CSU CAMPUS AS A LIVING LAB

California State University San Marcos

Data Visualization: Connecting Students to the Campus and their Environment with Art and Technology

PROJECT NAME:
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Learning Outcomes

Data Visualization teaches students to analyze and creatively display datasets to illuminate issues of sustainability on campus both within and for the community.

Students will learn to examine, identify and visualize local issues of sustainability. They will gain knowledge about the creation and application of both visual and physical representations of information-based models conveying those issues.

Sustainability outcomes for students in the course include achieving the ability to:

- Think critically and analytically about an issue, idea or problem related to sustainability on campus;

- Design custom data visualizations of subject-specific material related to issues of sustainability;

- Analyze visualizations about the environment, resource and energy use and distill both information and societal narratives;

- Construct models that convey the story of sustainability on campus.

Connecting to CALL

Data visualizations created by students, related to campus sustainability and shared with the public have potential to meet the CALL program objectives of:

- Promoting the use of alternative transportation and alternative fuels;
- Identifying energy efficiency improvement measures;
- Reducing water use and land waste;
- Reporting on recycled content product categories;
- Creating public awareness of sustainable operations for the campus.

The CALL program supports the engagement of students with campus-wide sustainability efforts and pubic outreach to the greater community about the use and impacts of energy, water, fuel and waste.

The next year of the CALL redesign requires establishing the groundwork for connecting student projects to campus-based sustainability data. The CALL champion and lead faculty member will work with key individuals to make these crucial connections.

Additional planning includes working with library, technology and GIS mapping staff to pave the way for successful student projects and for public outreach and engagement.

Overcoming Obstacles

Obstacles to overcome include:

- Communicating with multiple areas of the university to obtain relevant datasets;

- Paving avenues for public outreach to connect student work to the community at large.

Strengths include:

- The natural alignment of the course's learning outcomes and the sustainability outcomes;

- The connection between the course's sustainability outcomes and the Sustainability Master Plan and campus benchmarks;

- The potential for connecting students to the campus community and increasing awareness of sustainability.

Tracking Success

Assessment of students' achievement of Sustainability Outcomes will be measured by students' successful completion of sustainability-related data visualizations. Student work will be assessed according to these target Sustainability Outcomes.

Pre-surveys and post-surveys on students' understanding of sustainability before and after the course redesign will provide an indication of whether the Sustainability Outcomes made a difference in students' awareness of campus-based sustainability issues.

Assessment of the original learning outcomes before and after the CALL implementation will reveal whether the redesigned course is an overall improvement.

Taking Action

Students will contribute to the campus' story about sustainability at CSUSM. A sculptural model might reflect in real time the amount of water bottles that the campus community has avoided, propelling student interest in sustainability efforts and redirecting students to issues immediately relevant to them.

Students will conduct research in coordination with campus facilities, staff and faculty, as well as locate, analyze and chart comparable datasets outside of the university. Students will focus on a stratum of sustainability as it connects to the campus or their environment, collect related data, and convey their research in an annotated info-graphic.

Students will collaborate on a class sculpture that reflects data.

The sustainability officer's role includes helping to:

- Facilitate the course redesign elements with the Facilities Development and Management division;
- Identify promising datasets for visualization;
- Coordinate public outreach efforts for student projects;
- Establish rubrics for measuring students' understanding of campus-wide sustainability.

Future Tasks

Assignments

The engagement of students with sustainability through creative art practices and visualization will begin with a personal assignment, such as charting one's carbon footprint and visualizing this in an engaging way. Research into a specific subject will follow, extending out from the personal to the academic.

Projects that intersect with campus sustainability data may be collaborative endeavors, allowing for a more ambitious representation.

Surveys before, during and after sustainability visualization projects will help to gauge students' level of interest and the effectiveness of the assignment's framing.

Clear and early communication with Facilities Development and Management about key datasets is crucial to the course redesign development stage.

Criteria for Success

- Data modeling will communicate CSUSM's story about sustainability.
- Understanding of specific sustainability-related issues will increase among students of the redesigned course.
- Projects will broaden community awareness of sustainability efforts.

CALL OBJECTIVE

The 'Campus as a Living Lab' Grant Program is a unique opportunity to partner faculty and facilities management staff in using the campus as a forum for the exploration of sustainability concepts and theories.