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Design Review: Reflection #1

INTRODUCTION AND IDENTIFICATION

Throughout the Fall Quarter, our team, guided by Professor JAK in ENGR 110, is fully engaged in a collaborative project with the University of California Cooperative Extension (UCCE). Our task is concentrated and centered around improving and optimizing the Advanced Simultaneous Aeration and Passive (ASP) composting system. The structure of our teamwork is well-organized, ensuring that each week, we have dedicated times for meetings and consistent agendas that keep us on track, aligning with our Gantt Chart and overall project plan.

Our partnership with UCCE is essential, providing a platform to intertwine our academic knowledge with real-world applications, explicitly focusing on sustainability and composting practices. We're concentrating on making significant improvements, such as automating the system, making it more durable against pests like squirrels, and ensuring that it is user-friendly and easily replicable for broader community use.

The core of our project lies in understanding and addressing the needs of our customers – the UCCE – and, by extension, the various stakeholders ranging from students to small farmers and homeowners in California. Our goal is to deliver a system that is efficient and practical, accessible and easy to implement across various user groups, maximizing its impact. We aim to ensure the ASP system we work on is enhanced to meet essential user needs: it should be portable, durable, and low-maintenance, focusing on automating processes to save time and effort. The improvements we make must align with the goal of making the composting process more efficient, sustainable, and user-friendly, promoting wider adoption and use across the community.

INTERACTION & COMMUNITY INSIGHT / REFLECTION & SOCIAL ANALYSIS

The ASP project hopes to present its composting education program to Santa Clara County and educate the community members on composting. UCCE provides various resources to the Santa Clara County community on implementing composting in their home and becoming more conscious regarding their waste. Various demographics include students in K-12 schools, Santa Clara Residents, and young volunteers. The ASP project provides several services for the clients, such as communal events, school and college presentations (as done in SCU), and advice sessions. Furthermore, UCCE provides monthly composting workshops and the opportunity for community members to become "Master Composters."

Compositing evidently benefits the Santa Clara community as composting allows waste to be allocated efficiently. Composting also has environmental benefits, such as stimulating soil fertility, capturing carbon, and reducing methane emissions. Beyond providing services, UCCE gives Santa Clara residents resources to get compost, curbside compost, and reminders on community events beyond the UCCE. The program has established composting systems but is always looking for improvements and support from the community. Our product and project's primary qualities align well with its potential for social impact. By serving as an instructional piece and educational resource, it empowers individuals to understand the composting process and appreciate its importance. Such knowledge can bridge a significant environmental consciousness gap, as composting is an effective way to reduce waste and enrich the soil. This educational component addresses the need for more environmental awareness and sustainable practices among various communities.

In this case, the target community comprises multiple stakeholders, including community members, schools, small farmers, and organizations like UCCE and 4H Youth Development. The product's aim to be used by schools, small farmers, and homeowners presents an opportunity to ensure access to sustainable and equitable agricultural practices. In assessing how these communities are currently faring, we find disparities highlighting social injustices. The proposed automated watering system can provide a much-needed boost by making composting more accessible, particularly relevant for marginalized farmers who have historically faced challenges in accessing resources and support. The open-source nature of the product further amplifies its potential for social good. It promotes knowledge sharing and community engagement, enabling stakeholders to collaborate, learn, and implement sustainable practices. This open-source approach recognizes the importance of democratizing access to environmental education and resources, often overlooked in contemporary society where access to such resources is disproportionately distributed. By prioritizing sustainability and environmental conservation, the

project recognizes the broader injustices that stem from unsustainable practices and resource mismanagement.

PROJECT IMPACT & VALUE PROPOSITION

Value Proposition for UCCE Composting Program: ASP Piles

Implementing an automated irrigation system in the UCCE's ASP piles presents a multifaceted approach to sustainable composting. Environmentally, it fosters soil enrichment and water conservation by optimizing moisture levels. Socioeconomically, this system is cost-effective, time-saving, and promotes self-reliance, enabling individuals to create personal composting systems at home. Ethically, it encourages resource conservation, reduces chemical use, and mitigates food waste, promoting efficient water and material use. Physiologically, it eases the burden of physical labor, automating watering processes and ensuring consistent pile moisture content. Sociopolitically, this innovation nurtures community engagement, encouraging adoption of sustainable practices at a broader societal level. Culturally, it reshapes the communal relationship with the environment, enhancing the appreciation of sustainable practices, traditional knowledge, and community bonding.

Our value proposition offers a solution for organic waste processing and sustainable composting. It emphasizes educational outreach to be a comprehensive instructional and educational resource. The objective is to simplify the composting process, ensuring it is easily manageable and achievable within 16 weeks, thus fostering an understanding and appreciation of the composting process. With a focus on inclusivity, the system aims to attract various user groups, ensuring widespread benefits, user engagement, and system improvements. Open-source strategies and replicable steps are central to our approach, promoting accessibility and broad adoption of the system. Ultimately, the goal is to optimize the ASP system for enhanced sustainability, user engagement, and educational outreach while ensuring continuous improvement and innovation.