Impact of a Modular Bridge Course for First-Year Pharmacy Students

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Background

- With fewer individuals and more diverse applicant pools, pharmacy programs have evolved to minimize barriers and promote student success.
- Programs have shifted towards promoting diversity by encouraging those with limited financial means or first-generation applicants.
- UTHSC COP wanted to address varying levels of baseline knowledge among incoming students and the impact of cognitive overload on student performance and stress.
- The Cognitive Load Theory was applied to create a bridge course for first-year (P1) students with the intent to level the knowledge gap and potentially identify earlier on the students at risk of struggling in the curriculum.

Objective

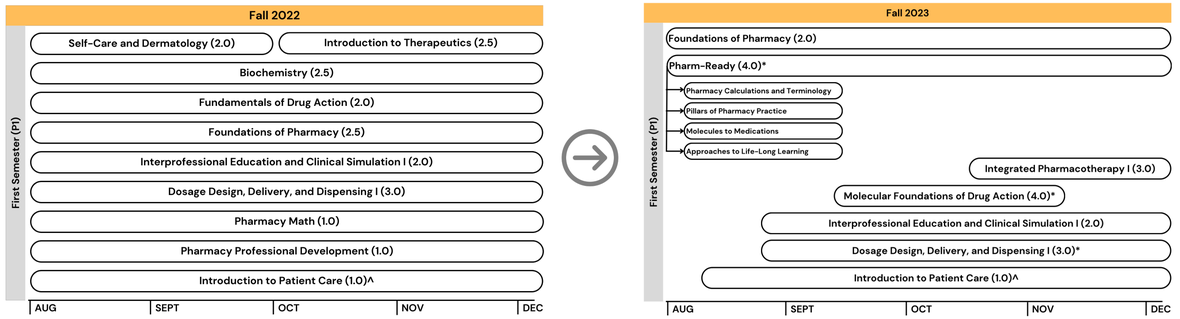
- To determine the short-term impact of a first-year pharmacy school (P1) curricular redesign on student performance in their first year.

Methods

- Single-institution, retrospective cohort analysis comparing student outcomes for the P1 fall semester and P1 year between the classes of 2026 (fall 2022) and 2027 (fall 2023) after a curriculum redesign for the latter.
- An initial modular bridging course (Pharm-Ready) was introduced in the fall semester, followed by a five-course schedule (Figure 1). Remediation was instituted for individuals needing to achieve set competence.
- Data collected: student demographics (Table 1); undergraduate, fall term, spring term, and P1 year grade point average (GPA); P1 fall course performance; pre-matriculation math performance; remediation attempts; course final grade and grades earned less than a C-.
- Descriptive statistics were performed. The Chi-Square test compared categorical variables and Mann - Whitney for continuous variables. Risk estimates were measured. Significance was set at a p-value < 0.05.
- The study was approved as exempt from the UTHSC IRB.

Results

Figure 1: Curricular changes from Fall 2022 (class of 2026) to Fall 2023 (class of 2027)



**Course performance included in data analysis; ^Class split between weeks 1-8 & 9-16*

Table 1. First-year student demographic breakdown for both classes

	All (n=203)	Class of 2026 (n=99)	Class of 2027 (n=104)	p-value
Age, in years, mean (SD)	23.3 (4.3)	23.0 (3.4)	23.6 (5.1)	.506
Race, n (%)				
White	121 (59.6)	57 (57.6)	64 (61.5)	.173
Asian	24 (11.8)	8 (8.1)	16 (15.4)	
Black	43 (21.2)	23 (23.2)	20 (19.2)	
Mixed	11 (5.4)	8 (8.1)	3 (2.9)	
Other	1 (0.5)	1 (1.0)	0 (0.0)	
Unknown	3 (1.5)	2 (2.0)	1 (1.0)	
First generation, n (%)				
Yes	73 (36.0)	38 (38.4)	35 (33.7)	.559
No	130 (64.0)	61 (61.6)	69 (66.3)	
Prior degree, n (%)				
No Bachelor's degree	54 (26.6)	33 (33.3)	21(20.2)	.039
Bachelor's degree or higher	149 (73.4)	66 (66.7)	83 (79.8)	
Pre-math assessment, mean (SD)	72.3 (16.9)	72.7 (17.0)	72.0 (17.0)	.727
Undergraduate GPA, mean (SD)	3.41 (0.38)	3.38 (0.37)	3.43 (0.39)	.006

Figure 2. Predicting student success during first-year of pharmacy program

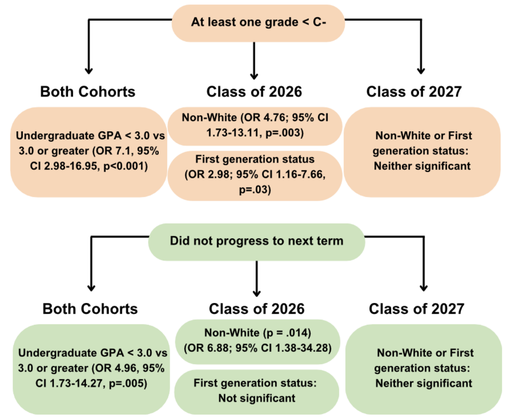
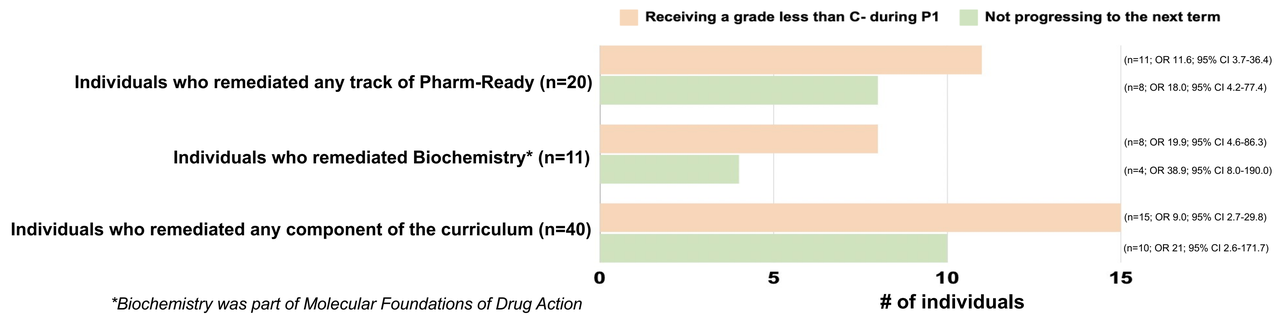


Figure 3. Class of 2027 remediation attempts and effect on future academic performance and progression



**Biochemistry was part of Molecular Foundations of Drug Action*

Major Findings

- No difference in academic performance was found between the cohorts with the curricular redesign.
- The addition of the Pharm-Ready course increased the likelihood of first-generation and non-White students progressing to the P2 year.
- Regardless of the Pharm-Ready course, students with lower undergraduate GPAs or a pre-matriculation math score of <70% were more likely to receive a grade <C- and not progress to the P2 year.
- For the class of 2027, remediation attempts in Pharm-Ready and other courses significantly identified students who performed poorly and did not progress to the P2 year.

Conclusions

- Adding a bridging course aided the transition to the PharmD program for first-generation and non-White students in terms of academic performance.
- Despite no difference in course performance, the need to remediate a portion of Pharm-Ready or biochemistry identified at-risk students for attaining a grade less than a C- or progressing in the curriculum.
- Pharm-Ready was predictive of students who would struggle, which can help with early identification of students at risk and intervention.
- Future directions are aimed at determining strategies to support at-risk students.