



Lessons Learned in the Development and Administration of Digital Biweekly Composite Exams for Pharmacy Students

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ABSTRACT

Objective:

The school of Pharmacy uses a biweekly composite exam model on multiple campuses to assess course performance in the Pre-APPE pharmacy curriculum. Our aim is to describe a best practice model for composite exam structure, organization, and administration, and to present outcome data that has driven refinement of this model.

Methods:

Literature was searched for exam best practices including number of assessment items, exam duration, and average time spent per item. This information was combined with TTUHSC experiences from the previous 5 years like work hours associated with exam preparation/administration and faculty proctoring load. We then developed timelines for exam building, item review prior to administration, and dissemination of exam data to faculty while considering faculty proctoring load and maintaining student satisfaction. ExamSoft digital assessment platform was used for exam administration.

Results:

The 16-week semester allows 8-biweekly composite exams creating data points every two weeks for monitoring student success. Logistical data includes exam duration, number of items, deadlines for item creation, student download timeframe, and confirmation of exam upload. Guidelines were created in awareness of faculty workload for exam item creation, analysis of exam data, turnaround time for scores to students, and handling of exam absences. Student outcomes were not negatively impacted, and student responses indicate a preference for this model.

Conclusions:

Successful implementation of the biweekly composite exams was refined through learned experiences and outcomes data. The results at TTUHSC can now be shared with other institutions seeking to implement a similar examination format. This summary identifies significant considerations to address and best practices learned for successful development and execution of the biweekly digital composite format.

FIGURES

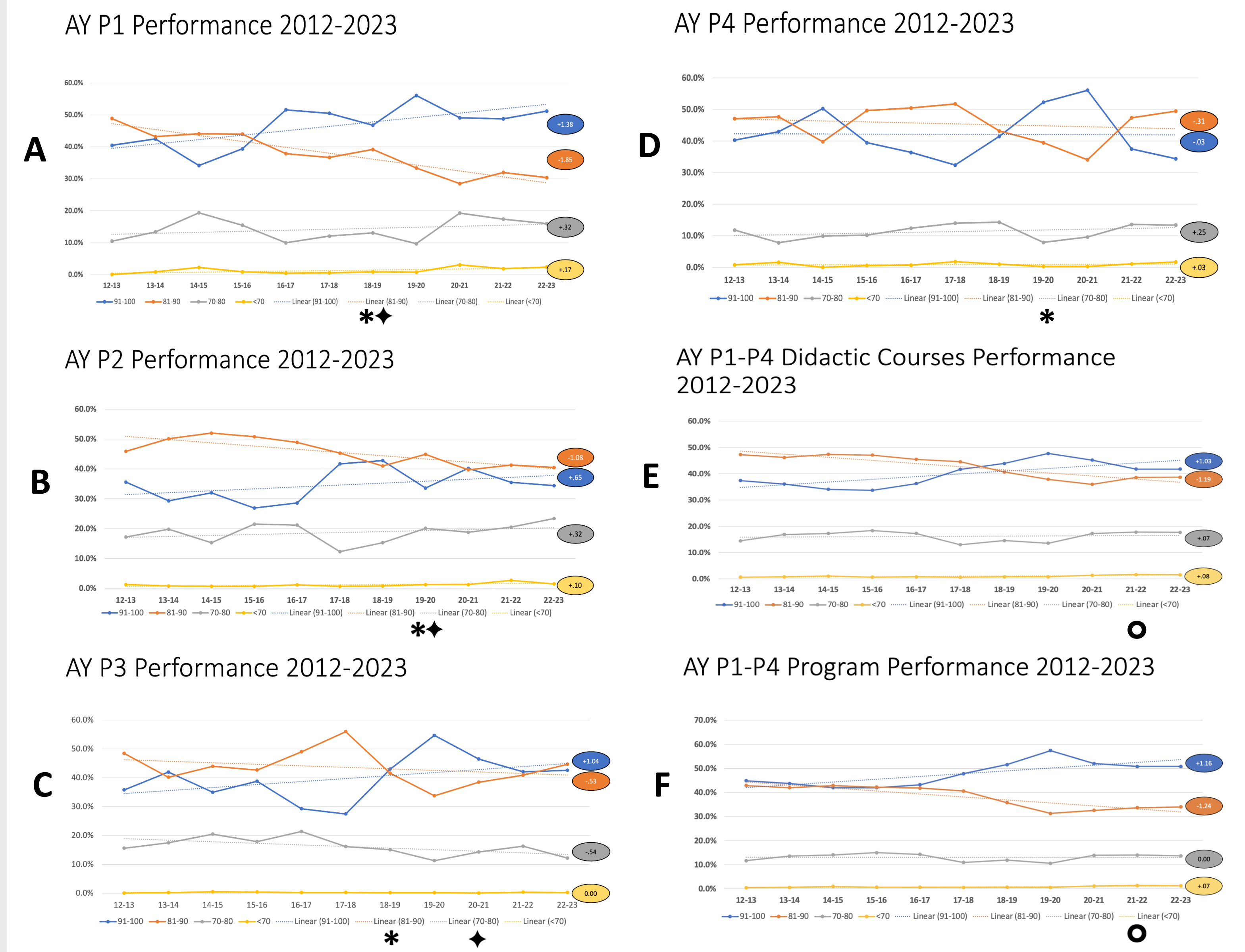


FIGURE EXPLANATION

Figures A-F illustrate final course grade outcomes for all students over a 10 year period.

- The school implemented new curriculum in a staggered fashion, beginning in the 2018-2019 academic year (AY) for P1 and P3 students, and then in 2019-2020 as these student matriculated to their P2 and P4 years (denoted by the asterisk symbol in figures A-D.)
- For the class beginning as P1 students in that year, the bi-weekly composite exam model was also initiated, and rolled out year over year (denoted by the diamond symbol). Note in Figure D that the curriculum of the P4 year does not employ composite exams.
- The graduating class of 2022 was the first class to experience both the new curricular model and the composite exam model throughout the 4 year program. Thus, the AY P1-P4 performance reflected in Figures E and F illustrate how overall grade outcomes were impacted by these changes beginning in the 2021-2022 AY (denoted by the O symbol).

LESSONS LEARNED

- The biweekly testing schedule allowed streamlining of the academic schedule, as well as room booking and make-up exam scheduling. This means students now do not test on a day they are also in class. This also made inclement weather accommodations easier.
- This reduced the requirement for proctors, for both the main exam and for ADA needs.
- Tagging exam items with the ability statements allows for analysis by competency as well as by course.
- By providing performance data every two weeks, the Office of Student Affairs receives data about struggling students early, repeatedly, and for all courses simultaneously. Previously, data came one course at a time, with the first data point later in the semester.
- Interpretation of outcomes is confounded by the impact of the COVID-19 pandemic that also affected curriculum and assessment delivery during this time period. However, the data demonstrates that overall course performance was not adversely impacted by the implementation of these new models.

DATA DRIVING REFINEMENT

- Schedules and Spaces:** Initially, exams were administered to each class at three separate times. After COVID-19 restrictions were eased, the school moved to two testing periods and finally to one, where P1, P2, and P3 students are tested simultaneously, using random seating assignments.
- Exam duration and composition:** Exam duration and number of items per course was initially based on estimates of student interaction time. Analysis of actual interaction time with items and overall instruments allowed refinement of exam duration and number of items contributed by each course.
- Faculty and Student Surveys:** Faculty survey data from 2021 yielded mixed opinions. A strong theme was a desire to contribute more questions per course. Sentiments were also expressed regarding returning to single course exams or changing the schedule. Student survey data from 2023 indicated that 121/178 (68%) did not want assessments for a course to be isolated from other courses and 154/177 (87%) did not want their exam day moved from Fridays.

BEST PRACTICES

- Every exam item is tagged with the following: Course name, Faculty member, Exam number, Lecture and objective numbers, and competency tested (ability statement).
- Structuring exams so that test items are arranged by course allows separation of data for course-specific grading. Course teams are still responsible for their own exam content and any decisions regarding item adjustment.
- Administration was converted from school-provided test laptops to students' personal computers. This eliminated set-up time from the exam schedule, allowed download to occur 24 hours in advance, thus providing advanced notice of students with IT issues before the day of the exam (the exam is encrypted on the machine and requires a password to launch).
- A single set of exam procedures and proctoring guidelines means all exams are administered the same way with the same student expectations.
- Uniform timelines for exam construction, data review, release of scores, and make up arrangements streamlines processes and facilitates troubleshooting (see graphic below).

LOGISTICS

- An Exam Team, led by an Exam Director, oversees the construction and administration of exams with assistance from the Office of Assessment.
- All exams are administered to all students from all class years in a single test period. Students use personal laptops, download exam 24 hours prior to start, and must upload prior to exit from room. Proctoring duties rotate between faculty.
- Though exams are constructed as a single instrument, the course specific content is kept separate, allowing each course to receive their own scores and performance metrics. Different versions of the exams can also be created for students taking unique combinations of courses due to off-track progressions.
- Course teams can access the exam performance data for their course as soon as the exam is complete.
- The Office of Student Affairs received outcome data as soon as the exam is complete, allowing identification of students with poor performance and routing to the Student Success Initiative, an internal support mechanism for struggling students.

BIWEEKLY PROCESS TIMELINE

