

Interdisciplinary Formative Assessments to Foster Student Learning in the Dual-Campus Large Classroom Setting

Gina Garrison, Pharm.D.; Monique R. Bidell, Pharm.D.; Katherine Cabral, Pharm.D.; Loraine Silvestro, Ph.D.; Abby Boire, Pharm.D.; Aimee Strang, Pharm.D., MSHPEd
Albany College of Pharmacy and Health Sciences, Albany, NY

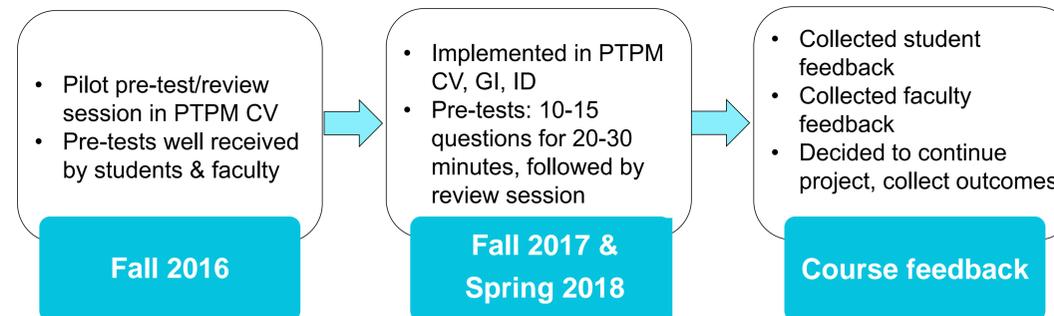
BACKGROUND

- Albany College of Pharmacy and Health Sciences (ACPHS) has campuses in Albany, NY and Colchester, VT. Doctor of Pharmacy class sizes including both campuses exceed 200.
- Pharmacy students are required to take an integrated pathophysiology/therapeutics/pharmacology/medicinal chemistry (PTPM) course sequence in the second and third professional years (P2, P3). These courses utilize synchronous live instruction between campuses by Pharmacy Practice (PP) and Pharmaceutical Sciences (PS) faculty.
- Discipline-specific course content is largely integrated through sequencing of topics. PS and PP faculty coordinate course content outside the classroom, but typically are not both present during class sessions.
- Efforts to join PP and PS in individual class sessions have been trialed in some PTPM courses, with positive feedback from students and faculty.
- In Fall 2016, the PTPM Cardiovascular (CV) course piloted formative “pre-test” assessments before each exam. Pre-tests were followed by exam review sessions co-led by PP and PS faculty.
- A brief student survey was issued to assess helpfulness of the pre-test in the PTPM CV course after the 2016 pilot. Nearly 80% (143/182) of students indicated “strongly agree” to the statement that pre-tests were helpful to their learning.
- Course faculty reported that the pre-test and student questions in the subsequent class sessions fostered discussion and integration of concepts between the two disciplines. The sessions also provided real-time feedback for faculty to identify and resolve student learning gaps.
- Other PTPM course coordinators received student feedback requesting pre-tests in subsequent PTPM courses. The PTPM CV course model for formative pre-tests was shared for other courses to utilize.
- The primary objective of this project was to gather faculty and student feedback on the value of this interdisciplinary model to support continued use of this integrated teaching approach. A secondary objective was to characterize baseline pre-test and exam performance to support future analyses on the impact of pre-tests on student exam performance.

METHODS

- The pre-test model was implemented in three PTPM course offerings in 2017-2018 – Cardiovascular (CV), Gastrointestinal/Nutrition (GI), and Infectious Diseases (ID).
- Consistent with the pilot in PTPM CV, pre-tests were incorporated into the class session preceding each exam, followed by an interdisciplinary review session co-led by PP and PS faculty.
- Each pre-test consisted of 10-15 multiple-choice questions written by PP and PS faculty whose content was assessed on the upcoming exam. Pre-tests were administered for 20-30 minutes using electronic testing software to simulate the exam environment and provide immediate performance scores to students.
- Following pre-test completion, PP and PS faculty reviewed the answer key, responded to student questions, and modeled thought processes for students to integrate concepts from the two disciplines.
- Feedback on the value of the pre-test model was obtained at the end of the semester from course students and faculty.
- Student performance on formative pre-tests and summative exams were collected along with student attendance at pre-test sessions.
- A summary of project is provided in **Figure 1**.

Figure 1. Project overview



RESULTS

Student Feedback

- “The pre-tests we did before each exam were an awesome study tool and I would definitely suggest keeping these in the curriculum for the future!”
- “Pre-Tests were a great way to get extra practice while also assessing my level of knowledge prior to the exam.”
- “I wish all classes would offer [the pre-test]...”
- “I think the pretest is a great idea and helps us get an idea on how each professor writes their exam questions, as [it] is hard having so many different professors [who] test their material differently.”
- “I really liked the addition of using pre-tests during this course – they really assist me in narrowing my studying to important topics before the exam, and let me know where I should focus my efforts.”

Faculty/Course Coordinator Perspectives

- Implementation of pre-test class sessions provided new opportunities for students to experience and practice the skill of integrating knowledge across disciplines.
- Prior to this approach, the PTPM CV course included exam review sessions with faculty as part of the course schedule. About half the class would attend these sessions. Implementation of pre-tests improved student attendance at exam review sessions in the PTPM CV course.
- Pre-tests provided a scheduled opportunity for PP and PS faculty to come together in the classroom to model integrative thought processes for students.
- Students seemed to appreciate the opportunity to practice exam material in a low-stakes environment with immediate faculty support.

Pre-test and Exam Performance (Figure 2)

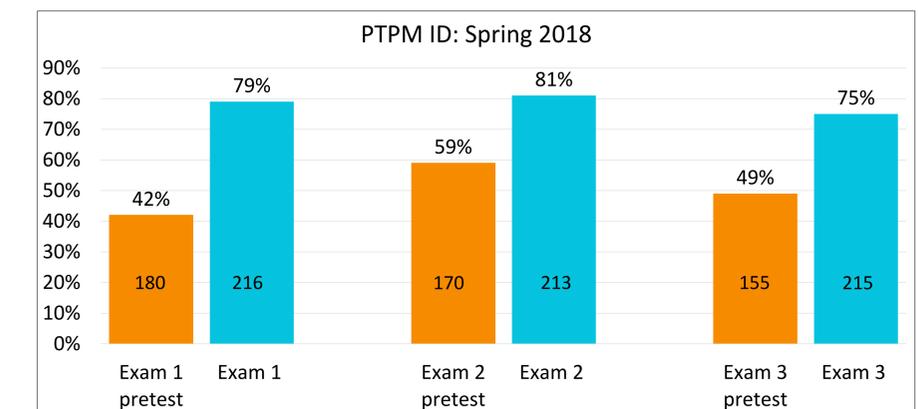
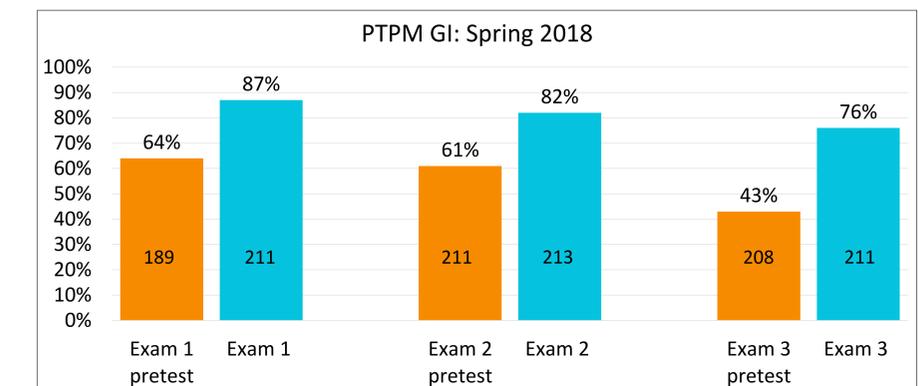
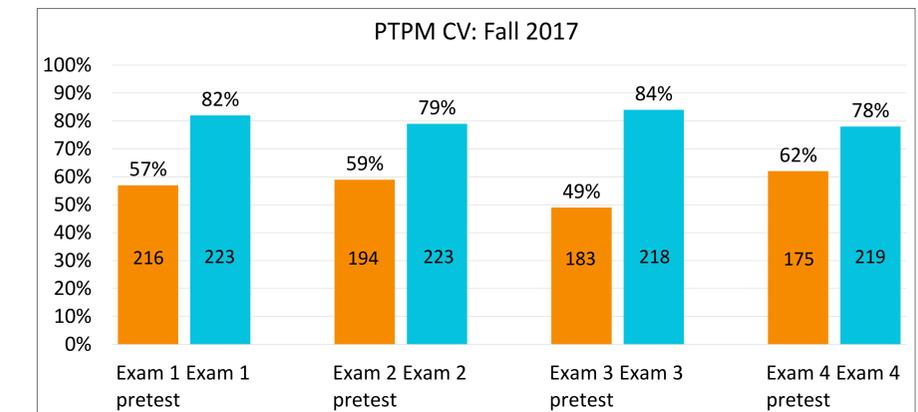
- Student performance improved from pre-test to exam in each involved course.
- Pre-tests class sessions were generally well-attended.

IMPLICATIONS

Use of a formative pre-test prior to exams can create a structured opportunity to coordinate PP and PS faculty teaching of interdisciplinary topics in a large classroom setting. This teaching approach appeared to be an effective method to engage students in integrative concepts across disciplines. Although it is difficult to determine if pre-tests improved student outcomes such as course grades, student feedback to this interdisciplinary approach to pre-exam review session in three required courses was highly favorable.

Figure 2. Student performance

Includes mean percentage scores and total exam takers.



FUTURE DIRECTIONS

- PTPM CV, GI, and ID courses plan to continue using the pre-test model in future course offerings to further support student learning.
- Faculty plan to assess the impact of this approach on student course performance upon future offerings.