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Opinion

Lessons from the trenches: Implementing team-based learning across several courses

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Abstract

Pharmacy educators are improving education of professional program students by incorporating active learning techniques. Team-based learning "flips" the classroom, creating different roles for faculty and students compared to traditional lecture-based pedagogy. Implementing team-based learning on a large scale, such as across multiple semesters, introduces challenges that are distinct from implementation on a smaller scale. We describe our experience at the University of Michigan College of Pharmacy with adopting team-based learning in our curriculum. We adopted team-based learning as a unifying pedagogy across our five-semester therapeutics problem-solving course sequence. We experienced challenges distinct from those that accompany smaller scale adoption of an active learning pedagogy. Specifically, garnering faculty support, logistical issues, and implementation of the new pedagogy by faculty and students were all affected by the large scale of adoption. We share our experience with a large-scale pedagogical shift, highlighting challenges and lessons learned for other faculty in health professions education who may be interested in leveraging the benefits of active learning across several courses involving many faculty.

Keywords: Team-based learning; Active learning; Pharmacotherapeutics courses; Pharmacy education

Pharmacy educators face mounting challenges as they revise, reform, and revolutionize pharmacy curricula. New pharmacists must be ready to practice in evolving roles as the health care system and public health care needs demand more accountability for health outcomes. Importantly, new pharmacists must be competent to work in live and virtual health care teams to facilitate continuity and efficiency of care.[1] To achieve these educational objectives, the Accreditation Council for Pharmacy Education (ACPE) explicitly recommends "The development of critical thinking and problem-solving skills through active learning strategies… ."[2]

Pharmacy education has adapted by integrating clinical practice experiences throughout the curriculum. To optimize training experiences, preceptors at practice sites require students to have functional knowledge and clinical skills earlier in the curriculum. Consequently, the didactic education program is challenged to prepare students sooner for these experiences.

Simultaneously, health educators increasingly recognize that traditional lecture may not be the optimal teaching strategy to help students learn and apply scientific content to clinical scenarios.[3] Copious research in science and engineering education suggests that active learning strategies can significantly enhance student learning, even in large

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courses.[4–6] In pharmacy education, active learning pedagogies have been advocated and adopted[7] because they are more compatible with theories of adult learning[8] and emphasize higher orders of learning that could translate into better performance in clinical sites.[9]

Team-based learning (TBL) is an instructional pedagogy that has been implemented in many health professions curricula over the past 10–15 years.[10] TBL facilitates active learning and engagement within and among small groups in a single classroom and permits inclusion of learning objectives such as developing teamwork skills. Studies supporting TBL in pharmacotherapeutics courses (often compared to traditional lecture) are positive or neutral with respect to short-term measures of learning outcomes.[11–15] Investigations of long-term learning outcomes or the impact of TBL on performance in subsequent clinical practice experiences are currently lacking. Nevertheless, in the context of curriculum revision, TBL is attractive for its potential to effectively implement active learning pedagogies on a larger scale, both across instructors in team-taught courses and across courses in a curricular sequence.

The purpose of this article is to offer specific guidance to health professions educators who seek to incorporate TBL in their curricula on a larger scale. Advice for individual faculty implementing the core principles of TBL within a course has been published elsewhere.[10,16–18] We aim to expand on this advice by offering insights into the realities regarding what is required to implement TBL as a unifying active learning pedagogy across several courses and many instructors. First, we describe why and how we adopted TBL across our five-semester sequence of Therapeutics Problem Solving (TPS) courses in the Doctor of Pharmacy curriculum at the University of Michigan College of Pharmacy. Next, we describe how we collected formative evaluation data from faculty and students to iteratively improve our implementation of TBL across 28 instructors and five courses. Based on these data, we highlight conspicuous challenges from the first two years of implementation and suggest practical strategies to address them based on feedback from both faculty and students.

Implementing TBL across courses

Stakeholders (students, preceptors, and employers) expect pharmacy students and new graduates to participate effectively in direct patient care, independently and on health care teams. Based on evaluations of post-graduation job attainment and college-level data on learning outcomes, we wanted to revise our curriculum to further develop critical thinking and clinical skills needed in modern work environments. The TPS sequence was a lecture-based set of courses, delivered over four semesters, and was the only place in our curriculum where therapeutics was taught. Large-group case discussions were included, but they were limited and did not engage the entire class in active learning. Mostly, students learned passively, limiting deep and persistent learning. The relative lack of experience with synthesis and application in our TPS sequence needed to be remedied to produce students and graduates with requisite competence and/or confidence to function optimally in clinical environments.

In 2008, planning began to reform our Doctor of Pharmacy curriculum to align with new educational standards and feedback from stakeholders. Reforms included a mandate to reimagine our TPS course sequence. Most faculty agreed that producing students with greater application skills would require a pedagogical shift, and many faculty were supportive of using active learning strategies based on their own experiences as learners or teachers. In February 2010, a subcommittee of the Curriculum and Assessment Committee (CAC) was formed; among their charges were evaluating active learning pedagogies and making recommendations for improving the five-semester TPS course sequence, which would include a self-care course in the P1 year.

The subcommittee saw value in adopting a unifying pedagogy across the TPS sequence to optimize the potential advantages of active learning and to provide consistency for both instructors and students. They also agreed that holding students accountable for initial exposure to content before class and using class time for synthesis and application of new knowledge might produce better learning outcomes. Pedagogies seriously considered were punctuated lecture (i.e., lecture with a one to two minute active learning exercise every 15–20 minutes, similar to previous pedagogy for this course sequence), case-based teaching, problem-based learning, and team-based learning.[19–21]

In March and April 2011, we held informational sessions comparing and contrasting these approaches. Sessions were presented by faculty on the subcommittee, nationally recognized early adopters of active learning in pharmacy education, and instructional consultants from the university's Center for Research on Learning and Teaching (CRLT). Concurrently, a pilot project implemented TBL provisionally in the first semester of the TPS sequence. Soon after, a departmental faculty meeting was devoted to debating options. Ultimately, in May 2011, based on the subcommittee's recommendation, the CAC endorsed TBL as the pedagogy best aligned with the teaching and learning goals of the course sequence. However, this decision was not unanimous within the subcommittee, or among faculty.

To prepare for transition to TBL, we used a multifaceted approach to faculty development and course design. All faculty members teaching in the TPS sequence were provided with two books on TBL to describe the basic tenets of TBL.[21,22] Two course coordinators attended a TBL "bootcamp" at the Team-Based Learning Collaborative Annual Conference in March 2011.[23] These workshops were replicated locally for our faculty in June 2011. To facilitate course materials development, CRLT provided workshops on backward course design. Backward course design is an approach to lesson, course, and curriculum