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Review article

Learning styles and approaches: Can reflective strategies encourage deep learning?

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Background: Research in learning styles and learning approaches is extensive; however our understanding of the differences and misconceptions between these two important constructs is limited. Furthermore, most health disciplines have utilized research into learning styles and learning approaches to refine teaching modules or as a basis for understanding student cohorts, yet very few studies have been conducted in the discipline of pharmacy.

Objective: This narrative review will discuss the misconceptions between the two constructs, the differences in their use and the important role reflection plays in both learning styles and approaches.

Methods: A snowball method was utilized to locate peer-reviewed articles from the last 30 years.

Results: The literature identified reflection may play a role in learning styles and approaches, which may influence academic performance.

Conclusion: Understanding a cohort's learning style and approaches and the role reflection plays, particularly over time, may provide invaluable support for refining pharmacy curricula for enhanced academic performance and student learning.

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Keywords: Narrative review; Learning styles; Learning approach; Reflective practice; Pharmacy education

Introduction

This narrative review will cover the importance of understanding the differences in the learning processes of students in terms of learning styles and approaches; the role *reflection* plays in learning styles and approaches and the impact that these two constructs have on pharmacy education. Learning styles and learning approaches are both strategies adopted by students in a learning environment. These two strategies may be influenced by their previous experience^{1,2} and may influence academic performance³; however, this is where the similarities cease.

Learning styles versus learning approaches

The terms *learning style* and *learning approaches* are often used interchangeably,^{4–6} thus, suggesting that they are the similar concepts; however, these two constructs differ on many levels. Learning styles refer to the ways in which a student prefers to take in and process information. In contrast, a learning approach refers to the *methods* in which a student prefers to approach a learning task. For example, a student may prefer to utilize a surface approach to learning, while another may prefer to delve more deeply into the subject material with a deep approach to learning. Some of the most influential learning style models classify styles with reflective learning attributes,^{7–9} and deep learning approaches have been associated with *reflection*. *Reflection* on one's learning provides a strategy to maximize deep learning, as it fosters students to critically think, analyze,

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and problem solve.¹⁰ In particular, understanding the complexities of these constructs, applications of use and limitations in pharmacy education can provide a greater understanding of today's pharmacy students' learning and reasons why they adopt or prefer certain learning styles or approaches. This is especially important when teaching a student in a professional degree program such as pharmacy, where the learning environment moves from a predominantly theoretical perspective to a clinical setting and students must integrate knowledge with practice.

Importance of understanding the learning process in pharmacy education

How a pharmacy student perceives, processes, and approaches his/her learning tasks are important aspects for educators to consider, especially when educating a student for a professional degree. The need for *reflection* in the learning process as well as in practice is paramount particularly to ensure students and practitioners continue to develop skills to deal with complexities of clinical practice.¹¹ Undoubtedly, active learning (learning by doing) is important for pharmacy education, particularly for practical demonstrations, laboratory work, and “hands-on” tasks. However, deep and reflective learners tend to hold the skills associated with self-directed and lifelong learning.^{11–14} An individual's learning style and learning approach may influence these learning abilities and therefore may influence the way students develop lifelong learning skills. Understanding the constructs involved with learning styles and learning approaches may allow educators to have a greater understanding of why some students do not reach the learning outcomes of successful integration of theories with complexities of clinical practice, thus not achieving academic success in pharmacy education.

Relevant articles for this narrative review were obtained through searches of the following databases: Scopus; Educational Resources Information Centre (ERIC); PubMed; Medline via OvidSP, and PsychINFO via OvidSP. Keywords used were learning styles, cognitive styles, experiential learning, and learning approaches. The inclusion criteria were publications relating to health disciplines (pharmacy, medical, nursing, dentistry, and allied health) in the higher education field and in English-language journal articles published in the last 30 years. Exclusion criteria were journal articles related to either primary or secondary education. Articles meeting the inclusion criteria were further screened by a reading of the abstract.

Reflection: Bridging the gap between theory and practice

Reflection in pharmacy education is one way to bridge the gap between pharmaceutical knowledge and clinical practice.¹¹ Research shows that fostering reflective practice can develop metacognitive ability,^{15,16} enhance critical thinking, problem solving,^{17–19} and hence clinical

reasoning skills.²⁰ Therefore, understanding *reflection* and its role in pharmacy education is crucial. There are elements of the reflective process involved in both learning styles and learning approaches. Learning styles and learning approaches are the strategies that are preferred or adopted by students in a learning context. As many learning style models have reflective attributes and deep learning approaches have elements associated with reflection, understanding the important role of reflection in both constructs is essential to understand student learning (Table).

Learning styles: Preference for perceiving and processing information

Learning styles are characteristic preferences for alternative ways of perceiving (“grasping”)^{1,21} and processing (“transforming”)^{1,21} information. They constitute a preference that a student chooses either consciously or unconsciously to learn content in context. Contrary to the belief of many educators, learning styles are not related to the ability to learn and therefore not related to how well they learn, rather it is the method by which students prefer to grasp and process information with the abilities they have.²² Learning styles are utilized in education as a tool to implement or refine teaching methods and modules.^{23–34} However, a preferred learning style may not indicate students' level of understanding of the content or context.²²

There are no “good” or “bad” learning styles; rather, one learning style may suit an individual's learning context better than another.⁸ Therefore, it can be postulated that a preferred learning style may influence academic achievement if the style suits the learning context.

Learning styles: Stable, adaptive states

If learning styles are to be considered in pharmacy education, then a greater understanding of their construct and stability are the important aspects to consider. Interestingly, some researchers and educators believe that the learning style construct is considered a trait (which is difficult to change),³⁵ while others believe it is a state (flexible and more apt to change) depending on the learning environment, context, and situation.^{7,36} Moreover, Curry's³⁷ three layer “Onion Model” (1983) that separates the following three subconscious layers: (i) instructional preference, (ii) learning style, and (iii) personality attempts to explain why some learning styles are more “trait like” while others are more “state like.”

Learning styles is an interesting area in terms of stability. Kolb (1976), as cited by Veres et al.³⁸ and also cited by Sims et al.,³⁹ attributes learning styles as relatively stable, “enduring characteristics of a learner.”^{38,39} This stability is echoed by Keefe³⁶ who also attributes learning styles as a relatively stable construct based on the “analysis of each

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