Integration and Sequencing of Didactic and Experiential Learning with Electronic Course Management and Testing to Improve Educational Outcomes and Student Performance

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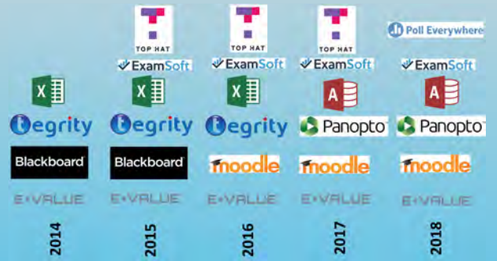
Abstract

Key technologies are maturing at a rapid pace, allowing for increased communication and access to qualitative and quantitative metrics to assess outcomes. As part of our continual modernization process and in response to curricular and assessment needs, we have re-sequenced course material while completing integration of multiple enterprise software solutions (Moodle, Panopto, PollEverywhere and ExamSoft) into the first year pharmacy curriculum. One major key to success is proper sequencing of course material where the appropriate didactic material precedes and supports a simulated learning laboratory. The work we have done to integrate our didactic Dosage Forms and Drug Delivery Systems course with the active Compounding and Applied Pharmaceutics Laboratory is presented. Student satisfaction was highly positive and increased in parallel with student use of the technology and improved student performance. Course objectives and test questions are tagged with CAPE Outcomes and can be used to further optimize, customize and enhance lecturer and student achievement of the outcomes. At our institution, student performance and outcomes have been improved through the integration and sequencing of didactic and active applied laboratory learning supported by technology solutions.

Timeline of Software Integration



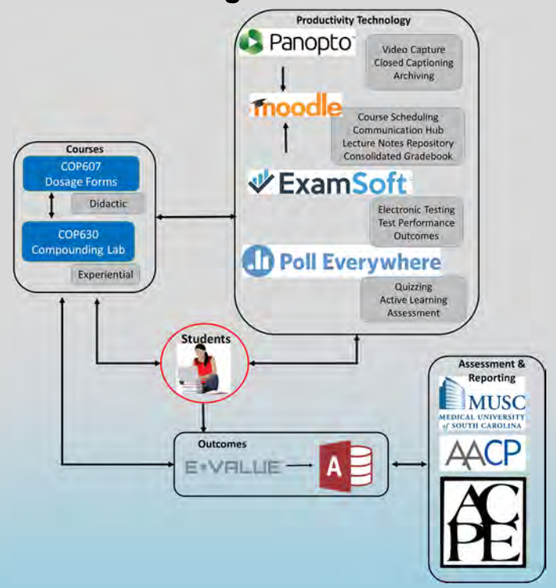
Course Integration and Sequencing

Lecture	COP 607 Topic	Faculty	COP 630 Lab Shirley	Educational Outcome
1	Introduction & Pharmacokinetics I	Peterson		1.1, 3.3
2	Pharmacokinetics II Solid Dosage Forms: Powders & Granules	Peterson	Lab 1	1.1, 3.1
3	Solid Dosage Forms: Tablets	Peterson	Lab 2	1.1
4	Solid Dosage Forms: Capsules	Peterson	Lab 2 (Lab 8)	1.1
5	Pre-formulation Considerations	Chou	Lab 1 & 2	1.1, 3.1
6	Solutions I: Newtonian/non-Newtonian liquids	Chou	Lab3	1.1, 3.1

Disclosure. The authors of this presentation have no possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.

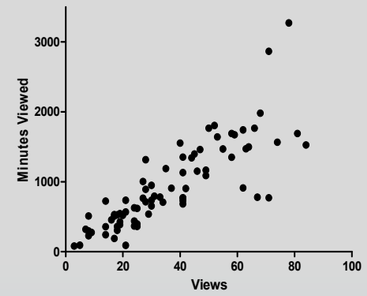
Results

Software Integration and Workflow

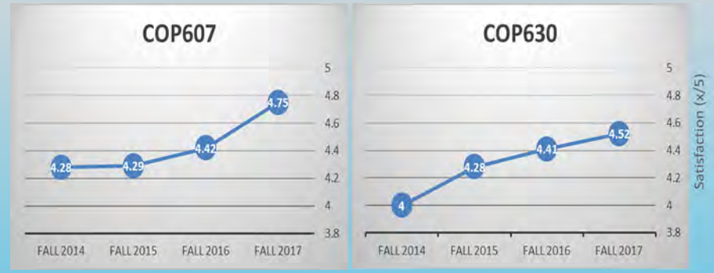


Weekly Student Moodle Usage (aggregate)

COP607 Panopto Usage (per student)



Student Technology Satisfaction



COP607 Longitudinal CAPE Outcome Analysis (ExamSoft)

	1.1. Learner	2.1. Patient-centered Care	2.2. Medication Systems	2.3. Health & wellness	3.1. Problem Solving	3.3. Patient Advocacy
Assessments	5	2	2	2	3	2
# Items	191	6	6	3	10	7
Average	88.5%	96.6%	87.7%	87.5%	84.5%	85.4%

Goals

- Optimize technology workflow for faculty engagement and student satisfaction
- Prepare faculty to match lecture material with exam questions and map to CAPE outcomes
- Prepare faculty and resources to employ more active learning
- Create centralized database of student and class performance and performance indicators

Results Summary

- MUSC COP faculty and students are now able to access multiple modern software platforms
- Student technology satisfaction has gone up in parallel with technology adoption

Conclusions

- P1 Year at MUSC COP is highly integrated with productivity software
- Student software usage correlates with class schedule

Future Directions

- Track and improve faculty and student performance, outcomes and satisfaction using multivariate statistics
- Use polling software and embedded video to increase student engagement and learning

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