Physiotherapy students' and clinical teachers' perspectives on best clinical teaching and learning practices: A qualitative study.

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ABSTRACT: **Background:** *Clinical education forms a core component of the training of physiotherapy students. Little research on the efficacy of commonly used physiotherapy clinical learning and teaching opportunities are available.*

Objective: *This paper sought to identify the clinical teaching and learning opportunities that undergraduate physiotherapy students and clinical teachers viewed as effective in enhancing learning, as well as the reasoning behind their views.*

Design: *A qualitative research design was used. Data was analyzed using content analysis. Data was coded, categorized and conceptualized into key themes and patterns.*

Participants: *All third year (n=40) and fourth year (n=40) physiotherapy students as well as their clinical teachers (n=37) were eligible to participate. Semi-structured individual interviews were conducted with a purposive sample consisting of six third-year students, six fourth-year students and six clinical teachers.*

Results: *The results indicated that learning is best facilitated in open, relaxed environments. Demonstrations of patient management by teachers and students, discussion of patient cases, feedback and formative assessment were identified to be effective strategies to enhance development of clinical competence.*

Conclusion: *Clinical education, using focused and structured processes, could ensure that students are exposed to a range of learning opportunities for development of clinical competence.*

KEY WORDS: BEST PRACTICE; CLINICAL TRAINING/EDUCATION; PHYSIOTHERAPY; TEACHING AND LEARNING.

INTRODUCTION

Clinical education is defined as the provision of guidance and feedback on personal, professional and educational development in the trainee's experience of providing appropriate patient care (Kilminster et al. 2007). Appropriate clinical education within the context of providing patient care is important for the development of health professionals (Grant et al. 2003, Kilminster et al. 2007, Lekkas et al. 2007, Strohschein et al. 2002). Clinical learning takes place in a complex social context, where the patients' and students' needs are considered (Chan 2001) and consequently, a careful balance between patient care and student learning is essential.

What and how a learner learns is influenced by many factors, including the organizational learning culture, learner characteristics, learner approaches to learning and teacher characteristics (Kilminster and Jolly 2000, Schunk 2004, Best et al. 2005). The learner's thoughts, beliefs, attitudes, values and learning style play an important role in the learning process. Many of the theories that contribute to our understanding of learning highlight it as a social process and as a product of the environment. Torre et al. (2006) indicate how some learning theories (namely behaviourism, cognitivism, humanism, social cognitivist theory and constructivism) can be applied in health care education. Best et al. (2005) also provide a description of the use of learning theories during clinical education.

Several authors across various disciplines emphasize the importance of clinical training to achieve clinical competence (Kilminster et al. 2007, Chan 2001 and Williams and Web 1994). The importance of clinical education for physiotherapy is investigated and reiterated by Baldry Currens and Bitchell (2003), Higgs (1993), Lekkas et al. (2007), Stiller et al. (2004) and Walker and Openshaw (1994). Several reviews on the efficacy of clinical education programmes across disciplines (Kilminster and Jolly 2000, Rushton and Lindsay 2003 and Strohschein et al. 2002) emphasize the need for an evidence-based approach towards clinical education.

Despite its importance, there is limited in-depth knowledge about which teaching strategies are potentially effective to facilitate learning and why some strategies might be more effective than others (Babyar et al. 2003, Lekkas

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et al. 2007 and Rushton and Lindsay 2003). Ernstzen et al. (2009) found that certain teaching and learning opportunities are perceived to be key elements for facilitating learning during clinical education. These opportunities included demonstrations and discussion on patient management, feedback on clinical skills, and assessment. The current article explores the teaching and learning opportunities from the context of qualitative data collected subsequently to the above findings.

This paper sought to identify the clinical teaching and learning opportunities that undergraduate physiotherapy students and clinical teachers viewed as effective in enhancing learning, as well as the reasoning behind their views.

Box 1: Main interview schedule

Interview schedule
Opening questions
Describe your best clinical learning/teaching session (story or incident) OR Describe your ideal clinical learning/teaching session (story or incident)
Specific probing questions
What methods/opportunities for learning/teaching are of most value to you during clinical rotations and why. • Probe for all, including: • Demonstrations • Feedback • Discussion • Assessment (self, peer, competency) • Reflection
What are your views on facilitating learning of: Problem solving skills? Clinical reasoning skills?
What aspects of clinical learning opportunities affects: Responsibility for learning? Motivation for learning?

METHODS

Research Design

A qualitative research approach was used in order to understand the context specific, real world setting without manipulating the environment (Golafshani, 2003). The study was conducted at the Division Physiotherapy, Faculty of Health Sciences (FHS), Stellenbosch University (SU), South Africa (SA). The study reported on formed part of a larger mixed method study that employed a survey as a first phase (reported on in Ernstzen et al. 2009). The current paper reports on the second phase of the study, which employed a qualitative methodology.

Data was generated using one-to-one, semi-structured individual interviews. Topics discussed in the interviews are included in Box 1. Interviews were conducted by the primary researcher in the language of choice for the participant (i.e. either in English or Afrikaans).

The interviews took place at the Division of Physiotherapy, lasted an average of 35 minutes and were recorded using a digital voice recorder. Field notes were kept to provide a summary of the process and the recorded interviews were transcribed by an independent transcriber. Unique serial numbers were given to each data set. The selected participants were invited to view and comment on transcripts to assist with validation (Mays and Pope 1995; Creswell 2003).

The protocol for the study was approved by the Committee for Human Research at the FHS, SU, SA (reference number N05/08/144). Permission to undertake the study was obtained from the chairperson of the Physiotherapy Division, and written informed consent was obtained from the participants prior to each interview.

Participants

All enrolled undergraduate physiotherapy students at SU who had had clinical experience, and all physiotherapists involved in the clinical education of these students during 2005 were eligible to participate. Purposive sampling was used to select six participants from each of the three groups (third year students, fourth year students and clinical teachers).

Data analysis

Data was analyzed using content analysis. The transcripts were analyzed and interpreted using specific analysis strategies (Creswell 2003, Krippendorf 2004) including familiarisation with the data, interpreting the data by coding, categorizing and contextualizing texts. Final codes were revised after being checked by an external auditor to aid validation. The codes were then grouped into categories by the researcher in conjunction with the external auditor. Categories lead to the development of patterns and themes within the data to explore their possible relationships. The process resulted in an understanding of learning within the context of the clinical teaching and learning opportunities used.

RESULTS

Profile of the participants

An overview of the profile of the participants is presented below in Table 1.

The fields that clinical teachers were teaching in, included orthopaedics (2), medical and surgical (1) and neurology (1). Two clinical teachers were involved in teaching in all three of the above fields. The level of health care taught at were: primary health care (1), secondary health care (2), tertiary health care (2) and a private practice setting (1).

Key findings of the interviews

The key themes identified through the interview transcripts are presented in

Table 1: Profile of the case population and sample

	3rd year students	4th year students	Clinical teachers
POPULATION			
Number in category	40	40	37*
Gender	39 female 1 male	35 female 5 male	34 female 3 male
Average age (SD)	21,53 (1,78) years	22,73 years (1,74) years	37 (7.51) years
SAMPLE			
Number of participants	6	6	6
Gender	All female	4 female 2 male	5 female 1 male
Average age (SD)	21,83 (1,33) years	22,17 (1,17) years	34,33 (5.54) years
Clinical education experience	1 year	2 years	1 – 11 years

*23 clinical lecturers and 14 clinicians in this category

Table 2: Summary of themes generated from interviews

	Opportunity	Description	Perceptions
TEACHING AND LEARNING OPPORTUNITIES	**Demonstrations**	Teacher-led	Teacher as role model Collaborative learning
		Student-led	Identification of student capability Collaborative learning Role of communication Guides self-development
		Peer-led	Challenges concept of self and others as therapists Feedback to peers and to self
	Discussions	Group discussion	Can include interdisciplinary learning Communication skills Collaborative learning
		Patient specific	Clinical reasoning Feedback
	Feedback	Timing of feedback	During demonstrations After demonstrations
		Nature of feedback	Edifying Strengths and shortcomings
	Assessment	Summative assessment	Less drive for learning
		Mock assessment	Self assessment Preparatory Guides learning Feedback opportunity
		Peer assessment	Uncertainty; mixed responses Difficult to judge peers Opportunity for self assessment
		Self assessment	Uncertainty; mixed responses Timing Limited self knowledge Needs feedback/discussion

Table 3: Summary of factors involved in creating an optimal learning environment

	Factor	Verbatim Quote
DESCRIPTIONS OF A GOOD LEARNING ENVIRONMENT	**Open/relaxed environment**	*"Where help is readily available and I could quickly ask for advice (Student 1)* *Where there is freedom to ask questions." (Student 4)* *"I create an open learning environment by being enthusiastic, approachable and open for feedback." (Teacher 1)*
	Open discussions	*"Where students can regularly discuss their clients progress." (Student 9)*
	Different sources of information	*"Where you can obtain input from different sources." (Student 3)*
	Demonstrations	*"Demonstrations at the beginning of the rotation have always helped me." (Student 5)*
	Guidance on patient management	*"Guidance on patient management and suggestions for improvement has improved my learning experience." (Student 10)*
	Equipment	*" It does help if the basic equipment is available." (Student 5)*

Table 2 and 3. Demonstrations of patient management, collaborative discussions between the student, clinical teacher and peer group, feedback on various learning aspects, and mock assessments were all confirmed to enhance the learning process. There was some uncertainty about the learning value of peer assessment and self assessment. These teaching and learning activities, with their key themes are elaborated on in the section below to explore how they influenced the learning process.

The themes presented in Table 2 are intertwined within the creation of an optimal learning environment, as summarized in Table 3. Students consistently reported their best clinical learning experience as occurring in clinical placements where an open, relaxed atmosphere existed between students and the clinical teacher, and where the students felt free to ask questions and make mistakes. The attributes and roles of the clinical teacher were reported to play a key role in the creation of an optimal learning environment. The participants reported that the clinical teacher can create an optimal learning environment by being enthusiastic, approachable and flexible with regard to learning opportunities (Table 3). Students appreciated diverse sources of information, indicating that they value feedback from more than one clinical teacher. Demonstrations of patient management and guidance on patient management played a role in creating a good learning environment. These two factors contributed to learning from the teacher when the teacher acts as role model for cognitive, social and technical skill, which is explored in the next section.

Demonstrations of patient management

Participants identified three types of demonstrations of patient care, namely; teacher-led, student-led, and peer-led. During teacher-led demonstrations, the teacher demonstrated patient care to one or more students. During student-led demonstrations one student demonstrated while the teacher provided guidance and feedback. Peer-led demonstrations was characterised by peers providing feedback during or after a student demonstration. Demonstrations were reported to be valuable as they helped students to think creatively and imaginatively by assisting reasoning. Student 4 stated:

"*Demonstrations help me to think out of my boxes of theory and practical. They help me to mix my boxes of different subjects, thus integrating theory with practice*."

During teacher-led demonstrations, the teacher acted as a role model with regard to cognitive, social and technical skills, highlighted by the following quotes:

Student 2: *"The demonstration by the teacher gave me direction in management options for the patient. It directed my thought processes as it provided a pattern of thinking and doing; it helped me to identify the type and logic of questions to ask. I started thinking in the same manner and could put the theory and practical together in a clinical setting."*

Teacher 3: *"When performing demonstrations I hope that learners may learn a specific pattern of thought or process of assessment/treatment of the patient. Not a recipe, but an approach.*

These illustrate how students can learn cognitive skills from teachers, especially their approach to clinical problem solving.

The clinical teacher was reported to be a role model for technical skill as Student 4 pointed out:

"It helped me to observe the teacher's physical handling skills. It showed me how to adapt my techniques, for example my grip, to make the technique more effective and comfortable to the patient."

Participants also reported learning productivity during student-led demonstrations. Student-led demonstrations

were valuable for identification of student educational needs, provision of feedback and planning for action. It also enhanced technical skill, clinical reasoning, communication skills, self-assessment and reflection, as illustrated in the quotes below.

Student 8: *"Observing someone doing something and then doing it yourself is quite different, you really only learn when someone corrects you and gives you feedback on what you are doing*."

Student 2: *"It can be very stressful to give a demonstration, but it definitely helps you to develop your confidence. The more you do it, the more confidence you gain. It helps with communication on a professional level."*

Clinical teachers confirmed the value of student-led demonstrations as providing opportunities for needs analysis, clinical reasoning and the development of communication skills, substantiated by the quotes below:

Teacher 2: *"It provides the opportunity for the teachers to identify students' strengths and limitations and to provide feedback on the students' clinical reasoning and performance of techniques."*

Teacher 3: *"It develops communication skills, as students are required to present information and reveal their thought processes to others while they are demonstrating. When students give a demonstration, they are being prepared for communication with colleagues and patients."*

Students preferred student-led demonstrations rather than peer-led demonstrations. However, they acknowledged the value of peer led-demonstration as follows:

Student 4: *"I was able to identify others' mistakes, which helped me to realize that I often make the same mistakes."*

Despite the many positive contributions from peer observation, students, as observers, admitted that they were unwilling to comment on the clinical performance of other students. Clinical teachers agreed with this notion.

Student 3: *"It is difficult to judge peers. I find it difficult to be objective. I am careful, in case I offend them. There has to be a well thought through process to manage peer observation and feedback."*

The processes of performing a demonstration and receiving/giving feedback through discussion were central to facilitating learning in this context.

Feedback during/after demonstration of patient management

Feedback during or after demonstrations was identified as providing direction to a student's development. Feedback was considered important in terms of it's content, the manner in which it was given, and it's timing. The following quotes illustrate that the nature of feedback played a role in the way it was perceived.

Student 4: *"If feedback is given immediately, you can apply it immediately, or immediately adapt your technique. Constant interruptions during my demonstration disturb my thoughts and concentration."*

Student 1: *"Feedback can be given any time during the demonstration, depending on how it is given. If feedback is given in an unnerving manner, it makes me uncomfortable and nervous."*

The relationship between the student and the clinical teacher influences the way feedback is interpreted. The comments below highlight the need for feedback to be immediate, specific, appropriate, empathic, and accompanied by advice.

Student 4: *"Feedback should be specific, edifying and focus should be on the way feedback is given. Feedback should provide suggestions or advice on improvements."*

Student 3: *"If you have a good relationship with the clinical teacher, you can handle critique better."*

Discussion as a learning activity

The learning value of individual and group discussions with the clinical teacher focussed on the development of problem solving, clinical reasoning skills, communication skills and reflection. Comments pertaining to discussions for learning included the following:

Student 8: "*Discussions facilitated problem solving, decision-making process, as well as understanding*."

Teacher 4: "*During discussions we focus on finding solutions for the problem identified and reasoning on it."*

Peer group discussions that ranged over a broader set of topics than patient-specific discussions were also highlighted as important. The collaborative discussions aided in self-assessment, clinical reasoning skills and the facilitation of communication skills, as well as assisting students to reflect on recent learning opportunities as indicated by the statements below.

Student 9: "S*uch discussions helped me to express myself and handle critique."*

Student 2: *"Discussions can aid in clinical reasoning, especially if specific questions are asked. It helps you by letting you do self assessment."*

Teacher 6: *"Discussion gives students the opportunity to discuss problem patients and interact with each other*."

Mock assessment

Participants regarded mock assessment (formative assessment) as valuable for learning, probably because the mock test is a simulation of the actual clinical competency test. Supporting quotes on mock assessment include:

Student 4: *"It helps you to identify your faults and to assess yourself. It provides the opportunity to clarify uncertainties."*

Teacher 5: *"A mock test teaches students how to approach the assessment situation and alerts the student to assessment criteria."*

Mock tests prepared students for the final clinical competence assessment as it promoted discussion and guided remedial action without the pressure of a 'real' assessment.

DISCUSSION

This paper presents information which elaborates on teacher and student perspectives on strongly valued elements that produce clinical learning. The findings suggest that quality clinical education is dependent on planning learning carefully to incorporate particular teaching and learning opportunities. Key factors that play a role in the creation of an optimal learning environment were found to be teachers' attributes and key teaching and learning opportunities (demonstrations of patient management, discussions, feedback and formative assessment).

Demonstrations of patient management provided opportunities for collaborative learning, the provision of feedback, facilitation of clinical reasoning and problem solving to integrate theory and practice. The importance of the teacher as a role model and facilitator of learning was underpinned by these findings, especially as they relate to the cognitive, affective and physical skills that are inherent to physiotherapy practice. Students expressed the view that they learn from observing the teacher and even more so when the teacher verbalized their cognitive processes. Learning by observation is supported by the social cognitive theory and behaviourist theory of learning (Schunk 2004). Clinical reasoning is apparently facilitated when clinical teachers explain their thought processes while performing demonstrations. This concept was termed by Meichenbaum as cognitive modelling (Meichenbaum, 1977 in Schunk, 2004). Students are thus developing their learning potential when interacting with a more knowledgeable other (the teacher).

The range of roles played by the teacher highlights the complexity of the interaction between student, patient and teacher in the clinical setting. The rich and complex clinical environment is worthwhile for learning as it requires integration of theory, practice and social skills. The unique and challenging learning experience that clinical environments offer is recognized by Cross (1995) and Baldry Currens and Bitchell (2003).

The interpretation of feedback was found to be influenced by the relationship between the student and clinical teacher. A relaxed learning environment facilitated the interpretation of feedback. This is congruent with humanistic theory (Best et al., 2005), and is confirmed by Williams and Webb (1994) who found that a personal relationship with a clinical teacher who demonstrates empathy, encouragement and care, assisted learning more positively than other teacher attributes. Clinical teachers need to be aware of the powerful learning effect that feedback has, if provided appropriately in terms of it's content, timing and the manner in which it is given. Hewson and Little (1998) found that the way in which feedback was given strongly affects students' perceptions of it's helpfulness.

Discussion between teachers and students occurred as part of demonstrations, feedback and formative assessment. The learning value of discussion was centred on facilitating understanding, clinical reasoning, decision making and communication between participants. Discussion may also facilitate learning trough reflection and self-assessment. These findings concur with the views of Gross Davis (2001), who argues that through discussion, students gain practice in thinking through problems, organising concepts, formulating arguments and counterarguments, evaluating the evidence for their own and others' position, and responding thoughtfully and critically to diverse points of view. Babyar et al. (2003) found discussion to be the most effective activity to facilitate clinical reasoning for physiotherapy students.

Mock assessment was valuable as it encouraged learning, promoted self-evaluation and improved the quality of teaching. Robertson et al., in McAllister et al (1997) supports this notion. Formative assessment with feedback is supported as a reinforcement strategy for learning (Torre et al. 2006). Mock assessment could be a useful strategy to drive learning in the process of developing clinical competence by combining it with feedback and discussion.

The findings of the study indicate that a structured clinical education program, that include the teaching and learning activities as discussed above could ensure quality in clinical education. Clinical teachers play a powerful role in facilitating clinical learning and thus need to be supported in this role.

There are several limitations to this study which could impact the interpretation of findings, as well as their generalisability. Participants in the study could only reflect on learning opportunities to which they were exposed to, and study findings can only be generalized to similar contexts. Future research could include a greater number of physiotherapy schools to produce a more varied student and teacher population, as well as more diverse teaching and learning opportunities. The gender bias in this study is highlighted. The value of self assessment and peer assessment also warrants further research. The study only focused on teaching and learning opportunities, whereas a more holistic study that included factors related to personal and professional development is recommended.

CONCLUSION

The study confirms that clinical placements offer a rich opportunity for students to learn. Clinical teachers played a central role in facilitating students' learning by addressing clinical, theoretical and social constructs that are present when providing patient care. Students' learning experience is strengthened by a supported learning environment that is enriched with visual and cognitive modelling.

FUNDING

The Fund for Innovation and Research into Teaching and Learning, Centre for Teaching and Learning, Stellenbosch University, South Africa.

ACKNOWLEDGEMENTS

The authors would like to thank the participants for their time and input.

ETHICAL APPROVAL

Committee for Human Research at the Faculty of Health Sciences, Stellenbosch University, South Africa (reference number N05/08/144).

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