



University of Michigan
College of Pharmacy

Implementing Team-Based Learning at the College of Pharmacy

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Background

The College of Pharmacy is undergoing curricular transformation, opening possibilities to make broad changes to improve learning outcomes. Based on feedback from students and preceptors, one arena selected for transformation was the therapeutics sequence (TPS).

Goal

Strengthen student pharmacists' ability to apply skills and concepts learned in the therapeutics sequence of their curriculum to introductory and advanced practical experiences.

Method

Implement Team-Based Learning (TBL) across 5-Semester therapeutics sequence.

Justification for TBL Pedagogy

- Comparable institutions have reported favorable short-term outcomes using TBL
- TBL promotes self-directed learning
- TBL emphasizes application of materials instead of rote memorization
- TBL is practical to implement in class sizes of 80–100 students

Implementation Timeline

The new TPS course sequence launched winter 2011. As of winter 2012, the third semester of the 5-semester sequence is underway. The same content is taught to second year pharmacy (P2) students in the “new curriculum” using TBL (P431) and our third year pharmacy students (P3) in the “old curriculum” using traditional lecture or punctuated lecture format (P532).

Course Structure

Students are assigned to 6- or 7-member teams for the duration of the semester. In class these teams work together to complete team readiness assessment tests, recitation and lab assignments. Graded activities (see Table 1) are used to assess team and individual student performance on a daily basis. Grading for the course emphasizes individual performance. However, team performance is also weighted substantially (25% of final grade) to encourage teamwork and the development of team skills. In addition, to pass the course, students must achieve a minimum average of 70% overall on exams.

Outcomes

We have evaluated a number of outcome measures for the TPS course sequence:

CRLT Midterm Semester Feedback

Student Identified Strengths of TBL

- Helps students to ‘learn’ rather than ‘memorize’ the material
- Keeps students up to date on the material
- Avoids simple solutions and encourages conversation and engagement
- Improves communication and clinical skills

Student Identified Areas for Improvement of TBL

- Provides more explicit directions regarding daily preparation
- Establishes and maintains a cap on the volume of TBL preparation
- Allows students to keep the case materials from TBL

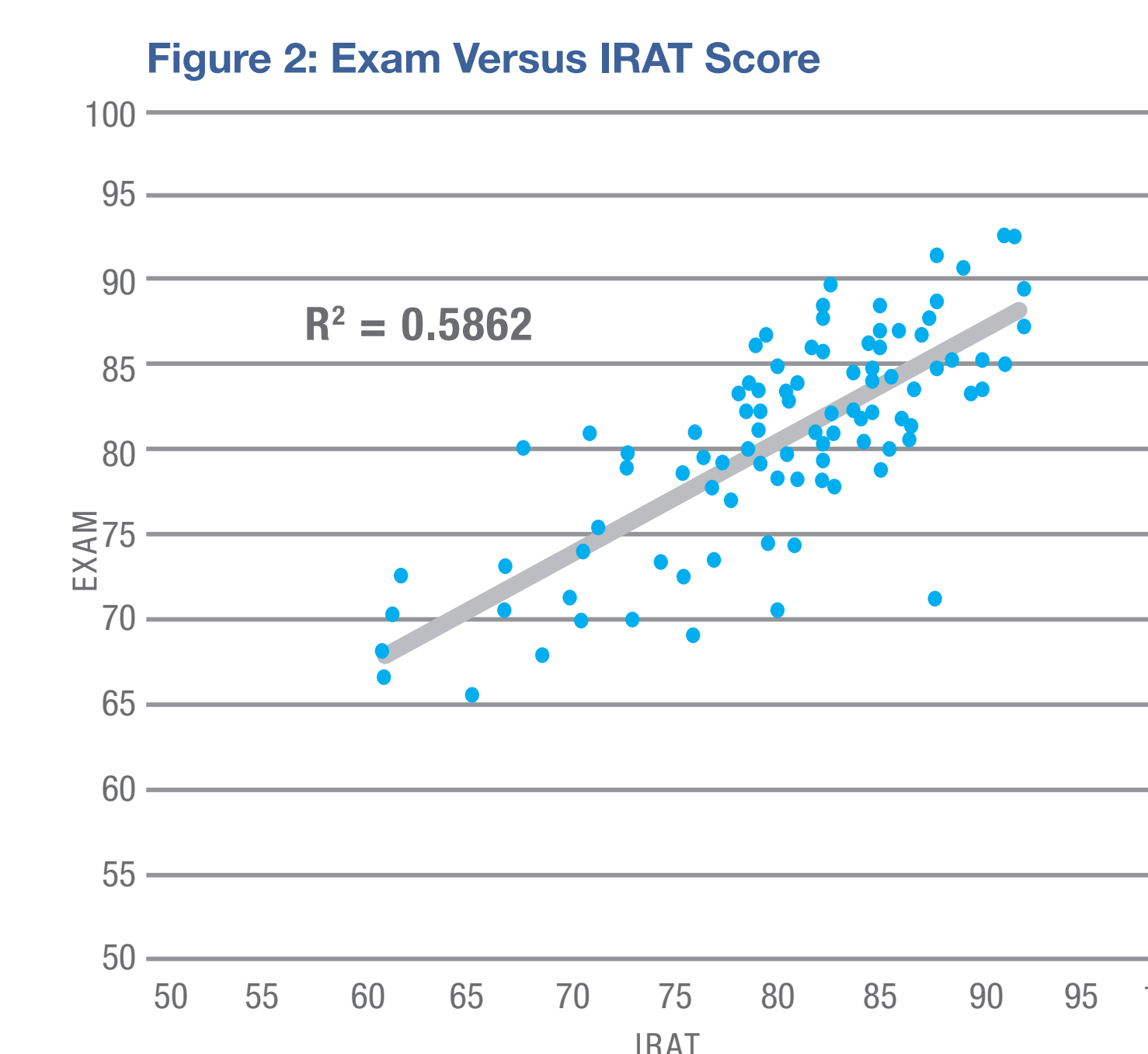
Future Evaluation Plans

Having both the “new” and “old” curriculum during this curricular transition provides a unique opportunity to evaluate learning outcomes and predictors of success across two different teaching pedagogies. In addition to measuring exam scores and the knowledge level of exam questions (recall vs application), we plan to evaluate a number of other metrics, including learning style, motivational orientation, and pre-admission test scores, to identify predictors of success in TBL versus lecture formats. We will also be able to compare performance in the clinical setting. Currently, there are limited data comparing TBL to lecture formats. The results of our study will significantly contribute to understanding the differences of TBL pedagogy versus lecture pedagogy on student outcomes and predictors for success.

FIGURES 2–6

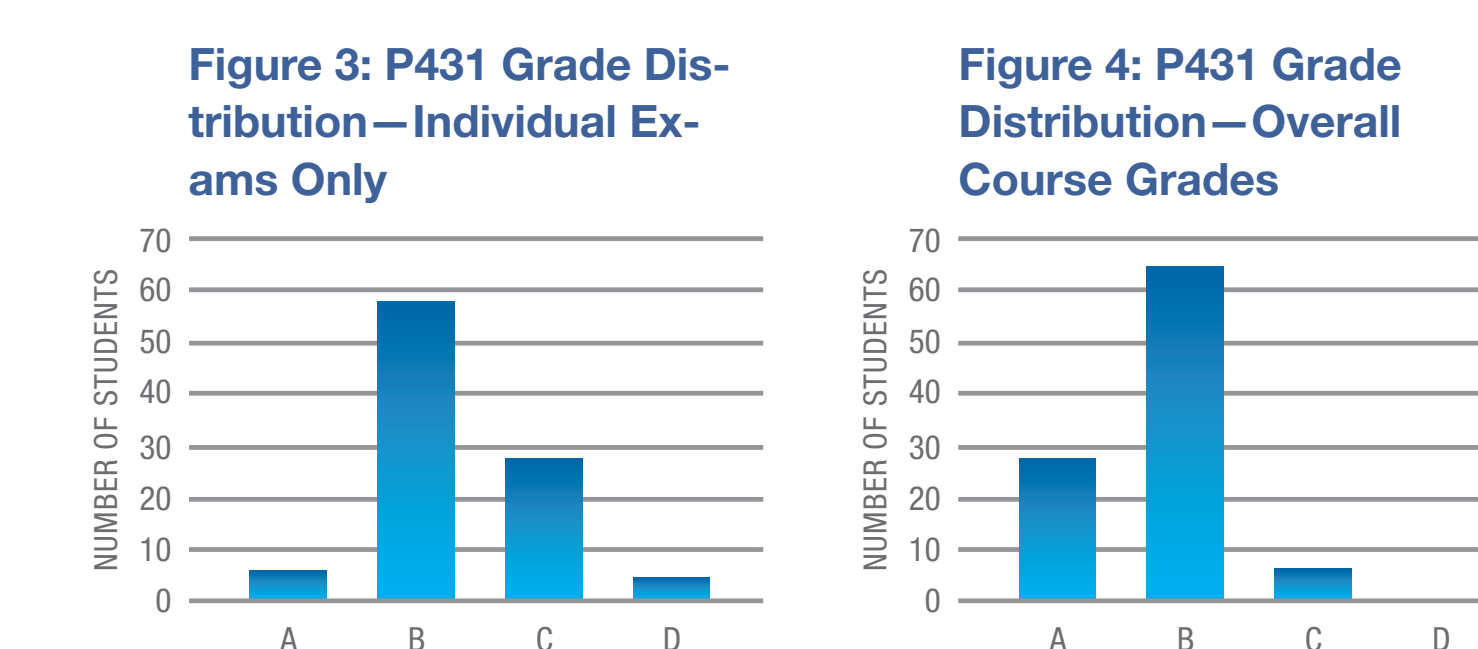
Effectiveness of Pre-Class Preparation

As seen in Figure 2, IRAT (pre-class quiz) performance from P431 is highly correlated to exam performance.



Grade Distribution

As seen in Figures 3 and 4, overall course grades for P431 are shifted higher as compared to grades based solely on individual exam scores. TBL leads to a higher percentage of students receiving As and Bs in our course sequence than in the previous curriculum.



Comparative Learning Outcomes

P2 students (“new curriculum”) and P3 students (“old curriculum”) have been taught the same materials by the same instructor this school year. In addition, the same exam questions have been used to measure student competency for both P2 and P3 students in the P431 and P532 courses. Preliminary data (see Figures 5 and 6) suggests that P2 students performed as well as P3 students. These findings are significant since this suggests that students with one less year of knowledge and experience taught by TBL pedagogy performed at a similar level when compared to a more advanced student taught by lecture or punctuated lecture format.

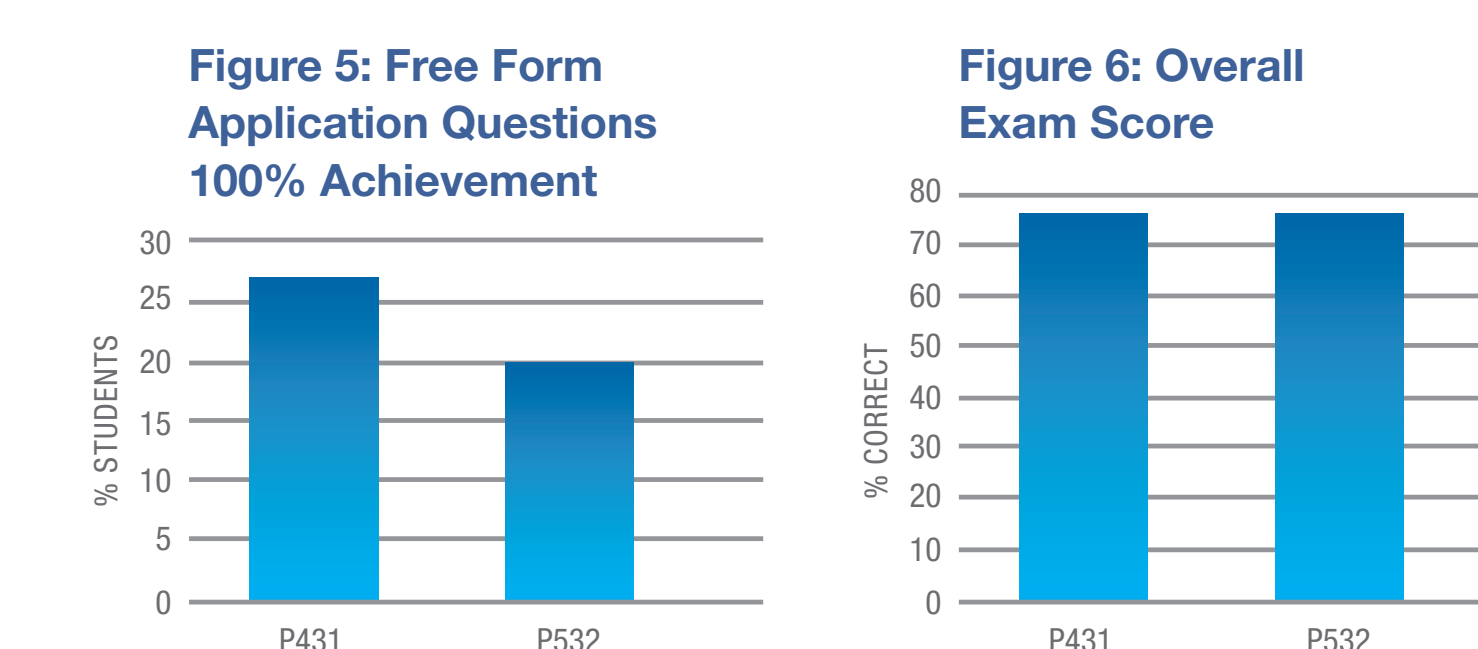


FIGURE 1

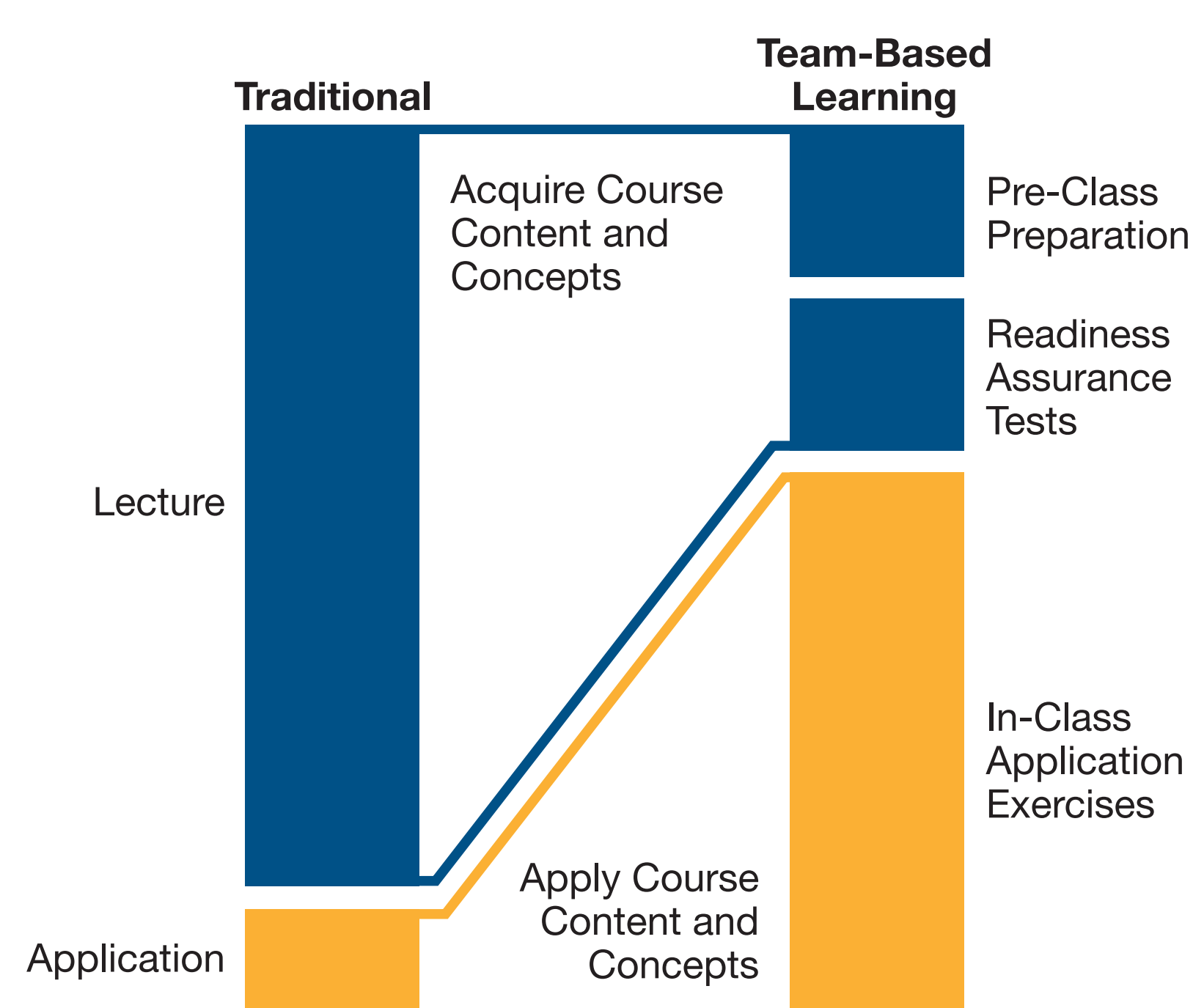


Figure 1 Contrasts Traditional vs. Team-Based Learning Pedagogies

Figure 1 TBL Compared With Traditional Lecture-Based Learning (Adapted from Team-Based Learning: An Alternative to Lecture-Based Learning—http://www.regis.edu/content/rhpharm/pdf/learning_with_TBL.pdf)

TABLE 1

Course Grading Policies

Individual performance—75% of grade

- Individual readiness assessment tests (IRAT) 10%
- Lab activities 15%
- Unit examinations 35%
- Final examination 15%

Team performance—25% of grade

- Team readiness assessment tests (TRAT)..... 10%
- Recitation activities 15%
- Peer evaluation of team participation TBD