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Profiling physiotherapy student preferred learning styles within a clinical education context

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Abstract

Objectives This study investigated the preferred learning styles, related to clinical education of a cohort of final year physiotherapy students.
Design A cross sectional observation study using a questionnaire survey.
Setting Undergraduate physiotherapy program at James Cook University, Townsville, Queensland.
Participants 48 final year physiotherapy students representing 89% of the total cohort (48/54).
Interventions Survey questionnaire using Kolb's Learning Style Inventory (Version 3.1).
Results The preferred learning styles were spread uniformly across the three learning styles of Converging, Assimilating and Accommodating, with the least preferred method of learning style the Diverging style. This suggests that in the clinical environment this student cohort are least likely to prefer to develop their learning from actually experiencing the scenario i.e. in front of a real life patient (concrete experience), and were more likely prefer this learning to come from a theoretical perspective, allowing them to consider the problem/scenario before experiencing it. When transforming this experience into knowledge, they prefer to use it on a 'real life' patient (active experimentation).
Conclusion Whilst understanding learning styles have been promoted as a means of improving the learning process, there remains a lack of high level evidence. The findings of this study reinforce those of other studies into the learning styles of physiotherapy students suggesting that physiotherapy students share common learning style profiles.

Keywords: Physiotherapy student; Learning styles; Clinical education

Introduction

The aim of teaching is to facilitate the learning process [1], and to develop competent practitioners able to function successfully in the community. Within the discipline of physiotherapy, clinical education; allowing the student to learn clinical skills in the workplace is seen as a vital part of the teaching process [2]. It has been argued that this form of teaching is the most important element of vocational healthcare programs, such as physiotherapy, because the environment in which the learning occurs most closely resembles the realities of clinical practice [3].

Hobbs *et al.* [2] identified a number of challenges facing clinical education in physiotherapy. These include reduced government funding for health and education, increasing competition for clinical education placements and difficulties in attracting clinical educators. In this increasingly challenging environment, strategies are required to improve learning during clinical education, to maximise the experience for the student and ensure they achieve clinical competency.

A number of learning theories have been proposed to help us understand how humans learn. These theories can be characterised by three broad approaches, based on differences in the underlying philosophical framework [4]. Behaviorism, based on the stimulus and response theories of Skinner, focuses on the observable aspects of learning, whilst Cognitive theories focus more on representational, brain-based learning. The third broad category of learning theories, Constructivism, views learning as a process in which the learner actively constructs or builds new ideas or concepts.

Experiential learning theory (ELT) is a form of constructivism, which proposes that learning is "the process

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whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience" [5]. Fundamental to this approach is the notion that experience plays a central role in the learning process. Clinical education is a form of learning that is heavily steeped in the experiential process as it requires students to actively build and integrate their theoretical and practical knowledge, through the experience of clinical practice [6–8].

ELT proposes two dialectically related modes of grasping experience, via concrete experience and abstract conceptualization, and two modes of transforming experience, through reflective observation and active experimentation [9]. Idealised learning in the ELT model is a cyclical process where the learner, in response to the learning situation and what is being learned, moves through each stage – experiencing, reflecting, thinking, and acting.

As a result of individual experiences it is proposed that each individual develops a preferred method or style of learning. Learning styles are seen as the way individuals prefer to process new information, and strategies they adopt for effective learning [10].

Nelson *et al.* [11] reported that college students who were tested on their learning style and were provided with an instructional session on how to apply their strengths and weaknesses based on their learning style, achieved higher academic results than other students. Linares [12] in a survey of students from five different health care professions (nursing, physiotherapy, occupational therapy, physician assistants, medical technology) found a significant relationship between the student's self-reported learning style, as measured by Marshall and Merritt's Learning style questionnaire, and their readiness to undertake self-directed learning, using the Self Directed Learning Readiness scale (SDLRS). This study found that students reporting preference for Converger learning styles were significantly more self-directed than other learning style preferences ($F = 25.43$; df = 3; $p < 0.001$).

Sandmire and Boyce [13] in a study of fifty-six allied health students in an undergraduate course which included content on anatomy, physiology and pathophysiology, found that mismatching students based on learning style (i.e. concrete with abstract learners) was related to significantly improved academic performance on a simulated clinical case exercise compared to matched students. Students were assigned randomly in pairs, based on their results from the Kolb Learning Style Inventory questionnaire, and the results were independent of previous cumulative grade point average and prior course examination scores.

It has been proposed that an understanding of student learning styles can improve the development, design, format and delivery of educational programs and resources to motivate the student's integration and application of professional knowledge [14]. However, whilst a relationship between learning styles and effective teaching approaches has been proposed there remains a lack of high quality evidence to support or refute any such relationship.

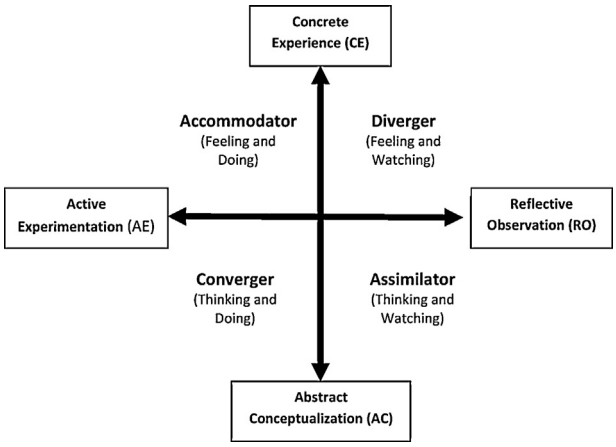

Fig. 1. Kolb's learning style quadrant.

Given the recent challenges facing clinical education [2], understanding physiotherapy student preferred learning styles, specifically within the context of clinical education, may help identify strategies to improve the learning process.

Kolb's Learning Style Inventory (KLSI) is a self-reported questionnaire, which has been used to identify key learning styles amongst different student groups over the past 30 years. The KLSI is based on ELT, and considers learning to be a cyclical process involving four modes, concrete experience (CE) and abstract conceptualization (AC), reflective observation (RO) and active experimentation (AE) (Fig. 1).

The KLSI (version 3.1) has 12 questions, each with four possible responses. Participants are asked to rank the responses from the response that best describes their learning style to the response that least describes their learning style. The assigned value for each response is summed to derive a total for each of the four modes of learning (CE, AC, RO, AE). The value for CE is subtracted from the AC value to calculate a *y*-coordinate value; the value for RO is subtracted from the AE value to calculate an *x*-coordinate value. These values are then plotted on the KLSI grid to identify the preferred learning style i.e. Diverger (CE and RO), Assimilator (AC and RO), Converger (AC and AE) or Accommodator (CE and AE) (Fig. 1).

Table 1 identifies the key attributes for each of the four different learning styles.

Learning styles have been investigated amongst allied health students from a range of disciplines and countries [12,15–18], with differences in preferred learning styles identified between students from different allied health disciplines [15,16]. Amongst physiotherapy students previous research has reported that the preferred learning style was Converger whilst the least preferred self-reported learning style was Diverger [12,15,16,18] (see Table 2).

Whilst learning styles are seen as a relatively stable personality trait they are also considered to have a dynamic quality, being influenced by a range of factors including learning context, personality type, educational specialization, career choice, current job role and tasks, and cultural