Research

# Assessment of a hybrid team-based learning (TBL) format in a required self-care course

Katherine Kelly Orr, PharmD[*], Brett M. Feret, PharmD, Virginia A. Lemay, PharmD, Lisa B. Cohen, PharmD, Celia P. Mac Donnell, PharmD, Navindra Seeram, PhD, Anne L. Hume, PharmD

*Department of Pharmacy Practice, College of Pharmacy, The University of Rhode Island, Kingston, RI*

## Abstract

*Objective:* To assess change in students' perception of self-care knowledge, communications, professional skills, and teamwork after completing a hybrid team-based learning (TBL) self-care course. Course grades prior to transition were also compared.

*Methods:* Previously, Self-Care I was a lecture-based course with three exams and comprehensive final exam. A TBL hybrid format was implemented and included individual readiness assurance tests (iRATs) electronically during class. TBL teams collaborate on group readiness assurance tests (gRATs) using Immediate Feedback Assessment Technique (IF-AT). On day 1, a voluntary 25-question, 1–5 Likert-scale, pre-survey was administered assessing students' confidence in self-care knowledge, communication skills, and team learning. Percentage of time preparing prior to class was also quantified. At semester's conclusion, a post-survey was administered. Survey data were analyzed for significance using paired sample *t*-tests. Exam grades of two hybrid TBL years were compared to two lecture-only years.

*Results:* Over two years, 73% (183/250) completed pre- and post-surveys. Measures relating to self-care knowledge, communication, and professional skills significantly improved ($p < 0.001$). Students' perception of group work value significantly improved in most measures ($<0.001$). Students self-reported that they perceived a 10.2% (95% CI: 4.15–16.26; $p < 0.001$) increase in time spent preparing for class compared with non-TBL courses. Exam performance comparison varied depending on assessment. iRAT and gRAT grades averaged $77.2 \pm 8.0\%$ and $90.5 \pm 6.2\%$, respectively, slightly increasing overall course grades.

*Conclusions:* A TBL hybrid provided self-reported improvements in teamwork, communication, study habits, and overall perception of self-care skills. Although individual exam scores varied by comparison, quizzes boosted overall course grades.
© 2015 Elsevier Inc. All rights reserved.

*Keywords:* Self-care; Nonprescription medications; Team-based learning

## Introduction

Pharmacy education, as well as that of other health professions, is increasingly utilizing team-based learning (TBL) in an effort to shift from passive to active learning. Team-based learning, developed by Dr. Larry K. Michaelsen, utilizes three phases, in repeating sequences, as an instructional approach. These phases consist of (1) student preparation *out of class*, (2) student application of knowledge *in class*, and (3) student discussion and immediate instructor feedback *in class*. Specifically, students are organized into teams of five to seven and work together throughout the course. In preparation for an individual class, students complete an assigned reading or learning activity designated by the instructor. Once in class, students participate in a Readiness Assurance Process, meaning students complete a test individually [the "individual Readiness Assurance Test"(iRAT)]. Following the iRAT, students then complete the test with their team [the "group Readiness Assurance Test" (gRAT)].[1] Last, after the group collaboration activity, the instructor provides immediate feedback to the class on the content to solidify learning.[2] TBL encourages students to prepare in advance for class.

Educators are challenged to provide a learning environment in which students are actively engaged in their education.[3] The primary motivation for transitioning this self-care lecture-based course to a self-directed, TBL design was to improve student engagement in the classroom. Though commonly utilized in higher education, the traditional lecture-based method of content delivery often results in the lower levels of knowledge retention. In a recent meta-analysis of undergraduate science students' "course performance" revealed that students whose courses were taught in lecture format were more likely to perform poorly on course examinations than those taught with active leaning.[4] In contrast, TBL and other active-learning methods aid in developing problem-solving and critical-thinking skills and encourage a higher level of cognitive functioning leading to a greater degree of understanding and retention.[5,6] Thus, the redesigned course incorporated a self-directed learning style to better engage students and to enhance the analysis, application, and evaluation of the self-care material during class.

With the dramatic increase in the use of TBL in pharmacy education, specifically in self-care courses, recently published best practices may help to guide faculty with consistent and effective delivery methods.[7–10] Haidet et al.[11] released a set of guidelines for medical and health science educators that address the seven core elements of TBL that should be included in published reports to ensure consistency when comparing results. These elements include team formation, readiness assurance, immediate feedback, sequencing of in-class problem solving, the four "S" structure in developing team exercises (significant problem, same problem, specific answer choice, and simultaneous reporting), incentive structure, and peer evaluation.[11] The guidelines correlate these design elements to educational principles that enhance student engagement and learning.[11] Given the diversity of courses implementing TBL, Farland et al.[7] published a review of best practices related to implementation of TBL in pharmacy education, including team-taught courses such as this self-care course. These best practices serve as a resource for educators to maximize the core elements in a TBL design and successfully achieve improved educational outcomes and student engagement.

In addition, in 2013, the Center for Advancement of Pharmacy Education (CAPE) expanded the focus of educational outcomes to emphasize the integration of applied knowledge with patient-centered problem-solving skills.[12] This is considered a key area of competency for Doctor of Pharmacy programs. The CAPE Outcomes also guide educators to develop opportunities for students to "communicate in a manner that values team-based decision making." In keeping with the CAPE Outcomes, the Accreditation Council for Pharmacy Education released new Standards for programs leading to the Doctor of Pharmacy degree in January 2015.[13] The standards have been refined to "ensure that graduating students are 'practice-ready' and 'team-ready'." Students must have the skills and confidence that allow them to work together in collaboration with others, whether in different health care fields or in team units within a specific field. Team-based learning allows students to gain these skills. The purpose of our study was to assess the change in students' perception of their self-care knowledge, communications, professional skills, and teamwork after transition to a TBL hybrid format. Course grades from previous non-TBL years were also compared to the hybrid format.

## Methods

Previously, Self-Care I (PHP/BPS 418) was a lecture-based course with three exams and a cumulative final exam. The content focuses on patient self-care, use of nonprescription medications, and pharmacist assessment of patients. A redesigned course was implemented in Fall 2012, while maintaining the previous course content and modifying classroom time to Monday, Wednesday, and Friday (50 minutes each session) over 13 weeks. Instead of solely delivering lectures on topics done previously, mini-lectures were provided to reinforce major points from the readings, leaving more time for quizzes, cases, and other activities creating a hybrid TBL course. The teams for this course were limited to four to five students per team and were created based upon prior academic performance and self-reported work experience. The new schedule allowed for integration of ten quiz days, including one practice, and comprised of an iRAT and gRAT. The lowest quiz day was dropped from the grading. Total iRAT plus gRAT scores accounted for 16% of the total grade and 4% peer assessment evaluations equaling 20% of the total grade. Therefore, each iRAT accounted for 1% of the grade, as well as each gRAT accounted for 1% of the grade. The remaining