

Thesis Portfolio

Satori: Open-source Course Management System
(Technical Report)

**Technological Momentum of Online Education: How Student Experiences Have Evolved
Over Time Through Online Instruction**
(STS Research Paper)

An Undergraduate Thesis

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Sociotechnical Synthesis

The year 2021 is passing in a way unfamiliar to millions of people around the world. People have been forced to make changes to multiple aspects of their daily lifestyles due to the current COVID-19 pandemic. Education is an especially notable element that has changed significantly; in order to limit the spread of the virus, many schools and universities have transitioned to online learning. In order to ensure the success of the transitions to online education that the pandemic has forced many institutions into, it is vital to research how students are able to navigate their new learning environments. The STS research paper focused on student opinions of online learning over time, examined using the technological momentum framework. Studying societal implications of online education provides important considerations for future innovations in digital instruction. The technical project that was worked on along with the research focuses on the continuation of Satori, an open-source course management tool designed to help improve the experiences of students as well as course staff.

In my STS research paper, I looked into online education and how students' perceptions and opinions of it have changed over time. By analyzing multiple case studies that were conducted in different years, I saw trends in the challenges that students faced. Though technological advancements have been made throughout the years, many problems persist in online education and must be addressed before online education can be seen as an equal replacement to traditional in-person education.

The technical project consisted of implementing additional features in Satori, a course management system that was started by another team last year. The system was created to be applicable to many different courses, but currently, the main usage takes place in CS 2150: Program and Data Presentation. One feature of this system is the office hours queue, where

students are able to request assistance during scheduled times, and Teaching Assistants (TA's) have the ability to assign and unassign students to themselves. The main deliverable of the project was the support request system, which allows students to submit tickets describing issues they are facing. Course staff members can then respond and handle those problems. The technical team also worked on smaller features or additions to existing features, as well as handled bugs that came up over the academic year. A major goal of the project was to improve the experiences of students, TA's, and instructors, as well as save them time and effort.

The completion of the STS research paper as well as the technical project helped me understand how important course management is for students and instructors. Through researching online education, I gained a deeper understanding of challenges students face that can prevent them from doing as well in courses as they can. Having an option to take online courses can help mitigate other hurdles students may face besides the coursework, such as different environmental or socioeconomic circumstances. However, online education also still needs to progress and solve longstanding issues. Working on the technical project allowed me to see how helpful a useful and intuitive online tool can be as a supplement to a course. As a TA, I used Satori both when CS 2150 was taught partly in person as well as when it was taught online. During both situations, I found having Satori was beneficial to TA's as well as students. By having online tools like Satori, instructors can help improve the overall experience of a course. When students are able to feel more encouraged and have different places to turn to for assistance, they may feel more motivated and can maximize their academic performances.