

Engaging Undergraduates in Social Justice Issues through Interdisciplinary Course Collaborations

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Institutional and departmental context

Location: Ewing, NJ

Undergraduate student body size: 6,790

Degree(s) offered: B.S. in Computer Science, Seven Year B.S./M.D. degree, B.S. in Computer Science with Data Science Specialization

Department/major name: Computer Science

Number of contributing faculty: 12 FTE

Number of majors annually: 190 majors

Does the department offer any graduate programs? No

Other context: At TCNJ, a strong liberal arts core forms the foundation for degree programs offered through the college's seven schools: Arts and Communication; Business; Education; Engineering; Humanities and Social Sciences; Nursing and Health Sciences; and Science. Signature experiences include a personalized, collaborative, and rigorous education; undergraduate research, mentored internships, and field experiences; community engaged learning; global engagement; and leadership development.

Description of Curricular Innovation

At TCNJ, like at most other liberal arts institutions, students are required to take courses in the arts and humanities, including those that focus on civic issues, such as racial and ethnic inequality. Often, these courses are perceived by students in computing disciplines to be outside their disciplinary area, and students do not always comprehend how these topics are applicable to their major. At the same time, students in non-STEM (Science, Technology, Engineering and Mathematics) majors do not always see the applicability or necessity of STEM concepts, including computational thinking, in their own disciplinary areas.

In the Collaborating Across Boundaries (CAB) curricular model, students in two courses from two disciplines collaborate with each other and a community partner on a STEM-focused project to address a community-identified issue. The intent of this model is to help students in their respective courses more deeply engage in their disciplinary content while envisioning how their disciplinary knowledge can be applied to help address social issues. For example, in Fall 2020, students in the Software Engineering course (required for the Computer Science and Computer Engineering majors) collaborated with students in the Penology course (required for the Criminology major) and community partner, The Campaign to End the New Jim Crow. Similarly, in Spring 2022 students in the two courses collaborated with the Atlantic Center for Capital Representation. By applying theory to practice in this collaborative environment, students from both courses, with diverse perspectives and disciplinary backgrounds, not only learned their disciplinary concepts

more deeply but also learn how to bring together and integrate these concepts to develop solutions to address complex real-world problems.

Both courses were taught separately, in their own classrooms enabling the instructors to cover disciplinary content. Both classes were scheduled to meet in the same time and this enabled the collaborative meetings to occur during class time when the professors and all students were available. Over the course of the semester, the two classes and the community partner came together on six occasions to work with each other on the project during class time. Teams were composed of six or seven students from both classes, balanced by gender, class (e.g., junior or senior), and major. This helped to promote equity and learning among students of different disciplines. The project goals drew from both courses equally, and were aligned with the learning outcomes stated on the individual course syllabi.

To ensure that students from both courses had a common foundation from which to approach their collaborative projects, the Penology instructor facilitated a discussion on the history of racism in the United States prison system, the Software Engineering instructor provided a background on version control and project management, and the community partner provided a summary of the major areas of criminal justice reform in the state. While all projects needed to revolve around the central theme of racial injustice in the criminal justice system, there was significant variation in the projects proposed, and most built on the team members' interests and expertise. The students developed a deeper understanding of the significance of social issues, such as incarceration, and the ability to analyze and address social issues using computational thinking. This collaborative model was possible due to flexibility in scheduling, smaller class sizes (18-20 students in each section), connections between the different schools, and focus on pedagogy and deep engagement. Connections with the local community partners also were beneficial.

Challenges/Limitations

There was a perception (from both sets of students) that the Software Engineering students had greater project responsibilities and the Penology students lacked knowledge of how to accomplish the (computational) tasks. This may have been ameliorated if the students had more clearly defined roles. Some students felt that the amount of time devoted to the project was unreasonable. Perhaps, a clear statement by the instructors about the amount of work that is reflected in the weight of the project toward the final grade, and the value to the community partner and to the student's own learning may have allayed some of the dissatisfaction.

It can be challenging to find a collaborator teaching a course that would align well with the social issue and goals in which you are interested, scheduled in the same time slots as your course. The instructors need to put in additional effort to design and manage the project, and ensure that contributions from the students are equitable and useful for the community partner. This additional effort may not be recognized by the institution. There may also be a perception that the project takes time away from content coverage. However, we found that we were able to cover all the essential content and students in fact engaged with his content more deeply.