setup of the IPE training ward which may have influenced some of the author team's views, although the initial data analysis was undertaken by the two otherwise uninvolved authors. Further research is needed to better understand the development of different IPCP competencies over the course of IPE training ward placement with a larger cohort of students from a wider range of professions.

V DECLARATION OF INTEREST STATEMENT

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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