



An Online Collaborative Practice Module as an Alternative to Traditional Interprofessional Learning Experiences: A Pilot Study

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Abstract

Interprofessional learning experiences (ILE) are becoming increasingly important components of allied health curricula, but present many challenges, particularly in distance education settings. We developed a bespoke online collaborative practice module (CPM) for clinical exercise physiology students studying via distance education, designed to deliver similar benefits to traditional ILE without the same challenges and limitations. The CPM consisted of two distinct learning phases: knowledge expansion and knowledge application, with each phase containing both synchronous and asynchronous learning experiences. The CPM was assessed via a mixed methods approach, which involved students participating in a one-on-one semi-structured interview post-CPM participation and completing the 16-item Self-Efficacy for Interprofessional Experiential Learning (SEIEL) scale both pre- and post-CPM participation. Participants ($n = 10$) were recruited from a single cohort of students studying a final year, capstone-style subject. The CPM was effective in improving student self-efficacy for interprofessional experiential learning ($p = 0.001$) and was acceptable to students who participated in the study. Inductive reflexive thematic analysis of the qualitative data supported an improvement in student self-efficacy and revealed four main themes: authentic preparation for real-world practice, encapsulation and consolidation of learning from across the degree, engagement and learning from peers, and broadening of knowledge and understanding, which enhanced confidence. The CPM may be a viable alternative to traditional ILE where the challenges and limitations of traditional ILE cannot be readily overcome.

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Practitioner Notes

1. Interprofessional learning experiences are integral components of allied health curricula but are often challenging to deliver effectively, particularly in distance education settings.
2. Bespoke, individualised approaches to the delivery of interprofessional learning experiences may be required in circumstances where the challenges of delivering traditional interprofessional learning cannot be reasonably overcome.
3. The collaborative practice module developed and assessed in the current study may be an effective approach in circumstances where the challenges to delivering traditional interprofessional learning experiences are too great to reasonably overcome.

Keywords

distance education; hybrid; interdisciplinary; allied health; exercise physiologist; tertiary.

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Introduction

Interprofessional healthcare is well recognised for its ability to improve continuity of care and patient outcomes across a vast spectrum of chronic and complex health conditions (Lai et al., 2016; Ouwens et al., 2005; van der Marck et al., 2009). Accordingly, to improve patient care, there have been marked efforts in recent years to increase collaboration between healthcare professionals across a wide range of medical and allied health settings (Schot et al., 2020). Likewise, there has been a concomitant recognition of the importance of integrating interprofessional learning experiences into allied health curricula in tertiary education to better prepare students for the contemporary demands of real-world clinical practice (Spaulding et al., 2019). The feasibility and acceptability of various models for implementing interprofessional learning have been documented, with some demonstrating great success (Bennett et al., 2011), and others reporting less favourable outcomes (Stull & Blue, 2016). It is clear from the evidence to date that the practical implementation of interprofessional approaches to learning are inherently complex and often present several challenges. These challenges include logistical difficulties associated with coordinating students from multiple professions, highly variable student understanding of their own professional role and scope, and perceived differences in power and status among professions, all of which limit participation and engagement, and in turn reduce the effectiveness of the learning experience (Olson & Bialocerkowski, 2014). The emergence and subsequent proliferation of online models of tertiary education in recent years have only added to the complexities associated with effectively delivering interprofessional learning experiences. In addition to technical problems (Reeves et al., 2017), such complexities also include difficulties creating an authentic learning experience in an online setting and a reluctance of students to engage with, and critique the work of, students from other professions with whom they are not familiar, in turn reducing the effectiveness of the learning experience (Miers et al., 2007).

Evaluation of face-to-face interprofessional learning experiences within allied health courses has been well documented for multiple decades (Clarke et al., 2007), however it is only in more recent years that distance education models of interprofessional learning have been assessed (McCutcheon et al., 2017). It is clear that logistical constraints markedly limit the success of interprofessional learning models (Patel et al., 2025), and there is evidence that online models of interprofessional learning present additional and unique logistical constraints that are not easily overcome (O'Shea et al., 2019). Moreover, at an institution level, various discipline- and course-specific curricula factors, such as varying accreditation requirements, differing modes and structures of course delivery, and variable timing and placement of appropriately integrated subjects, often result in difficulties in achieving appropriate scaffolding and alignment of learning activities within interprofessional learning modules (Thistlethwaite, 2012). Resultingly, a large proportion of allied health students from a well-recognised range of disciplines have reported that components of interprofessional learning case studies do not align with the roles and responsibilities of their professions (van Diggele et al., 2021). Whilst there is a sparsity of evidence with respect to the integration of less well-recognised allied health professions within interprofessional learning models, it stands to reason that such disciplines would likely experience an accentuation of the aforementioned challenges. Accredited exercise physiology (AEP) is one such discipline for which, despite a defined scope and role within the Australian healthcare sector (Smart et al., 2016), there is a general lack of recognition and understanding of the profession

(Beecroft et al., 2025) and an underrepresentation of the profession within interprofessional healthcare teams who manage noncommunicable disease (Soan et al., 2014).

The current models of interprofessional learning that underpin successful real-world interprofessional practice are fraught with logistical challenges. There appear to be additional challenges when tertiary education is delivered via a distance model, and the challenges are likely accentuated for less well-recognised allied health professions. To address the identified challenges, we developed a bespoke online collaborative practice module (CPM) that was designed specifically for AEP students studying via distance education. The bespoke module was designed to deliver similar benefits to traditional interprofessional learning models without the same logistical challenges associated with such traditional models. In contrast to existing online interprofessional learning experiences, which emphasise interaction between students from different disciplines (Reeves et al., 2017; Singh & Matthees, 2021), our novel CPM provides a bespoke two-phase approach, whereby each phase includes both asynchronous and synchronous learning activities designed to prepare students for real-world interprofessional practice without the necessity of collaborating synchronously with professionals or students from other disciplines.

The aims of this study were two-fold: (i) to determine the effectiveness of the CPM for improving student self-efficacy for interprofessional practice; and (ii) to assess the acceptability of the CPM through an exploration of student perspectives of, and experiences with, the learning module. It was hypothesised that the module would be effective in improving student self-efficacy for interprofessional practice and will be an acceptable model of learning for students to undertake.

Method

Context

This study was conducted within the context of a Master of Clinical Exercise Physiology (MCEP) course at an Australian university. The course is run predominantly online, with compulsory blocks of face-to-face, on-campus intensive schools where students learn and develop necessary practical skills. Students complete approximately 60 hours of face-to-face intensive school learning over the duration of the 1.5-year full-time equivalent course. From 2024 onwards, all students enrolled in the MCEP course are required to complete a capstone-style subject as a pre-requisite to commencing clinical placement. This subject is run entirely online and was designed to integrate critical knowledge and skills that students have been taught across all subjects within their course. A key component of this knowledge and skill integration involves the students actively participating in a two-phase intensive online CPM.

Module Design

The CPM, which was designed to ensure students achieved subject and course learning outcomes and professional accreditation requirements, consists of two distinct phases: knowledge expansion and knowledge application, both of which contain synchronous and asynchronous learning experiences. The design of the CPM was primarily guided by the theoretical framework of social constructivism, a theory that posits learning as a shared, dynamic process that is co-created through experience and interactions, and which has previously been used to inform interprofessional learning experiences (Hughes et al., 2004). Given the online

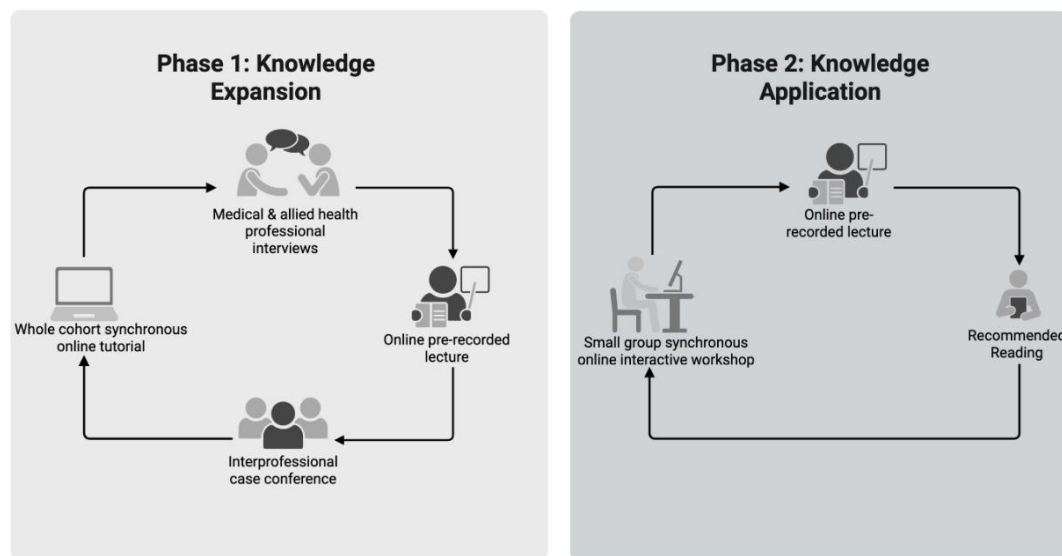
delivery of the CPM, design of the module also drew on aspects of connectivism, a theory recognised for its ability to explain the process of learning in the digital age (Goldie, 2016). Finally, implementation and delivery of the CPM was informed by collaborative and experiential learning theories, and adopted a case-based learning approach, which has been used successfully in science education (Hudson & Buckley, 2004) and in the training of healthcare professionals (Cendan et al., 2011; McLean, 2016). Figure 1 provides an overview of the structure and components of the online CPM. Table 1 provides a detailed itemisation of all learning activities across both phases of the online CPM. The online CPM adopted a multimodal learning approach to maximise student engagement (Xiao et al., 2022), enhance student comprehension (Sankey et al., 2010), allow for a degree of flexibility to accommodate diverse learners (Govender & Rajkoomar, 2021), and improve critical thinking (O'Halloran et al., 2017).

Research Design

This study used a mixed-methods approach, which involved students participating in a one-on-one semi-structured interview post-CPM participation and completing the 16-item Self-Efficacy for Interprofessional Experiential Learning (SEIEL) scale both pre- and post-CPM participation, to: (i) determine the effectiveness of the CPM for improving student self-efficacy for interprofessional practice; and (ii) assess the acceptability of the CPM by exploring students' perspectives on and experiences with the learning module.

Figure 1

The Online Collaborative Practice Module: An Overview



Note. Created by the authors using BioRender.

Table 1

Detailed Components of the Online Collaborative Practice Module

Phase 1: Knowledge Expansion

Medical and Allied Health Professional Interviews

- One-on-one interviews of 7-8 minutes in duration were filmed and provided to students. Interviews were conducted with each of the following clinically practicing professionals:
 - General practitioner
 - Dietitian
 - Podiatrist
 - Physiotherapist
- Each of the interviews included a discussion of the following topics:
 - Introduction to the individual and their profession
 - Professional regulation requirements
 - Scope of practice within the Australian healthcare system
 - Challenges within the profession
 - Referral pathways to accredited exercise physiologists

Online Pre-Recorded Lecture

- A 45-minute lecture that covered the following topic areas:
 - Terminology: interprofessional vs. interdisciplinary vs. multidisciplinary
 - Definition and key elements of interprofessional collaboration
 - Importance and outcomes of effective interprofessional collaboration
 - Continuity of care
 - Advantages and challenges of interprofessional collaboration
 - Strategies for successful interprofessional collaboration
 - Other relevant medical and allied health professions involved in interprofessional teams

Interprofessional Case Conference

- A 50-minute interprofessional case conference was filmed and provided to students. The case conference involved a patient, general practitioner, accredited exercise physiologist, dietitian, podiatrist and physiotherapist
- The case conference:
 - Highlighted the management of a complex patient presentation via collaboration between the patient and the health professionals
 - Demonstrated the importance of interprofessional communication and decision-making in healthcare. It emphasised how the integration of diverse perspectives can be used to optimise patient care outcomes

Whole Cohort Synchronous Online Tutorial

- A 60-minute online interactive tutorial that centred around the following discussion topics:
 - An overview and delineation of the various roles of accredited exercise physiologists in the Australian healthcare system

Phase 1: Knowledge Expansion

- Professional regulation, scope of practice requirements, and challenges for accredited exercise physiologists
- Review and consolidation of the roles and responsibilities of key medical and allied health professionals in relation to the interprofessional case conference
- Reflection on key communication strategies from medical and allied health professionals, to facilitate effective interprofessional collaboration and patient care

Phase 2: Knowledge Application

Online Pre-Recorded Lecture

- A 35-minute lecture that covered the following topic areas:
 - Seeking feedback to inform decision making in healthcare
 - Referral and delegation to other health professionals
 - Types of communication used in healthcare including reports and direct communication
 - Advocating for exercise physiology as a treatment option
 - Managing conflict and disagreements in interprofessional care
 - Referrals to community support services

Recommended Reading

- A recommended reading to consolidate and expand student knowledge and understanding
 - 'How do interprofessional healthcare teams perceive the benefits and challenges of interdisciplinary ward rounds' (Walton et al., 2019)

Small Group Synchronous Online Interactive Workshop

- Students were allocated to a 60-minute online workshop. Each workshop consisted of six to eleven students and a facilitator
 - Each workshop focused on discussion questions relevant to a multi-pathology case study including:
 - Identification and prioritisation of patient conditions, contraindications, treatment goals, assessment and intervention options
 - Identification of other health professionals who should be involved in the interprofessional team to optimise patient care
 - Delegation of roles and responsibilities within the interprofessional team
 - Strategies to ensure effective communication between the interprofessional team and the patient to support continuity of care and shared decision making
 - Methods of assessing interprofessional team success
-

Recruitment

Following institutional ethical approval (H24108), all students enrolled in the capstone-style subject (n = 54) received an invitation via email from the first author to participate in the study. The first author was not involved in curriculum delivery within the online CPM, nor the subject more broadly. Students who expressed an interest in participating were provided with a

Participant Information Sheet detailing the commitments involved in study participation. A total of ten students ($n = 10$) provided written informed consent and chose to participate in the study. Participants were then contacted via email to make logistical arrangements with respect to survey and interview completion, the details of which are provided below.

Pre- and Post-Intervention Survey

Participants completed the 16-item Self-Efficacy for Interprofessional Experiential Learning (SEIEL) scale (Mann et al., 2012) both before (pre-intervention) and after (post-intervention) participating in the two-phase online CPM. The SEIEL scale contains 16 questions (see Table 2), each requiring a response on a Likert scale (1-10), where 1 is 'low confidence' and 10 is 'high confidence'. All participants completed the SEIEL scale a maximum of fourteen days prior to commencing the online CPM (pre-intervention) and a maximum of fourteen days after completing the online CPM (post-intervention).

Post-Intervention Semi-Structured Interview

An interview guide was developed by the research team following a review of the relevant literature. One-on-one semi-structured interviews between each of the participants and the first author were then used to assess student perspectives and experiences of the online CPM. Interviews were conducted via teleconference (Zoom), recorded, and then manually transcribed verbatim. Interview transcripts were checked for accuracy by two members of the research team (TM and KL).

Analysis

The SEIEL scale data are reported as means $\pm$ standard deviations (Williams et al., 2017). The normality of the data was assessed using the Shapiro–Wilk test. Paired samples t-tests were applied to determine significance between pre-post online CPM for the SEIEL scale. Secondary analysis of individual SEIEL questions was conducted via paired samples t-tests. Where data was not normally distributed (Q4 and Q8), related-samples Wilcoxon signed rank test was applied. Significance was set at $P < .05$. Cohen's d , a measure of magnitude of difference (Cohen, 2013), has also been reported. Statistical procedures were performed using SPSS Statistics v30.0.0 for Windows (IBM® Inc., Armonk, USA).

Qualitative interview data was analysed via inductive reflexive thematic analysis (Braun & Clarke, 2006). Initial codes were manually generated by the first author via an iterative coding process. Themes were developed, reviewed, and agreed upon via consensus between two members of the research team (TM and KL) before exemplar quotes were extracted.

Table 2*SEIEL Scale Items Adapted from Mann et al. (2012)*

Individual SEIEL Scale Items
Q1. Working with other students from different professions to form a team.
Q2. Working with other students from different professions to resolve problems in the team.
Q3. Working with other students from different professions to develop a realistic appropriate patient care plan.
Q4. Working with other students from different professions to understand our respective roles in an interprofessional team.
Q5. Working with other students from different professions to understand the benefits to patients of team care.
Q6. Interacting with students from other professions and disciplines than my own.
Q7. Learning together cooperatively with students from other professions.
Q8. Communicating effectively with other members of an interprofessional team.
Q9. Understanding and discussing the objectives of interprofessional learning.
Q10. Providing feedback to an interprofessional team on our function and work as a team.
Q11. Providing feedback to individual team members of an interprofessional team on their function and work on the team.
Q12. Helping clinical sites understand an interprofessional team's role in a clinical setting.
Q13. Helping the patient understand the objectives of the interprofessional learning
Q14. Evaluating the quality of work as an interprofessional team.
Q15. Evaluating the degree to which an interprofessional team has achieved its goals.
Q16. Interacting with teachers and preceptors from other professions and disciplines than my own.

Each individual item in the SEIEL scale requires a response on a Likert scale (1-10), where 1 is 'low confidence' and 10 is 'high confidence'.

Results

Quantitative Results

The SEIEL scale data are presented in Tables 3 and 4. There was a significant improvement in the overall SEIEL scale data pre- to post-online CPM participation ($p=0.001$). Further, while each of the individual SEIEL scale questions was statistically significant pre- to post-online CPM participation ($p<0.001-0.048$), the greatest improvements were observed in interprofessional collaboration to develop care plans (Q3; 36.66% improvement), providing feedback to team members (Q11; 40.35% improvement), helping sites to understand the interprofessional role (Q12; 38.33% improvement) and evaluating goal achievement (Q15; 38.71% improvement). Whereas working with students from other professions (Q1), learning together cooperatively with students from other professions (Q7) and effective interprofessional communication (Q8), were areas that observed the smallest percentage improvements (18.84%, 15.07% & 19.18% respectively).

Table 3*Overall SEIEL Scale Data Following CPM Intervention (n= 10)*

Overall Score	Mean $\pm$ SD	p-Value	Cohen's d	% Change
Pre- IPE	105.1 $\pm$ 24.90			
Post- IPE	133.5 $\pm$ 14.87*	0.001	1.38	27.02%

*denotes statistically significant from pre.

SD: standard deviation

Table 4*Individual SEIEL Scale Data Following CPM Intervention (n = 10)*

Question	Pre-Intervention Score (Mean $\pm$ SD)	Post-Intervention Score (Mean $\pm$ SD)	Pre-Post % Change	Cohen's d
1	6.9 $\pm$ 1.66	8.2 $\pm$ 0.92	18.84	0.97
2	6.5 $\pm$ 1.65	8.1 $\pm$ 1.10	24.62	1.14
3	6.0 $\pm$ 1.56	8.2 $\pm$ 0.92	36.67	1.72
4	6.9 $\pm$ 1.66	8.4 $\pm$ 0.97	21.74	1.10
5	6.9 $\pm$ 1.79	8.7 $\pm$ 1.06	26.09	1.22
6	7.0 $\pm$ 1.89	8.4 $\pm$ 0.97	20.00	0.93
7	7.3 $\pm$ 1.57	8.4 $\pm$ 1.07	15.07	0.82
8	7.3 $\pm$ 1.34	8.7 $\pm$ 0.67	19.18	1.32
9	6.3 $\pm$ 1.49	8.3 $\pm$ 1.06	31.75	1.54
10	6.3 $\pm$ 2.00	7.9 $\pm$ 1.52	25.40	0.90
11	5.7 $\pm$ 2.11	8.0 $\pm$ 1.49	40.35	1.26
12	6.0 $\pm$ 1.83	8.3 $\pm$ 1.06	38.33	1.54
13	6.9 $\pm$ 1.66	8.7 $\pm$ 1.06	26.09	1.29
14	6.1 $\pm$ 2.13	8.2 $\pm$ 1.14	34.43	1.23
15	6.2 $\pm$ 2.30	8.6 $\pm$ 1.17	38.71	1.31
16	6.8 $\pm$ 2.15	8.4 $\pm$ 1.17	23.53	0.94

SD: standard deviation

Each question was scored on a Likert scale (1-10), where 1 is 'low confidence' and 10 is 'high confidence'.

Qualitative Results

Ten students participated in the study and completed the one-on-one post-intervention interview. Overall, students reported that participation in the CPM was a positive learning experience:

It was really nice to have someone [academic staff] think of that [online CPM] and say, 'Hey, this is what these students need', because without that I think I would have been a bit lost (Participant #3).

Four major themes were generated from the data that reflect students' perspectives and experiences of the online CPM. The themes were: (i) authentic preparation for real-world practice; (ii) encapsulation and consolidation of learning from across the degree; (iii) engagement and learning from peers; and (iv) broadening of knowledge and understanding, which enhanced confidence.

Authentic Preparation For Real-World Practice

This first theme demonstrates that students perceived value in the genuine authenticity of the CPM and, in turn, appreciated that this created a valuable experience that enhanced their preparedness for clinical placement and real-world practice as graduate clinicians. Despite the CPM being run entirely online, many students acknowledged the authenticity of the learning experience, with one student stating that it was "... a lot more similar to actually having your own practical experience" (Participant #3). Other students referred to the real-world nature of the online learning experience and the fact that it challenged their thought processes:

It gives you like, an idea of how things would work when we actually start... working in the real world (Participant #9).

It's just a different way to learn... in a real-world scenario, and [it] forces us to think a bit more... it's different from a textbook (Participant #1).

Most students were interested, and saw value, in the interprofessional case conference component of the online CPM: "It was cool to see how that [interprofessional case conference], I guess, works in a professional setting" (Participant #1). Other students also contextualised their learning experience with respect to their future work role and saw benefit in "being able to see it in practice, like how I'm actually going to operate as a practitioner and talk to other people" (Participant #3). This concept of contextualisation within the students' future profession was also discussed more broadly:

Watching those case conferences was good, just to get an idea of... what that all looks like... what we'll be dealing with on a weekly basis, and the kinds of people we'll be dealing with (Participant #4).

Having that experience [interprofessional case conference], seeing it, you know, play out in front of me in like a little video scenario, just made it really clear what it actually looks like to implement the things that we've been learning (Participant #3).

Finally, many students perceived value in "seeing different professionals [and] how they work together" (Participant #8). In particular, because of exposure to the interprofessional case conference, students felt they gained an appreciation for the idea "that there's that level of understanding between allied health professionals" (Participant #6). Some students also reported that the online CPM enhanced their understanding of the roles and scopes of other allied health professionals: "It was good to see... the other allied health professionals, where they stand and their goals. And it was good to see kind of their point of view of it [management of a patient's

case] all, as well” (Participant #7). A limited number of students who are currently working in paid roles within the healthcare sector also related their learning experience to how it has assisted them in their current work environment:

Alright, cool, I know... how a Podiatrist can actually help them [clients] now (Participant #10).

Two students reported that their learning experience within the online CPM may have been enhanced via direct interaction with students from other allied health disciplines:

I think that workshop that we did... really helped with working as part of a team, but that was with other EPs [Exercise Physiologists]. So, in terms of like working with other allied health professionals, I don't know how feasible it is, or how possible it is, but it would have been interesting to get to talk to other students, perhaps, from different professions (Participant #4).

Encapsulation and Consolidation of Learning from Across the Degree

This second theme highlights student perceptions that the CPM not only encapsulated knowledge that has been taught across other subjects within the degree but also helped students to consolidate and contextualise this knowledge within an authentic learning environment. Most students acknowledged the value of the online CPM for encapsulating and consolidating learning from across the degree, with one student stating that “... it's almost like putting a little bow onto everything” (Participant #3), and another student stating that it “helped really put everything into perspective” (Participant #1). Many other students made similarly positive comments:

It very much cemented everything that we've learned (Participant #7).

To see it all together at once just makes it really crystal clear... it's just laid out so nicely (Participant #3).

Engagement and Learning From Peers

The vast majority of students perceived that the online CPM improved their engagement, and the engagement of their peers, with the learning material:

I think it [online CPM] made other students, like, say what they thought. Whereas before... they wouldn't, like, engage (Participant #6).

The way they [academic staff] did it in the [online CPM] was more engaging, and it is more interesting... everyone was engaged (Participant #9).

Many students attributed the improved engagement amongst the student cohort to the small group, online interactive workshops within the online CPM. Furthermore, some students felt that this enhanced the online learning environment:

I feel like the fact that you had to turn up and engage [in the online interactive workshops] meant that you paid more attention (Participant #5).

Having those smaller groups allows people who don't normally speak up, to speak up a bit more. The workshops with smaller groups... it was a good way to actually fully be able to interact with other students... it felt very much like what you would get on-campus (Participant #1).

As a result of the improved engagement and interactivity, most students reported greater levels of peer-to-peer learning, which in turn was perceived quite positively by students, who generally believed it enhanced their overall learning experience:

To me, being able to discuss a case is more practical than me just sitting, and reading, and thinking myself. So, I think I walked away going, 'Right, there's a few things I hadn't thought about myself', and being able to apply other students' knowledge to future cases and things was really beneficial... It's allowed me to critically think a bit more, and step back and think about a few different things before jumping right into my first thought process (Participant #10).

It was really good chatting to everyone else and talking about a case together... I think the workshop that we did for the assessment really helped with working as part of a team (Participant #4).

I think it was really valid for everyone to be having their say, and they all had interesting and worthwhile opinions. So, it's just good to hear across the board what people are thinking, rather than trying to guess in your head (Participant #8).

There was one student who did not report a favourable experience with respect to engagement and peer-to-peer learning:

I felt as though, like, I was probably the loudest in the room. So, with a quieter group, it's, I think harder to bounce off ideas, so you won't get as much out of it... I'm quite happy to speak, and say what I think, and give it a go. But I did find it... a bit difficult at times when I didn't have people who wanted to put the same enthusiasm in (Participant #3).

Broadening of Knowledge and Understanding, Which Enhanced Confidence

This final theme highlights that students generally perceived the online CPM to have broadened their knowledge and understanding of their own scope of practice and responsibilities, the roles of other health professionals, and the overall healthcare landscape:

A lot of people lump Exercise Physiologists and Physiotherapists together. To have that defining difference in treatment definitely helped my understanding. I think I have a better understanding of when I would refer on, and when something's out of my scope (Participant #5).

This part of the module, I think, helped us to discover more about what each other allied health professional does, and what their scopes of practice are (Participant #2).

I learned about a few new professions that I didn't know there were (Participant #10).

Because I come from a different background, coming from the community sector, I was interested, in particular, seeing the difference across sectors and working in the health sector. So that was useful (Participant #8).

Most students reported that this broadening of their knowledge and understanding translated into enhanced confidence to commence their clinical placements and subsequently work as clinicians in their own right:

Just deepening my understanding of each allied health professional, and when a client may seek certain people for their treatment has definitely helped, I think, my confidence when I go on placement (Participant #5).

If I were to have to deal with other allied health professionals on placement, I imagine I'd be a lot... more comfortable with it (Participant #4).

Whilst almost all students reported an enhanced level of confidence secondary to a broadening of knowledge and understanding, some students did express an underlying nervousness and apprehension with respect to commencing placement and subsequently working as graduate clinicians:

I'm nervous to go into placement, but I'm excited, and I think that'll help me. But yeah, I think it [online CPM] definitely did [improve confidence for placement]. Still... I'm very nervous to actually graduate and be in charge (Participant #7).

I'm definitely at that bit where I'm like, God, how am I going to... you know, in... well not even six months' time, be like, 'Yep, cool, I can start... working in this industry?' I'm like, 'Can I, though?' Do I like, 'Do I feel like I should be?' (Participant #6).

Discussion

This study found that a bespoke online CPM was effective in increasing student self-efficacy for interprofessional practice. This increase was comparable with other research that has investigated the effectiveness of traditional interprofessional learning experiences utilised in a range of medical and allied health courses (Keshmiri et al., 2021; Nørgaard et al., 2013; Watters et al., 2015). The inductive mixed methods approach utilised in this study enabled an a posteriori triangulation, whereby the qualitative data were supportive of the quantitative data, indicating that student self-efficacy and confidence for interprofessional practice increased following participation in the online CPM. This study also found that the bespoke online CPM was acceptable to students who participated in the study. It has been recognised that the creation and implementation of authentic experiences that engage students in genuine peer-to-peer learning is a significant challenge in the online education of allied health students (Nyman, 2025), and in distance education more broadly (Parker et al., 2013). The bespoke online CPM used within this study appears to have successfully addressed this challenge, with the results indicating that the

module created authentic preparation for real-world practice whilst simultaneously fostering engagement with, and learning from, peers.

While all 16 individual SEIEL scale questions were significantly increased pre- to post-online CPM participation, improvements of greater than 35% were observed for four questions: interprofessional collaboration to develop care plans (Q3), providing feedback to team members (Q11), helping sites to understand the interprofessional role (Q12), and evaluating goal achievement (Q15). These findings are pertinent given the recognised cruciality of such skills and capabilities to the success of interprofessional healthcare teams in real-world practice (Bainbridge et al., 2010; Cleary et al., 2019) and, in turn, the value of high-quality interprofessional healthcare in enhancing continuity of care and patient outcomes across a wide spectrum of health conditions and healthcare settings (Lai et al., 2016; Ouwens et al., 2005; van der Marck et al., 2009). Our findings are likely reflective of two major foci of the online CPM framework implemented in our study: (i) a clear outline and delineation of the roles, responsibilities, and scopes of practice of the medical and allied health professionals, achieved via deliberately targeted one-on-one interviews with each of the participating clinicians; and (ii) a case-based learning approach, achieved via an interprofessional case conference with a complex patient presentation, and a subsequent small group synchronous online interactive workshop which was centred around management of complex case presentations. The qualitative data supported the above quantitative findings, with many students reporting a perception of improved understanding of their future role, and the role of other medical and allied health clinicians in the management of complex patient presentations in an interprofessional setting. Specifically, students reported that the online CPM had a direct likeness to actual practical experience, with many students commenting on the real-world nature of the learning experience. Furthermore, students perceived genuine value in enhanced engagement with their peers, with many claiming that this engagement enhanced their capacity to learn from the experience. Moreover, most students reported that the CPM helped to encapsulate and consolidate learning from all subjects across their degree, which subsequently improved their perceived ability to confidently manage complex case presentations. These qualitative findings are consistent with the quantitative data, indicating that students had markedly improved self-efficacy for developing care plans and evaluating goal achievement. Taken together, these results indicate that the bespoke online CPM may have the capacity to address some of the key challenges in facilitating authentic and engaging online learning experiences for allied health students.

Improvements of less than 20%, but still greater than 15%, pre- to post-online CPM participation were observed for three questions within the 16-item SEIEL scale: working with students from other professions (Q1), learning together cooperatively with students from other professions (Q7), and effective interprofessional communication (Q8). This finding is not particularly surprising given that the novel online CPM was specifically designed to not include the typical interaction between students of different disciplines that is characteristic of most traditional approaches to interprofessional learning in tertiary education settings (Reeves et al., 2017). This quantitative finding was supported qualitatively by a limited number of students who reported that their experience of the online CPM may have been enhanced through direct interaction with students from other allied health disciplines. Whilst lack of direct interaction with students from other allied health disciplines may be viewed as a constraint of the online CPM, it is important to recognise

that all 16-items in the SEIEL scale improved significantly from pre- to post-online CPM participation. The relatively smaller improvement in questions related to working with students from other professions may be a necessary trade-off to achieve the high levels of student acceptability that were observed in the current study, and that are not typical of traditional interprofessional learning experiences used in tertiary education settings (O'Shea et al., 2019; Patel et al., 2025; Thistlethwaite, 2012; van Diggele et al., 2021).

Limitations and Future Research

The findings of this study need to be viewed in light of the study's limitations. Firstly, whilst the study adopted a mixed methods approach, the sample size was relatively small (n=10). Furthermore, the study only included clinical exercise physiology students, and this limits the external validity of the findings. Finally, given the voluntary nature of participation in the study, it is possible that more committed and engaged students had a greater willingness to participate. Therefore, the CPM may not be similarly effective and acceptable for all student demographics.

Future research should investigate the effectiveness and acceptability of the CPM in larger cohorts of students from other allied health and medical disciplines. Such research should also seek to make direct comparisons, via the inclusion of a control group, between the CPM and traditional models of interprofessional learning.

Conclusion

This mixed methods study evaluated the effectiveness and acceptability of a bespoke online CPM for clinical exercise physiology students studying in a distance setting. The results presented indicate that the online CPM was effective at increasing student self-efficacy for interprofessional experiential learning and was acceptable to those students who participated in the study. Therefore, a CPM approach may be a viable option in circumstances where the constraints and limitations of traditional interprofessional learning experiences are too great to reasonably overcome. Such circumstances may include instances where there is poor curricula alignment between allied health disciplines within an institution, where logistical arrangements between allied health disciplines is untenable, when courses are delivered via a distance model of education, and/or when the discipline in question is less well recognised professionally and therefore likely to be undervalued or underrepresented within a traditional interprofessional learning experience.

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