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This conference paper was originally published as:

Francis-Coad, J., & Hill, A. (2012). Discovering which experiences physiotherapy students identify as learning facilitators in practical laboratories: An action research project. *EDULEARN 2012: 4th annual International Conference on Education and New Learning Technologies*.

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# DISCOVERING WHICH EXPERIENCES PHYSIOTHERAPY STUDENTS IDENTIFY AS LEARNING FACILITATORS IN PRACTICAL LABORATORIES: AN ACTION RESEARCH PROJECT

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## Abstract

**Purpose:** Students enrolled in courses that focus on patient contact participate in practical laboratories to learn clinical skills but this can be challenging in a pre-clinical environment. A simulated case based format using role play in small groups is commonly undertaken. Students may find it difficult to actively engage in learning and effective role playing without prior clinical experience. The aim of this study was to discover what type of experiences facilitated student learning in practical laboratory sessions. **Method:** *Design:* Action research study. **Participants:** Thirty two undergraduate second year physiotherapy students who were engaging in practical laboratories. **Data collection and analysis:** Teacher observations, minute papers and semi-structured interviews were conducted over a nine week teaching period to gain the student perspective on what facilitated their learning. Data from these three sources were categorised and coded.<sup>1</sup> A concept mapping technique<sup>2</sup> was then used to represent the construct of learning facilitators identified, from which the final survey was developed. **Results:** Learning facilitators identified by students were categorised under three key units: those provided by the teacher, those initiated by the students themselves and material resources. Concept mapping revealed three emergent themes: provide multiple opportunities for learning that address all learning styles, formative learning support and resources to consolidate learning. Students rated timely feedback from the teacher while they practiced the required skills and behaviours as the highest valued learning facilitator (strongly agreed 78.6%, agreed 21.4%) followed by watching the teacher modelling the skill or behaviour required (strongly agreed 67.9%, agreed 25.0%). Students also reported that using a peer feedback checklist constructed by the teacher clarified their expectations of engaging in observation and feedback (strongly agreed 32.1%, agreed 50.0%) and guided their performance in the skills and behaviours expected (strongly agreed 35.7%, agreed 53.6%). **Conclusions:** Students at a pre-clinical level can identify which experiences facilitate their learning in practical laboratories, if given the opportunity. While these students place the highest value on teacher feedback they can actively engage in peer learning if given constructive guidance on the skills and behaviours required. Discovering what students identify as facilitating their learning in practical laboratories can guide successful evaluation of laboratory teaching plans to modify and create new learning opportunities and resources. This has the potential to improve student satisfaction and achievement of intended learning outcomes.

Keywords: Action Research, Practical Skills, Physiotherapy, Undergraduate.

# **1 INTRODUCTION**

This is my third year of teaching in the four year Bachelor of Physiotherapy course at The University of Notre Dame Australia, where I have a half time appointment. I teach the gerontology module of a unit titled 'Physiotherapy in gerontology and gender health' which runs for nine weeks in second semester of year two. There is a teaching team of three for a cohort of 78 students and I am responsible for two of the five laboratory groups running. The gerontology module deals with the ageing process, biopsychosocial perspectives and holistic physiotherapy management of the older person. Older persons' are by nature a more complex patient group to comprehend and manage due to age related changes and multiple pathologies and this is challenging for second year students. Therefore the aim of my study was to discover which learning experiences facilitated student learning given these challenges and use this information to inform my teaching.

## **1.1 Focus and Framing**

Our practical laboratory sessions are taught using a simulated case based format where the students problem solve in small groups role playing the physiotherapist, the patient and peer observer. Evaluation by past students and teachers had identified the peer observer role was not engaging for the student and perhaps could be better utilised to provide a more meaningful learning experience. It is well documented that feedback can assist the development of student competencies, evaluate their achievements and increase motivation and confidence [1, 2]. To facilitate learning in laboratory sessions verbal expert [teacher] feedback was provided but this was limited by student-teacher ratios [3] and I wondered if students would also benefit from peer feedback. Peer learning could provide the opportunity for students to question, explain and put ideas in their own words in a non-threatening context [4]. I thought I would try making the role of the peer observer more active in the learning experience by engaging them in providing peer feedback. However previous researchers have reported students placed in this role feel they lack the clinical expertise and are not confident to participate without support [5]. My thoughts turned to the concept of scaffolding, which metaphorically describes a type of structured assistance offered by a more experienced other to facilitate learning [6]. The next challenge was how to make the peer [student] into 'an experienced other'? Answer – with structured guidelines; hence I developed the peer feedback checklist as a tool for trial in the practical laboratory sessions.

## **1.2 Peer feedback checklist**

It is well reported that students focus their learning on what they are being assessed on and teachers align assessments with learning outcomes [2]. Therefore I selected items for the peer feedback checklist by analysing unit objectives and aligned criteria on the practical examination. Previous teachers have reported that physiotherapy students' were able to construct individual frameworks of patient care in a deep manner when they were actively engaged in doing and reflecting, seeing the whole picture, self-assessing and directing their learning toward areas needing development [7]. The assistance provided by the checklist was targeted just beyond the level of what the student could do independently; recording the performance observed provided the feedback necessary to guide the student towards mastery, with them gradually taking over the responsibility for learning [6].

## **1.3 Expert video clips**

The next tool I developed was expert video clips. The unit teaching team role played two clinical physiotherapist/patient scenarios for video recording. These clips were easily down loaded and placed on our electronic learning management system for students to access as required.

# **2 METHODS**

## **2.1 Design**

An action research study.

## **2.2 Participants**

The participants in the project were thirty two second year physiotherapy students enrolled in two laboratory groups in 2010. The majority of students were school leavers and had completed foundation units in biological science and basic physiotherapy practice but had not yet undertaken any formal physiotherapy clinical placements [where they gain experience in managing real patients].

## **2.3 Data gathering**

I chose three data gathering methods which included lecturer constructed instruments and semi structured interviews. I hoped these sources would collaboratively provide detail and help clarify my understanding of the situations encountered and ultimately guide the most appropriate action [8]. I also felt these collection methods to be manageable within the time frame of the project:

### *2.3.1 Diarised teacher reflections*

In action research recording observations and reflecting on them can guide the researcher to a deeper level of understanding as they themselves are immersed in the process[8, 9]. So with this in mind I set up diary using a word document with headings 'Week 1-9' followed by the sub heading 'Action'. I found that by opening my diary before I left for my laboratory session instilled the discipline required to reflect and write it on return.

### *2.3.2 Minute papers*

My approach to gathering some base-line data on how the students were finding the learning experiences in lab sessions was to adapt the idea of the 'minute paper' to provide me with feedback at the end of a chosen session[10]. The minute paper was anonymous and simply stated: "My comment on the learning experience in today's session: Next session could be improved by:"

I chose these simple open phrases because I wanted the students to state what was most important to them whilst avoiding any bias that their experience should necessarily be a positive one. I also wanted them to feel they had some autonomy in regards to their learning during lab sessions. Minute papers were provided to students at the conclusion of week two and week six, without comment.

### *2.3.3 Student interviews*

Nine students participated in interviews in small groups of three during weeks three, five and seven. Interviews took place outside of laboratory sessions and were audio recorded using a digital dictaphone. I gave the student participants the three key questions I would be asking prior to switching on the recorder in an effort to put them at ease. The three key questions were: "i) Tell me about how you learn in practical laboratories; ii) Could you describe a great learning experience? (What stands out in your mind?); iii) Are there any learning tools or resources you would like to experience?"

I phrased these questions in the neutral, non-leading style described as 'grand tour'[8] so as to elicit the perspective of the student rather than any biases of my own. I placed the recorder centrally on a table around which we were seated but I sensed this was a bit unnerving initially for the student participants as it became a focus point. So in subsequent interviews I placed several other items on the table with the recorder to 'camouflage' it and make it less obtrusive and then made sure I established eye contact with the student participant speaking immediately.

## **2.4 Data analysis**

Phase one data from teacher diarised entries, minute papers and transcribed semi-structured interviews were divided into units of meaning and recorded onto a master spreadsheet. The three units of meaning namely; learning experiences involving the teacher, the students and material resources were used to form categories and sub categories; these were concept mapped to reveal emergent themes [8]. A concept map is a graphical tool for organising and representing relationships between concepts and is a useful research tool in education in both curriculum design and evaluation [11]. I chose to incorporate my concept mapping using online computer software as this is advantageous in making the multiple revisions that are part of map construction. This mapping process was integral in clarifying meaning from the phase one data sources [11].

The final questionnaire was structured to represent the construct of valued learning facilitators identified from phase one data and quantify how student participants rated these using a 5-point Likert scale. Twenty eight out of thirty two students completed the final questionnaire with four being absent on the day. Individual response frequencies were graphed and the mean calculated for each item.

## **2.5 Ethics**

The study was approved by The University of Notre Dame Australia Human Research Ethics Committee. After receiving written and verbal explanations regarding the project and understanding their right to withdraw at any time, without prejudice or personal consequence, all students in my lab groups volunteered to participate and signed consent forms. One student commented, “...*It’s nice to know that you are interested in our learning and are trying to do things to help us...*” This made all the effort feel worthwhile.

## **3 RESULTS AND DISCUSSION**

### **3.1 Identifying key issues and experiences**

Teacher diarising was undoubtedly one of the most empowering experiences of this project. For example I noted that when learning to treat gait impairments the students role play of the patient’s gait was ineffective as they had little idea of how these patients presented. The student role playing the physiotherapist was then unable to successfully practice correction techniques. The action I took was to provide a patient role play slip detailing how to act the impairments. This change resulted in more effective practice time for students as they now had an impairment to correct. The diarising allowed small changes to laboratory content and structure along the way and helped develop new ideas for the following teaching period.

The logistics of organising the small group student interviews outside of laboratory time was challenging however the rich data they provided was invaluable in confirming and informing current teaching.

Three key units of meaning for facilitation of learning emerged; the teacher, the students themselves and material resources. The learning items assigned to each of these categories were further divided into pre lab, in lab and post lab experiences. My focus had been the laboratory sessions themselves and I had not really considered the importance to students of pre and post lab learning opportunities in shaping their performance in subsequent laboratories; this has resulted in me extending my attention to include these areas. The first being that the lecture material prior to the lab not only aligns but is referred to in context during the lab session, especially when the lecture and lab teacher are not the same person.

The information gathered from the first round of minute papers showed the most important learning facilitator at this stage was indeed teacher demonstrations. These demonstrations [modelling] may have been most important in early weeks as students grappled with many new concepts so more have been added during this period. Modelling has been identified as one of the most influential elements in skill acquisition in physiotherapy clinical teaching [4]. Feedback from the teacher was the most highly valued learning facilitator at the end of the unit and one that I will assign more time for in the latter laboratory sessions.

The students also valued discussion and feedback from peers, the mock practical exam and time for self practice; more time would be better too. The written resource in the form of a laboratory workbook again provided structured learning support but the checklist was more popular; probably as it was directly linked to the assessment! As a result of using the checklist students were able to provide clear consistent formative feedback to their peers in practical laboratory sessions. This meant the students were active during the process and therefore better engaged in the learning experience and the cues provided focus to keep them on task. Whilst the expert video clips were a popular post lab learning facilitator there were comments that having real patients feature would be preferable.

The most surprising result for the teachers was the popularity of a self-directed manual handling task. Students role play a patient simulation task which is done at the conclusion of the unit and is given a non-graded pass. Preparation for this task is done in the students’ own time as part of their self-directed practical learning. The previous year this task had been flagged by several students as having few benefits and unit teachers were seriously considering recommending its omission. The

popularity of this learning experience demonstrates the importance of listening to each cohort of students' feedback about what facilitates their learning. Students' preferences for one learning environment over another is susceptible to change over time and teachers should continually re assess and respond to each cohorts' needs [12].

### 3.2 Emergent themes

Phase one data was then concept mapped with three main themes emerging. Fig. 1 identifies those experiences that students identified as providing valuable learning opportunities.

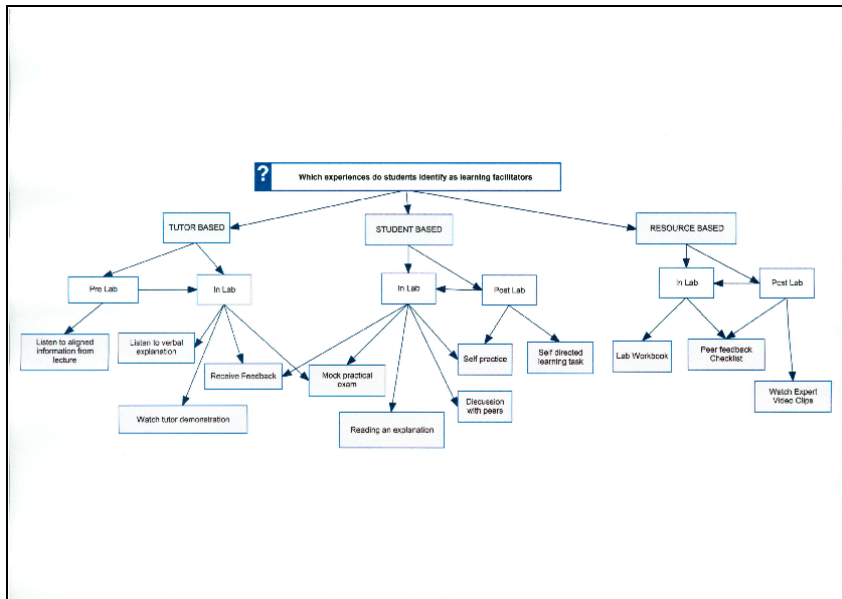


Figure1. Concept mapping of students' identified learning facilitators

The first emergent theme was multiple learning opportunities addressing all learning styles. Students identified a variety of learning opportunities involving aural, visual and kinaesthetic modalities as important in assisting them to understand and develop new concepts and skills, "...I learn best when I see the teacher demonstration first then have a go myself, it helps to know the relevance and to have instructions to refer to..." The second theme was learning support. Guidance from the teacher in particular, along with peers and resources both in and out of lab session time was important, "...It's great you [teacher] come round and give us feedback as we practice so we don't repeat our mistakes, our peers can then help reinforce this..." The final theme was learning consolidation. Accessible resources were important especially post lab to reinforce new concepts, "...The checklist and expert video clips are helpful to guide practice and you can revisit them as many times as you like..."

These emergent themes were also used to inform the construction of the final survey. The final survey asked students to rate the following key items. The survey items and results are presented in Table 1.

Table 1. Ranking of students' identified learning facilitators in the practical laboratory

Item No.	Item wording	Responses total n=28 (100%)				
		SD*	D	U	A	SA
1	My learning is facilitated by watching the teacher model the skills and behaviours expected			2 (7.1)	7 (25.0)	19 (67.9)
2	My learning is facilitated by receiving feedback from the teacher as I practice the skills and behaviours expected				6 (21.4)	22 (78.6)
3	The Peer feedback Checklist clarified my expectations of the skills and behaviours expected		1 (3.6)	4 (14.3)	14 (50.0)	9 (32.1)
4	The Peer feedback Checklist guided my performance in the skills and behaviours expected		1(3.6)	2 (7.1)	15 (53.6)	10 (35.7)
5	The expert video clips available on the electronic management system are useful learning tools		2 (7.1)	5 (17.9)	9 (32.1)	12 (42.9)
6	The Manual Handling Task was a valuable self-directed learning experience				15 (53.6)	13 (46.4)

\*Likert scale: SD=strongly disagree, D=disagree, U=undecided, A=agree, SA=strongly agree

## 4 CONCLUSION AND FUTURE DIRECTIONS

In completing cycles of the action research process I have discovered what students identify as learning facilitators in practical laboratories and have used this information to modify and create new learning opportunities and resources.

### 4.1 Unit curriculum review

I plan to review the unit content and teaching methods in conjunction with my findings from this project with the unit teaching team. Further changes can then be implemented for trial to better meet student learning needs.

## 4.2 Real patient video clips

I have organised to meet with physiotherapy colleagues working in the aged care sector to discuss making some video clips with consenting patients.

## 4.3 Standardised patients

I plan to investigate the use of standardised patients [actors' role playing patients] for inclusion in clinical education programs. This may be well suited to my practical lab sessions as students were challenged by role playing older persons with multiple impairments successfully, which impacted on their ability to practice skills.

## 4.4 Final reflections

The action research process has been immensely informative. It can easily be incorporated in tandem with teaching and should be a way of life for teachers, or at least those teachers who want to be better teachers! It generates answers and more importantly new questions; this makes it synonymous with the ethos of lifelong learning. Effective teachers are described as those who assess what is happening in their classroom, reflect upon this, read the literature and continue to make changes throughout their careers[13]. I hope I have become one of those teachers.

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