

California Water Institute Provides Project Opportunities for Students

Classroom Case Study: Data Analytics

A California Water Institute (CWI) grant project allowed Fresno State students to flex their data analytics skills to help a local farm reach a major milestone. Woolf Farming, a third-generation Central Valley family-owned farm since 1974, partnered with CWI in its efforts to achieve B Corp Certification. The globally recognized designation requires a business to meet rigorous and exceptionally high standards in social, environmental and operational performance. Woolf Farming grows conventional and organic crops including almonds, pistachios, tomatoes, grapes, onions, garlic, wheat, hay and more. To demonstrate its commitment to sustainability, Woolf Farming needed to develop an Environmental Management System (EMS) that could track its use of water, pesticides and fertilizer.

CWI turned to Dr. Aimee Jacobs, an associate professor of Data Analytics at Fresno State Craig School of Business. Jacobs credits this classroom partnership opportunity to the positive working relationship with CWI's interim director Laura Ramos, who she says has been proactive in reaching out with ways to involve students in ongoing projects.

Because of the unpredictable timeline of this project, Jacobs took the project out of the classroom and into the flexibility of a student club, the Data Analytics Student Association. Allowing students to work on the project in a club setting was key to extending the timeline beyond the confines of a semester. Jacobs said students who volunteered on the project benefited from learning a real-world application for data analytics.

"In the classroom, they're just following what I do on canned datasets and you don't always run into problems. And so, when you have a project, they're running into problems that they have to solve," Jacobs said. Although the project was too big to fit into a classroom curriculum, Jacobs noted the benefit of still being able to teach the project as a classroom example of a real-world application.

This classroom project began in phases with students collecting and digitizing data that used to be compiled in handwritten logs. Students like Arthur Carlos analyzed how much water was needed and being used for specific crops, the basis of an EMS for water tracking. Carlos, who worked on the project for a little over a year, called it an incredible opportunity.

"It was really quite instrumental in my personal growth and my career growth," he said. Carlos emphasized his ability to develop interpersonal skills through his work on the project and to work with real stakeholders. This included building relationships with people who worked at the farm and learning how to explain technical concepts to non-technical people. Carlos said he learned a lot from working with data in the field.

"The real world was much more difficult than the classroom. You often get improper, imprecise and imperfect data, and that's much more of a reality in the real world that you don't see in class," he said. "In a roundabout way, it was a direct lead-in to where I am today and what I do today." Carlos landed a full-time job in 2023, soon after graduating. He began his career as an analytics engineer with a nonprofit accounting software company in Fresno.

The Environmental Management System Carlos and other students helped to create landed Woolf Farming the B Corp Certification it sought. Dr. Aimee Jacobs called it a win-win for her students, the client and CWI. She said she'd be willing to take on another project in the future.

