

Constructivist Learning Theory in Physiotherapy Education: A Critical Evaluation of Research

Mohammad Qasem*

Physiotherapy Department, University of Brighton, UK

*Corresponding author: Mohammad Qasem, Physiotherapy Department, University of Brighton, UK, Tel: (+44) 7479964060; E-mail: M.Qasem1@uni.brighton.ac.uk

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Abstract

Physiotherapy is a field that has benefitted significantly from advances in learning theory. Due to the prevailing physical component of rehabilitation and intervention, researchers and educational theorists have faced unique challenges when developing educational models in the physiotherapy field. The purpose of this review is to present and analyse relevant literature related to learning theory in physiotherapy regarding Constructivist Learning Theory and its importance to the physiotherapy practice. It presents numerous applications for physiotherapy practice. Principles of constructivism suggest that teachers encourage learners to arrive at resolutions in unique and varying ways. A constructivist approach to physiotherapy can also be applied by presenting a more problem-based training program.

Keywords: Physiotherapy; Constructivism; Education

Introduction

Education theory has experienced significant evolution and reform since its historical roots in Greek philosophy [1]. Educational theories include both philosophies on teaching and learning, as well as theories on curriculum design [2]. Physiotherapy is a field that has benefitted significantly from advances in learning theory. Due to the prevailing physical component of rehabilitation and intervention, researchers and educational theorists have faced unique challenges when developing educational models in the physiotherapy field.

The purpose of this review is to present and analyse relevant literature related to learning theory in physiotherapy. Emphasising constructivist learning theory, this review first provides background information pertaining to learning theories in physiotherapy. Constructivism is a learning theory that places emphasis on the manner in which learners attribute meaning to their perceptions through personal constructs [1]. A comprehensive discussion of constructivist theory is then presented, followed by a brief summary. Applications of constructivist theory to the practice of physiotherapy are then discussed. This review concludes with a brief summary and outline of key points.

This section provides historical and background information concerning learning theories in physiotherapy. A thorough discussion of constructivist learning theory is then presented, along with applications of this theory in current educational research. This section concludes with a brief summary.

Learning Theories in Physiotherapy

The transformation of learning theories and educational curricula in physiotherapy has coincided with the evolution of educational philosophies in general. A diverse set of theoretical and philosophical frameworks for learning theories currently exist a number of trends have emerged [3].

For several decades, the school of behaviourism dominated learning theory in all educational fields, including physiotherapy [4]. Based largely on the work of Skinner, teachers favoured these simplistic and effective approaches for modifying behaviour. Behaviourism is characterised by a teaching and learning process in which specific tasks are divided into smaller and more discrete components. Each component is taught separately through a process of reinforcement or punishment, until the desired behaviour occurs consistently. As each component of the learning process is learned, they are then tied together in a chainlike fashion until the full behaviour is ingrained. Physiotherapists initially enjoyed this approach to learning because behaviours were easily observable and measurable. A behaviourist approach to learning was associated with number of drawbacks, however, such as the lack of individualism in the learning process and a failure to account for thoughts and emotions [4].

In response to some of the drawbacks of the behaviourist approach to learning theory, physiotherapists began to adopt a more cognitive-based philosophy [4]. Cognitive learning theorists assert that teaching and learning is a dynamic process in which the learner receives sensory input and then processes this input by way of categorising or conceptualising new information [5]. This approach viewed the learner as analogous to a computer, and emphasised the problem-solving process when teaching new skills [6]. Cognitive learning theory is also associated with some drawbacks, such as a neglect of an individual's experience or beliefs when perceiving new information [4].

Colliver [7] conducted a review of problem-based learning curricula in physiotherapy education, reviewing medical education literature between the years 1992 and 1998. Problem-based learning is a theory that encapsulates key aspects of cognitive learning and emphasises a solution-focused curriculum design. In evaluating these studies, they concluded that no convincing evidence was provided demonstrating that problem-based learning improves knowledge base of clinical performance for students. Additional research has also illustrated drawbacks of the problem-based learning method, citing its loose educational theory and research base [7].

Constructivist Learning Theory

Recent trends in physiotherapy research have favoured a constructivist approach to learning [8]. Constructivist learning theorists view the learning process as an active construal of new information in relation to each learner's past experience, beliefs, and individual perceptions [9]. This theory goes beyond the traditional emphasis on the transmission of facts from teacher-to-student and accounts for the experiential component of learning [10].

Scheel and Probst [11] assert that, despite its unique educational platform, physiotherapy has made relatively few contributions to learning theory. According to these authors, adopting a constructivist approach to the training of motor activities presents a unique opportunity to illustrate the transmission of knowledge in a manner that fully encompasses the learner's experience. They emphasise that a constructivist approach to physiotherapy can result in successful treatment through the use of verbal feedback and the transference of knowledge to real-life settings [11].

Ollis and Sproule [12] examined the efficacy of adopting a constructivist approach in the training of motor skills in an elite sports team. These researchers conducted a two-year intervention with an elite shooting team, specifically focusing on constructivist teaching techniques such as emergenic, iterative, ecological and meta-level coaching processes, as well as personal and inter-personal support. Results illustrated that this approach was effective in meeting the learning needs of this specific group and produced a rich interconnectedness between the learners. The researchers explain that monitoring and assessing desired behaviours was simple and conducive to a constructivist training approach [12].

Gijbels et al., [4] also note that a constructivist learning environment is conducive to the training of physical skills. According to these researchers, all learners undergo a process of changing their perceptions of assessment demands toward more deep-level and personal demands, and subsequently their approach to learning. Therefore, accounting for individual differences in the training of motor learning, identifying the complex relationship between the learner and environment, students' perceptions of training demands, and students' unique approaches to learning will result in more effective transference of skills [4].

Schmidt et al. [13] conducted a review of the effects of constructivist learning in the medical environment for students. These researchers summarised the effects of 270 learning cases from a single medical school to determine the quality of learning and overall level of student satisfaction. Results indicated that students using a constructivist learning approach demonstrated greater interpersonal skills, as well as superior medical skills. Furthermore, these students experienced less attrition and less time needed to graduate. These results indicate that the constructivist learning method has positive effects on learning, even though it has been criticised for placing less emphasis on direct instruction [13].

Applications for Practice

Constructivism presents numerous applications for physiotherapy practice. One manner in which a constructivist approach has been demonstrated to be more effective in a physiotherapeutic environment is when working with children [4]. Principles of constructivism suggest that teachers encourage learners to arrive at resolutions in unique and varying ways. Furthermore, learners should be encouraged

to reveal how they arrived at solutions and articulate their strategies for solving problems [14]. Pathways from previous knowledge should be built and incorporated into future learning as well. Adopting this approach tends to enhance the learning process by making training more meaningful and allowing for individual creativity in developing motor learning habits [15]. Promoting a process of guided discovery makes the learning of new movements and skills more personal and results in a deeper level of understanding for children [4].

A constructivist approach to physiotherapy can be applied by presenting a more problem-based training program [16]. Rather than strictly rewarding or punishing desired or unwanted behaviours, or emphasising surface level transmission of knowledge from teacher to learner, the constructivist physiotherapist can devise real-life scenarios and encourage students to create strategies for utilising newly learned skills to address them. Adopting a problem-based approach engages the learner in the training process and produces a greater level of motivation to activate prior knowledge of the material [17].

Reflective practice is another application that has stemmed from a constructivist approach to learning in physiotherapy [18]. This practice requires that learners systematically review the learning process and reflect upon the skills and habits they have developed. Moon [19] asserts that reflection is a method of mental processing. This practice is utilised to achieve some anticipated learning outcome, and is applicable to complex ideas in which a concrete solution is not readily apparent. This process incorporates both the processing of new knowledge and emotions that exist during learning. According to this researcher, surface learning does not provide a chance for the student to reflect, and limits the depth or meaning of the knowledge [19].

Research [7, 13] has provided strong evidence that the constructivist learning theory provides educational advantages to physiotherapy students and educators. As this model focuses on problems in which students must devise solutions and conceptualise their own strategies for applying these solutions to practise, constructivist learning theory helps facilitate critical thinking to a greater extent than more direct instructional methods [13]. Student learners may become more effective physiotherapy educators due to the continual challenge of connecting theoretical and academic knowledge with current clinical problems.

Conclusion

Constructivism presents numerous applications for physiotherapy practice. One manner in which a constructivist approach has been demonstrated to be more effective in a physiotherapeutic environment is when working with children. Principles of constructivism suggest that teachers encourage learners to arrive at resolutions in unique and varying ways. A constructivist approach to physiotherapy can also be applied by presenting a more problem-based training program. Finally, reflective practice is an application that has stemmed from a constructivist approach to learning in physiotherapy and has relevance to the learning of physical skills.

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