


ACTIVE TEACHING AND LEARNING WITH ACHIEVE

Rediscovering the Beauty of Calculus

PRODUCT USED	Achieve for Sullivan's <i>Calculus 2e</i>	 <p>Florida State College at Jacksonville</p>
STUDY DESIGN	Evaluation Study with Descriptive Analyses	
COURSE	Calculus	
INSTRUCTOR	Marwan Abu-Sawwa	

The Challenge

Student Preparedness and Instructor Efficiency

Instructor Marwan Abu-Sawwa describes his previous teaching style as a traditional lecturer due to pressure to deliver all the needed content, which left little time for interaction with students even when he was teaching face-to-face. *"There is not enough time to cover the content of the course and go over examples in the classroom or give in-class activities."* Students at Florida State College at Jacksonville enroll with various levels of algebra and precalculus skills as dual enrollment, new high school graduates, and older returning students; his students major in subjects ranging from engineering to pharmaceuticals. Instructor Abu-Sawwa states, *"My students tend to need more help."* After COVID-19 in Spring 2020, his courses went fully virtual, and he taught online for the first time ever. Before using Achieve, he shares that students did not come to class prepared and lacked time management skills. Also, the instructor used to find it hard to know if students understood the material covered in class. Once he started using Achieve, he saw positive changes in his instruction and his students' learning outcomes, and he smoothly transitioned to fully online teaching.

The Solution

Achieve Instructor and Student Resources

"I really enjoy teaching Calculus with Achieve since I have a different approach to teaching the course. I feel very active in teaching the class."

Instructor Abu-Sawwa specifically notes the instructor and student resources in Achieve as beneficial. His favorite feature is Insights where he is able to review assignments and see top learning objectives and overviews of student performance. All of this *"helped as an instructor to know where my students stand, analyze their progress and performance."* He also uses the PowerPoint slides to explain the content in class, pre-class activities (such as the Guided Learn & Practice) to help students do the reading and come to class prepared, and post-class activities for homework practice. Instructor Abu-Sawwa

tracks student progress in the course through assessments to see where students are struggling, and he addresses those weaknesses in the classroom or by contacting students individually. *"Using Achieve helped me to prepare my presentations, quizzes, tests, and study guides."*

"Achieve meets all my needs for instruction in the classroom."

Instructor Abu-Sawwa states that Achieve student resources are *"designed for students at all levels"* which is specifically important at his open enrollment institution. He notes, *"Achieve is easy to use and [easy to] navigate and can be accessed anywhere, any time."* Students think of Achieve as a very convenient tool to do homework and access the textbook, as well as to track, practice, and improve their math skills. With the COVID-19 transition to online, these accessible, easy-to-use features were key. Instructor Abu-Sawwa reports students specifically enjoy the Guided Learn & Practice and LearningCurve Adaptive Quizzing assignments. The instructor has seen students become involved in their own learning (and be less reliant on him). He states students now *"see the beauty of calculus and its applications."*

Instructor Abu-Sawwa reports, *"The teaching environment changed with my use of Achieve; there was a change in teaching instructions and homework assignments as well as student interactions and involvement and, ultimately, their performance."* When online instruction occurred due to COVID-19, the instructor adapted quickly and noted, *"Achieve saved me time during my virtual class meetings."* Regarding his first time teaching online, he states, *"I could not have done the switch to virtual classes without Achieve. I give the use and implementation of Achieve all the credit."*

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The Results

Achieve Saves Instructor Time and Positively Changes Instructor/Student Interactions

“I was very pleased with my students’ performance and success in the class. Students had better outcomes.” Instructor Abu-Sawwa noticed students were more involved in class after using Achieve. *“The pre-class, in-class, and post-class activities help a lot in students’ engagement.”* Based on the feedback he receives through the Achieve dashboard—which identifies areas of weakness and tracks student progress and performance—he can focus his weekly teaching. *“I take action immediately.”* This means he has more time to give extra examples in class and is able to do more in-class activities. The instructor’s advice to other calculus instructors interested in using Achieve is to encourage student involvement and use all of the resources, and you will save time.

- *“Encourage your students to get involved especially with the pre-class activities. Those activities are the key to an excellent communication between you and your students when covering new material in the class.”*
- *“The instructor will save time in preparing for the class, assigning homework, and creating quizzes and tests.”*
- *“Try to use Achieve as much as you can and take advantage of all the resources available for the course. All resources for remote or hybrid classes are available for both instructors and students.”*

School Background

Florida State College at Jacksonville (also known as ‘FSCJ’) is a four-year state-supported college offering associate’s and bachelor’s degrees. The undergraduate population of over 23,000 students attend one of four campuses and three centers located throughout Duval and Nassau County in Jacksonville, Florida. The college has an open admission policy and the student to faculty ratio is 25 to 1. Student demographics are 48% white, 27% black, 11% Hispanic/Latino, 5% race/ethnicity unknown, 4% Asian and 3% two or more races. Slightly more than half (56%) of the students are under 24 years old and 90% are in-state students. (citation: NCES).

About the Professor

Marwan Abu-Sawwa is a veteran calculus instructor with 28 years of experience teaching mathematics. He currently teaches at Florida State College at Jacksonville. Instructor Abu-Sawwa has taught a range of courses including PreCalc Algebra and Trigonometry, Differential Equations, Calc with Analytic Geometry I and II, and College Algebra. Instructor Abu-Sawwa has been implementing Achieve for Calculus since it was first beta-tested in 2017.

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Study Limitations

Although the data are rich, the findings of this case study are specific to the instructor who participated. They cannot be generalized to all institutions who use Achieve. The results are also descriptive and should not be used to infer causation.