Title: Implementing the Calderdale Framework as a model of clinical education for pre-entry occupational therapy students in regional and rural hospitals.

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Abstract:

Objective: The purpose of this study was to examine the application of the Calderdale Framework (CF), a skill sharing and delegation model, for competency training of occupational therapy pre-entry students on clinical placement in a regional context.

Methods: A multi-method qualitative study using grounded theory examined the application of CF to OT student placements in a regional and rural hospital and health service. Routinely collected patient service delivery data, focus group discussions and in-depth interviews was used to examine student and clinical educator experiences of the model.

Results: Five themes emerged from the data analysis: experience of new model; adjustment to change in approach to placement model; impact of CF Clinical Task Instructions; impact of CF learning model on student confidence and impact of CF placement model on service delivery.

Conclusions: The model was supported by both students and clinical educators as a way of supporting student skill development, confidence and contributing to safe patient service delivery. The CF is a model which provides a framework for development of workplace competencies, with teaching and learning resources and tools to support clinical reasoning. Further investigation of student and clinical educator perceptions of the CF as a model of clinical education therefore is required.

Introduction

With multiple demands on professionals in an increasingly complex healthcare environment, there is a need to examine clinical education placement models which support students' learning as novice practitioners whilst maintaining safe patient service delivery. In a pilot study, Furness, Pighills et al. (2016), application of the Calderdale Framework (CF) in clinical education was shown to support student learning, development of clinical competence and safe student contribution to patient service delivery. The purpose of this current study was to further examine student and educator experiences, and student contribution to service delivery via the application of the CF as a placement model in a regional context.

Importance of practice education

The World Federation of Occupational Therapists (WFOT) guidelines require occupational therapy (OT) students to complete 1000 hours of practice education prior to graduation. Practice education is considered to be vital to support students' development of competence to practice as occupational therapists (OTs) (Hamilton, Copley et al. 2015). It provides opportunities for students to work with

experienced OTs to observe their practice; improve confidence in decision making and demonstrate competence for practice (Hamilton, Copley et al. 2015). Practice education is also considered to be important in development of students' professional behaviour and skills and bridge learning between the classroom and service setting (Kirke, Layton et al. 2007). Students' confidence in their professional skills and knowledge is seen to increase on placement – over the duration of each placement and on each subsequent placement (Derdall, Olson et al. 2002, Holmes, Bossers et al. 2010).

Teaching and Learning in practice education

Dreyfus and Dreyfus (1980) proposed a five-stage model to skill acquisition. This model of skill acquisition has been applied across nursing (Benner 1984), medicine (Carraccio, Benson et al. 2008) and occupational therapy (Spalding 2009). Dreyfus and Dreyfus noted the five stages of learning as: novice, advanced beginner, competent, proficient and expert (Dreyfus 2004). Students can be considered to be novice practitioners as they have no prior experience in the skill that they are learning. Characteristics of novice practitioners are: the use of rule based decision making; use of analytical reasoning in their decision making, difficulty synthesising information to filter important information or prioritise relevant information and reliance on objective facts and figures (Dreyfus 2004, Carraccio, Benson et al. 2008, Spalding 2009).

To ensure novice student learners on clinical placements progress towards increased skill development, at the advanced beginner level, it is necessary to support the development of clinical reasoning skills (Carraccio, Benson et al. 2008). Advanced beginners are: beginning to gain experience from real scenarios, increasingly able to sort through rules and information to determine relevance based on past experience, and increasingly using both analytical reasoning and pattern recognition (Dreyfus 2004, Carraccio, Benson et al. 2008, Spalding 2009). They still require assistance to set priorities and work within guidelines (Carraccio, Benson et al. 2008). Clinical reasoning is defined (Schell and Schell 2008 p.5) as 'the process that practitioners use to plan, direct, perform and reflect on client care'. It is considered to be an important skill acquisition (Schell and Schell 2008). Unsworth and Baker (2016) systematically reviewed literature on professional reasoning in OT. They noted that all studies reviewed reinforced the complex nature of developing clinical reasoning skills. Innovative approaches to support students to acquire clinical reasoning skills are required, along with an understanding of how placement experiences can promote skill acquisition and mastery (Unsworth and Baker 2016).

Current issues in clinical education

A number of viewpoint articles in the Australian Occupational Therapy Journal, describe the growing demand for OT practice education (Brown, McKinstry et al. 2015, Hamilton, Copley et al. 2015). Hamilton, Copley et al. (2015) noted that Australian Government Labour force projections indicate that OT will see a significant growth in coming years and that these projections have resulted in the higher education sector providing more OT programs to meet this demand. With an increase in the number of OT programs, there is a resultant increase in demand for practice education. In Queensland, there has been an increase in OT programs with five entry-level programs in the Brisbane regional area alone (Brown, McKinstry et al. 2015). This equates to a requirement of 440 placement blocks of longer than four-week duration during Semester 1 2017 (personal communication, University Occupational Therapy Practice Education Network, UOTPENQ, member). Clinical educators are being increasingly required to support clinical placements in their work settings while also maintaining the delivery of high quality, safe clinical services to patients (State of Queensland 2013). The need for efficient clinical education placement models which support student skill acquisition, whilst meeting placement demand and enabling clinical educators to meet the demands of service delivery is, therefore, very evident.

Calderdale Framework in clinical education

The Calderdale Framework (CF) has been adopted by Queensland Health as a tool to support the delegation of clinical tasks to Allied Health Assistants and for Allied Health (AH) Professional skill

sharing (Smith and Duffy 2010, Nancarrow, Moran et al. 2012, Patterson, Comans et al. 2015, Pighills, Bradford et al. 2015). It is suggested that the CF can be successfully applied in clinical education for the following reasons. Firstly, the CF provides a structure to support student learning and competency development which is guided by the framework premise – *taught, modelled, competent* (Smith and Duffy 2010). Secondly, skill acquisition in the CF model involves active participation by Students in a real-world clinical environment. Thirdly, a variety of learning approaches are used including: building on students' current knowledge and knowledge gained from other placement experiences; learning by doing and reflection during the teaching and learning process. Finally, risk to patients is mitigated through ongoing risk assessment completed during the process with only tasks considered safe and appropriate being allocated to students and students being deemed to be competent with a clinical task prior to exposure to patients.

Additionally, the authors believe the CF model could support the progression of skill development of students as novice practitioners through the provision of a clinical reasoning tool to provide students with a framework to support development of clinical decision making and recommendations for future patient care. The '*taught'* component of the model provides theoretical information and facts about the clinical skill for students who may have had limited or no exposure to the skill being taught. CF training approaches and resources are designed to achieve consistent and repeatable outcomes. The CF is a clinical education model which is likely to be easily adaptable to regional service delivery.

The current study draws on the concepts of learning transition from novice to expert practitioner and pairs this with a pragmatic approach to the development of clinical placement models supportive of the complexities of modern healthcare environments. The purpose of this study was to examine: *How and to what extent does the Calderdale Framework enhance the placement model for Occupational Therapy Student clinical placements in regional and rural hospitals?* Student and clinical educator experiences, and the impact of the model on service delivery were measured.

Methodology

Study Design

A multi-method qualitative research design using grounded theory was employed. This approach provided a way of exploring and understanding the perspective of participants and the meaning they ascribe to the research problem (Creswell 2014) A grounded theory design was used researchers to refine and correlate interrelationships of categories of information gathered at a number of stages to develop a general, abstract theory (Creswell 2014). An inductive approach was used to build data into broad themes to provide a generalisable model or theory (Patton 1999, Creswell 2014).

The study comprised of two phases. Phase 1, a retrospective audit of student and clinical educator service delivery in a 'traditional' apprenticeship placement model and phase two, a prospective review of the application of the CF.

Study Setting

This implementation of CF in clinical education was undertaken in a regional health service comprising one regional and six rural teaching hospitals in 2016. The orthopaedic inpatient ward at the regional hospital and mixed inpatient and outpatient community-based caseloads in rural hospitals were the focus of this study.

Participants and Recruitment

In phase 2, purposeful sampling was used to identify study participants. Participants identified for inclusion in the study were: OT clinical educators at one regional and four rural hospitals, and OT students completing clinical placements in these locations. Students' year level of study, University, placement model, length of placement or gender did not influence inclusion in the study. Students whose learning needs were not well supported by the placement model and hospital sites whose staffing or resource requirements were not sufficient to support student clinical placements were

excluded from the study. Participants were invited to join the study through invitation by the primary investigator.

Intervention

The CF '*taught, modelled, competent*' approach to skill development was used in this study. During phase 2, in the first week of placement, all students were trained in nine CTIs by a senior OT. The first day of training was attended face to face by all students. For the subsequent training the student at the rural hospital participated via videoconference link to the training site. The '*taught*' and '*modelled*' component of the training was finalised during the first week of placement. This involved didactic teaching of the tasks followed by demonstration via role playing or simulation. Students then practised the task with trainer or peers providing feedback. Attempts were made, as much as possible, to use real environments (such as conducting the training in the bathroom or by the car, and using a de-identified chart for information gathering) during the training. An additional two CTIs (INSERT TABLE 1) required for service delivery in the orthopaedic ward were 'taught and modelled' for students completing placement in that area. Following the 'taught and modelled' component of the training, students' clinical educators provided further teaching, modelling, and provided feedback to enable students to develop competence in the clinical tasks. Students' competence in the tasks was assessed by the CEs using a checklist written for each competency.

Table 1: Clinical Task Instructions completed during placement

CTIs taught to all students ○ WTS02: When to Stop (Student Allocated task) ○ A-AD01: Over toilet frame prescription ○ A-AD02: Prescription/practice use shower chair/stool ○ A-AD03: Prescription/practice use static commode ○ A-AD06 Occupational therapy initial assessment ○ A-AD07: Long handled devices – assessment and practice ○ A-CP01: Cognitive Screen Montreal Cognitive Assessment (MOCA) ○ A-CP02: Six item cognitive impairment test (6CTI) ○ A-MT01: Assessment and practice car transfer
Additional CTIs taught to students completing placement in orthopaedic ward ○ A-NM01: Inpatient review of major orthopaedic pre-admission (MOPS) (recommendations and development of treatment plan) ○ A-AD04: Acute inpatient services- Discharge planning

Notes:
CTI: Clinical Task Instruction
Code for CTI refers to Queensland Health CTI numbering classification

Students achieved competency sign off for all frequently presenting tasks across both the regional and rural site. Students did not achieve competency sign off for cognitive assessments, Montreal Cognitive Assessment (MOCA)and Six item cognitive impairment test (6CIT), as these tasks were less frequently used in their practice areas.

Data Collection

Data collection tools used in the study included routinely collected patient service delivery data (Phases 1&2) and focus group discussions (FGD) and in-depth interviews (IDI) (Phase 2). The interview schedule for FGDs and IDIs was developed by researchers with open-ended prompt questions to guide semi-structured interviews. The questions were trialled during a pilot study. The primary investigator was known to all study participants; therefore, a focus group facilitator external to the institution was employed to limit the potential of bias.

Data Analysis

In Phase 1, descriptive analysis was used to review patient service delivery data. In Phase2, the focus groups and in-depth interviews were used to explore participant opinions on the application of CF in clinical education (Prince, van de Wiel et al. 2000) . All participants were familiar with the videoconference technology used to link rural participants into the focus group sessions. Focus group sessions were audio recorded and each focus group lasted approximately 60 minutes. Recorded discussions were transcribed by a transcriptionist, then, two investigators independently read the transcripts to gain broad understanding and develop initial codes. Coding was based on naturally occurring themes arising from the data. Codes were collated into themes with similar topics grouped together and consideration made of interrelationships between codes. Investigators jointly compared the themes, and re-examined the data to achieve consensus (Braun and Clarke 2006, Creswell 2014). Participants were invited to review themes to ensure accuracy.

A variety of techniques were used to enhance the rigor of this study (Krefting 1991, Hanson, Balmer et al. 2011, Stalmeijer, McNaughton et al. 2014). Both method triangulation (using several methods to answer the research question) and researcher triangulation (multiple researchers involved in data collection and analysis) have been used (Stalmeijer, McNaughton et al. 2014). Multiple researcher involvement in data analysis and peer debriefing to discuss insights emerging has established dependability of results (Hanson, Balmer et al. 2011).

Ethical Considerations

This study was granted ethical approval from Darling Downs Hospital and Health Service Human Research and Ethics Committee (HREC/13/QTDD/80).

The research team consisted of researchers with backgrounds in research methodology, clinical education and a CF practitioner.

In Phase 1 – routinely available service delivery data were audited and data de-identified.

In Phase 2 – Participant Information sheets were provided, and voluntary written consent was obtained from all participants. Participants were not paid for involvement in the study. Confidentiality of participants was maintained with an independent facilitator conducting FGD & IDI and transcripts being de-identified and pseudonyms used to identify participant responses.

Results and discussion

Study participants

A total of 10 students and 5 Clinical Educators were recruited for phase 1 and 2 of the study (TABLE 2). Participants were located at one regional and one rural hospital. All participants approached agreed

to participate in the study. Participant numbers in rural hospitals were limited by staffing and recruitment issues, which in turn reduced the capacity for staff to offer clinical placements. One student was withdrawn from the study when the placement was moved to another service area which could more adequately support their specific learning needs (phase 1).

Table 2: Details of Participants involved in study – Phases 1&2

Study phase	Participants	Location	Placement descriptors	Comments
Phase 1 'Traditional' apprenticeship placement **Retrospective data analysis**	1 Student 1 CE	Regional hospital - Orthopaedic ward	7 week 3rd year first block placement, 2011	CEs servicing orthopaedic ward and outpatient hand clinic
	2 Student 2 CE	Rural hospital	7 week 3rd year first block placement, 2011	
Phase 1 Implementation 'learning curve' phase	2 Students 1 CE	Regional hospital- acute wards	10 week 4th year placement., 2014	Students from 2 different universities. Students complete combination of apprenticeship and CF model, completed CF clinical tasks as referred by OTs across hospital. CEs servicing orthopaedic ward and outpatient hand clinic
Retrospective data analysis	1 Student 1 CE	Regional hospital - Orthopaedic ward	7 week 3rd year second block placement, 2014	Second student allocated but withdrawn due to learning support required. Student completing tasks only in orthopaedic ward. CEs servicing orthopaedic ward and outpatient hand clinic
	2 Students 2 CEs	Regional hospital - Orthopaedic ward	7 week 3rd year first block placement, 2015	Student completing tasks only in orthopaedic ward. CEs servicing orthopaedic ward and outpatient hand clinic
Phase 2 Study phase **Prospective Pi5 data Focus groups**	3 Students 4 Clinical Educators	Regional hospital - Orthopaedic ward. Rural hospital	5 & 10 week 4th year block placement, 2016	Student completing tasks only in orthopaedic ward. CEs servicing orthopaedic ward and outpatient hand clinic

Notes: All students completed full time placements, sick leave was not accounted for. Students from various universities.
CEs= Clinical Educators

A total of 3 students and 3 CEs participated in focus groups for phase 2. One student completed an IDI in the final (5th) week of placement. The remaining two students participated in a FGD in their final (10th) week of placement. CEs were invited to participate in FGD in the week following student's departure with three CEs participating.

The contribution of students to patient service delivery was investigated by contrasting retrospective patient service delivery statistics when no student was present, periods when students were on placement in 'traditional' apprenticeship placement with student contribution to service delivery in the CF model. Results showed that using the CF model, student delivered occasions of service more than doubled compared to 'apprenticeship' placements (INSERT Figure1). The increased contribution to patient service delivery by students was most evident from midway through the placement and continued to the end of placement. Student contribution was greater in the regional ward in comparison to the rural hospital where CEs serviced a mixed caseload of inpatients, outpatients, and

provided services to a range of age groups and conditions. Student contribution to service delivery more than compensated for the OT time invested in student training at the commencement of placement. No patient or staff complaints or PRIME Clinical Incident reports were received in relation to the implementation of the CF model indicating that the implementation of the CF model did not adversely impact on patient safely or staff work processes.

Figure 1: Regional hospital orthopaedic ward – Average inpatient clinical time per week comparison of placement models

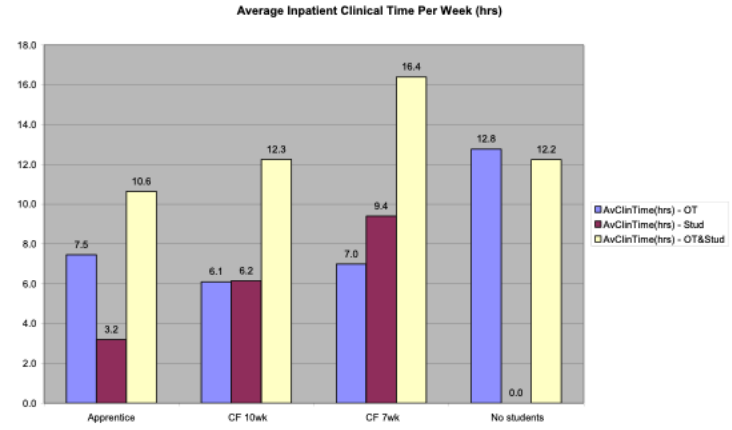

Figure 1 Notes:
Average Clinical time (hours)
OT – Occupational Therapist
Stud - student
OT & Stud – occupational therapist and student combined service delivery.
Time recorded is shown only for patient service delivery, non-clinical activities not included.

Five themes were identified through data analysis: experience of new model; adjustment to change in approach to placement model; impact of Calderdale Framework Clinical Task Instructions; impact of CF learning model on student confidence and impact of CF placement model on service delivery. A summary of themes and subthemes and representative participant responses is shown in Table 3 (INSERT TABLE 3). Overall, both students and CEs supported the implementation of the CF as a placement model.

Table 3: Thematic analysis - Focus group interviews (Clinical Educators and Students)

Theme	Subthemes	Representative quotes
Experience of new model	• Impression of training – what worked • Comprehensive approach to training • Role play for learning • Impression of trainer not from work area • Differences regional and rural sites	*'You kind of understood the task a lot more when you did it in a role play and then when you did it with a client you could see how it payed out in context." STUDENT 3* *'I can't think of too many negative experiences (of the model). I think it I had a shorter prac I would have found that it was a bit too time consuming..' STUDENT 2* *'I felt a bit awkward because we'd only just met (trainer), I felt a bit awkward like role playing in front of her I guess because I'm not usually comfortable like acting or like pretending to be a patient. STUDENT 2* *'I found that it was beneficial because role playing…. Like you get to talk a lot so you're getting comfortable with phrases that you would use on the ward.' STUDENT 2* *Rural differences: 'Some of the CTIs like the shower chair we used a lot, but then other we just didn't see because of being rural..' STUDENT 3*
Adjustment to change in approach to placement model	• Increase in predictability of placement • Follows 'usual' process, helps give Students knowledge • CEs need more info about training	*'Well my previous supervisors or CEs kind of I guess were about the formalities of it, using that sort of structure anyway. So for me it was kind of similar..they were following the three broad steps..I think it's definitely a good way to do it..' STUDENT 3* *"...it actually doesn't have a significant impact....I actually don't think it's sped up when we would be allowing Student to do it independently, in a way. I think it's just followed out natural progression that was just an added bonus that they had the training.' CLINICAL EDUCATOR 3* *'I think if we had a student who took longer time to develop competency in any of the CTIs, like, then it would help to have that structured framework. But I guess our student was quite competent at doing those things anyway, It was just the formality of the sign off.' CLINICAL EDUCATOR 3*
Impact of Calderdale Framework Clinical Task Instructions (CF tools and approaches)	• Students learning and training • Experience professional learning with CTIs • Works well in repetitive caseloads	*'....Because we have them written – because we've been given handouts with them- so we can keep them. If we ever end up in a similar setting we have had exposure I guess, if that makes sense to the clinical task." STUDENT 1* *'Because where we worked was quite specialised, so we're in acute orthopaedics, so there's really only a handful of tasks that we get to do clinically speaking. The training was quite comprehensive I guess…STUDENT 1* *'...definitely a good learning style for most Students.' STUDENT 2*
Impact of CF learning model on Student confidence	• Students like taught modelled competent approach • Role play practice • Reduce feelings of 'overwhelmed' • Helps give idea of what to expect on ward • Competencies signed off	*'.. I did like that we got the chance to practice before we went to the ward. I think that made a huge difference from when we –then finally we first got to do it ourselves.' STUDENT 1* *'It helped me I guess, to develop my confidence further down the track when I did it next time, it's just so much more applicable I guess, once you've seen it in action- it that makes sense' STUDENT 1* *'.. you didn't feel like you were on your own and you knew a little bit more..' STUDENT 1* *'I think it was really good having it (training) at the beginning of the prac just to set us up a bit more and also to act as a bit of a refresher as we'd just come back from holidays.. STUDENT 3* *'I guess I really like the three steps because it means that you're really clear by the time it comes to you actually doing it, about what you're doing and why because you've observed it being done before in the first week. We've talked about it and then you've observed it being done and then you have the chance to practice it before you're assigned.' STUDENT 3*
Impact of CF placement model on service delivery	• Students could focus on patient having developed task competence • Students more prepared for practice • Supports CEs workload through provision of patient care • CF provided good orientation to placement	*'....it also gave us an idea of what to expect when we go on ward..' STUDENT 1* *'I think it made me feel a lot more confident in what I was doing and that probably helped me to be a bit more efficient and effective as well..... Like instead of just trying to think about how to convey it to the client..' STUDENT 3* *'it gave them more confidence and knowledge, I suppose.' CLINICAL EDUCATOR 3* *'I think for us it was really helpful. We've seen a really big reduction in the workload, I suppose, as the placement progressed, because often the ward would have something like six joint replacements at a time, and (Student) by the end of it was really quite competent at doing those MOPS reviews. Decided, clinically reasoning, what to do with them as well. So taking out six people off a list of 12 people is really quite massive. But it was really only beyond halfway.' CLINICAL EDUCATOR 1*

Experience of new model

All participants reported that this model had been a positive experience. The initial time spent training CTIs was valued by students as a way to understand the clinical task before they saw patients. This is consistent with the notion that novices favour adherence to 'rules' rather than understanding context (Peña and Kiran 2008, Spalding 2009). Students reported that role-playing helped them to '*(get) comfortable with phrases that you would use on the ward' STUDENT 2.* Some students reported feeling awkward completing the role plays with a trainer they had only just met. The use of the CF Clinical Tasks Instructions as a training resource was considered by all students to provide a more thorough approach to providing theoretical knowledge during training. Students considered the CTIs which provided scripted prompts and steps to follow for interventions (Peña and Kiran 2008) as a resource to refer back to during their placement and for future reference. All participants acknowledged the trainer not being from the immediate work area to be positive in that it gave

students a different perspective on completing a task. Some students, however, noted that they modelled more from their CE than from the initial training and CEs still identified the need to model the tasks on the ward. All CEs and students identified differences in the CTIs required for a rural generalist caseload with the frequency of completion of some tasks being much less at the rural site.

Adjustment to change in approach to placement model

Some participants noted similarities between the CF training approach and experiences in other placements. For some CEs, the CF model followed the usual placement progression, but with the added bonus of students receiving training as background knowledge. The issue of time impacts on CE workload when students are present has been examined by a number of authors (Lopopolo 1984, Shalik and Shalik 1988, Schoen Dillon, Tomaka et al. 2003, Thomas, Dickson et al. 2007, Carlson, Pilhammar et al. 2010, Rodger, Stephens et al. 2012). The CF approach was not considered by CEs to either save time or take extra time on the placement. CEs noted benefits in increased predictability of placement for students who were completing the same tasks with patients with similar conditions. Providing multiple opportunities for students to practice interventions is considered an important transitional phase of learning to help students begin to consider how to support patients with a range of needs (Peña and Kiran 2008). All CEs noted the need for more information about the initial training provided to students.

Impact of Calderdale Framework Clinical task Instructions

CF CTIs were valued by all students as a resource they could refer back to on placement and into the future. One student reported,

> '*…so now you can apply the theory in a much different way. I went back to the task instructions that were written down in the hard copy, and looked over it knowing what it looks like with a patient.*' STUDENT 1.

A proactive approach to sourcing learning resources to meet a learning need has previously been identified by (Spalding 2009). This finding was consistent with the current study and is exemplified by one CE noting that one of the greatest challenges for students on placement

> '*was not the things that the CTIs were addressing. I mean, you're looking at their overall professional behaviours, their communication, their documentation, their time management…. I think they're the things in the placement, not the fact that you gave Mrs Smith an over toilet frame, and not that I don't want to scale down CTIs….*' CLINICAL EDUCATOR 2.

Repetition and practice have been highlighted by a number of authors in the progression of skill development for novice learners (Benner 2004, Peña and Kiran 2008, Spalding 2009).

> *'But we were mainly giving them the same stuff every time, so the same conditions…..So I think that was good for them because they were able to practice similar patients with similar conditions.' CLINICAL EDUCATOR 1.*

Impact of CF learning model on Student confidence

The need for competent and confident practitioners in a changing work environment is well known (Derdall, Olson et al. 2002). For some authors there is conflict in expectation of whether skills for practice should be taught at a university or workplace (Hummell 1997). One student reported the benefit of the CF model,

> '*it also gave us a sense of what the organisation expected of us, because I know that what the uni(versity) is giving us is really broad' STUDENT 1.*

All students reported that the model had increased their confidence. This is of significance when students identify anxiety at learning to perform new tasks (Benner 2004). One student identified how the model increased

her confidence through the CF process of competency sign off by trainer and CEs. Gruppen, Mangrulkar et al. (2012) note the benefits of competency-based education in providing a framework for implementing education which specifies performance standards to determine if the learner has reached a standard of performance to be considered competent. Students identified benefit in having opportunity to role play and practice a task before going to the ward. Practical sessions with demonstration and opportunities to practice skills in a safe environment were noted by Naidoo and van Wyk (2016) as strategies that positively influenced learning on placement. One student said,

> *'I did like that we got the chance to practice before we went to the ward. I think that made a huge difference from, when we- then finally we first got to do it ourselves'. STUDENT 1.*

A Student identified the similarities to the learning process in other placements, however also noted

> '*whereas here I was shown then practiced a little bit by myself with my (s) fellow student, then (trainer) would give us feedback which was good…*STUDENT 1.

Another student reported appreciating the 'taught, modelled, competent' approach used in CF.

> '*'I guess I really like the three steps because it means that you're really clear by the time it comes to you actually doing it, about what you're doing and why because you've observed it being done before in the first week. We've talked about it and then you've observed it being done and then you have the chance to practice it before you're assigned.' STUDENT 3.*

Teaching and learning strategies such as tutorials, demonstration and practicing clinical skills (Hummell 1997) were noted by students to be of high importance on placement. In addition, allowing students some independence, giving guidance and modelling interventions was considered by students in Grenier (2015) study as preferred teaching techniques.

Impact of CF placement model on service delivery

Students identified that participation in the CF had enabled them to be more prepared for practice. One student said '*it also gave us an idea of what to expect when we go on ward.' STUDENT 1,* whilst another said '*I still feel we were probably more confident in the way that we were communicating, because we had spare time to think about how to talk through the tasks and instructions we gave.' STUDENT 1.*

A number of students identified how the model enabled them to focus on patient care.

'*We felt free to ask questions (in training) and all of that whereas in a clinical setting with patients it could be a bit awkward or we'd have to wait until after we'd done it to feedback our supervisor'….. 'I think it made me feel a lot more confident in what I was doing and that probably helped me to be a bit more efficient and effective as well… Like instead of just trying to think how to convey it to the client.' STUDENT 3.*

All clinical educators identified that students had been able to contribute to patient service delivery. One CE reported

> *'I think for us it was really helpful. We've seen a really big reduction in the workload, I suppose, as the placement progressed, because often the ward would have something like six joint replacements at a time, and (Student) by the end of it was really quite competent at doing those MOPS (Major Orthopaedic Pre-admission screening) reviews. Decided, clinically reasoning, what to do with them as well. So taking out six people off a list of 12 people is really quite massive. But it was really only beyond halfway.' CLINICAL EDUCATOR 1*

Another CE noted,

> *'It…… saved a bit of time….. if we're seeing someone and then they needed a piece of equipment, I could ask (Student), can you run over to the equipment room and get that for me. Give it to them, do the loan form.' CLINICAL EDUCATOR 2.*

These findings are supported by a number of studies which show students contributed positively to service delivery whilst on placement (Leiken 1983, Leiken, Stern et al. 1983, Rodger, Stephens et al. 2011).

Conclusion

This study explores CE and student perceptions about the application of CF as a clinical education model. In general, the model was accepted by both students and CEs as a way of supporting student skill development, confidence and safe patient service delivery. Features of the CF model supporting student skill development, such the use of the *taught, modelled, competent* approach to skill development, role-play, feedback from the trainer were considered to be valuable by students. The use of a scaffolded skill development approach, including initial scripts and models to follow for implementing intervention supports the notion of the progression from novice leaner to advanced beginner (Peña and Kiran 2008). In addition the advantages of focussing on a narrow set of skills and learning these in conditions structured to reduce error was recognised by study participants (Peña and Kiran 2008). Whilst this study did not specifically focus on the development of clinical reasoning, the CF CTIs include a clinical reasoning tool and CEs noted the student's use of clinical reasoning in service delivery. Both students and CEs identified the contribution of the model to student confidence in both service delivery and communication with patients. The contribution of students to patient service delivery was noted by CEs and identified in patient service delivery data.

Study participants provided a number of suggestions in relation to future implementation of CF in clinical education. Students suggested that the training be undertaken following orientation to the placement environment and caseload. It was suggested that video snippets of the clinical task being modelled by an OT in an authentic environment with a patient could be used to build a bank of training resources. One CE suggested that training videos would provide the added benefits of time efficiency and an opportunity to customise the CTIs taught to the needs of the practice area.

Strengths and Limitations

One strength of this study is that it is, to our knowledge, the first to examine the application of CF in clinical education. It seeks to pair educational theory and practitioner transitions from novice to advanced beginner through the use of CF in clinical education. However, this study had several limitations that may have affected the results. Firstly, we encountered a number of difficulties in recruiting participants due to budget constraints affecting staffing and recruitment and, therefore, only a small number of participants were recruited to the study. Secondly, the effect of individual participant factors such as previous placement experience, personality, age and gender were not taken into consideration. Thirdly, the use of retrospective data in phase 1 of the study may have influenced results. The retrospective data may have been influenced by potential inconsistency in CE recordings, and inconsistent historical procedures for student recording of patient service delivery data. There is also potential for bias in prospective data collection during the study period where CEs and students may have been more diligent with data input. Fourthly, potential for comparison of placement experiences and data from regional and rural caseloads is somewhat limited. In the rural setting OTs have a mixed caseload, undertake a rural generalist role and students are not permitted to drive on placement to provide independent service delivery, in contrast, to the caseload consistency and ward based service delivery in the regional hospital. Finally, aspects of workplace culture, such as, historical dynamics between staff working together may have had an effect on results. Staff personality and acceptance of change may also have influenced results.

Implications for practice and future research

The issue of measuring practitioner competence through credentialing has been explored at some Australian hospitals (Somerville, Wilding et al. 2007). The concept of competency-based education has also been flagged as a way to optimise preparation of health professionals for practice, with competencies focussing on what the learner should be able to do in practice (Hummell 1997, Gruppen, Mangrulkar et al. 2012). A move to competency based education would necessitate consideration of what competencies are required to address health care needs (Gruppen, Mangrulkar et al. 2012). The benefits of a competency based model are noted by Nancarrow, Moran et al. (2014) to increase clinical service capacity, and that clinical training becomes a resource to health care.

Whilst the notion of competency based training can be considered valuable to support student learning and progression from novice to advanced beginners (Dreyfus 2004), clinical reasoning is also considered to be a critical skill for all health practitioners (Schell and Schell 2008, Unsworth and Baker 2016). Therefore, future models of clinical education supporting both competency development and the development of clinical reasoning are critical. The CF is considered to be a model which provides a framework for development of workplace competencies, teaching and learning resources and tools to support clinical reasoning. Further investigation of the CF as a model of clinical education therefore is required.

Competing interests

The authors declare that there are no competing interests.

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