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Designing near-peer mentoring for work integrated learning outcomes: a systematic review

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Abstract

Background Work-integrated learning (WIL) is a core aspect of allied health education. WIL placements typically focus on developing clinical skills, with broader conceptions of work readiness a secondary consideration. Near-peer mentoring (NPM), where senior students mentor junior students, is one WIL placement model that holds promise for developing students' work readiness, along with additional benefits for educators and service users. While there is emerging evidence of the benefits of NPM in allied health, a more comprehensive understanding of the design and outcomes of NPM WIL placements for allied health students, their educators and service users is needed.

Methods A systematic search of seven electronic databases (CINAHL, ERIC, ProQuest Education, Medline, PsychInfo, EMBASE and Scopus) from 2003 to 2022 was conducted with 4195 records reviewed. Included studies reported on near-peer mentoring between at least one of the identified 11 allied health professionals providing services to real people (i.e. not simulation). Data extracted included pedagogical approaches, type of service model and relationship of peers to each other and educator, objectives for implementing the NPM, and effects for students. Quality appraisal was undertaken using the Standards for Reporting of Qualitative Research (SRQR).

Results Fourteen studies met the inclusion criteria. The majority were North American in origin, from the disciplines of pharmacy, physiotherapy, psychology and occupational therapy, and used a range of research designs. Four types of placement design were observed from incidental co-location of students and observing outcomes through to deliberate preparation of students and/or educators for their roles in a NPM placement. Outcomes for junior students included lowered anxiety leading to increased confidence and motivation to learn and thus enhanced clinical skills. Senior student outcomes included development of educator skills, increased confidence, and enhanced professional reasoning. Service users and educators also benefited from NPM; however, evidence was sparse in these areas.

Conclusion The evidence supports near-peer mentoring as a valuable WIL model to support work readiness, and several general pedagogical designs are evident. Future research should design NPM WIL with a greater integration of educational theory and evaluate outcomes beyond satisfaction and self-reported experiences.

Keywords Health, Work-integrated learning, Health professions education, Clinical placements, Peer-assisted learning, Near-peer, Work readiness, Mentoring, Student supervision

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Introduction

In general, many allied health professionals are considered eligible to directly enter practice upon completion of their degrees (i.e., without any further requirements such as a postgraduate internship or residency). Thus, adequate preparation and subsequent achievement of professional competencies is essential to ensure graduates are ready for the demands of the workplace. 'Work readiness' is a multidimensional concept, [1] defined as "the extent to which graduates are perceived to possess the attitudes and attributes that render them prepared or ready for success in the workplace" [[2], p12]. It encompasses both technical or discipline-specific and generic or soft skills [3] that support the use of professional judgement in complex situations [4]. Beyond clinical proficiency, work readiness for allied health professionals includes personal characteristics or social intelligences such as confidence, responsibility, maturity, resilience, flexibility, self-awareness and stress management, and non-technical skills such as effective communication with service users and colleagues, clinical reasoning, interprofessional teamwork, and organisational skills, [5, 6] along with participation in the education of others [5, 6].

Work-integrated learning (WIL) is often identified as an appropriate arena for the development of non-technical capabilities, [1] yet in the health professions, WIL, in the form of individual placements, has traditionally focussed on the development of clinical acumen through service user[1]/client contact [7, 8]. Simultaneously, education providers are forced to deal with capacity limitations in workplace-based learning, and it is recognised that individual apprenticeship models of clinical education are unlikely to be viable in the longer term [7, 8]. Individual apprenticeships also limit opportunities for students to develop teaching skills prior to graduation. This may in turn compound limited placement capacity since graduates must first further develop their skills before becoming placement educators [9]. Presently, the predominance of the apprenticeship model means there is often limited focus on students and educators implementing innovative placement models, and where innovations do occur, these studies are often of poor methodological quality [7, 10, 11]. Evidence for WIL models that support all aspects of work readiness – especially the development of educator skills – is therefore required to ensure that allied health graduates are indeed prepared for practice.

Preparedness for practice, or work readiness has been explored in health professions [12–14] generally, with some studies specifically focussing on the unique contribution of WIL [13, 15]. Much of this literature comes from the professions of nursing and medicine and, given that these professions share a common purpose of healthcare service delivery with allied health, findings could be interpreted as being applicable to all health professions. However, even between nursing and medicine, cultural differences in hospital-based teaching and learning practices have been identified, [16] challenging the assumption that WIL placement research findings are applicable across health professions. Attrill et al., [4] argues that generalisation of findings is also impacted by context, since medical and nursing work readiness research is primarily based in hospital settings. This contrasts with allied health professionals who increasingly work in a diversity of practice settings such as disability services, community organisations and private practices in addition to tertiary healthcare. The relative absence of the voice of allied health professionals in health professions educational research to date points to a need for research on WIL models focussing on the development of educator skills involving a range of allied health professions. In this paper, we firstly summarise the pedagogical contribution of one WIL model, near-peer mentoring, investigating the impacts of near-peer mentoring in allied health WIL placements through a systematic review of the literature.

Near-peer mentoring (NPM)

NPM is particularly applicable to workplace-based settings for learning and the development of the associated work readiness skills. Variously referred to as near-peer mentoring, near-peer tutoring, layered learning model, [17] tiered learning or cross-peer assisted learning, [18] it involves students who are one or more academic year levels apart. It is a subset of peer-assisted learning (PAL), which is a well-established educational approach in which students learn from and with each other [19, 20]. This learning occurs in very small groups (1:1 to 1:2 ratios of senior:junior students [19]), with more experienced peer/s also role modelling and reinforcing the learning of less experienced peer/s and in turn learning by teaching [21].

The pedagogical underpinnings of near-peer mentoring in WIL

NPM is broadly considered a pedagogical approach that is aligned with a social constructivist paradigm, whereby knowledge is constructed by individuals from experiences that are integrated into their own understandings, rather than being absolute and transferrable [22, 23]. This combines well in WIL where the context promotes experiential learning; that is, learning in context from

[1] Across healthcare, a range of terms are used for the person accessing the service including patient, client, consumer or service user. In this paper, service user will be used.

authentic experiences and through interaction with others [22]. Important to such learning in WIL is deliberate practice where students have the opportunities for repetition, feedback and reflection to improve their performance [24]. In NPM, these opportunities are enhanced by the availability of peers. Participating in roles of both performer and observer, feedback receiver and feedback provider, also enhances students' metacognitive awareness and self-regulation [25].

Learning together in NPM, students have opportunities to develop their knowledge, skills, and professional identities within their zone of proximal development (ZPD) where substantial seniority or expertise is not required, and learning can occur with the guidance and support of anyone who is more advanced in the area [26]. Supporting this belief is the idea that students, even of differing levels are both cognitively and socially congruent [27]. They share a similar knowledge base which enables the more advanced student to explain difficult topics or share how they learned a complex technical skill or concept. In relation to social congruence, they have both adopted student roles, sharing similar experiences, problems and demands [28]. NPM also provides opportunities for senior students to fulfil relatively senior roles such as supervision to support development of their educator skills prior to graduation. In the process, junior students may feel more comfortable to be vulnerable for new learning and development, [27] and in NPM, senior students may gain confidence in the extent of their knowledge and skill [15] relative to peers at a level of their own recent experience, as well as reinforcement of knowledge and skill through interaction with others and teaching [15, 21, 29].

Through the process of constructivist and experiential learning in WIL settings, students are developing the knowledge, values, and attitudes of professionals in their field in a process of professional socialisation [30]. In NPM, students have opportunities for exposure to, and internalisation of, the norms and practices of their profession with peers who are more advanced as well as with educators [31]. They also have opportunities to see the process of professional entrustment in progress whereby students are entrusted by educators with increasing levels of independence based on an evaluation of the risk involved considering their knowledge, skill and attributes [32]. Similarly, NPM harnesses the tendency for social comparison as a means for self-evaluation [20] as students progress in their professional socialisation and identity formation. Finally, with senior students, junior students, and/or educators interacting and learning together in the workplace, there is also the opportunity for the formation of communities of practice [33] and consequently the motivation and reward of working towards membership of the profession [34].

Evidence for effectiveness of peer-assisted learning

The use of various forms of PAL in health professions WIL are identified in the literature dating back to the 1980s, [35–37] in a number of health professions education systematic reviews [7, 11, 20, 21, 38]. These reviews vary as to who was included (medicine, nursing, or all health professions) and the inclusion or exclusion of a near peer versus same level PAL. Overall, these reviews demonstrate that students benefit from increased opportunities for discussion, reflection, and peer support in PAL models [7, 11] with students in NPM also finding learning from a near peer lower pressure than learning from an educator [15]. Generally, students' increased confidence also leads to reduced educator supervision needs [7, 11]. Improved outcomes are often noted in collaborative, non-technical, work readiness skills and attributes such as communication, teamwork, time management, and leadership, as well as autonomy and clinical reasoning [10, 11, 15, 38, 39]. Challenges arise when there is perceived competition between students, or students feel that learning from peers competes with their learning from 'expert' educators, especially as they approach the end of their placements [7, 11, 15, 39]. When paired with junior students, however, senior students gain confidence and teamwork skills thought to be beneficial in the transition to graduate practitioner [15, 39]. Despite these generally positive outcomes for students identified in previous reviews of PAL, the quality of included studies was criticised, especially since study designs focus on student and educator satisfaction rather than learning, behaviour and/or impact levels [10, 11]. Reviews also do not distinguish the difference in allied health professions contexts from nursing and medical contexts, meaning contextual outcomes and experiences may be neglected [7, 10]. Though research quality has improved over time, even recent reviews across all health professions concluded there is insufficient evidence to recommend any particular placement model [11, 15]. While outcomes evidenced to date are reasonably consistent [7] and align with what may be expected given the theoretical foundations of PAL, there has been limited consideration of such explanations for the outcomes observed in allied health, [10] in contrast to medicine [20] or nursing [40].

In the placement setting, it is also important to consider the benefits and impacts for other stakeholders such as service users, educators and employers. It has been noted that PAL and NPM placement models can be challenging for educators to implement, particularly if students have different learning needs or a student is underperforming or requires support in managing peer relations [11, 15, 38, 39]. Educator training regarding the facilitation of PAL is therefore recommended, [7, 39] though it is also challenging if placement models

are prescriptive of PAL activities [15]. On the other hand, educators can find that peer interactions during the placement can decrease the time educators spend in instructing and supervising students and increase the service productivity when accounting for student inputs [10, 38, 39]. Educators may also have opportunities to gain additional skills related to instruction, teamwork, and clinical management [39]. The balance of these challenges and benefits do vary, and findings regarding the time commitments for PAL placements are mixed, [11, 15, 38] which may lead educators to perceive that PAL placements will be time consuming [39]. Organisation is certainly required, including to schedule students together and for advance preparation of the placement, educators, and students, with a degree of tailoring to students' goals and individual needs [7, 10, 15, 38, 39]. It has also been noted that there is little evidence regarding the impact of PAL and NPM placements on service users, despite the argument that such placements should improve quality and outcomes in healthcare [39].

The evidence gaps for allied health NPM placements

The use of NPM in allied health WIL has the potential to address the quality of learning experiences for students, enhance outcomes for service users, improve educator productivity and increase placement capacity. WIL, like clinical practice, should be based on evidence [39]. The lack of focus on and supporting evidence for the impacts of NPM on allied health service users and educators is perhaps a reason why there has been limited uptake of these placement models. While considerable evidence exists for NPM PAL placement models in medicine and nursing, [39] there is limited evidence beyond 2:1 placement models and insufficient evidence to recommend any specific PAL placement model in allied health [11, 15]. Recent systematic reviews have mostly failed to consider the underlying pedagogies used to inform placement design while recommending that future studies collect further evidence beyond student and/or educator satisfaction to consider outcomes for student learning, behaviour and/or impact [41]. Presently, allied health educators are unable to determine how to effectively design and implement NPM to achieve desired learning outcomes for students. Therefore, this study sought to address the following questions:

- What are the outcomes of near-peer mentored work integrated learning placements for allied health students, their educators and service users?
- How are near-peer mentored placements in allied health designed to achieve those outcomes?

Methods

This review was conducted using a systematic approach to literature searching and data analysis. Details of the protocol for this systematic review were registered on PROSPERO (CRD42018102790) [42].

Search strategy

Seven databases were searched: Cumulative Index to Nursing and Allied Health Literature (CINAHL via EBSCO), Educational Resources Information Center (ERIC via EBSCO), Proquest Education (via Proquest), Medline (via OVID SP), PsychInfo (via OVID SP) EMBASE (via OVID SP) and Scopus for English-only sources dated between January 2003 and December 2022. The years 2003 to 2022 were selected to both overlap with an earlier near-peer learning in WIL-specific systematic review [43] while capturing the most recent literature, with the search first undertaken in March 2018, updated in October 2019 and last repeated on 21 November 2022.

Search terms

Previous systematic reviews [10, 18, 44] provided insight into the breadth of search terms needed to capture NPM in work integrated learning placements. Search terms included combinations of the terms student, clinical, education, placement, clerkship, practicum, and professional education; terms to capture peer learning included near-peer, peer-assisted, peer mentoring, cross peer, paired, collaborative or cooperative learning; and allied health related terms. To determine which professions to include in the search, the list published by Allied Health Professions Australia [45] was used with the following professions included: occupational therapy, physiotherapy, speech pathology, social work, pharmacy, dietetics, audiology, podiatry, exercise physiology and paramedicine as well as their various international derivatives (for example, physiotherapy or physical therapy and exercise physiology or exercise science professional). The criteria for inclusion/exclusion is outlined in Table 1.

Screening and selection of studies

Covidence [46] was used to manage the review process (refer to Fig. 1). The first 300 articles (sorted according to title) were independently reviewed by title and abstract by the lead author (MP), with two additional authors (JT and GE) reviewing 50% each. Where differences were identified, all three reviewed the title and abstract together to establish concordance. With agreement reached on the interpretation of the criteria through this process, the team moved to single reviewer screening (MP) with a tendency to include rather than exclude as

Table 1 Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Peer reviewed and published after 2003	Articles not published in English, or not available as full-text
Includes at least one of occupational therapy/physiotherapy/physical therapy/speech pathology/speech therapy/ dietetics (including nutritionist where relevant to country context)/ social work, psychology, audiology, exercise physiology or exercise science professional, podiatry or chiropody, pharmacy and paramedic	Is descriptive article or editorial and/or no outcomes are reported
Reports on near-peer mentoring—where senior student has some responsibility for the learning of the junior student (any level to any level) undertaking a placement (may include multiple student models e.g., 2:1 or 2:2 or more), within same or across disciplines	Participant group only nursing or medical or any other discipline not considered allied health
Placement involves students providing real services to real service users (can include on-campus clinics)	Placement is fully 'simulation' or otherwise not providing real services to real people
Reports on effects/outcomes for students, educators and/or service users	Students only same level to same level

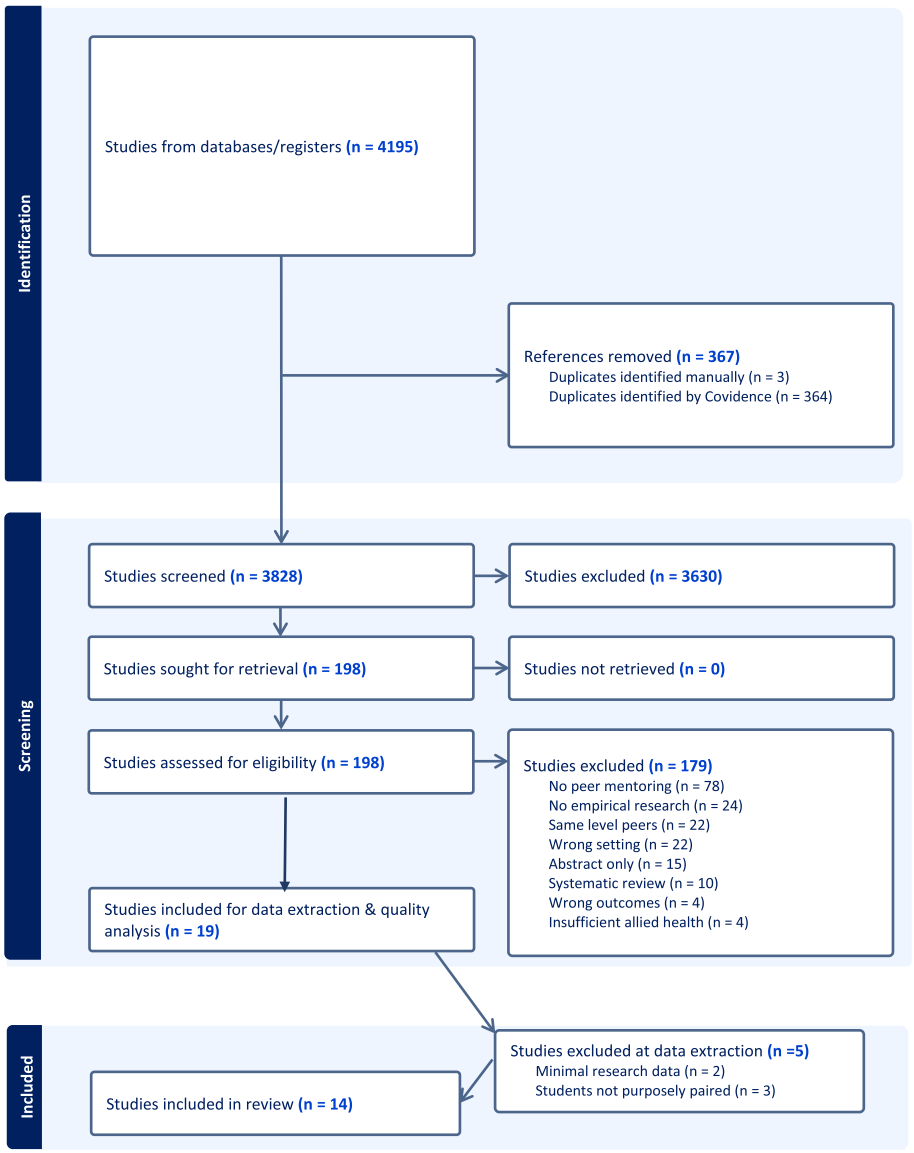

Fig. 1 PRISMA identification, screening and inclusion process

outlined by Tai et al. [20] Where it was not clear whether to include based on title/abstract, MP consulted with JT and GE and a final decision was made.

Full-text screening of studies found across the three search dates was undertaken on 198 papers independently by a combination of two of MP, GE and JT, with the third screener providing conflict resolution. Of note, is the addition of three papers [47–49] found in the final search, being the only ones published after October 2019 that met the inclusion criteria. In total, this process identified 19 papers as potentially meeting all criteria for inclusion in the review. Given the differing nature of the papers, and to ensure that all relevant information was located and reported, MP, GE and JT scrutinised each article in depth. Data extraction was completed separately using a simple data extraction tool [20] with headings aligned to the review questions. Findings were compared and compiled into final descriptions. Through this process a further five studies were excluded as it became evident that these studies did not fully meet the criteria. Specifically, participants were not purposefully paired for the purposes of learning, or minimal research data was presented.

Quality review was then undertaken on the final 14 papers using the Standards for Reporting of Qualitative Research (SRQR), [50] which was designed for holistic judgement as befits a qualitative approach, instead of a quantifying score. Each paper was assessed for quality across 21 standards of the SRQR. Two researchers (MP and GE) applied the SRQR standards separately, deeming the quality of meeting each standard to be high if the majority of elements were adequately described and justified, low if substantial elements were described but not adequately justified, or unclear if substantial elements were not described in adequate detail (refer to Supplementary Material). MP and GE then compared these judgements with the aim of reaching consensus. The overall judgement of the quality of each paper was discussed and agreed to by MP, GE and JT with more weighting placed on the standards relating to methodology than other standards. For most papers, quality was difficult to judge due to insufficient information provided in the articles resulting in many unclear ratings. No papers were excluded based on the quality assessment given the small number of papers overall and the descriptive nature of this review. Instead, study quality was considered when considering the weighting of the evidence.

Results

Description of studies

The final 14 papers, (henceforth called studies; see Table 2) described 12 NPM placement interventions. Two studies were represented by pairs of papers. One of the NPM placement interventions was reported first from the student learner [49] and then educator [47] perspectives. The second study was undertaken with pharmacy students [51] with the design of the NPM intervention and research methods appearing to be replicated in a later comparative study [52, 57] between medical and pharmacy students in the same hospital. Although these studies appear to be paired and each group of authors references the earlier study, for the purposes of the results they are reported as individual studies.

Studies were from the United States ($n=6$), Canada ($n=7$) and the United Kingdom ($n=1$). Disciplines represented included pharmacy, physiotherapy, psychology and occupational therapy, with 12 studies involving students from the same discipline, [6, 9, 17, 47–49, 51–56] and two pairing related but distinct roles within the same disciplines (e.g., occupational therapy with occupational therapy assistants and physiotherapy students with physiotherapy assistants) [57, 58]. Across the 14 studies, placement lengths varied from four weeks [51] through to nine- to twelve-month programs, [53, 55] with some being part-time only for the junior [6, 9, 53, 56] and/or senior students [6, 53, 55, 56]. Five studies were based in university owned and operated clinics, [6, 9, 53, 55, 56] six in adult hospital settings, [17, 48, 49, 51, 52, 58] one in mixed hospital/community settings [47], and one in a residential aged care setting [54]. One study did not provide sufficient data to determine the placement setting [57].

Studies were also varied in their research design. Six were program evaluations, [6, 17, 53, 55, 57, 58] one mixed methods research, [56] two drew on ethnographic principles, [51, 58] two were case study research, [9, 54] with one of these also utilising action research [54] and three studies used a retrospective design, [47–49] being either survey and/or individual semi-structured interviews. Sample sizes ranged vastly for both students ($n=4$–130) and educators ($n=1$–20). In one study, service users' experiences ($n=16$) were also reported [53].

The aims and objectives of the studies were also heterogenous, with research designs reflecting the variety of positioning of the research in relation to the rationales for including NPM. For example, some studies described placement structures where, due to the curriculum design and resulting overlapping placement across different year groups, near-peer mentoring was already occurring. The focus of these studies was to evaluate what had been ongoing for some time [51] or to explore the value of additional introduced elements [53, 58]. Several studies focused on student and/or educator perspectives of evaluating the introduction of NPM for the first time, with evaluations undertaken on placement completion, [54] within 3 years of graduating, [49] or at times not

Table 2 Overview of studies

Author(s) Year Country	Educational Theory &/or Teaching/Learning Methods	Service Model Mentor/Mentee Educator relationship	Objectives for implementing NPM	Research Design & Study Aim	Data collection methods	Effects for students/ educators/service users
Black et al. [53] 2017 USA	Case based, interactive and participatory through use of grand rounds	On-campus pro-bono teaching clinic, plus additional Grand Rounds model of case presentation PT[a] doctoral program, Year 3 mentor year 2 Year 2 mentor year 1 (Mentoring occurs across each learning team) PT educator(s) on-site, facilitate discussion, provide hands-on guidance as needed	i. To provide: ii. Better continuity of care for clients iii. Stronger learning experience for students	Program evaluation To evaluate implementation of senior/junior student teams and grand rounds model	i. Year 1 Reflective survey ii. Year 2 Pre/post surveys iii. Year 3 Reflective statement iv. Educator interview v. Client: Satisfaction survey	*Students* • Year 2 reported increased confidence in service delivery (statistically significant), supported by educator observation of performance • Year 1 valued active involvement in service delivery; assistance of Year 2/3 in helping their learning; requested a more active role in grand rounds • Year 3 valued their mentorship role • All students valued team learning *Educator(s)* • Nil noted *Service users* • 50% of clients noted improved student knowledge of their condition, ambiguous about recognising student(s) delivering service • Students valued team learning, benefiting clients' progression • Educators noted grand rounds assisted client continuity of care
Boniface et al. [54] 2012 UK	Collaborative peer learning in a pyramidal, long-arm supervision model	Role-emerging[b] placement in an older adult's residential care setting Final year undergraduate Welsh OT[c] students' mentor Polish OT students with less placement experience (students paired) OT educators provide long-arm distance supervision	To provide an environment where students can learn from each other through shared similarities and differences	Action research and case study To investigate student and educator experiences of peer-assisted learning and long-arm supervision	i. Semi-structured interviews	*Students* • All students valued experiential learning opportunities to develop skills • Senior (Welsh) students developed assertiveness, negotiation and conflict resolution skills • Reciprocal learning between near peers *Educator(s)* • Personally challenging; learned about self as an educator • Needed peer support from each other • Noted need to provide pastoral care to students *Service users* • nil noted

Table 2 (continued)

Author(s) Year Country	Educational Theory &/or Teaching/Learning Methods	Service Model Mentor/Mentee Educator relationship	Objectives for implementing NPM	Research Design & Study Aim	Data collection methods	Effects for students/ educators/service users
Cicinelli et al. [47] 2021 Canada (Paired with McIntyre et al. [49]	Nil noted	Teaching hospitals/community settings Alternative placement models introduced including: PAL[d] (≥ 2 same-level students supervised by ≥ preceptors; ≥ 2 two or more senior students (resident or upper-year pharmacy student) and 1 or more junior students assigned to one or more preceptors, co-preceptorship or shared precepting with more than one preceptor per student or student group	To address anticipated placement shortages with introduction of entry to practice PharmD[4] degree	Qualitative To describe pharmacy preceptor's experiences in alternative preceptor models and their perceptions of these model's impact on the knowledge, skills attitudes, behaviours and professional practices of both themselves and their students	Semi-structured interviews	*Students* Educators report: • Students enjoyed learning from each other's perspectives/opinions, more at ease with presence of another learner • Learner independence and sense of responsibility with peers providing realistic benchmark for performance, motivating performance • Senior students consolidated knowledge, developing confidence in clinical skills and educator competencies *Educator(s)* • Efficiency in offering more student placements within shorter timeframe • Better workload balance through shifting responsibility for junior student learning to senior student • Allowed for benchmarking of performance • Improved time management, teaching and feedback skills, • Became more adaptable Challenges • Increased time to manage evaluations and administrative tasks, *Service users* • Educators report enhanced opportunities to provide more comprehensive care to service users

Table 2 (continued)

Author(s) Year Country	Educational Theory &/or Teaching/Learning Methods	Service Model Mentor/Mentee Educator relationship	Objectives for implementing NPM	Research Design & Study Aim	Data collection methods	Effects for students/ educators/service users
Collins et al. [6] 2012 USA	Reflective apprenticeship with peer mentoring drawing from Cognitive Apprenticeship Model	On-campus pro-bono clinic Year 3 doctoral PT students mentored Year 2 doctoral PT students (pairs)	To provide: i. an innovative approach to advanced, supervised experience ii. skills necessary to be effective clinical instructors	Program Evaluation No study aim stated	i. Journal entries ii. Focus groups	*Students* • Year 3 students identified their clinical development by comparing own performance with Year 2 • Year 3 students felt challenged, rewarded, knowledgeable • Year 3 students increased in confidence and sense of capability • Year 3 students developed skills to facilitate learning for Year 2 and service users • Year 3 students developed insight into instructor role; interest in becoming instructor in the future *Educator(s)* • Felt rewarded in being able to facilitate integration and application of recently learned material *Service users* • nil noted
Dockter et al. [9] 2013 USA	Integration of clinical skills development with deliberate educator skill development	Pro-bono clinic Year 3 PT students supervise and mentor Year 2 PT students (pairs) Director of Clinical Education manages clinic, assesses students. Core faculty also assist with clinic teaching	i. Enhance 3rd year student development as quality educators in the future ii. Enhance 2nd year students' ability to perform peer review and provide constructive feedback	Case study To develop an educational model that integrates clinical teaching development and peer coaching	i. Peer-assessment survey (Year 2) ii. Self-assessment survey (Year 3)	*Students* • Year 3 students identified own ability to act as role models • Year 3 students able to adapt to learning needs of Year 2 students and practice peer communication skills • Some Year 3 students realised they would like to become Clinical Instructors • Year 3 students self- identified development needed in Clinical Instructor skills • Year 3 students recognised challenges of transition between student, therapist and educator • Reciprocal learning between near peers • Year 2 students received frequent, timely, constructive feedback and found Year 3 students helpful in their learning *Educator(s)* • Nil noted *Service users* • Nil noted

Table 2 (continued)

Author(s) Year Country	Educational Theory &/or Teaching/Learning Methods	Service Model Mentor/Mentee Educator relationship	Objectives for implementing NPM	Research Design & Study Aim	Data collection methods	Effects for students/ educators/service users
Foxwell et al. [55] 2017 USA	Experiential learning paired with deliberately structured learning experiences targeting expected competency development	University owned psychotherapy training clinic Psychology Doctoral Interns paired with Clinical Psychology practicum students Licensed Psychologists [2] supervised program and held primary clinical responsibility. Psychologists met with junior students weekly and senior student (interns) twice	i. Develop basic supervision skills in pre-doctoral student mentors ii. Foster professional development iii. Develop fundamental procedural and clinical skills in pre-doctoral mentees	Program Evaluation To pilot a peer mentorship program in clinical psychology	i. Doctoral intern Pre and post survey on training in supervision ii. Doctoral intern self-assessment of supervision competency iii. Mentor and mentee satisfaction survey	*Students* • Increased knowledge of clinical supervision amongst students • Senior student self-reported improved confidence and competence in clinical supervision skills • Strong mentor–mentee alliance and student satisfaction *Educator(s)* • Nil noted *Service users* • Nil noted
Jelley et al. [57] 2010 Canada	Experiential shared learning experience (2:1 model), collaborative practice and reciprocal peer coaching Educators trained in use of model	Placement setting not defined Reciprocal Peer Coaching Model – Year 3 PT students paired with Year 2 (final) year PTA[e] students on shared placement Experienced physiotherapy clinicians provided supervision under a 2:1 model of supervision	Promote collaborative practice between PT and PTA students	Program Evaluation To investigate the perceived impact of a shared placement on PT and PTA students' skills (communication, consultation and assignment of tasks)	i. Pre and post-placement interviews ii. Participant reflective journals	*Students* • Skill and confidence building (organisation, interdisciplinary collaboration, effective communication) • Feeling of comfort and inclusion in clinical team • Understanding of other team member roles • Increased self-directed collaborative learning *Educator(s)* • Funding enabled educators to receive relief time from regular duties for preparation, student orientation and teaching *Service users* • Nil noted

Table 2 (continued)

Author(s) Year Country	Educational Theory &/or Teaching/Learning Methods	Service Model Mentor/Mentee Educator relationship	Objectives for implementing NPM	Research Design & Study Aim	Data collection methods	Effects for students/ educators/service users
Jung et al. [58] 2008 Canada	Sharing experiences, sharing knowledge in a collaborative learning model	Inservice user hospital settings OT students paired with OTA[f] students (some time alone, sometimes together) Supervised by OT educator (assisted by OTA educator)	Help students: i. Learn professional roles and relationships ii. Share knowledge and collaborate in pairs for service provision	Program Evaluation To explore the impact of a combined collaborative fieldwork placement and weekly tutorial as a teaching strategy for intra-professional education	i. Student reflective journals ii. Student focus groups or survey iii. Tutor journals iv. Educator focus group	*Students* • Emerging sense of self/identity • Able to articulate roles of self and peers • Enjoyed client interaction, relationships and wealth of learning opportunities provided • Recognised the importance of communication skills, consulted with each other, resolved caseload conflict and clarified terminology / documentation methods • Practiced exchange of information, participation in teamwork and close collaboration with professional partner • Learning via peer and in collaboration with peer *Educator(s)* • Nil noted *Service users* • Nil noted
Kasper et al. [17] 2018 USA	Experiential, layered learning (cognitive apprenticeship) model, learning from each other	Ambulatory care setting in veterans' hospital managed by university Year 4 doctoral pharmacy students paired with Year 3 doctoral pharmacy students Pharmacy educator on-site to supervise paired students 1:4 supervision Educator prepared Year 4 students for teaching role and provided guidance for all students	i. To accommodate overlap between Year 4 and Year 3 students placement rotations ii. To observe whether overlapping rotations enhanced the quality of the student learning environment	Program Evaluation To observe the teaching–learning interactions between near-peer students and evaluate student perceptions of a layered learning model (LLM) in pharmacy	Survey	*Students* • Year 3 students valued variety of teaching style, comfort with learning environment • Year 4 students valued opportunity to reinforce own knowledge through instruction • Greater appreciation of educator role amongst Year 4 students • Authors hypothesise the model assisted with readiness for Year 4 placement or post graduate clinical practice *Educator(s)* • nil noted *Service users* • Year 3 students perceived they could contribute to service user care, • Year 4 students perceived enhanced quality of care as outcome of collaboration with Year 3 students

Table 2 (continued)

Author(s) Year Country	Educational Theory &/or Teaching/Learning Methods	Service Model Mentor/Mentee Educator relationship	Objectives for implementing NPM	Research Design & Study Aim	Data collection methods	Effects for students/ educators/service users
Kucharski-Howard et al. [56] 2019 USA	Experiential collaborative model, peer mentoring relationship with deliberately scaffolded learning experiences including delineated roles/ tasks for senior and junior students	Pro-bono clinic Year 1 doctoral PT students paired with Year 2 doctoral PT students during placement Faculty act as role models supporting development of mentoring skills in Yr 2 students; provide feedback	i. To ensure graduates have the knowledge and skills required to mentor and serve as future clinical educated ii. To strengthen a lifelong commitment to mentoring	Mixed methods To investigate student perceptions of the development of mentoring skills in a physiotherapy doctoral program	i. Standardised survey: Mentoring Culture Assessment ii. Focus group iii. (Data collected from Yr 2 cohort only)	*Students* • Valued model as preparing them for future clinical practice and teaching • Perceived that they further developed skills in communication, clinical reasoning, problem-solving, mentoring and confidence • Described expectation of being lifelong students *Educator(s)* • nil noted *Service users* • nil noted
Leong et al. [51] 2012 Canada (Paired with Sharif-Chan et al. [52])	Experiential, paired clinical skills development with deliberate exposure to selected teaching tasks for senior students	Haemodialysis unit in a teaching hospital Doctoral pharmacy student and pharmacy resident[g] mentored Year3/Year4 pharmacy students Educator outlined teaching expectations for senior students, led group teaching sessions and formal service user discussions. Provided consultations to all students for service user related decisions	Not stated	Exploratory observation guided by principles of ethnography To observe the interactions between pharmacy students learning in a near-peer teaching environment	i. Field notes (daily observations) ii. Semi-structured interviews	*Students* • Year 3 / 4 students exposed to different perspectives from PharmD[4] student and others; valued more people to ask questions of; able to observe what their future practice could be • Challenges included increased repetition of information *Educator(s)* • Valued student opinions as part of the team • Unit physicians stated more service users able to be seen due to student presence *Service users* • Unit physicians noted more service users able to be seen

Table 2 (continued)

Author(s) Year Country	Educational Theory &/or Teaching/Learning Methods	Service Model Mentor/Mentee Educator relationship	Objectives for implementing NPM	Research Design & Study Aim	Data collection methods	Effects for students/ educators/service users
MacDonald et al. [48] 2020 Canada	Nil noted	Hospitals Senior peer(s) providing learning support to junior learner(s), assigned to one preceptor or co-precepting team	i. Expand placement capacity ii. Diversify preceptor practice and student learning experience iii. Benefit clinical care through involvement of more student pharmacists	Survey design To explore the use of PAL and NPM models of precepting, as well as attitudes and beliefs about their use Objectives: To quantify the types of precepting models used in experiential training of student pharmacists in hospital practice in Alberta, their advantages and challenges as well as supports needed for implementation	Online survey (Likert & free text responses)	*Students* Educators/Pharmacy leaders report: • Instils teaching responsibility in senior students • Consolidates knowledge and skills through teaching others • Fosters pharmacy culture and expectations of lifelong learning and teaching • Students feel less intimidated • Students can split workload Challenges: • Access to facilities • Meeting the learning objectives of both senior and junior students • Differences in learning styes or personalities • Too few service users for students to share *Educator(s)* • Decreased preceptor burnout • Increased opportunities for staff education • Accepted in environment as mimics medical teaching model • Efficient or more efficient than 1:1 learner preceptor model Challenges: • Time to complete learner assessments • Increased support needs for preceptors • Scheduling logistics • Balancing teaching and on-teaching workload • More challenging to support struggling students • Students working too collaboratively and not independently • Buy-in and dedication of preceptors to the model *Service users* Educators/Pharmacy leaders report: • Increased capacity/efficiency of provision of service user care

Table 2 (continued)

Author(s) Year Country	Educational Theory &/or Teaching/Learning Methods	Service Model Mentor/Mentee Educator relationship	Objectives for implementing NPM	Research Design & Study Aim	Data collection methods	Effects for students/ educators/service users
McIntyre et al. [49] 2019 Canada (Paired with Cicinelli et al. [47])	Nil noted	Teaching/Non-Teaching hospitals Alternative placement models introduced including: PAL (≥ 2 same-level students supervised by ≥ preceptors; ≥ 2 two or more senior students (resident or upper-year pharmacy student) and 1 or more junior students assigned to one or more preceptors; co-preceptorship with more than one preceptor per student or student group	i. Expand placement capacity ii. Explore student experience of the models	Qualitative To characterise students' perceptions of and outcomes from non-traditional teaching models	Semi-structured interviews	*Students* • Enjoyable experience, increased motivation • Comfort in relatability, less pressure • Shared workload responsibility, less preceptor attention decreased learner anxiety • Increased opportunities for learning, led to increased self-management, communication, collaboration and teamwork • Increased exposure to service user cases • Senior students 'bridged' classroom knowledge and real-world practice for junior students, sharing their reasoning and providing feedback • Retrospectively, graduates drew from learning experiences as students to inform their current preceptor practices Challenges: • Junior students could feel intimidated • Less individual preceptor attention, difficult to identify students' weaknesses *Educator(s)* • Nil noted *Service users* • Nil noted

Table 2 (continued)

Author(s) Year Country	Educational Theory &/or Teaching/Learning Methods	Service Model Mentor/Mentee Educator relationship	Objectives for implementing NPM	Research Design & Study Aim	Data collection methods	Effects for students/ educators/service users
Sharif-Chan et al. [52] 2016 Canada (Paired with Leong et al. [51] *NB: pharmacy data only extracted.*)	Experiential, informal peer teaching	Haemodialysis unit in large teaching hospital BScPhm[h] student paired with a final year PharmD[i] student and pharmacy resident[i] Role of educator not specifically provided; however students did consult with educator for all major decisions	Not stated	Exploratory observation guided by principles of ethnography To compare and explore themes related to peer teaching in a medical and pharmacy clinical teaching unit To provide suggestions for future research in pharmacy experiential near-peer teaching	i. Field notes (daily observations) ii. Semi-structured interviews	*Students* • Undergraduate student approached both PharmD student and resident equally • Peer teaching and support evident in absence of the educator, all students benefited from the model • Challenges included anxiety around formal peer teaching; role confusion for PharmD student (less practically experienced than undergraduate) and student initial difficulty managing variable daily schedules in order to attend range of informal/formal learning *Educator(s)* • Nil noted *Service users* • Nil noted

[a] Physiotherapy or physical therapist
[b] Role-emerging placement – placement where there is no established occupational therapy role and educator provides distance (off-site) supervision
[c] OT – Occupational therapy
[d] PAL – Peer-assisted learning
[e] PTA – Physical Therapy Assistants
[f] Occupational Therapy Assistants
[g] For the purposes of this study, residents are not considered to be students and findings specific to the resident experience excluded in the analysis
[h] BscPhm – Bachelor of Science in Pharmacy
[i] BscPhm – Bachelor of Science in Pharmacy
[j] PharmD – Doctor of Pharmacy

explicitly reported [47, 48]. Other studies had more specific goals for introducing NPM; for example, to explore whether NPM could assist students in the acquisition of skills required to be effective educators, [47, 48] or to ensure students from differing roles within the same discipline (e.g., physiotherapists and physiotherapy assistants) were better prepared for working collaboratively [57].

Overall, the quality of the papers was difficult to discern and therefore to weight in the evidence when also considering different designs and aims. There were, however, exemplars [6, 9, 52–55, 57] that adequately described and justified most of the elements for the quality standards pertaining to the methodology and results. Most of the papers had multiple sections scored as 'unclear' due to limited reported details about the study, with those deemed of lower quality not providing adequate justification and often not clearly being aligned to a research framework.

Placement design

The catalyst for adoption of a NPM model varied across the studies. Analysis of the placement designs described provided insight into the underpinning educational theories and/or learning strategies utilised. The placement designs could be organised into four main groupings: the first related primarily to co-locating the students and observing outcomes, the second to preparing students to achieve expected learning outcomes, and the third to preparing educators for their role in placement design. The fourth group consisted of retrospective studies of whole student cohorts, where the emphasis was on the student and academic experiences, with no specific information provided about placement design.

Co-location of students

Three studies [53, 54, 58] primarily drew on the theories of collaborative learning and experiential learning [53, 54] to inform placement design. Examples of learning strategies included introducing Grand Rounds to provide better continuity of care and stronger learning experience for students [53] or joint tutorials between related disciplines to discuss interprofessional issues [58]. The underlying premise in these studies was that by co-locating students in a collaborative peer relationship, mutual learning would occur through the sharing of experiences and knowledge, with junior students also learning from observing their senior peers. In these studies, there appeared to be minimal to no preparation of students for their roles as mentor/mentees or even co-learners. While the authors reported that students found the experience satisfying and gained confidence in some skills, [53, 54] it was not clear the degree to which this could be attributed to the near peer relationship as opposed to the placement learning experiences generally. Outcomes from these studies included recommendations related to the need for improved preparation of students, including clarity of senior and junior roles [54].

Deliberate student preparation

Studies in this group [6, 9, 17, 55, 56] included those where the authors deliberately designed their placement models to meet specified student learning outcomes, such as developing senior students' educator skills with the view that they eventually become formal educators of others, or for fostering interdisciplinary teamwork. Whilst drawing from experiential learning theory, [9, 55] these authors also applied learning theories or models such as cognitive apprenticeship [6] and transformative learning [6] in a layered learning [17] or progressive curricular model [56]. In these five studies, senior and junior students were specifically prepared for their roles. Junior students were primarily prepared for aspects of direct service delivery and in one study also for their role in providing feedback to senior students [9]. Senior students were specifically prepared for their role as educators, mentors or coaches. While the senior students may initially have a greater clinical role (e.g., to model practice behaviours/skills), in some studies [6] this was reduced over time to enable increased opportunity for junior student involvement in service delivery. For all studies in this group, senior students were prepared for their mentoring role during classes occurring in parallel with the placement, [6] or within the placement itself [17, 55, 56]. For the within-placement model, learning experiences were deliberately scaffolded, with ongoing coaching/education sessions and/or educator modelling to support the development of the senior students' mentoring role. Several of these studies [6, 17, 56] implemented a progressive circular or layered learning model where students experience firstly the junior, then senior role, in the same context. Three of these studies were pro-bono university clinics [6, 9, 56] the other two university managed clinics, either in the academic medical centre [55] or ambulatory clinic in a local hospital [17]. Thus, for students entering the senior role in these studies, some had already experienced being a junior student and were familiar with the placement context, educators and service delivery models.

Compared with the first group, where students were co-located with the aim of learning from each other, studies in this group deliberately designed for specific outcomes. With targeted preparation and some degree of ongoing coaching (either in class or in the placement), a different range of outcomes were reached. For example, students were seen to have a greater degree of

confidence in not only their educator skills, but in their clinical skills as well, with one study suggesting the model assisted with readiness for the final placement and postgraduate clinical experience, [17] and another that students demonstrated increased confidence and sense of capability [6]. Students and their educators perceived that students developed clinical skills in communication, problem-solving and clinical reasoning and were able to identify growth both in themselves and junior students, [6, 17, 56] with participants in one study reporting knowledge being reinforced through the instruction of junior peers [17]. In studies where the learning was explicitly scaffolded, where the educators modelled how to educate, and where students rotated through from junior to senior student, the findings suggested that these senior students emerged from the experience feeling confident in the educator skills they had developed, positioning themselves as lifelong learners and being inspired for, and feeling prepared for future educator roles [6, 9, 55, 56].

Deliberate educator preparation

One study incorporating deliberate educator preparation [57] was identified, being otherwise similar to the studies with deliberate student preparation designed to achieve student learning outcomes. This study drew from learning theories such as collaborative learning within a reciprocal peer coaching model. However, the preparation focus in this study was on the educators who were encouraged to use guidelines for collaborative practice to create optimal learning experiences for student pairs. Outcomes of this model were similar to those studies where students were co-located with minimal to no preparation for their educator roles.

Retrospective perspectives

The final and most recent group of studies [47–49] had a retrospective approach to investigating the use of NPM placements and did not explicitly state either the educational theory or learning strategies implemented in the original placements. These studies employed survey and semi-structured interview methods to understand student and educator perspectives on past experiences with NPM models of placement. Findings from these three studies reiterated outcomes for students and educators found in the other groups of studies, such as building educator skills, student autonomy and student enjoyment [47–49]. Additionally, MacDonald et al. [48] gathered suggestions from educators on strategies to mitigate specific challenges encountered in future implementation of the model.

Observed outcomes

A collation of reported outcomes reported in included studies is reported in Table 3. Outcomes for each stakeholder group are briefly summarised below.

Overall, the NPM model was well received by most students [17, 55]. Many of the studies supported that the model facilitated development in students' personal growth, skill acquisition and well-being. As discussed above, outcomes varied across the studies, depending on the intent and educational approaches to student placement. Skills such as communication, confidence and collaborative practice were observed to be developed, including reports of student motivation and inspiration for the roles of clinician [9] and educator in the future [6, 48, 49, 56]. Outcomes observed by students and educators were different between senior and junior groups with predominantly positive outcomes reported. A few studies described challenges of the model for students with reports of some anxiety, repetition of information, difficulties managing time, competitiveness and role confusion [48, 52].

Outcomes for educators

Six studies [6, 47, 48, 51, 54, 57] commented specifically on the educator impacts of implementing this model at their sites. Educators further developed their supervision skills and support for each other in this model [54]. Educators also felt rewarded in facilitating this integration of near-peer student placement models with client care [6] and in one study reported the logistical benefits of project-funded relief time from duties to prepare for the placement [57]. Challenges reported for educators included the balancing of different learner needs and time commitment for tasks such as preparation and assessment [47–49].

Outcomes for service users

Five studies mentioned an impact on service users and health care delivery, [17, 47, 48, 51, 53] with only one of these [53] including service users as direct participants contributing their own perspectives. None of the impacts on service users were measured; all were reported from the perspectives of participants. In the one study that included service users as participants, those service users did not overtly recognise the students as delivering a service [53]. Students and educators were more positive about the impacts on service users, with participants perceiving the team learning approach in NPM improved service users' care and progression, [17, 51] and educators feeling the model assisted with continuity of service for service users. [53] It was also reported that

Table 3 Reported outcomes of using near-peer mentoring in allied health placements

Outcomes for students	Outcomes for educators	Outcomes for service users
Junior Students: Enjoyment in placement & service delivery [47, 49, 53, 54, 58] Confidence in service delivery [53] Enhanced learning through peer feedback [9] Exposure to alternative ways of working [51, 54] Motivation to improve [47, 49] Reduction in anxiety, increased comfort [49] Repetition of information [51] Senior peer bridges theory to practice [49] Companionship, lowered anxiety [48, 49] Less individual educator attention [49] *Senior Students:* Inspiration to become a future educator [9] Perceived value in being a mentor [9, 53, 56, 58] Build educator skills [6, 47–49, 55, 56] Interpersonal skill development (assertiveness, negotiation, conflict resolution, communication skills [6, 9, 54, 56–58] Intrapersonal skill development (awareness of strengths, weaknesses, sense of self) [57, 58] Development of evaluative judgement [6] Increased confidence, competency & independence (clinical /non-clinical) [6, 47–49, 58] Knowledge gain through instruction [17, 47] Comfort, companionship & inclusion in a team [17, 47, 49, 57] Fosters culture of lifelong learning & teaching [48] Increased anxiety (formal teaching sessions) [52]	Rewarding experience [6] Educators support one another [54] Advancement of supervision skills [47, 54] Improved workload balance and relief time [47, 57] Efficiency in placement delivery [47, 48] Efficiency in clinical services [48] Support for performance benchmarking [47] Increased admin & assessment load [47, 48] Challenges supporting differing learning needs & personalities [48] Decreased burnout [48] Opportunities for professional development [48] Difficulty identifying learner weaknesses [48]	Perceived improvement in continuity of care [53] Greater number of service users seen (not quantified) [51] Perceived greater opportunity & capacity for comprehensive care [47, 48]

more service users were able to be receive a service when senior students were assisting the junior students in the NPM but this was not quantified [51].

Discussion

This review has identified clear benefits for allied health students from participating in NPM placement models, across a modest number of papers. Due to the evaluative rather than comparative nature of the research, it is uncertain whether all of the findings are substantial additional benefits over a traditional placement model. However, it is unlikely that students would enjoy the same development of educator skills without opportunities to practise these in the mentoring role. To be considered work ready, graduates must be able to practice not only service user care, but also other capabilities that are considered core components of professional practice in allied health, such as working collaboratively in teams [4, 59] and participating in the education of students and peers [5, 6]. In alignment with previous reviews, there remains sparse evidence for educator and service user benefits. However, this should not prevent the implementation of NPM, rather, we echo previous recommendations that further investigation and more elaborate reporting of outcomes is required, when NPM is utilised.

Given that the evidence from these studies does not provide a strong basis for implementation of any particular placement model, we now propose and discuss three aspects of intervention design and/or research that would facilitate the generation of higher quality NPM research and implementation.

Design NPM with work readiness in mind

Several studies in the review [53, 54] reported that NPM came about as a by-product of circumstances related to the increased need for placements. This impetus has previously been noted in systematic reviews of same level PAL [5, 10]. Rather than selecting this model to only address placement capacity, we suggest that intentionally designing NPM into the learning experience, as was done in the deliberate student preparation group of interventions, will lead to better outcomes for students. Further, additional to the aim of developing students' clinical skills, there should be explicit goals to support the development of work readiness attributes [14] including: interpersonal capabilities such as confidence in developing professional relationships; practical wisdom or confidence in making deliberate, effective and appropriate decisions; organisational acumen or the navigation of administrative and cultural elements of the workplace;

as well as supporting the development of personal attributes such as resilience, flexibility, adaptability and having a growth mindset for themselves and others [3, 4, 14, 59]. Whilst acknowledging that it is not feasible to design a single placement to address students' needs to develop the full gamut of work ready attributes, the findings of our review suggest it is possible for a well-designed NPM placement to offer a range of learning opportunities to support the development of work readiness of both senior and junior students.

NPM placements can be designed in a way that ensures experiences exist to scaffold learning, where educators understand the theoretical basis for such approaches. For example, pro-bono university-based clinics can be carefully structured to ensure opportunities for lower-risk service activities by having senior students who are already familiar with the service and placement model support junior students to take responsibility for these activities. Entrustment of lower risk activities to the senior-junior student dyad builds a sense of responsibility in both senior and junior students [32]. It also creates a culture of preparing students for future educator roles, where senior students are supported and expected to develop and exercise educator skills as part of their degree. As reported in some of the studies in this review, acting in an educator role also appears to develop senior students' sense of clinical competence, professional reasoning, and independent practice [6, 47–49, 58]. It appears that with more responsibility for service user care, comes a growing sense of agency by senior students as they move towards being a fully-fledged clinician. Designing for learning moves beyond the co-location models reviewed in this study that, although generating perceptions of safety and collaborative learning, are less intentional in developing students' educator skills. As has been recommended in same level PAL, [10] achieving these outcomes requires the preparation of both educators and students in the theory and application of NPM education strategies as part of deliberate design for learning.

Evaluate beyond student and/or educator satisfaction

For student outcomes, more elaborate evaluation is needed, beyond Kirkpatrick's Level 1, satisfaction with education interventions [41]. Future studies could focus on student performance on relevant assessments, and/or tracking students longitudinally to understand what types of future mentoring, leadership and educator roles they engage with as graduates, and how NPM experiences have shaped their educator and professional practice, that is, Kirkpatrick's Level 4 [41]. Furthermore, teamwork and collaborative capabilities developed in NPM might influence how graduates work in multidisciplinary teams with peers and how they engage in supervision relationships and lifelong learning i.e. Kirkpatrick's Levels 2 and 3 [41]. While some of these aspects have been revealed through qualitative, open-ended studies included in this review, [9, 51, 55, 56] they should be more systematically investigated across cohorts.

Beyond students, there might be efficiencies in investigating educator and service user outcomes simultaneously, since they overlap. While service user [60] and educator satisfaction is important, additional metrics might usefully focus on occasions of service (how many times a service was utilised), clinician time-use, service staffing profile (where students become integral to the service enabling existing staff to be deployed elsewhere) along with meeting service key performance indicators (KPIs) such as progression along clinical care pathways, and/or waitlist lengths and discharge destination (e.g. rehabilitation, care facility or home). In addition, career progression for educators (such as formal leadership, supervision and educator roles) could also be investigated. Some of these metrics have been examined for allied health placements in general, [61, 62] but not for NPM placements in this review.

Finally, it was apparent that few studies followed any reporting guidelines for qualitative studies, for example using the Standards for Reporting of Qualitative Research (SRQR) [50]. The use of such standards when reporting on studies undertaken not only support high quality publications but may also assist researchers in planning and undertaking higher quality research, the findings of which can be confidently applied in the practice context.

Use learning theories to interpret NPM outcomes

In recommending further research be conducted in this area, we echo recent exhortations to more explicitly adopt and incorporate learning theory within health professions education in both framing the phenomenon or intervention of interest and developing relevant and appropriate research designs [63–65]. Authors of the studies identified a number of educational theories that informed the design of the NPM placements including communities of practice (with legitimate peripheral participation [33, 66]), peer learning theories, [26, 67] cognitive apprenticeship, [68] social constructivist [23] and experiential learning [22]. What is not clear from this review is which of these theories are core to the design of NPM placements or which contributes most to which learning outcomes. Further research could assist placement designers to select the most appropriate learning theory or theories to inform the design of their placement models to achieve the desired learning outcomes.

Whilst it can be challenging for researchers, the use of theory and theoretical frameworks in health professions

education supports understanding of the mechanics and meaning of complex phenomena such as learning environments, learning relationships and learning outcomes [64, 65]. It also assists educators and WIL placement providers to identify the usefulness, relevance and application of findings from individual studies as they work to implement innovative placement models such as NPM [63, 64]. Conversely, failing to engage with theory in this domain risks the implementation of ineffective education programs that do not meet the goals of placement design, and research that lacks transparency, integrity and rigor [63, 64].

Limitations

This systematic review aimed to examine the design and outcomes of NPM WIL placements for allied health students. The findings presented draw only from peer-reviewed articles published in English with no searching of the grey literature or citation tracking. Thus, we acknowledge that this narrower focus may have excluded studies across the globe and informal reports, particularly where professions may still be establishing, and a paucity of educators may lead to more creative placement models. The search was also restricted from 2003 to 2022, with the aim of capturing studies not found by Burch et al. [43] in their earlier systematic review on the same topic. It is possible that our selection of search teams and databases may have led to some studies being omitted, however the use of a range of professions, along with a broader use of descriptions for the placement model has addressed this potential limitation. Finally, we acknowledge that a degree of individual judgement was exercised when searching the included articles for the educational pedagogy and/or teaching/learning methods. Having multiple authors involved in the screening, data extraction and data analysis, working independently before comparing and clarifying, mitigated this limitation.

Conclusion

There is growing evidence for positive student outcomes of NPM in terms of both satisfaction and opportunities to further develop work ready attributes and characteristics. However, the evidence for educator and service user outcomes remains sparse. Based on the findings of this review, there are two clear actions for universities, their partner site educators and health profession education researchers to consider. Firstly, to continue to use NPM solely as a means of addressing placement shortages is a disservice to health professions education, and this model specifically. If the objectives of a placement are to support students' development of work-ready attributes and discipline-specific knowledge and skills, then NPM could be the placement model of choice. Secondly, in specifically designing for these outcomes, suitable educational theories should be used to inform the design of both the placement and research to address the evidence gaps. Making careful and deliberate choices in educational and research design and reporting will increase the potential for richer, evidence-based learning experiences for students as well as improved outcomes for educators and service users.

Abbreviations

BscPhm	Bachelor of Science in Pharmacy
NPM	Near-peer mentor/mentoring
OT	Occupational therapy
OTA	Occupational Therapy Assistants
PAL	Peer-assisted learning
Pharm D	Doctor of Pharmacy
PT	Physiotherapy or Physical Therapy
PTA	Physical Therapy Assistants
WIL	Work Integrated Learning
ZPD	Zone of Proximal Development
KPI	Key Performance Indicators

Supplementary Information

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Supplementary Material 1.

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Authors' contributions

All authors conceptualised the study, MP performed the database searches, MP, JT and GE completed data extraction and quality review. All authors completed data analysis and interpretation, drafted, edited and finalised the manuscript. All authors read and approved the final manuscript.

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Consent for publication

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Competing interests

The authors declare no competing interests.

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