The Effects of the Diagnostic Assessment and Achievement of College Success Intervention

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Abstract
The Diagnostic Assessment and Achievement of College Skills (DAACS) is an intervention designed to address college readiness among newly enrolled college students. It consists of a collection of open-source online diagnostic assessments, feedback, online educational resources, and social supports that promote readiness for college-level work. An experimental study conducted at two institutions (n = 13,147) indicates that freshman GPA for traditionally aged students attending the brick-and-mortar institution was 0.19 higher for treatment students (Cohen's d= 0.19). In addition, the data show that student success increases as student engagement with DAACS increases. DAACS did not increase GPAs at the online institution nor term-to-term retention at either institution.

DAACS Components
DAACS is a suite of technological and social supports to optimize student learning. DAACS provides students personalized feedback about students' strengths and weaknesses in terms of key academic and self-regulated learning skills, linking them to the resources to help them be successful students. DAACS has five main components (Figure 1):

1. Diagnostic Assessments
   - Self-Regulated Learning Survey
   - Writing Assessment
   - Reading Comprehension
   - Mathematics
2. Feedback and Resources
3. Automated Nudges
4. Student Advising
5. Predictive Modeling

Research Questions
1. Do students assigned to the DAACS intervention demonstrate greater retention and academic achievement than those who were assigned to the control group?
2. Does DAACS improve the accuracy of predicting student success?

Method
DAACS was implemented in the first year experience course at the University at Albany (UAlbany; primarily traditionally aged first time college students) and the University of Maryland Global Campus (UMGC; primarily returning adult students). Course sections were randomly selected to have DAACS as key component of the course.

To assess the accuracy of predicting student success, predictive models using logistic and random forests were estimated with and without DAACS data.

For students at a traditional brick-and-mortar institution, those assigned to the the DAACS treatment had a 7.2% higher GPA than the control group (Cohen's d = 0.19). For adult students in an online college, there was not statistically significant effect.

DAACS can increase the accuracy of predicting student success by 4% to 21%.

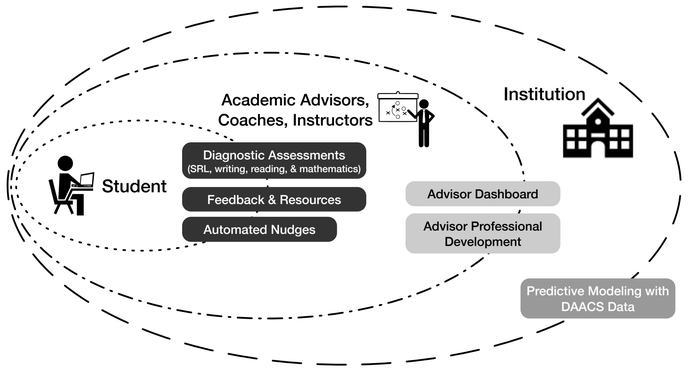

Figure 1. DAACS Framework.

Model	Demographics	DAACS	Demo + DAACS
	University at Albany		
GPA			
Linear Regression	0.09	0.08	0.11
Random Forest	0.05	0.06	0.09
	University at Maryland Global Campus		
GPA			
Linear Regression	0.11	0.25	0.32
Random Forest	0.12	0.24	0.32

Table 1. Predictive Modeling Results.

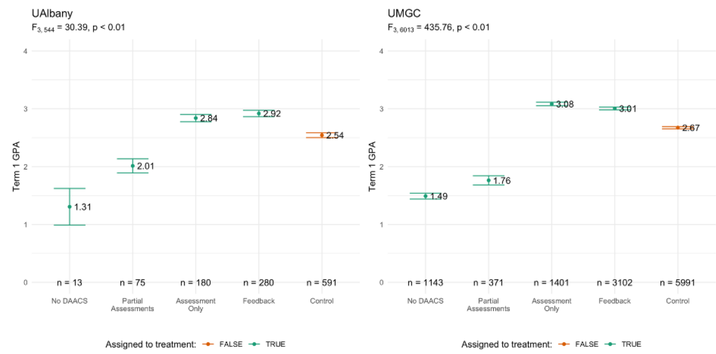

Figure 2. GPA by Dosage at UA and UMGC

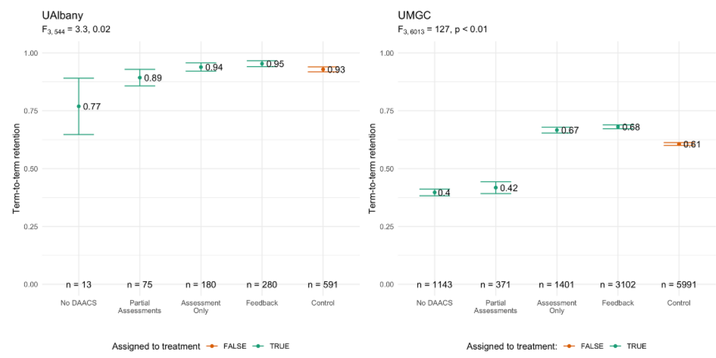

Figure 3. Term-to-Term Retention by Dosage at UA and UMGC

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