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Professional and pre-professional pharmacy students' perceptions of team based learning (TBL) at a private research-intensive university

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ABSTRACT

Background and purpose: Pharmacy students need to develop critical thinking and problem-solving skills as well as be a valuable team member. The use of team based learning (TBL) fosters effective team collaboration, enables continuous active and self-directed learning, and requires both individual and team accountability. The purpose was to evaluate pharmacy students' perceptions and experiences related to TBL in different years of the pharmacy curriculum.

Educational activity and setting: Two classes, Introduction to the Profession of Pharmacy (intro), a required course, and Self-Care/Non-Prescription Medications (self-care), an elective course, utilize the TBL approach. Students enrolled in both courses were recruited to complete a validated questionnaire during the last class.

Findings: There was 100% participation; the majority of students, regardless of course, expressed positive attitudes towards TBL. Variations, relevance of TBL activities and the use of TBL as a learning strategy, between the required intro class and the elective self-care class were observed using a Mann-Whitney *U* test ($p < 0.05$).

Discussion: Both cohorts of pharmacy students positively rated the TBL sessions in terms of learning effectiveness. It's important to consider the differences in professional development in these students and how this may impact their perceptions of TBL. TBL imparts more responsibility and accountability on the individual student allowing for the development of self-directed learners.

Summary: Students, regardless of their year, found TBL to be an effective learning strategy. Third professional year (P3) pharmacy students further along in the curriculum are more accepting of TBL and are better able to appreciate the benefits of active and self-directed learning as well as working within a team.

Background and purpose

Team based learning (TBL) is an innovative instructional strategy that promotes active and self-directed learning through a combination of both individual and team work. TBL has become increasingly prevalent in higher education due to the proven positive effects of this strategy on student learning outcomes.[1,2] Some benefits include acquiring a deeper learning of the material being

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taught, identifying what learning style suits the student best, and ensuring students stay on track with the course work.[3] More recent studies have demonstrated a positive impact on student engagement, communication and team-building skills, as well as retention of course material specifically to pharmacy education.[4–8] TBL involves a two-step process that combines individual and team collaboration between students and facilitated, structured activities provided by the course instructor.[9]

With the recent revisions in the Accreditation Council for Pharmacy Education (ACPE) Standards 2016, both its philosophy and emphasis have been refined based on stakeholder feedback that graduating students are "practice-ready" and "team-ready" in providing interprofessional care.[10] Exposing pharmacy students to TBL as a learning strategy may assist in their development of becoming "team-ready." TBL requires four essential elements to work properly: groups, accountability, feedback, and assignment design. Groups must be properly formed and managed with a proper platform to allow for a critical transformation into learning teams. To foster development of a learning team, there must be open communication among members that builds trust and understanding amongst this diverse group, otherwise referred to as a team. A learning team is one where a diverse group of students effectively communicate and hold discussions that allow them to learn from one another.[11] Ideally, each student contributes his/her ideas, which fosters healthy conversation and effective learning. However, in order for this to occur, students must be accountable for the quality of their individual and subsequent teamwork. Unlike traditional classroom settings, students engage in self-directed learning prior to class and are held accountable for their work to both the instructor and their team members during class. Students must receive frequent and timely feedback as the feedback allows for effective learning and retention of content. Team assignments must promote both learning and team development. When constructed well, team assignments provide the opportunity for significant engagement among team members with a goal of developing critical thinking.[3]

TBL favors active and self-directed learning as opposed to classic, passive classroom environments. The traditional classroom setting utilizes teaching strategies such as listening to lectures and presentations. Such passive activities result in minimal interactions between the instructor and students, or among students. TBL provides students with the opportunity to participate in the necessary passive activities through pre-class assignments (e.g., reading primary literature or audio-visual clips) individually outside of the classroom, in a self-directed environment, where they can commit as much time and resources as needed to learn the material.[12] When the student comes to class, they complete the Individual Readiness Assurance Test (IRAT) to assess their knowledge of pre-class learned material. The student then completes the same assessment with their team members as part of the Group / Team Readiness Assurance Test (G/TRAT).[11] Students are held accountable to each other via these assessments as well as during class when they complete a variety of TBL activities. These include but are not limited to: application activities, team-based discussions, and responding to provocative questions to develop critical thinking. Creating effective TBL activities should adhere to the four S's: the activity should be *significant* to the students' learning, the *same* among all teams, students should select a *specific* choice (answer), and reporting of selected answers should occur *simultaneously*.[3]

While literature surrounding TBL within pharmacy is growing, limited literature is available evaluating student perceptions of TBL within pharmacy programs, particularly pre-pharmacy students compared to students in the professional years of the Doctor of Pharmacy (PharmD) program.[4–8,13–15] The purpose of this study was to evaluate the perceptions of first-year pre-pharmacy and third professional year (P3) pharmacy students towards the use of TBL as a learning strategy at an urban, private research-intensive university. The PharmD curriculum is structured as two pre-pharmacy years and four professional years (P1-P4). It is anticipated that students believe TBL fosters effective team collaboration, enables continuous active and self-directed learning, and requires both individual and team accountability that can assist in the students' professional development of becoming "team-ready." Additionally, TBL can be used as a means to foster critical-thinking, problem-solving, and effective communication skills.[3]

Educational activity and setting

Two classes, Introduction to the Profession of Pharmacy (intro) and Self-Care/Non-Prescription Medications (self-care), utilize the TBL approach. Intro is a one-semester hour (SH) credit required course for first year pre-pharmacy students that provides them with information on professionalism and various pharmacy career pathways. Self-care is a two-SH credit elective course, offered to P3 pharmacy students, that focuses on non-prescription medications and self-care measures. Both classes meet once weekly during the spring semester and are coordinated by the same instructor of record with certain individual classes co-facilitated under the direction and mentorship of the instructor of record. Students enrolled in the above courses were recruited to complete a paper-based voluntary, validated questionnaire during the last class; it was distributed within each team's TBL folder. The validated 19-item questionnaire developed by Vasan et al.[16] was used as a post-class survey to gather the data. This survey utilized a Likert scale ranging from −2 to 2 (strongly disagree to strongly agree).[16] When calculating the survey results, the authors modified the scale from negative numbers to include a positive 1–4 scale (strongly disagree to strongly agree). A post-class survey was chosen to allow the students to reflect on their thoughts, experiences and opinions of TBL and to measure the students' perceptions and experiences towards TBL. Also, the survey allowed students to reflect on their perceived effectiveness of the instructional strategy in regards to learning outcomes. The first question, as indicated in Table 1, was omitted from the intro class due to the lack of written examinations in this course. In addition, the last question pertaining to the students' perception of their overall grade for the class was omitted as this did not apply. The remaining 17 items were analyzed using a Mann-Whitney *U* test for two independent samples with significance defined a priori as $p \leq 0.05$ (based on the overall mean score of the two samples). Data were entered into Microsoft Excel®, and analyses were performed using the Real Statistics® data analysis tool (Release 3.5.3).[17] Information gathered from this questionnaire was collected anonymously and contained no participant identification information. Due to the low amount of risk to potential subjects, this study was submitted to the Institutional Review Board and deemed to be exempt. Written informed consent was obtained for this study. The minimal risk posed by this study included a breach of confidentiality, and was outlined in the