# Teaching Physiotherapy Students to Provide Feedback Using Simulation

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## Abstract

Healthcare professionals are responsible for providing education to both healthcare consumers and the peers with whom they work. As such, specific teaching skills must be developed during prelicensure training to facilitate the transition from classroom to clinical practise. The realistic environment that simulation-based learning (SBL) activities utilise is a powerful enabler of translating theory to practise. The aim of this study was to explore the experiences of prelicensure physiotherapy students acting in either peer teacher or peer learner roles during a peer-assisted learning (PAL) activity delivered using SBL. Following preparatory training, over two days in 2018, a group of six final-year physiotherapy students (peer teachers) taught concepts around communication to a group of 126 of their junior physiotherapy colleagues (peer learners) during an SBL activity. Data were collected from all participants using written reflections (peer teachers) and the "Measure of quality of giving feedback scale" (peer learners). Three themes emerged from open coding of written reflections: preparation and training, perceptions peer teachers held of themselves as teachers, and perceptions peer teachers held of their learners. These themes are described with verbatim quotations used to support coding choices. Peer teachers reported value from the training and teaching experiences and felt they met the challenges of peer teaching, particularly with respect to being adaptable to learner performance. Peer learners rated the feedback quality highly with frequencies of responses demonstrating an overall mean score of 6.3 out of a possible 7 (SD1.1) for all scale questions. Peer-assisted learning using simulation was a positive experience with a perception of reciprocal benefit from both groups.

## Introduction

The ability to apply adult learning principles to facilitate learning by clients and their family members, other health professionals, peers, and students is a core competency for physiotherapists (Physiotherapy Board of Australia & Physiotherapy Board of New Zealand, 2015). Consequently knowledge of adult learning principles and development of teaching skills must be part of prelicensure physiotherapy training (Tai et al., 2016). One method of developing knowledge and skills in adult learning approaches is through peer teaching, whereby senior students engage in teaching junior students. For example, it has been identified that up to one third of medical students' knowledge is attributable to junior doctors (Bing-You & Sproul, 1992) spending significant time with students teaching skills and providing feedback (Bardach, Vedanthan, & Haber, 2003). Assessing and providing feedback to peers offers cognitive benefits that result in deeper learning (Heckmann et al., 2008; Yu et al., 2011) as well as enhanced confidence (Ten Cate & Durning, 2007).

Peer teachers need to develop their feedback skills. Feedback needs to be constructive, effective, timely, and in context to be useful to the learner. Those giving feedback require an ability to "think on their feet" and use active listening and questioning skills to promote learner self-reflection and insight (Chowdhury & Kalu, 2004). The key skills are to listen and ask, not to tell and provide solutions (Nestel & Kidd, 2005). Training programs on how to give feedback are essential for healthcare professionals to ensure that learning is facilitated and that learner confidence is not undermined (Nestel & Kidd, 2005). Learning experiences that require giving feedback to peers will also improve employability skills of both peer learners and peer teachers, such as problem solving, decision making, and effective communication (Cassidy, 2006).

Peer teaching may be further enhanced if it is combined with simulation-based learning (SBL) activities. This modality is particularly relevant to students about to embark on their clinical career, with realistic immersive environments enabling the translation of theory to practise (Weller, 2004), and the development of self-reflection on performance through debriefing (Kneebone & Nestel, 2005). Most published evaluations of peer teaching have been within medicine (Burgess & McGregor, 2018). Building on a previous study (Dennis, Furness, & Parry, 2017), the current study aimed to (1) explore peer teachers' experiences of providing feedback and (2) ascertain peer learners' satisfaction with feedback when a group of final-year physiotherapy students undertook peer teaching of an SBL activity with more junior physiotherapy peer learners.

## Method
### Participants
There were two groups of participants: peer teachers and peer learners. The peer teacher participants were six final-year Curtin University (CU) physiotherapy students who volunteered and consented to take part in the project as part of a self-directed fieldwork placement. These peer teachers were from Curtin University as this was the coordinating site for the project, and all had experience with simulation-based learning throughout their curriculum. The peer learner participants were physiotherapy students from Bellarmine University (BU) and the University of South Australia (UniSA) who were undertaking pre-clinical learning experiences and were in either their first or second year of study. All students in the relevant classes at BU or UniSA participated in the SBL activity as a compulsory part of the curriculum; however, only those who gave written informed consent were included in data collection.

### Ethical approval and participant consent
This study was approved by the CU ethics committee (HRE2018-0036), as well as relevant ethics committees from Bellarmine University and the University of South Australia. All participants who completed the data collection aspects of the study provided written informed consent prior to participation. Participation or non-participation in the study had no effect on the students' results for the course.

### Procedures
**Peer teachers were trained for the SBL activity**. Prior to delivering the SBL activity at BU and UniSA, peer teachers were trained using a self-directed online learning module. This module was made up of four key components: adult learning, the provision of effective feedback, simulation as a teaching

modality, and debriefing with good judgement in SBL. On completion of the module, there was a test of key learning outcomes. Successful progression to the next stage of training required achieving a score of 80% or above.

In the final stage of training, the peer teachers practised debriefing the activity. This was undertaken using archived video recordings of previous iterations of the exercise. Peer teachers watched and practised debriefing actual scenarios and were coached in doing so, using the "see one, do one, teach one" surgical-training model (Kotsis & Chung, 2013).

**Peer teachers were taught how to deliver the SBL activity**. The SBL activity was an established Curtin University teaching activity that involved junior physiotherapy students (peer learners) undertaking a subjective examination of a patient with elbow pain. During the subjective examination, the patient enacted an attitude or behaviour that provided a communication challenge; for example, a very chatty person constantly went off topic. Peer learners undertook the task in small groups of three to four members. The simulated clinical encounter was AV recorded, and debriefing and feedback from peer teachers occurred with review of the AV recording. Each peer learner group undertook two subjective examinations. More detail of the model of this SBL activity is described elsewhere (Dennis et al., 2017). Although the SBL activity was already familiar to the peer teachers—as they had participated as learners two years prior—they were unfamiliar with how to deliver it as peer teachers. They therefore learned and practised the implementation of the activity, especially in terms of participant (peer learner) flow. This involved understanding how to allocate peer learners into groups, becoming familiar with the timetable, and practising.

**Peer teachers delivered the SBL activity to two peer learner cohorts unfamiliar with the activity**. Over two separate days, peer teachers delivered the activity on-site to peer learners at Bellarmine University (BU); Kentucky, USA; and the University of South Australia (UniSA), Australia.

**Outcome measures**
Peer teachers undertook an unstructured written reflection on the usefulness of the training and the implementation of the activity, particularly relating to their provision of a debrief to their peers.

Peer learners evaluated the feedback provided by peer teachers during the SBL activity using the "Measure of quality of giving feedback scale" (Reiter, Rosenfeld, Nandagopal, & Eva, 2004) (Appendix 1). This survey consisted of 20 statements rated on a scale of 1 ("not at all") to 7 ("very well").

**Data analysis**
Qualitative data from the written reflections were analysed using a descriptive thematic approach. Data were coded independently by two authors (DD and AF). Agreement was then reached regarding the codes to be applied to all reflections. The themes and subthemes of the data were developed with supporting verbatim quotations (Polit & Beck, 2013).

Descriptive statistics for each statement within quality of feedback questionnaires were calculated.

**Results**

Six Curtin University final-year students agreed to participate as peer teachers, and all successfully completed the online learning module relating to teaching adults and the delivery of education using SBL activities. In September 2018, 126 peer learner students participated in the SBL activity at either BU or UniSA. All peer learners consented to take part in the study, and 124 completed a quality of feedback questionnaire.

**Peer teacher reflections**

Analysis of responses revealed a saturation of themes with three broad areas emerging: preparation and training, perceptions peer teachers held of themselves as teachers, and perceptions peer teachers held of their learners.

**Preparation and training.**

1. *Helpfulness of training.* Written reflections described the helpfulness of both the learning module and training day in preparing to deliver the activity. The module was found to be useful in establishing a framework for debriefing: "I found the online module on debriefing very useful as it introduced me to the importance of having a structure." It helped students develop an understanding of the language needed to facilitate self-reflection during the debrief: "I found it useful seeing specific concepts acted out in the online modules—ways of questioning to encourage the student to reflect in an objective manner, how to phrase comments to avoid being confronting or too blunt, how to encourage students to be self-reflective rather than needing continued guidance."

2. *Value of practise and feedback.* The training highlighted the value of practise and feedback on performance. Respondents said, "strategies provided during the training day were useful and gave me insight into how previously I have been debriefed as a student following a simulation," and "through practising on the training day, my nervousness improved," and "as soon as the simulation commenced, and the groups came through, the memory of the strategies and lessons taught during the training day came easily." Finally, training established the need for developing targeted debrief points around important learning objectives: "As part of the debrief training, I found it very useful to discuss the key debrief points (of the activity)."

**Perceptions peer teachers held of themselves as teachers**. Table 1 summarises the perceptions peer teachers held of themselves as teachers, with three themes emerging:

1. *Emotional response.* Subthemes of the teachers' emotional responses evolved on a continuum, where each progressed through three stages. Initially there was nervousness and fear of the unknown: "I found myself initially feeling nervous about being given the role as a teacher." But once debrief began, peer teachers enjoyed the experience: "…made me realize how much I enjoy mentoring and sharing my clinical experience with others" and were fulfilled with their contribution to their peers' learning: "It was satisfying to see many of the students learnt something."

Table 1

*Self-perception of performance as a peer teacher*

| Theme | Subtheme | Verbatim Quotations |
|---|---|---|
| Emotional response | Nervousness and fear of the unknown | • "I found myself initially feeling nervous about being given the role as a teacher."<br>• "I had only practised this previously with friends/peers and felt nervous about giving advice and recommendations to students I didn't know."<br>• "I felt the task would play out differently when debriefing during the real simulation." |
| | Enjoyment | • "Once commencing the debriefing sessions, I felt comfortable and was able to relate to the students and how they felt, having previously completed the simulation myself."<br>• "… made me realize how much I enjoy mentoring and sharing my clinical experience with others."<br>• "I enjoyed watching the students and then debriefing with them." |
| | Fulfilment | • "It was satisfying to see many of the students learn something from each scenario and walk away with a sense of achievement after the debrief sessions!" |
| Skill development | Personal growth | • "I began to enjoy it more and more because I felt I got more effective with practise."<br>• "[The activity has] helped to verify my knowledge base as I was able to provide clinical reasoning and points of discussion."<br>• "I became more fluent at debriefing with time and practise, and this improved my confidence."<br>• "I enjoyed being a peer teacher as it helped to develop my leadership, listening, and reasoning skills."<br>• "This project has given me the opportunity to work on skills that future employers will be seeking." |
| | Creating a learning environment | • "The environment was open, inclusive, and encouraged all students to engage with the reflection process."<br>• "I feel that discussing in a relaxed, non-threatening environment encouraged greater self-reflection and honesty."<br>• "Drawing on my own experience with the simulation and with my own patients helped me to relate it to the students." |
| | Value of a debriefing framework | • "I found that having a clear structure and having specific debrief points…helped my debrief."<br>• "I think a nice way to start the debrief sessions is to ask an open question about how the students felt the scenario went and then go from there." |
| | Usefulness of video replay | • "Many don't remember what they did during the scenarios, whether it be things they said or their body language, so it is useful for them to watch back." |
| Challenges | Managing student confidence | • "I also found it hard to involve each student in the discussion when there were some clear extroverts and introverts."<br>• "Encouraging the less active students to speak up and engage was a challenge."<br>• "It was great to see some students really engaging…however, this occasionally meant [the] discussion became overtaken." |
| | Accepting the fictional contract | • "[Some students] didn't treat the scenario like a real-life scenario and instead treated it like a practical exam." |
| | Promoting self-reflection | • "I found it quite challenging to guide the students' thought processes for them to develop a strategy without 'jumping the gun' and giving them strategies myself." |

2. *Skill development.* Respondents described personal growth in effectiveness, confidence, and leadership during the implementation of the debrief sessions: "I became more fluent at debriefing with time and practise, and this improved my confidence," and "I enjoyed being a peer teacher as it helped to develop my leadership, listening, and reasoning skills." This growth was reflected in comments around future employability: "This project has given me the opportunity to work on skills that future employers will be seeking." Peer teachers also described creating a positive learning environment: "I feel that discussing in a relaxed, non-threatening environment encouraged greater self-reflection and honesty." Other subthemes related to the value of a debrief framework: "I found that having a clear structure and having specific debrief points…helped my debrief" and the usefulness of video capture and replay: "Many don't remember what they did during the scenarios, whether it be things they said or their body language, so it is useful for them to watch back."

3. *Challenges.* The third theme related to the challenges peer teachers faced. There were two subthemes relating to the characteristics of the student learners. One of these was managing student confidence, with both quiet and assertive students being difficult to debrief: "I found it hard to involve each student in the discussion when there were some clear extroverts and introverts in the group." The other was managing students who had difficulty accepting the fictional contract, whereby some students "didn't treat the scenario like a real-life scenario and instead treated it like a practical exam." The final subtheme centred on the peer teachers themselves. They found it difficult to allow student learners to self-reflect before pre-emptively providing direct feedback: "I found it quite challenging to guide the students' thought processes for them to develop a strategy without 'jumping the gun' and giving them strategies myself." They received no coaching from faculty during the activity and were perhaps able to self-modulate the feedback they provided in response to repeated practise; however, no data was collected to confirm this.

**Perceptions peer teachers held of their learners.**
1. *Learner response.* Respondents described positive engagement: "I felt like the students were really engaged and wanted to learn from the experience" and enjoyment: "They enjoyed hearing about our own clinical experiences and simulation experiences," although some students were also self-critical: "Although students knew the task was a simulation with no grade or mark attached, they were often very critical of their performance and anxious prior to commencing the simulation."

2. *Power differential.* Peer teachers described a less intimidating dynamic between themselves and the learners compared to faculty with comments like, "Many of the students enjoyed the peer debrief sessions because it can be daunting self-evaluating your performance in front of an experienced physiotherapist or lecturer" and "as students debriefing students, I think we were potentially

more approachable, particularly for the more apprehensive, nervous students." The other power gradient subtheme involved the relatability of the content and the student status between the peers: "I felt that most students were quite comfortable to share their thoughts with me as a tutor, and this may have been due to the fact that I was another student who was of similar age and experience to them" and "Being a student myself, I was able to relate to the participants (peer learners) more than a tutor would have."

**Peer learner responses to "measure of quality of giving feedback" survey**
Mean and standard deviation scores for each of the 20 statements in the quality of feedback questionnaire are shown in Figure 1. There was an overall mean of 6.3 out of a possible 7 across all questions (SD 1.1), indicating a high rating for quality of feedback provided by peer teachers. The use of non-judgmental language, the provision of specific observations, accurate feedback, highlighting of strengths, phrasing negative feedback constructively, and a global rating of feedback all had mean scores at or above 6.5. Lowest scores related to limiting feedback to a few points (mean 5.6, SD 1.6) and labelling subjective feedback (mean 5.9, SD 1.4); however, these scores were still relatively high. These data indicated that peer learners, on average, rated how well feedback was provided by peer teachers as above "moderately well" on all items, suggesting quality feedback was provided.

## Discussion

This study has demonstrated the bi-directional benefit of peer-assisted learning (PAL) whereby peer teachers were able to deliver high-quality feedback during an SBL activity to peer learners whilst at the same time improving their own theoretical knowledge and clinical competence. Peer teachers' reflections indicated a self-perceived growth in confidence and skill. These results reflect findings reported in medical training literature (Ross & Cameron, 2007) and support the employment of the PAL model in physiotherapy prelicensure training (Sevenhuysen et al., 2013).

Our findings reflect the effectiveness of the training model utilised as preparation for teaching. Provision of some educational background or modified "train the trainer" coaching has been identified as an important component of any PAL programme (Dandavino, Snell, & Wiseman, 2007; Williams, Fellows, Eastwood, & Wallis, 2014). Peer teachers reported new knowledge around the structure and language of debriefing from both the online module and the immersive training that followed. This was then applied to unpack key elements of performance for student learner appraisal. The combination of the preparatory educational background provided and the implementation of the debrief sessions that enabled practise supported the notion that PAL enhances life-long learning (Gibson & Campbell, 2000).

The reflections provided by peer teachers in this study revealed that the peer teachers develop their understanding of the topic, which is not a new phenomenon (Krych et al., 2005; Topping, 2005). Engaging in the experience afforded an opportunity to use existing knowledge to teach, and in doing so, experience deeper learning (Evans & Cuffe, 2009; Ramsden, 2003). It also provided leadership development, as it required peer teachers to organize and facilitate the learner group (Krych et al., 2005).
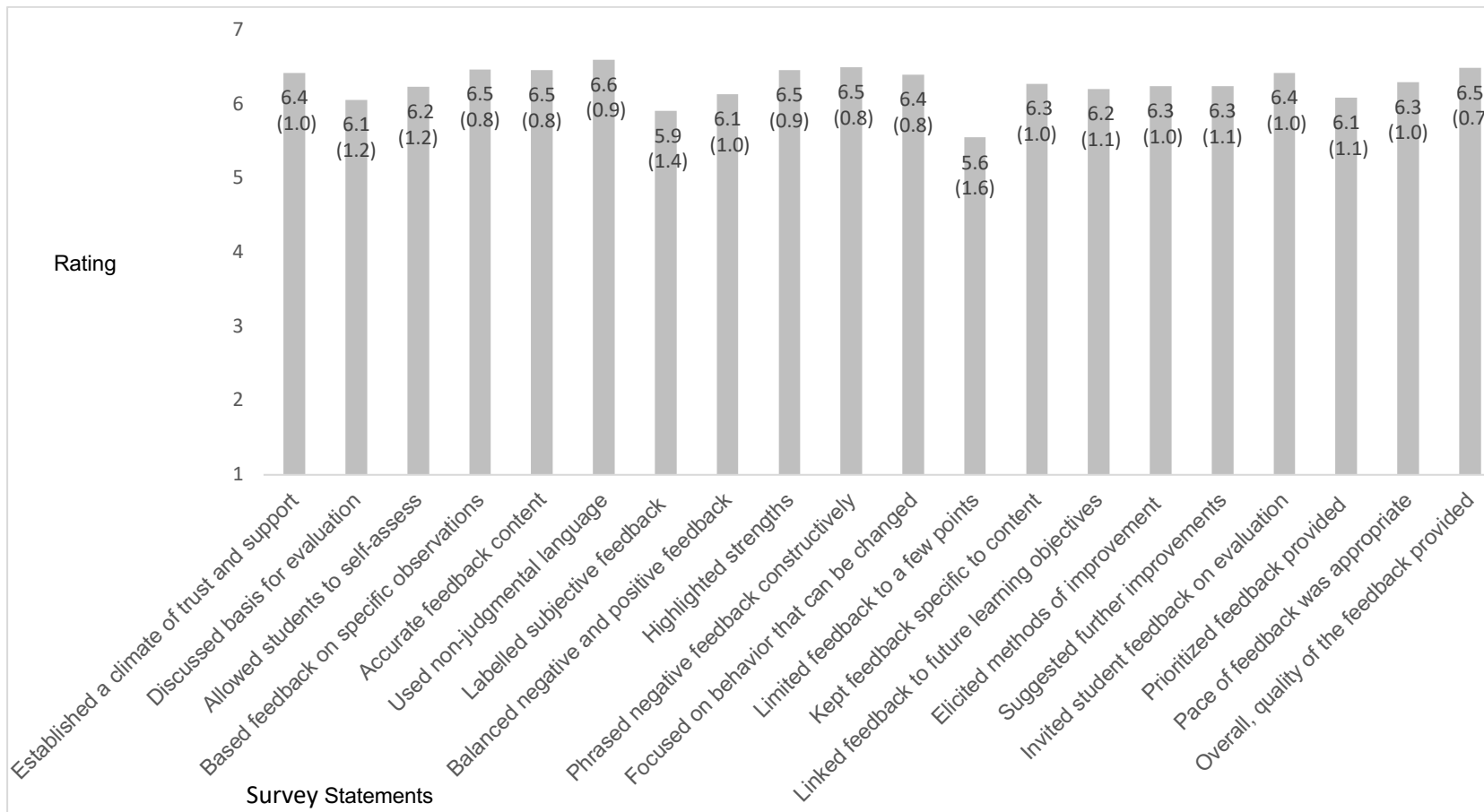
*Figure 1.* Mean (SD) scores from the quality of feedback questionnaire completed by student learner participants (*n* = 124).

A number of sources of teacher anxiety have been described in educational literature, including fear of incompetence (French, 1997). As they had little teaching experience, it was reasonable to anticipate the initial nervousness described by the peer teachers. They subsequently demonstrated reciprocal learning within the flattened hierarchy that exists between peers, particularly around confidence (Faure, Unger, & Burger, 2002) and effectiveness (Ross & Cameron, 2007). They also described enjoyment (Evans & Cuffe, 2009), particularly in relating their own stories and anecdotes, which has been reported in other studies (McKenna & French, 2011).

An important component of new understanding acknowledged by peer teachers centred on their ability to encourage self-reflection in their learners, rather than imposing their own direct feedback on performance. This model may encourage a higher degree of clinical reasoning around decision making and forms part of the "debriefing with good judgement" model, in which the instructor's view on performance may not be the only valid view (Rudolph, Simon, Rivard, Dufresne, & Raemer, 2007).

The quality of feedback provided by the peer teachers was scored highly by peer learners. Peer teachers were perceived as being accurate and specific in their provision of feedback. Particular strengths identified were their use of non-judgemental language and their ability to highlight strengths and phrase negative feedback constructively. The peer teachers were able to deliver feedback in bilateral, context-based dialogue that is proposed to be superior to unilateral, educator-driven approaches (Telio, Ajjawi, & Regehr, 2015). This fits with the notion that teachers who have relatively recently mastered teaching content themselves may better relate to the material and may pitch it at a more appropriate level to peer learners (Ross & Cameron, 2007).

The lowest rating of peer teacher performance by their peer learners related to "limiting their feedback to a few points" even though this statement was still rated highly (5.6/7). It may be that their professed enjoyment of debriefing the activity translated into an overzealous abundance of feedback. Repeated practise may have facilitated them in better prioritising the material being taught (Krych et al., 2005) and therefore limiting discussion to a few key points. The corollary is that an expansive debrief may also reflect their ability and confidence to make ad-hoc decisions during the learning activity, which is a positive PAL effect (Krych et al., 2005).

This study broadens literature on PAL that has largely focused on medical training to physiotherapy prelicensure training. It was noteworthy that final-year students from a different physiotherapy program could provide a useful PAL activity for more junior students from a different program of study, both interstate and from a different country. The SBL activity was applicable across multiple physiotherapy programs, and the feedback from peer teachers was valued by peer learners across territorial boundaries. It is possible that having peer teachers from a different program added an extra dimension and warrants further exploration. This approach may also lend itself to interprofessional PAL, an area that has been noted as a gap in the literature (Burgess & McGregor, 2018).

## Conclusion

In a peer teacher–led SBL activity involving prelicensure physiotherapy students, peer teachers reflected positively on development of teaching knowledge and skills. The peer learners rated delivery of feedback by the peer teachers highly, supporting peer teachers' self-reflection of improved teaching skills. This study confirms that there is potential to promote development of future prelicensure healthcare professionals' teaching skills using the PAL model of training described.

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