

Life, Work, and Citizenship: Improving Student Learning and World Readiness through Changes to a Food Science Program

*Dr. Bridget G. Trogden, Dr. Julie K. Northcutt, Dr. Paul Dawson,
Alex Thompson, & Belinda Cochran*



trogden@american.edu, jknorth@clemson.edu, pdawson@clemson.edu, art6@clemson.edu, bcochra@clemson.edu

PROJECT OVERVIEW

If the first job is an unpaid internship, how can we frontload that opportunity into the college curriculum?

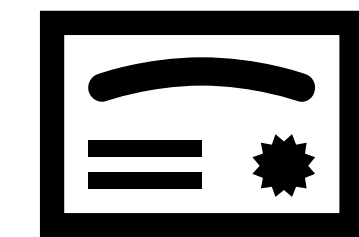
How can we ensure that students with fewer socioeconomic resources and higher financial need can participate in career Core Competencies at equitable rates?

With a grant from the USDA’s REEU program (United States Department of Agriculture - Research and Extension Experiences for Undergraduates), Clemson University has created a sequence that includes Extension-Integrated Food Science curricular opportunities, a paid internship after the junior year, and professional Core Competencies infused in the undergraduate program.

Institutional research via NSSE (National Survey on Student Engagement) showed that students in the Food Science program were less likely to plan on an internship during college and less likely to clearly connect their academic experiences with work preparation.

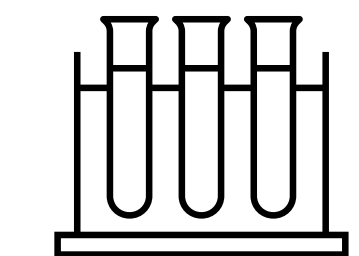
We designed interventions to improve the students’ education along with Provocation 1 of *The Equity/Excellence Imperative* – ensuring world readiness though “transformative education for life, work, and citizenship in an age of daunting challenges...” and “education for *all* students, not only those already privileged.”

THE PROGRAM



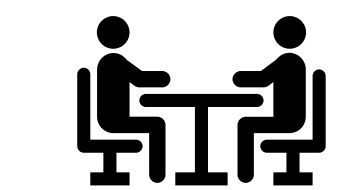
Course Certifications

Undergraduate students participating in a Food Science special topics course completed training in Food and Drug Administration (FDA) and USDA food safety regulatory standards. Upon course completion, students became certified in Hazard Analysis and Critical Control Point System (HACCP) and Food Safety Modernization Act (FSMA) Preventative Controls for Human Food. Under the new Extension-immersion curriculum, undergraduate students interacted with and learned from industry experts while completing their course assignments and earning industry credentials with no additional cost.



Real-World Lab Experiences

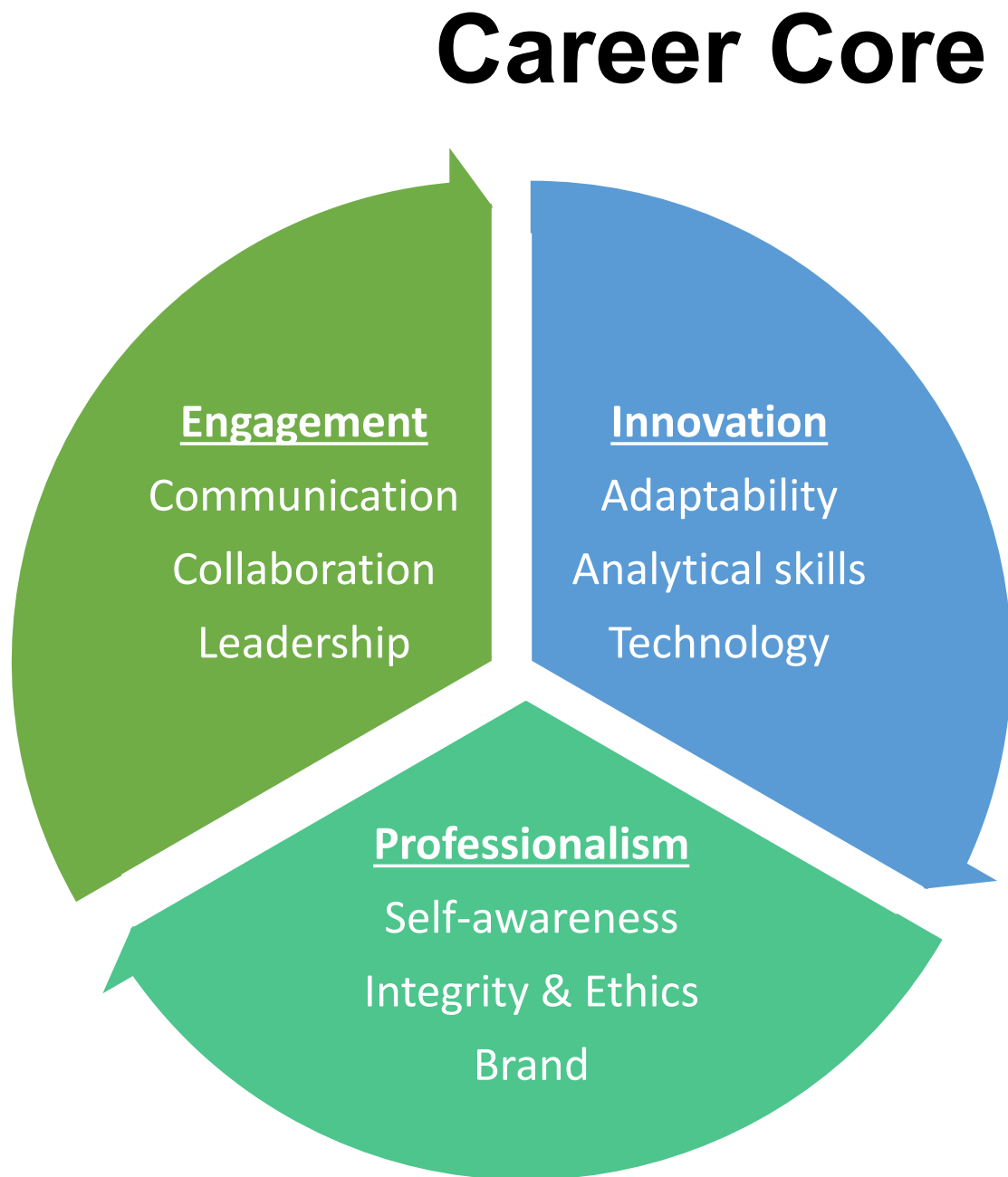
Students in a food chemistry and analysis course participated in new laboratory activities that included the chemical analysis of actual food products that had been prepared by food entrepreneurs and submitted to Clemson Cooperative Extension Service for product safety and shelf-stability testing. Students were trained and then conducted the tests (under faculty supervision) on real-world products while faculty and Extension Agents taught them to interpret findings and file reports to entrepreneurs and state agencies.



Paid Summer Internship

Undergraduate student interns were placed with food companies and industry partners throughout South Carolina for a 10-week paid internship. Students worked with mentors to develop projects based on relevant topics within the industry. Interns were exposed to the wide range of tasks and skills needed to perform well in the food industry. Students generated reflective portfolios based around Core Competencies for career readiness, which allowed them mentored opportunities to better prepare for their eventual careers.

FINDINGS



In determining the impact of the program on student world readiness, we collected multiple forms of data from students on their educational outcomes.

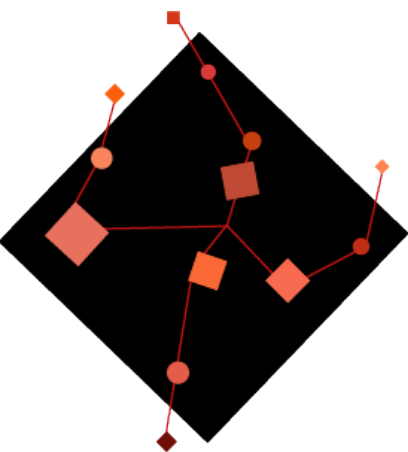
Key to the project were pre- and post- student self-ratings on proficiency skills on the 9 career core competencies deemed most essential by employers.

	Course (n=6)			Lab (n=13)			Internship (n=10)		
	pre	post	D	pre	post	D	pre	post	D
Communication	3.33	4.00	0.67	3.69	4.13	0.44	3.29	3.63	0.34
Collaboration	2.67	3.75	1.08	3.85	3.87	0.02	2.57	3.38	0.80
Leadership	3.00	3.50	0.50	3.54	3.67	0.13	2.86	3.13	0.27
Adaptability	3.67	4.50	0.64	3.85	4.00	0.15	3.57	4.13	0.55
Analytical skills	3.00	3.75	0.75	3.62	3.60	-0.02	3.00	3.63	0.63
Technology	2.67	3.50	0.83	2.92	3.40	0.48	2.71	3.13	0.41
Self-Awareness	3.67	4.50	0.83	4.00	4.13	0.13	3.71	4.38	0.66
Integrity & Ethics	3.83	4.50	0.67	3.85	4.13	0.29	3.86	3.88	0.02
Brand	3.33	3.75	0.42	3.46	3.73	0.27	3.29	3.63	0.34

Self-reporting scale: 1=aware, 2=basic, 3=intermediate, 4=advanced, 5=expert

(See also <https://career.sites.clemson.edu/core/>.)

Additional data analysis via student responses, mentor responses, and direct assessment of student work will continue to be analyzed as the grant-funded project concludes in the coming year.



**Association for
Undergraduate Education
at Research Universities**