Research

Use of a unified learning style model in pharmacy curricula ☆

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Abstract

Objective: Identify student learning preferences and assess learning satisfaction, gain, motivation, time spent studying, and effort used when studying.

Methods: First-year pharmacy students completed a survey about exposure to learning style models and subsequently participated in a learning preference workshop in the second professional year (P2). Identification of learning preferences using a unified learning style model (ULSM) was completed using faculty assessment (FA), learning preference questionnaire (LPQ), and student self-assessment (SA). Agreement of FA with LPQ and FA with SA was described using kappa values. Students also completed a "learning satisfaction questionnaire" before the workshop and at the end of the semester to assess learning satisfaction, gain, motivation, time spent studying, and effort used when studying.

Results: Eight of 58 students (14%) had exposure to learning preferences. Seventy-three students completed the P2 workshop. Slight to fair agreement was found between FA with LPQ and slight to moderate agreement was found between FA and SA of various learning preference sub-categories. No significant changes were seen in mean scores for overall learning satisfaction, gain, motivation, time spent studying, and effort used when studying at the end of the semester. The proportion of students answering "always" versus other categories increased in learning satisfaction (1.4% versus 6.8%, $p = 0.05$) and effortless studying (0% versus 6.8% students, $p = 0.03$).

Conclusions: Learning preferences may be identified using either faculty assessment or a combination of survey and student self-assessment, although a substantial level of agreement between different methods is unlikely. This may suggest learning preferences are more "state-like" rather than "trait-like."

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Introduction

The importance of learning styles has become increasingly recognized in education. The definition of learning styles, more appropriately called learning preferences, is typically accepted as "characteristic cognitive, affective, and psychosocial behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment."[1] The complexity of this process illustrates the challenge of defining learning preferences and accounting for change or adaptation in individual preferences. Learning style models group these

preferences into categories to help individuals understand preferences in a systematic manner. Models commonly provide a framework to maximize learning gain based on learning preference.[1]

Several learning style models have been developed, with no single model being the most accepted.[1] The models are based on different behavioral theories, each with its own unique aspects. Although some of the definitions overlap, the literature demonstrates a lack of universal consensus.[1,2] A comprehensive analysis by Coffield et al.[3] evaluated 13 of the more prominent learning style models, out of a total of 71 identified. The authors concluded that only two of the models met minimum criteria for reliability, and they described the limitations of the measuring instruments used. The authors advised against the use of any single instrument to define learning preferences.[3]

More recently, a Unified Learning Style Model (ULSM) was developed by Popescu[4] utilizing the strengths of various individual models to create a more complete and less confusing model. The ULSM aimed to combine a wide array of learning elements into one model, including preferences related to perception, processing, field dependence/independence, reasoning, organizing, motivation, persistence, pacing, social aspects, and coordinating instance.[4] The ULSM has been validated through an e-learning platform, the Web-based Educational system with Learning Style Adaptation (WELSA), which showed a beneficial effect on learning satisfaction, gain, motivation, time spent studying, and effort used while studying.[5] Table 1 includes descriptions of Popescu's categories along with elements from other models that pertain to a traditional learning environment (not web-based).[2,4]

A learning preferences model specific for pharmacy students, the Pharmacist's Inventory of Learning Styles (PILS), has been previously developed; however, this model includes only three aspects of the learning process: cognition (input/perception), conceptualization (processing), and motivation.[6] Currently, no studies on pharmacy students have utilized ULSM methodology. Using a ULSM may increase pharmacy student awareness of multiple learning preference categories and allow students to transform information presented in class to a format that may be easier to learn.

The purpose of our study is to identify student learning preferences using ULSM methodology through faculty assessment (FA), learning preference questionnaire (LPQ), and student self-assessment (SA). Our study also assessed changes in learning satisfaction, gain, motivation, time spent studying, and effort used while studying when individual's learning preferences were accommodated. We hypothesized that methods other than FA can be used to identify learning preferences in pharmacy students.

Methods

This study was conducted at Wayne State University, Eugene Applebaum College of Pharmacy and Health Sciences, which is a four-year pharmacy program in Detroit, Michigan requiring at least two years of pre-pharmacy coursework. This study was approved by the Institutional Review Board. Consent was obtained prior to the initial survey and the workshop. First-year pharmacy students (P1) completed an initial survey (Appendix 1) to determine their exposure to learning preferences prior to entering the pharmacy program. This survey was completed through the E-Value™ system (Advanced Informatics, Minneapolis, MN). This survey was prescreened using a small focus group. All students were required to attend a two-hour workshop about learning preferences as part of orientation to the second year of the pharmacy program (P2). The workshop occurs at this point in the curriculum to prepare students for the increase in difficulty of P2 level courses.

Prior to the workshop, students completed a "learning satisfaction questionnaire" assessing their learning satisfaction, gain, motivation, time spent studying, and effort used while studying (Appendix 2), and then completed a paper learning preference questionnaire (LPQ) to identify their learning preferences (Appendix 3). The LPQ was developed using ULSM-derived concepts and adapting these concepts to provide pharmacy-focused examples.[7–17] The LPQ was also designed to identify environmental preferences in addition to ULSM learning preferences. This was required because the ULSM was developed to be used in an online learning environment. The LPQ is a new tool and has not been previously validated.

During the workshop, students received specific instruction regarding learning preferences, completed the student self-assessment (SA) of ULSM learning preferences (Appendix 4), and participated in faculty assessment (FA) of learning preferences through completing activities at six "stations." Table 1 gives a brief overview of ULSM preferences and an abbreviated description of each station's methodology. The six learning preference stations included perception, processing, field dependence/independence, reasoning, organizing, and social preferences. Each station was designed using ULSM concepts. Specific instructions and training for the faculty members evaluating each station were provided by the primary investigator (Appendix 5). Student to faculty ratio was approximately 12:1 at each station. Faculty did not assess certain learning preferences (motivation, persistence, pacing, and coordinating instance), as these preferences are not able to be easily identifiable in a workshop setting. SA and LPQ were able to identify these preferences. The workshop also included tools and suggestions to help students apply their learning preferences to improve studying techniques.

Application of learning preferences to studying techniques was reinforced during the semester via one individual student meeting with trained faculty. At the end of the semester, students completed a final written questionnaire (Appendix 2) to re-assess their learning satisfaction, gain, motivation, time spent studying, and effort used while