The Journal of Teaching and Learning for Graduate Employability

ISSN: 1838-3815 (online) Journal Homepage: https://ojs.deakin.edu.au/index.php/jtlge/

Developing allied health collaborative practice capability for contemporary healthcare landscapes: serendipitous and deliberate

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Abstract

Collaboration is key for success across multiple industries, including healthcare settings. In order to prepare students for contemporary and future healthcare landscapes, there is scope for higher education to embrace development of a range of capabilities for collaboration, including those that might be less visible and hard to measure. Using practice theories as a lens, this research explored collaboration in healthcare landscapes as 'collaborative practice.' Our research focussed on the preparation of allied health students for collaborative practice. As key contributors to collaborative models of healthcare, allied health professionals comprise a wide range of health professions, come from diverse origins and have a relatively flat hierarchical structure. This qualitative research informed by philosophical hermeneutics explored perceptions of allied health academics and students as people deeply entrenched in higher education and its role in enhancing employability. Our research found that capabilities for allied health collaborative practice are currently being *deliberately* and *serendipitously* developed. *Deliberate* development occurred across teaching strategies of case and problem-based learning and simulation-based scenarios. *Serendipitous* development largely occurred as part of work integrated learning (WIL). Use of practice theories highlighted how capabilities for collaborative practice, including the less-visible capabilities, can be more intentionally developed in allied health higher education. Educators and WIL supervisors are invited to reflect on their own practice and the roles they play in intentionally developing these capabilities with and for students. Further, including capabilities for collaborative practice as part of allied health registration and practice thresholds may help bring them into focus.

Keywords
Allied health; collaborative practice; collaborative practice capability; employability; health graduates; professionalism; reflection

Introduction

Collaboration underpins successful outcomes across a broad range of industries, including health, law, retail, education, commerce and transport (Ankersmit et al., 2014; Bruns, 2012; Çoban et al., 2020; Itani et al., 2017; Tarricone & Luca, 2002). In healthcare settings in particular, collaboration is integral to providing efficient, safe, and high-quality patient care (Wei et al., 2020). In these settings health professionals from different professions and backgrounds work together for a shared purpose (Croker

et al., 2012). The ability to collaborate, therefore, represents an important employability capability for health students. To meaningfully prepare students for employment in contemporary healthcare landscapes, those working in higher education need to focus and refine their approaches to development of student capability for collaboration. Examination of the nexus of higher education and health landscapes in particular through a theoretical lens of practice theory opens up opportunities for deeper understandings in relation to teaching and learning for collaboration in and for these landscapes.

Human social practices, made up of 'doings', 'sayings', and 'relatings', are crucial to human existence and coexistence (Kemmis, 2022) and are shaped by social and physical contextual factors. All practices are fluid, being dynamically formed simultaneously by contemporary circumstances and past histories (Kemmis & Grootenboer, 2008). Social practices exist and evolve in a context, in a nexus characterised by an interdependent weave of activity and objects, with physical contexts shaping practices through their ability to enable and constrain particular actions (Schatzki, 2002). More particularly, professional practices including education and healthcare practices represent distinctive, ethical, and complex forms of social practice (Green, 2009) that are typically performed in challenging and uncertain contexts. Central to professional practice performance, and distinguishing it from other social practices, is the aim to use professional knowledge and expertise in the service of others (Higgs, 2012). Thus, professional practice can be viewed as a dynamic, complex, and experiential phenomenon, that is embedded in practice contexts, embodied in and transformed through individual performances, and grounded around the ethical aim of doing good for others (Patton & Higgs, 2018). This recognition of the complex and dynamic nature of professional practice including the importance of tradition, contexts, relationships and individual actions provides a valuable guide for exploring both collaboration as a social practice and development of collaborative capabilities for contemporary and future healthcare landscapes as an education practi*ce*. Collaborative practice occurs in a wide variety of healthcare settings and is based on people working together (Martin et al., 2023; World Health Organisation, 2010), highlighting contextual and social elements of this practice. The situated nature of collaborative practice highlights the need for the development of a broad range of capabilities.

The complexity of contemporary healthcare landscapes has necessitated continued emphasis on collaborative models of healthcare in the provision of high-quality care and improved communication in healthcare settings (Boaro et al., 2010; Chen et al., 2018; Gittell et al., 2012; World Health Organisation, 2010). Collaborative practice and collaborative models of healthcare offer significant benefits including enhanced health indicators and patient safety; increased breadth and use of appropriate services; improved attitudes, role understandings and interpersonal dynamics for staff; and enhanced students' understandings and knowledge (Berghout, 2021; McNaughton et al., 2021; Rich et al., 2021). Collaborative practice also contributes to addressing contemporary pressures on healthcare, such as increasing costs associated with malpractice, workforce labour, drug supplies, medical technology and information technology (Morley & Cashell, 2017). As healthcare landscapes become increasingly complex and challenging, collaborative practice also provides benefits for health professionals, including improvements in wellbeing and work satisfaction (Clelland, 2015).

Accompanying the recognised merits of collaborative models of healthcare practice is growing interest in graduate employability and preparedness for this work (see Davidson et al., 2022; World Health Organisation, 2010). To strengthen graduate preparedness, teachers in higher education need to continually review and refine their education approaches to align with current healthcare demands and community aspirations. The workplace landscape is characterised by a network of people and places where domain knowledge is supplemented by a range of other attributes and behaviours that are important for employers, as well as personal interactions and a sense of inherent worth important to employees (Crisp et al., 2019). Healthcare students graduate with the necessary disciplinary knowledge and skills (as determined by regulatory bodies) for registered healthcare practice. This requires teaching strategies that bring together 'the content knowledge and practices of a discipline as well as the cultural, personal, ethical and human contexts of implementing knowledge in the real

world' (Crisp et al., 2019, p.221). Ideally, university students are prepared to become members of their profession and global citizens (Higgs, 2013), as employment is germane to both personal and community health and wellbeing (McIlveen, 2018). Thus, the nexus of higher education and health landscapes opens opportunities to better prepare allied health students to become both members of their profession and global citizens, positioning them to meet the requirements of both current and future healthcare practice.

Currently, there is a tension between contemporary higher education neo-liberalistic ideology committed to delivering quantifiable targets (Kuldova, 2021) and the requirement to develop a broader range of capabilities required for current professional practices, including collaborative practice. Education is currently focused on developing competencies that comprise identified values, knowledge and skills needed by industry (Holdsworth & Thomas, 2020). This approach may result in learners with skills in known contexts, but less prepared for the challenge of doing good for others in complex and dynamic circumstances (Holdsworth & Thomas, 2020). Higher education needs to consider making explicit all capabilities for collaborative practice, including those that are more tacit and harder to measure. Developing these capabilities may equip graduates with the capacity to be adaptable, generate new knowledge and improve individual performances (Chance-Larsen et al., 2019). Such capacity is particularly important as high levels of service demand, increasing costs and an ageing demographic are characteristics of Australian healthcare settings, exacerbated since the Covid 19 pandemic (Braithwaite & Fisher, 2024). Public health services are now experiencing unprecedented demand, increased inequity in relation to healthcare services across different sections of communities rising patient complexity and higher prevalence of chronic disease (Angeles et al., 2023). Further, healthcare workers are currently experiencing ongoing burn-out and psychological distress (Dobson et al., 2021). Thus, higher education teachers may need to stretch their focus beyond quantifiable targets, such as knowledge and skills. Graduates need to be equipped to work within this highly complex, pressured landscape, to adapt to patient needs and even to facilitate industry change to better accommodate these patient needs.

Exploration of student preparation for collaborative practice using a capability lens may also be important for the less visible and hard to measure abilities, attributes and qualities (capabilities). Recent research exploring allied health collaborative practice interpreted nine intertwining capabilities underpinning collaborative practice (see Paton et al., 2024). These capabilities enable allied health professionals to participate in collaborative practice regardless of the type of health setting (for example, a hospital or community). Adaptability, responsiveness and persistence enable health professionals to work within professional boundaries and healthcare organisation requirements and environments. Friendliness, openness and reciprocity enable allied health professionals to navigate the social connections integral to practising with a range of people in varying contexts. Professional expertise, willingness and flexibility strengthen individual contributions to patient care and ongoing collaborative practice. Some of these capabilities are 'less visible' than others (for example, persistence, openness and willingness) and can be challenging in how they can be developed in higher education contexts (Paton et al., 2024).

Practice theories encompass a range of theorists and approaches with a shared goal around seeking to interpret and better understand the nature of practice (see Kemmis, 2022; Rouse, 2007; Schatzki, 2010). While deliberate practice theories were initially founded in examination of expertise in musicians and athletes (see Baker et al., 2004; Ericsson, 2006; Ericsson, 2007; Hyllegard & Bories, 2009), they have been more recently been used to explore healthcare practice (see Colman, 2024; Naldemirci et al., 2017; Reinstein et al., 2021). Deliberate practice theories explore explicit, effortful, goal directed activities that are designed to improve performance in a specific domain (Ericsson, 2006). Examination of the deliberate development of collaborative practice capabilities resonates with deliberate practice theories' focus on training and education that is explicitly directed toward improving particular tasks and enhancing performance (Ericsson, 2008). Further, collaborative

practice capability, comprises a number of 'tasks' in the form of capabilities and underpinning skills, qualities, and traits (see Paton et al., 2024) that can be deliberately developed in higher education.

In general, student preparation for practice is achieved in higher education settings through a range of purposefully designed teaching strategies. Well recognised within Australian health professional higher education curricula and courses for development of practice capabilities are the teaching strategies of problem and case-based learning, participatory simulation-based scenarios and WIL (see Bond University, 2024; Curtin University, 2024; Patton, 2018; Savery, 2006; Thistlethwaite et al., 2012; University of Melbourne, 2023; University of Sydney, 2020; Wyres & Taylor, 2020). Case-based learning prepares students for practice through the use of authentic clinical cases, where students work through questions and problems posed in small groups (Thistlethwaite et al., 2012). Problem-based learning aims to part-replicate clinical processes, where students work towards understanding or resolving clinical problems (Kingsbury & Lymn, 2008). In contrast to case-based learning, little preparation is required in advance for problem based learning and limited guidance is provided during the discussion (Benjamin & Keenan, 2015). Participatory simulation-based scenarios involve the use of actors, people, environments, role play, task trainers, computer systems or manikins to enable students to practise a variety of skills, replicating or part-replicating authentic environments (Nestel & Gough, 2018; Weller, et al., 2012). WIL, where healthcare students spend time in healthcare settings, provides practice experience, professional role models, opportunities to develop practice-based knowledge and capability, and appreciation of the realities of practice (Higgs, 2018). Interprofessional education (IPE) is often integrated into these four teaching strategies. IPE is focused specifically on collaboration between students from different professions, with students learning with, from and about each other in preparation for working effectively in interprofessional collaborative teams providing patient-care services (Keshmiri et al., 2021; World Health Organization, 2010).

Amongst the broad range of healthcare professionals involved in collaborative practice is the professional grouping of allied health. Allied health professions provide crucial support for people experiencing disability, chronic illness and a wide range of other health issues, and include physiotherapists, occupational therapists, podiatrists, paramedics, speech pathologists among others (Allied Health Australia, 2024). In relation to preparing for collaborative practice, this professional group requires particular attention due to having characteristics that differ from medicine and nursing. Although coming from diverse origins and working in many groupings allied health professions share relatively flat hierarchical structures when compared to medicine and nursing (Kim et al., 2017; Morley & Cashell, 2017; Olson & Brosnon, 2017). As hierarchies exert a significant influence on collaboration (Gergerich et al., 2019; Gowda et al., 2019), it is valuable to further understand allied health preparation for collaborative practice. This research brings focus to this unique group of health professionals and examines their perceptions and experiences in relation to the development of capabilities for allied health collaborative practice, in order to inform development of collaborative practice capability. Given the importance of collaboration across a broad range of industries, these findings may also have resonance beyond healthcare student education.

Methods

Research design

The research aim was to explore how higher education teaching strategies prepare allied health students for contemporary healthcare practice, especially how they develop capabilities for allied health collaborative practice. Qualitative research facilitates development of deeper understandings of social phenomena (Silverman, 2001). Thus, using a qualitative approach to explore development of collaborative practice capability is apt as both education and healthcare practices are inherently social, relying on multiple people working together (McNaughton et al., 2020). This study was undertaken in the interpretive paradigm and informed by philosophical hermeneutics, which is centred on understanding how people interpret the world around them and how this affects the way in which

they think and act (Lawless et al., 2017). The way that philosophical hermeneutics looks to understand human experiences (Hovey et al., 2022), resonates with the social nature of contemporary allied health education and allied health collaborative practice and the way that it is founded on humans themselves helping and interacting with each other (Fox et al., 2019).

Hermeneutic tools of fusion of horizons, hermeneutic circle and dialogue of question and answer were used to enable deep dialogue with the texts to generate new understandings (see Gadamer, 1975). A fusion of horizons is where pre-understandings or initial horizons are identified and represents a convergence of perspectives between the researchers and the texts (participant transcripts). Ultimately, a fusion of horizons results in development of a new horizon or understanding. The hermeneutic circle is based on movement between the parts (participant transcripts) and the whole (emerging findings) in the development of new understandings of a phenomenon. This involves reading and re-reading of text, comparing across and within and developing codes and themes. These texts are approached using a dialogue of question and answer, where questions are asked of the text, and the researchers undergoing multiple transformations in understandings. These transformations enable the research to accommodate new insights that the text conveys.

The research team comprised a lead researcher and two co-researchers. All team members had backgrounds as physiotherapists and were working in academia as lecturers or researchers. All had an interest in allied health student education and the development of allied health student collaborative practice capability. The lead researcher facilitated the semi-structured interviews and focus group discussions, transcription (with some assistance from a separate research officer) and initial thematic analysis. The co-researchers participated with the lead-researcher in concept development and design, initial coding, thematic analysis and editing. The research team did not hold positions of leadership or power in relation to the academic participants, and were not teaching or assessing the students. An independent third party (Heads of Schools or Discipline/Course Leaders) distributed Invitations to Participate alongside Participant Information and Consent Forms to avoid coercion.

Research setting

Two Australian universities provided the context for this study. Both universities offered a broad range of allied health professional education programs. We chose to examine the perspectives of academics and students, as they had a most up-close view of how allied health capability more broadly is developed, and provide different perspectives of the topic. Studying professional preparation or professional ‘nurseries’ opens-up understandings of why professions develop the way they do (Shulman, 2005), particularly helpful in exploring preparation of allied health students for collaborative practice.

Participants and sampling

Invitations to participate were emailed by Heads of relevant Schools to all allied health students and academics within their schools. Academic participants needed to have at least 2 years of teaching experience. The student participants were limited to undergraduate participants. This was to reflect the higher number of undergraduate health students in higher education in Australia (Australian Bureau of Statistics, 2021). All the allied health students and academics who responded were invited to participate, with all respondents participating. Table 1 illustrates participant diversity. Twelve students from the same university and twelve academics across five disciplines participated. Eleven of these academics were from the one regional university, and one academic from a different regional university. Two academic educators’ roles spanned both university teaching and work-integrated supervision. All students had clinical placement experience, and all academics had more than five years teaching experience.

Table 1: Summary of participant characteristics

	Number of student participants	Student academic year level	Number of academic participants
Discipline			
Paramedicine	0	NA	2
Physiotherapy	2	3	3
Podiatry	8	2-4	2
Occupational therapy	0	NA	3
Speech pathology	2	4	2
TOTAL	**12**		**12**

Data collection

Academics participated in 60-minute semi-structured interviews (3 online, 9 face to face) and students participated in one of three 60-minute face to face focus groups. Semi-structured interviews are a well-recognised way to explore relevant and meaningful themes and facilitate conversation with participants, and are helpful tools for understanding human beings and their ideas (Clegg & Stevenson, 2013; Paterson & Higgs, 2005; Rabionet, 2011). Focus groups are highly suitable for collecting young adults' perspectives through group discussion (Adler et al., 2019). With over 80% of Australian university students aged under 29 (Universities Australia, 2022), focus groups were deemed to be an appropriate way to capture student perspectives. There was not a target number for the number of participants. Rather the research aimed to achieve a range of participants that enabled sufficient diversity and rich engagement with the topic. This approach aligns with Hennink and Kaiser (2022), who put forward that saturation can be achieved in qualitative research through a narrower range of interviews (9-17) or focus group discussions (4-8). Although our research encompassed three focus groups, these comprised comprehensive and rich discussion. On analysis, consistent themes of focus opened up across all focus groups, providing rich data and reflected the way that patterns and connections between emerging themes can indicate a level of saturation (Naeem et al., 2024).

Questions that guided the interviews and focus groups explored how capabilities for allied health collaborative practice are developed as part of allied health higher education. A semi-structured interview guide was used to help guide discussion and ensure all areas of interest were explored (see Appendix 1). Interview questions were initially piloted with two separate allied health professional academics unrelated to the research as preparation for the formal interviews. This resulted in minor modifications to the format of the interviews. The interviews commenced with some general open-ended questions about the participants' experiences and professional backgrounds, moving to open-ended questions such as: 'What capabilities are important for collaborative practice in healthcare settings?' and 'how are you developing these capabilities in your students?'. When necessary, probing questions were used to gain a deeper understanding of participant perceptions and again ensure all areas of interest were comprehensively explored (see Appendix 1 for Interview and focus group structure).

All interviews and focus group discussions were audio-recorded with participants' consent and transcribed verbatim. Academic participants were assigned pseudonyms beginning with 'A'; student participants 'S'.

Data analysis

Data analysis (interpretation) was iterative and dialogical. Prior to interpretation, the researchers articulated their understandings of allied health collaborative practice capability development to form their beginning horizons of understanding. This understanding initiated an iterative dialogue of question and answer with the texts. As the basis of interpretation, this dialogue enabled the researchers to develop deeper understandings as they fused their horizons of understanding with those interpreted from the texts (Koch, 1996; Ramsbotham, 2019). It was important for researchers to question their own understandings and ask questions of the texts, this dialogue enabling unexpected insights and the opportunity to engage and understand differently (Gill, 2015). The main researcher (IP) engaged deeply with the text and the other researchers (NP and AC) provided the questions to help inform the richness of the dialogue of question and answer. Data was analysed using a collaborative practice capability lens drawn from contemporary research (see Paton et al., 2024), which also reflects well recognised global collaborative practice capability and competency frameworks (see Canadian Interprofessional Health Collaborative, 2024; Curtin University, 2013; Interprofessional Education Collaborative, 2023).

Ethical considerations with ethics approval (IRB) number

This study was conducted with ethical approval from the Ethics in Human Research Committee (protocol number 2014/219). This approval covered ethics approval for the second university. Quality considerations were assured through good qualitative research, that ensured the trustworthiness, rigour and transparency of the research (see Silverman 2001). For example, the lead researcher kept a research journal which provided evidence of research integrity and acted as an audit trail of ethical and methodological decision-making (Smith 1999). The research journal also enabled transparency in the research process, and facilitated reflexivity through the way it was used to guide discussions with co-researchers and monitor changes and decisions taken in the project (Finlay, 2002; Gribch, 2010).

Findings

Two main themes in relation to development of capabilities for allied health collaborative practice were found. Capabilities tended to be more intentionally and knowingly developed as part of case and problem-based learning and simulation-based scenarios, highlighting a *deliberateness* to their development. The development of capabilities in WIL tended to be more unplanned and fortuitus, with a suggestion of presumption around their development but less consideration around how capabilities were developed in WIL. This suggested an element of *serendipitous* development of capabilities as part of WIL as an education strategy.

Deliberate development

Deliberate development of capabilities for collaborative practice was evident across a range of teaching strategies. Participants emphasised the importance of clinical authenticity in the development of capabilities. Teaching strategies such as participatory simulation-based scenarios, case and problem-based learning leveraged a degree of clinical authenticity for developing capabilities. For example, participatory simulation-based scenarios provided opportunities for developing *adaptability* through deliberate inclusion of challenging and dynamic contextual influences in scenarios. This integration is illustrated by Adam's description of an interprofessional participatory simulation-based scenario with scope to develop *adaptability* through situated discomfort, urgency, and uncertainty:

> *I did one [a simulation] last week, I had three peer tutors with me and we had 2 police officers doing a stabbing, so one of the peer tutors brought in her computer and turned on ambient city noise, and we were able to use the stereo system, so they were working the stabbing, it was just like it*

was in the street... so that's a 4th year tutor adding a little bit of complexity to relatively simple scenario (Adam)

During participatory simulation-based scenarios some academics tended to focus on the development of *adaptability* in relation to profession-specific skills through provision of student feedback, rather than explicitly for collaborative practice. That deliberate development of *adaptability* was not confined to collaborative practice demonstrates how allied health collaborative practice capabilities also span and are relevant to individual professions. A blurring of the boundaries between collaborative and individual practice are highlighted. For example, *adaptability* was evident in *Agnes'* example of students adapting their individual, profession-specific skills through explicit feedback that enabled the student to respond to the patient's sporting injury:

They [students] will go and have a try of the [manual] technique and then the lecturer will come around and modify or adapt their technique. So, I like to get them to have a go… and then modifying and adapting that technique as we go (Agnes)

Opportunities to interact authentically with other students were identified as being valuable in developing *reciprocity. Sutton* emphasised the value of interprofessional problem-based learning, for opening up opportunities for interaction, sharing perspectives and working with students from different professions. She described how interactions between students of the same and different disciplines were a valuable way for creating conditions to develop *reciprocity*:

We have done [interprofessional] PBL (problem-based learning) this semester and it's been really good, I wish we had done it earlier, it's much more interactive… I think it's just the engaging instead of listening to a lecturer after so many years it gets really hard, [it is helpful] learning from each other, getting other people's perspectives instead of just one…(Sutton)

Clinical authenticity in student-student or student-educator interactions using role-playing as part of classroom case-based education was valued, as evident in Allan's experience. Allan described the use of role-playing clinical scenarios in classrooms to provide opportunities for students to interact and foster development of their ability to understand and respond to people, all of which underpin reciprocity. Allan's experience reflects the way that the development of capabilities key for collaborative practice may occur in discipline specific education settings, as he does not describe role-playing explicitly in relation to collaborative practice or education. He noted 'I think it [role-playing] gives them the chance [to feel part of a more authentic clinical experience], it's a way to get them engaged and interact and participate.'

Professional expertise encompasses discipline-specific skills and knowledge, alongside understanding other health professional roles. Student participants identified the value of interacting with other health professionals in order to better understand different roles. Sammy referred to interprofessional problem-based learning experiences and particularly noted the value gained by interacting with students from different health professions early in education:

I feel like the subject we're doing now, the interprofessional one would have been really good to do earlier. Definitely could do that in 3rd year because even now the OTs [occupational therapists] are like, so what do you guys actually do? Or I'd say to Speech [Pathology], are you guys okay if I do this? And they say what they do and that sort of thing… (Sammy)

Academic and student participants identified that classroom problem and case-based learning can develop students' understanding of the roles and functions of other health professionals, important knowledge contributing to professional expertise. They felt that these understandings were enhanced by encouraging students to appropriately identify referral points to other health professions depending on patient needs during classroom problem and case-based learning. Alison described her way of integrating the importance of other professionals into her single-discipline classroom teaching to promote student understanding of the roles of other health professionals:

When I teach dysphagia, I will stand there and go on about positioning and you've got to be best mates with your physio [physiotherapist] like get in with the physio, talk to them, what's possible? What does the OT [occupational therapist], what can they tell you… (Alison)

While some participants acknowledged the importance of *persistence* in allied health collaborative practice, its deliberate development was more difficult to articulate. However, *Anabelle,* in recognising that less-visible capabilities could be developed more generally by educator role modelling, opens up considerations for how *persistence* could be deliberately developed in allied health higher education:

It [implicit capabilities] comes all down to… 1) there's role modelling, 2) there's practising good behaviour so you get them to do that role modelling and practising of behaviour; you could do case studies and talk about people's viewpoints about that and get people to be a little bit more open and understanding by exploring their attitude about those kind of things (Anabelle)

Classroom case-based learning was identified as an appropriate vehicle for deliberate and simultaneous development of *flexibility* and *openness* through incorporation of multiple answers and uncertainty for learners in the cases. This diversity and uncertainty increased authenticity of cases and reflected the way that collaborative practice can be different across different places, times and people. *Sharnie's* experience underlines the importance of *flexibility* in thinking through hearing the ideas of other students. Acknowledging that practice is not one-dimensional, but rather is complex, also calls for *openness* to other answers and perspectives:

With the case studies we have got at the moment its really open to interpretation as well, so you might have some that get the same and others that get very different answers but [the lecturer encourages us] be flexible as there is no wrong answer (Sharnie)

Serendipitous development

The participants described serendipitous capability development, or serendipitous development of elements of capabilities. Serendipitous development comprises capability development that is spontaneous and reliant on students spending time in particular settings. WIL emerged as a key teaching strategy where participants described serendipitous capability development, or parts of capabilities. Participants did not tend to describe how or why capabilities were developed as part of WIL, but were generally confident and there was a level of presumption that some capabilities for collaborative practice could be developed during WIL. Further, participants noted that development of these capabilities can also be influenced by student characteristics. For example, Angus spoke about the importance of responsiveness in healthcare practice and identified that while students on placement need to respond, how they respond is a factor of both their inherent traits and skills. He did not describe how responsiveness could be explicitly developed or enhanced, highlighting a serendipitous element to capability development:

If we think about students when they go on placement, are potentially going into very complex settings, patients are very unwell, staff are very stressed… And they're [the student] probably going to get someone who's really cranky, could be a nurse, could be a doctor, could be another professional… and how they respond is some evidence of their maturity and their skills (Angus)

WIL was found to create conditions for development of reciprocity. This tended to be an unplanned byproduct of the development of student confidence in their role and through experiencing the value of communication. For example, the way that reciprocity underpins dialogue resonates with Ainsley's experience. She described how students would return from their first work integrated learning experience with renewed appreciation of the importance of communicating with other health professions. Although Ainsley highlighted the importance of understanding roles and talking to people, she did not describe how these understandings were developed as part of WIL: 'In third year, their first exposure, was one of the best things, they learnt kind-of where they fit in terms of our role, they learnt that we need to talk to people (Ainsley).

Stewart also emphasised the importance of WIL for creating conditions for the serendipitous development of some elements of reciprocity, highlighting that 'when thinking about who we need to talk to and work with, it always comes back to, this happened on placement.'

Anna's description of what students need in a collaborative situation in WIL further highlights the intertwining of a range of capabilities including willingness, flexibility, and openness.

> *You've got to know yourself fairly well and be able to be willing to… be brave, you actually need to be vulnerable to saying I don't know everything and I'm willing to learn and I'm willing to actually make some mistakes along the way [in collaborative practice]… they have to be open to hearing from other people. (Anna)*

While Anna described a need for these capabilities, she did not explicitly describe how these capabilities are developed, either in preparation for or during WIL. Anna's experience also highlights the way that serendipitous development can encompass simultaneous development of multiple capabilities.

Discussion

The acknowledged criticality of collaborative practice to successful healthcare outcomes for patients and staff (Wei et al, 2020), highlights the importance of comprehensive and consistent development of collaborative practice capability in health students. However, our research revealed some collaborative practice capabilities were deliberately developed in higher education contexts, with others more serendipitous in their development. Adaptability, reciprocity, professional expertise, persistence, flexibility and openness were all interpreted to be deliberately developed in case and problem-based learning, participatory simulation-based scenarios. Work integrated learning tended to comprise serendipitous capability development, targeting responsiveness, reciprocity and willingness. Willingness emerged to rely wholly on serendipitous development, and friendliness not developed either deliberately or serendipitously. Capabilities tend to be serendipitously developed as part of work integrated learning, without explicit description of how capabilities are developed as a result of immersion in the real world of work. An intertwining of capabilities arose; this being where teaching strategies can target development of multiple capabilities concurrently. Capabilities for collaborative practice were developed in both and discipline-specific education. The way that capabilities are both deliberately and serendipitously developed puts forward the potential for more consistent and explicit development of capabilities as part of teaching and learning in allied health higher education.–As this research identified scope for more deliberate development of student capabilities for collaborative practice, deliberate practice theories provide an appropriate guide to application of the research findings to practice.

Deliberate practice theories highlight the importance of intentional focus on capability development. Reliance on natural skill and talent is not sufficient for high levels of expert performance (as required in healthcare professional practice), intentional repetition of activities is required to improve performance (Campitelli & Gobet, 2011). Therefore, intentionally leveraging opportunities for the development of all of the capabilities for collaborative practice could be helpful in preparing healthcare students for contemporary healthcare practice. Practice is fluid and dynamic, thus there is a need for graduates to be prepared for change (Schwandt, 2005). Practice fluidity is particularly required in healthcare settings where there is constant change and ongoing need for systems and staff to adapt (Sutherland et al., 2020). Capabilities for allied health collaborative practice, in particular *adaptability* and *responsiveness* have been demonstrated to enable allied health professionals to respond to changes in relation to patients, other health professionals and contextual demands (Paton et al., 2024). However, few allied health higher education programs currently recognise the knowledge, skills and qualities, including *adaptability* and *responsiveness,* that enable health professionals to adapt, respond and thrive in rapidly changing healthcare environments (Braithwaite et al., 2020). Therefore, intentional and repetitive development of capabilities such as *responsiveness*

and *adaptability* may strengthen allied health professional graduates' employability and position them to meaningfully contribute and thrive within contemporary healthcare landscapes.

This research also revealed the largely *serendipitous* nature of some capabilities for collaborative practice capabilities during WIL. This is of consideration as expert performance does not automatically develop from extensive experience and general education, rather it requires the acquisition of complex integrated systems of representations for the execution, monitoring, planning, and analyses of performance (Ericcson, 2008). This highlights scope to intentionally leverage *serendipitous* opportunities for the development of some capabilities for allied health collaborative practice in WIL settings and challenge underlying assumptions that students will develop these capabilities through exposure and experience alone. Further, the complex and dynamic nature of healthcare settings, where WILoccurs, may in itself challenge intentional capability development, in contrast to the more highly controlled classroom environments. Therefore, a first step in intentionally leveraging *serendipitous* development of collaborative practice capabilities opportunities, requires work-integrated learning supervisors to reflexively identify how their workplaces shape students' collaborative practice capability development. This may assist in the creation of conditions for allied health students to more meaningfully participate in *serendipitous* opportunities for development of collaborative practice capabilities.

Graduate professional competency registration standards and accreditation practice thresholds determine learning outcomes and aims for WIL, with a tendency to focus on development of discipline specific skills. This may contribute to the *serendipitous* development of some capabilities for allied health collaborative practice in WIL. WIL is a key consideration in the development of capabilities for collaborative practice, based on the premise that many professional skills cannot be developed in academic environments alone (see Delany & Golding, 2014; Miles et al., 2016), however standards and thresholds do not explicitly reflect many of the less-visible and hard to measure capabilities for allied health collaborative practice (for example, *openness, responsiveness, willingness, friendliness* etc) (See Physiotherapy Board of Australia, 2023; Occupational Therapy Board of Australia, 2019; Paramedicine Board of Australia, 2024; Podiatry Board of Australia, 2024; Speech Pathology Australia, 2020). Some capabilities such *openness* and *responsiveness* are reflected in Australian Social Work Practice Standards and the National Competency Standards for Dietitians in Australia (see Australian Association of Social Workers, 2023; Dieticians Australia, 2021), which could be used to guide other allied health regulatory bodies. There is a tendency for WIL to focus on student achievement of required standards and thresholds (Chandan et al., 2022). This highlights an urgent need to explicitly recognise capabilities for allied health collaborative practice in registration standards and practice thresholds. This may help intentionally leverage *serendipitous* opportunities for the development of some capabilities for allied health collaborative practice in work integrated learning settings.

Deliberate practice theories may also inform education environments outside of WIL, such as the classroom, in the *deliberate* development of capabilities for collaborative practice. The findings of this research highlight opportunities within and across a range of collaborative and discipline-specific teaching strategies including case and problem-based learning, and participatory-simulation-based scenarios. Development of capabilities can be simultaneous and intertwined across different teaching strategies. We contend that there is scope for more intentional and holistic development of capabilities for collaborative practice through utilisation of a range of academic-based and WILteaching strategies. Further, development of capabilities should be considered across a whole of program or course level, to reflect contemporary moves to assessment at programme and institutional levels (Baartman & Quinlan, 2023) and the way that regulatory authorities recommend content and learning activities are considered at a course level (see Australian Government: Tertiary Education, Quality and Standards Agency, 2017).

The challenge for allied health academics and work-integrated learning supervisors is to reflect on and examine their own education practice to identify and enhance development of capabilities for collaborative practice. Within the range of academic environments allied health students learn,

deliberate practice of capabilities for collaborative practice, particularly those that are less visible may be helpful in enhancing their preparedness for these practice landscapes, and employability more broadly. Further, there may be scope to reflect the way that capabilities can be intertwined and simultaneously drawn on in academic environments as part of their development. Elements illuminated in this research such as student exposure to clinical authenticity; integration of authentic elements into education experiences; the opportunity to interact with other health professionals; classroom exploration into roles and scope of practice; and educator role-modelling of capabilities offer a valuable focus for intentional development of capabilities for collaborative practice as part of allied health teaching and learning. The way work-integrated learning supervisors behave, and value practice and capabilities can impact student experience and learning (Piras et al., 2024), thus their role-modelling of capabilities for collaborative practice may be particularly useful in intentional development of capabilities. See Table 2 for a summary of Implications for teaching and learning in allied health higher education and Table 3 for a summary of Implications for policy and practice.

Table 2: Implications for teaching and learning in allied health higher education

- This research has illuminated understandings and awareness of the capabilities for collaborative practice which provide a solid foundation for strengthening development of allied health students' collaborative practice capability in preparation for practice
- *Deliberate* development of *adaptability, reciprocity, professional expertise, persistence, flexibility* and *openness* is positioned in case and problem-based learning and participatory simulation-based scenarios
- Specific strategies to foster development of these capabilities included student exposure to clinical authenticity; integration of authentic elements into education experiences; providing opportunities for students to interact with other health professionals; integrating classroom exploration into roles and scope of practice; and educator role-modelling of capabilities
- Academics could also consider these strategies for development of other capabilities, such as *friendliness and willingness.*
- To leverage opportunities for *serendipitous* development of these capabilities during WILexperiences, academics and WILsupervisors are encouraged to consider how explicit development of these capabilities could be consistently integrated into WIL experiences

Work-integrated learning supervisors are encouraged to adopt a reflexive stance to both their own collaborative practice and their education practice as student supervisors. A reflexive approach to their own practice may enable work-integrated learning supervisors to better identify qualities and skills that underpin collaborative practice. Further, examination of their individual workplaces and supervision practices may enable WILsupervisors to better understand their influence on student learning. Through adoption of a reflexive stance, work-integrated learning supervisors may be better positioned to look beyond competencies to explore intentional development of a broader range of capabilities that underpin allied health collaborative practice capability.

Table 3: Implications for policy and practice

- Deliberate practice theories as a lens highlights potential transferability beyond allied health, to other healthcare disciplines and other disciplines beyond health who rely on WIL to develop capabilities in general
- This research may also have relevance beyond healthcare, as some of these capabilities are considered important for industries such as commerce, retail, and business.
- Incorporating capabilities for allied health collaborative practice into registration standards and practice thresholds may bring focus on development of these capabilities into the foreground.

This research has highlighted the development of capabilities such as adaptability, responsiveness, persistence, willingness and flexibility which resonate with elements of Australian Registered Nurse Standards and the Good Medical Practice Code of Conduct. For example, Registered Nurse Standard 6.1 describes how Nurses need to be responsive to the nursing needs of people (Nursing and Midwifery Board, 2024); and the Good Medical Practice Code highlights how Medical Practitioners should develop relationships based on openness and good communication (Medical Board: AHPRA, 2020). This research illuminated how teaching strategies such as case and problem-based learning, participatory simulation-based scenarios and WILcontribute to the development of capabilities, and these strategies are commonly utilised in preparatory programs for medicine and nursing (see de Andrade Gomes, 2024; Cant et al., 2023; Donkin et al., 2023; Shrivastava & Suhoyo, 2024). Further, this research may also have relevance beyond healthcare. For example, accounting professionals and hospitality graduates need to be adaptable; whereas a willingness to change, alongside flexibility are important skills in business (Bowles et al., 2020; Ngoepe & Wakelin-Theron, 2023). Indeed, it is important for all higher education graduates to be adaptable, willing, and open to thrive in contemporary work environments (Seevaratnam et al., 2023).

In Australia, registration standards and practice thresholds define requirements that health practitioners need to meet to be registered and determine allied health higher education course curricula. Allied health higher education programs must undergo accreditation by their governing bodies to ensure they are producing students that meet these standards and practice thresholds. Accreditation requirements result in a propensity for higher education providers to rigidly apply standards (Baker et al., 2004; Butler-Henderson et al., 2020). The less visible and hard to measure capabilities for collaborative practice such as openness and willingness have limited representation in allied health registration standards and practice thresholds and this may account for a limited focus on deliberate development of some capabilities.

Limitations

While these were the findings in relation to some allied health professions, consistent with transferability in the interpretative paradigm we invite readers to consider our findings in relation to their own context. This could include readers from professions with hierarchical structures other than the characteristics of allied health and the allied health professions not included in this study. The participants in this study came from five allied health professions. Allied health is a diverse group and any claim of representation of all potential allied health professions is beyond the intention of this study. While student participant representation was limited to three disciplines, rich discussion occurred within the single discipline groups. A limitation of this study is that although the importance of other health professionals (i.e., medical and nursing), other ancillary healthcare staff (for example administration), patients, clients, families, carers and communities as participants in collaborative practice is acknowledged, this study did not include these groups' perspectives on allied health collaborative practice and the development of collaborative practice capability. The breadth and diversity of healthcare professionals essential to meet patient and client needs provides rich scope for future research. The value of including the experiences of other health professions and/or expanding the research concepts across a broader range of allied health professions in future research is acknowledged.

Conclusion

This research has illuminated how academics and work-integrated learning supervisors may enhance allied health graduate employability through more intentional preparation for collaborative practice. While our research focused on allied health, we invite other health professionals and health professional educators to examine their own approaches to intentionally developing capabilities for

collaborative practice, acknowledging that other professions, patients/clients, and axillary staff are a fundamental part of collaborative practice.

Acknowledgements

The authors would like to acknowledge Emeritus Professor Joy Higgs for her early contributions to this research.

Funding details

No funding was received for this study.

Declaration of interest statement

The authors report there are no competing interests to declare.

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Appendix 1: Semi-structured interview guide

Sample Interview questions: academic staff

- Permission to record & Purpose of study
- Tell me about your work/employment history
- How many years have you been teaching for?
- Who/what are you currently teaching? (specify)
- What is the main focus of student education more broadly in the discipline you teach into?
- How do you understand the notion of collaborative practice in healthcare settings?
    - What does collaborative practice in healthcare settings look like?
    - What capabilities are important for collaborative practice in healthcare settings?
- How are you developing collaborative practice capability more broadly in your students?
    - How are you developing the underpinning capabilities key for collaborative practice in your students?
    - What kind of teaching and education strategies help develop these capabilities?
    - How often do you deliver teaching focused on development of these capabilities?
    - Are some capabilities more difficult to develop? Why?
- What are typical general teaching strategies you use?
    - What is it about those strategies that appeal to you (why do you choose them)?
    - What are your thoughts about how these will prepare students for collaborative practice?
    - What prompted you to use these/why do you do these particular strategies? (do you have a theoretical underpinning beneath the use of these strategies)?
    - How often do you use them?
    - Do you wish you could use them more often/are there teaching strategies you would like to use more often to develop collaborative practice capability? (if not why not and barriers to using more often)
    - How are other universities and lecturers preparing their students for collaborative practice?
    - What teaching strategies do you know are being used in other universities or courses?
    - Are you aware of any innovations or approaches that you would like to adapt?

Sample focus group questions and prompts: students

- Permission to record & Purpose of study
- Tell me about the course you are studying?
- How many years have you been studying for?
- What do you feel are the main focus of your education more broadly?
- How do you understand the notion of collaborative practice in healthcare settings?
    - What does collaborative practice in healthcare settings look like to you?
    - What capabilities are important for collaborative practice in healthcare settings?
- How do you feel your collaborative practice capability is being developed as part of your studies?
    - How do you feel the underpinning capabilities key for collaborative practice are being developed as part of your studies?
    - What kind of teaching and education activities do you feel help develop these capabilities?
    - How often do you feel there is a focus on development of these capabilities?
    - Do you feel some capabilities more difficult to develop? Why?
- What are typical general teaching strategies your lecturers and clinical educators tend to use?
    - Is there anything about these strategies that you particularly enjoy, or think are helpful?
    - Do you feel these strategies are preparing you for collaborative practice?
    - What do you think might be helpful about these strategies in preparing you for collaborative practice?
    - How your lecturers and clinical educators use them often?
    - Do you wish your lecturers and clinical educators used these strategies more often? What do you think might be preventing them from using them more often?
    - Have you seen or heard of other ways that other universities and lecturers are preparing their students for collaborative practice?