Sustainability and Education

2016-17 University of Hawaiʻi President's Emerging Leaders Program

Project Team

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Executive Summary

Project Description: The University of Hawaiʻi's sustainability policy provided an opportunity to implement meaningful change to the curriculum at the UH campuses while addressing sustainability. The objective of this project was to determine the challenges encountered at each campus while integrating sustainability into their curriculum and formulate recommendations to facilitate this process.

Primary goals of the project:

1. Assess the progress of several UH campuses (UH Mānoa, UH West Oahu, Kapiʻolani Community College and UH Hilo) in addressing sustainability in General Education and evaluate the feasibility of adding an "S" requirement.
2. Investigate the methods that similar state institutions are using to implement sustainability in education.
3. Determine assessment methods used to monitor the progress of programs implementing sustainability in education.

Methodology: (1) Document and literature reviews, and (2) interviews of key administrators and faculty involved in general education, curriculum, and/or sustainability initiatives at UH Mānoa (UHM), UH West Oahu (UHWO), Kapiʻolani Community College (KCC), and UH Hilo (UHH).

Project Outcomes:

Addressing Sustainability at UH campuses: Our investigation revealed that, just as each UH campus has a unique context, the integration of sustainability into general education was also different at each campus. As UHWO is a newer campus, their work on general education has been focused on balancing the existing offerings, and does not yet address sustainability. At KCC, there is progress towards incorporating sustainability into the campus Strategic Plan and learning outcomes; however, sustainability is not yet integrated into General Education requirements. At UHM, the R1 (Doctoral granting - Highest research activity) context may make a cross-listing approach with a sustainability subject code a more viable approach than integration of sustainability into General Education. At UHH, a Sustainability Plan has been developed and implemented with 29 courses currently having S-designations; in addition, there is work on incorporating Hawaiʻi Papa O Ke Ao into sustainability efforts and also first steps towards the development and implementation of a UHH Flagship Certificate Program: Sustainability for Island Earth (SIE).

Other Universities' Methods for Implementing Sustainability in Education: Institutions are taking varying approaches to integrating sustainability into their curriculum. At some institutions, such as the University of Vermont and University of Wisconsin Green Bay, students meet their sustainability requirement by selecting an approved course or courses. At other institutions, such as the University of Colorado Springs, sustainability is incorporated into general education requirements and integrated into discipline-specific coursework.

Assessment Methods for Monitoring Progress of Implementing Sustainability: Data analysis involves determining how to organize, synthesize, compare and present the assessment results. These are guided by the questions we ask, the assessment method used, and the information we hope to gain from the evaluation of the program. Discussing the data in groups and involving others in reviewing the results will result in a greater understanding of the outcomes and impacts of the sustainability program through different perspectives.

Recommendations:
1. Clearly articulate and disseminate a definition of "sustainability" to set the foundation for a coherent representation of sustainability throughout the University of Hawai'i system.
2. Capitalize on the momentum of ongoing sustainability efforts across the system to organically transform curriculum through sustainability, rather than establishing a sustainability requirement.
3. Coordinate the efforts of UH's sustainability initiative and the Hawai'i Papa O Ke Ao initiative to implement a unified, synergistic solution.

Background

What does the future post-secondary education look like? Is the current model of general education still viable in the short and long terms? If general education needs to be reformed, how can it be accomplished? These are some of the broad questions that were explored through this project.

The traditional model of higher education at the University of Hawaiʻi is under intense pressure from a variety of sources: falling enrollments, reduced state funding, rising costs, shifting demographics, technological advancements, among many others. Current and prospective students are questioning the value of a college degree and are increasingly looking at their return on investment to drive their decisions. The University must evaluate its current model of education and establish a strategy for reforming it to ensure that it continues to serve the best interests of its students and communities.

Meanwhile, global climate change continues to escalate. As the most geographically isolated state in the United States, Hawaiʻi faces its own unique hurdles. Rising global sea levels pose a significant threat to Hawaiʻi's coastal infrastructure. Increasingly intense and erratic weather events and patterns expose the state to more severe drought impacts and greater risk of tropical storms, heavy rains and destructive waves. Hawaiʻi is dependent on imported fossil fuels and has one of the highest rates of electricity use in the United States. The sheer volume of waste generated due to the use of fossil fuels and electricity has a deleterious impact on the environment. The damage to our environment will affect future generations. Hawaiʻi is also largely dependent on imported food, with approximately 92% of food being imported. In response to these and other challenges, the State of Hawaiʻi adopted a climate change law (Act 234, 2007), the Hawaiʻi Clean Energy Initiative and the Hawaiʻi State Sustainability Plan. In order to address the Hawaiʻi State Sustainability Plan, in February 2015 the University of Hawaiʻi (UH) Board of Regents approved an Executive Policy for the UH System (EP 4.202) to implement sustainability principles for all campus activities including plans to address the five areas addressed by the policy: Operations, curriculum, research and scholarship, campus and community engagement and cultural connections [1].

Project Objective

Our group sees the issues of reforming the current model of education and the University's emphasis on sustainability converging into an opportunity to implement

meaningful change in a realistic timeframe. The overall objective of this project was to determine the challenges encountered at each campus while integrating sustainability into their curriculum and formulate recommendations to facilitate this process. This includes Career and Technical Education (CTE) degrees, Associate's, Bachelor's, Master's and Professional degrees.

The specific proposal of the project was to:

Initiate the process of General Education reform by introducing a sustainability ("S") requirement.

The primary goals of the project were to:

1. Assess the progress of several UH campuses (UH Mānoa, UH West Oahu, UH Kapiʻolani College and UH Hilo) in addressing sustainability in General Education and evaluate the feasibility of adding an "S" requirement.
2. Investigate the methods that similar state institutions are using to implement sustainability in education.
3. Determine assessment methods used to monitor the progress of programs implementing sustainability in education.

Project Approach

Goal 1: Assess the Progress of several UH campuses in addressing sustainability in General Education and evaluate the feasibility of adding an "S" requirement [2].

1. Interview Wendy Pearson, Mānoa OVCAA regarding WASC & the addition of a sustainability code (S-designated courses) at UH Manoa.
2. Interview Hokulani Aikau, General Education Office regarding General Education, sustainability & possibility for collaborating on a survey to be sent out to faculty and/or students.
3. Interview Matthew Lynch, UH System Sustainability coordinator regarding sustainability designation initiatives at different campuses, and the implementation of the sustainability policy at each UH campus.
4. Interview Dr. Krista Hiser, English Faculty and Sustainability Coordinator and Dr. Keala Losch, Pacific Island Studies Faculty and General Education Chair at Kapiʻolani Community College.

5. Collaborate with General Education committee and Curriculum committees to conduct a faculty & student survey on sustainability and general education.
6. Meet with Sustainability committee from each campus.
7. Map the progress of each campus on planning and implementing the sustainability policy.

Interview questions:

- What is your vision for reforming General Education?
- Has your campus initiated the planning and/or implementation of including S-designated courses in the curriculum? Why or why not?
- What are the obstacles/challenges, if any, that your campus encountered while planning and/or implementing S-designated courses?
- What support and resources would help you to be able to integrate S-designated courses?
- What are the obstacles/challenges, if any, for your campus to have a broader discussion about addressing sustainability and implementing it on your campus?

Goal 2: Investigate the methods that similar state institutions are using to implement sustainability in education.

- Research Sustainability Education and curriculum at other Universities, focusing on California State University System, University of California System, Oberlin College and David Orr.

Goal 3: Determine the assessment methods used to monitor the progress of programs implementing sustainability in education.

- Research assessment tools used by other universities with sustainability education programs.

Project Outcomes

Goal 1: Assess the Progress of several UH campuses in addressing sustainability in General Education and evaluate the feasibility of adding an "S" requirement [2].

UH West Oahu

After meeting with UHWO General Education (GenEd) Committee Chair, it became clear that UHWO is just getting their balance on offering the existing GenEd requirements due to the more recent transition to a 4-year offering schedule and new campus. No discussions have occurred yet at UHWO on adding sustainability to the GenEd curriculum. Some of the roadblocks here are the number of classes/professors available that would be able to offer the courses that fall under this designation, possibly exacerbating the issues of hiring lecturers to teach more sections. As well, a Sustainable Community Food Systems (SCFS) program exists as a Bachelor's degree, which would likely get an influx of students seeking to meet this designation. Currently, that program only has one tenure track faculty member, and no lecturers, so that would likely present an issue of available offerings for students to graduate with the GenEd requirement.

Kapiʻolani Community College

Kapiʻolani Community College appears to be gaining more momentum around integrating Sustainability initiatives into the College's overall Strategic Plan. The College recently circulated a document titled "Hoʻomauō Kapiʻolani" outlining the history of the Sustainability Plan with actionable items tied to learning goals and outcomes [3]. Although not directly connected, the content gathered from our meetings with Dr. Krista Hiser and Dr. Keala Losch implies that it is quite possible that some elements around the sustainability movement could make their way into the General Education curriculum thus impacting both the Career and Technical Education (CTE) and Liberal Arts degree. However, any progress comes with a resistance to change, regardless of if it is supported by data. Those that are currently involved are committed and believe that with enough critical mass a gradual shift will result where change is the inevitable and unavoidable.

UH Mānoa

UH Mānoa (UHM) is an R1 (Doctoral granting - Highest research activity) institution. In this R1 university context, sustainability is of broad importance, spanning not only curriculum from the undergraduate to doctoral levels, but also research, extracurricular

activities, service-learning, and more. The approach for integrating sustainability into the curriculum that may be most appropriate at UHM is using a sustainability subject code (alpha code: SUST) for *cross-listing* any courses that incorporate sustainability. That way courses from undergraduate through doctoral level that address sustainability would be offered as cross-listed courses from programs all across campus. UHM currently has a list of courses with S-designations that the ad-hoc sustainability committee identified as courses that address sustainability; however, the official faculty senate process/protocol for adding an S-designation to courses has not taken place yet. In contrast to adding S-designations to courses, adding a SUST alpha code for cross-listing could be accomplished more quickly.

Through meeting with UHM faculty, it became clear that is important to think about how to incorporate sustainability into the curriculum while at the same time leveraging the strengths of each institution's unique context. Adding an S-designation and/or including sustainability in *general education* may not be the best approach for every campus.

UH Hilo

In order to meet the targets set forth in the UH System Sustainability Policy, UH Hilo (UHH) was tasked with developing a sustainability plan that addresses each of the following areas [4]:

1. Operations
2. Curriculum
3. Research and Scholarship
4. Campus and Community
5. Cultural Connections

Below are the steps UHH has taken to plan and implement the UH System Sustainability policy.

1. Appoint UHH Sustainability Planning and Implementation committee
   a. To address the UH System Sustainability policy, UHH Chancellor Donald Straney appointed Ryan Perroy as the Chair of the UHH Sustainability Planning and Implementation Committee.
2. Develop UHH Sustainability Plan
   a. The UHH drafted a [UHH Sustainability Plan](#) on Tuesday, January 26, 2016
3. Implement UHH Sustainability Plan

a. UHH currently has 29 S-designated courses, with at least 5 more courses currently in development [6].
4. Incorporate Hawai'i Papa O Ke Ao into sustainability efforts [7]
5. UHH is initiating the first steps towards the development and implementation of a UHH Flagship Certificate Program: Sustainability for Island Earth (SIE) [8]. The SIE program is an interdisciplinary program that explores sustainability through coursework in agriculture, food and energy, culture, commerce and education, and the indigenous knowledge from the Hawaiian culture as the foundation for sustainability. The certificate program is still in the development phase.

UH System

Recently, a new noun was coined by the Hawaiian lexicon committee (2016), mauo for *sustainability.* Mauo is made up of two basic words; mau, stability, unbroken continuity, and o enduring in a healthy state. Sustainability in higher education involves educational activities that support interdisciplinary dialogue between faculty from all areas, inspire research and scholarly activities, promote community engagement in local and global sustainability issues, teach students sustainability principles, skills, attitudes and ways of thinking and knowing with consistency, rigor and hope, and utilizes indigenous knowledge as a foundation for sustainability education activities.

The University, with support from Dr. Krista Hiser and Matt Lynch of the UH Office of Sustainability, has made significant progress toward achieving mauo the perpetuation of well-being across the University:

- 3 Bachelor's programs are currently offered in sustainability:
    - Bachelor's of Applied Science: Sustainable Community Food Systems at UHWO
    - Bachelor's of Applied Science: Sustainability Science Management at UHMC
    - Bachelor's of Interdisciplinary Studies: Sustainability Studies at UHM
- A system-wide "S" designation has been established, with more than 200 courses across the system listed with the designation.
- The 5th Annual Hawai'i Sustainability in Higher Education Summit was held March 16-18, 2017. The Discussions and presentations during the summit included:
    - Student Sustainability Projects
    - S-designation and Sustainability curricula
    - Science education for New Civic Engagement and responsibility
    - Strategic Energy Management

- ○ Student sustainability leadership
- ○ Meeting of Wisdoms between ancestral knowledge and modern sciences

Faculty and Student Surveys

After conducting the initial interviews, it was clear that a survey approach would not be the most effective. As the project progressed, we learned that the major aspects we needed to focus on were learning more about the hurdles to integrating sustainability into the curriculum and the uniqueness of each campus context. Therefore, the initial approach was modified and the surveys were not conducted.

Goal 2: Investigate the methods that similar state institutions are using to implement sustainability in education.

University of Vermont

UVM's sustainability requirement is intended to provide undergraduate students with knowledge of social, ecological, and economic dimensions of complex problems; developing skills in rigorous and complex discussions about solutions; negotiating multiple values; and analyzing their own experiences and actions. Beginning with the entering first-year class in fall 2015, all undergraduates must meet a General Education requirement in Sustainability. To meet this requirement, students must complete a course, curriculum, or co-curricular module prior to graduation that has been approved by the Faculty Senate's Sustainability Curriculum Review Committee.
- Learning Outcome 1 - Students can have an informed conversation about the multiple dimensions and complexity of sustainability. (knowledge category)
- Learning Outcome 2 - Students can evaluate sustainability using an evidence-based disciplinary approach and integrate economic, ecological, and social perspectives. (skills category)
- Learning Outcome 3 - Students think critically about sustainability across a diversity of cultural values and across multiple scales of relevance from local to global. (values category)
- Learning Outcome 4 - Students, as members of society, can recognize and assess how sustainability impacts their lives and how their actions impact sustainability. (personal domain)

University of Wisconsin Green Bay

UW-Green Bay's select mission recognizes the importance of a university education to promote engaged citizens. Courses that meet the sustainability requirement ensure that students gain knowledge and experience with critical social issues and problems

of sustainability, global and multicultural issues, regardless of their eventual major. Students select a course that meets the sustainability requirement at some point during their academic career at UW-Green Bay.

University of Colorado Springs

The UCCS General Education Goals approved in fall 2010 include the following:

"*Act and Interact. Students will cultivate self-awareness and understanding of their impact-locally, nationally, and globally. Students will be prepared to participate effectively in a society that encompasses diverse experiences, perspectives, and realities. This area includes [among others]: Sustainability-understanding the interaction between human development and the natural environment*"

In order to achieve the terms of this goal, students learn about key principles of sustainability including social equity, environmental protection, and economic development, among others. The sustainability General Education goal will be achieved by integrating teaching about sustainability within discipline-specific coursework and/or other General Education components, or in general elective courses.

Integrated content and/or courses will vary across disciplines and will examine the integrative nature of the sustainability concept to their disciplinary work. Ideally, students will gain knowledge about how to promote sustainability in their place of employment (e.g. support diversity, environmental activities such as recycling, reduction of waste, etc.).

San Francisco State

There are four SF State Studies requirements that students must meet: American Ethnic and Racial Minorities (AERM), Environmental Sustainability (ES), Global Perspectives (GP) and Social Justice (SJ). Courses certified as meeting the SF State Studies requirements may be upper or lower division, may be in General Education, a major or minor, or may be an elective.

Oberlin College

At Oberlin College sustainability is defined as: "Meeting the needs of the present without compromising the ability of future generations to meet their own needs". The core mission of Oberlin College is the education of its students. For the college to achieve this mission, it requires meeting the needs of the present without compromising the ability of future generations to meet their needs. As such, the

College has embraced sustainability and is fully committed to incorporating sustainability into its curriculum, research, and operations.

Additionally, Oberlin College has partnered with the City of Oberlin and private and institutional partners in a joint effort called the Oberlin Project to improve the resilience, prosperity, and sustainability of the community. The initiative aims to:
- Revitalize the local economy.
- Eliminate carbon emissions.
- Restore local agriculture, food supply and forestry.
- Create a new, sustainable base for economic and community development.

Oberlin utilizes the Sustainability Tracking, Assessment & Rating System (STARS) which was developed by the Association for the Advancement of Sustainability in Higher Education (AASHE). Oberlin was a charter member of AASHE. The college offers sustainability-related and sustainability-focused courses, but does not have a sustainability requirement.

Goal 3: Determine the assessment methods used to monitor the progress of programs implementing sustainability in education.

Sustainability means, in general, "serving the needs of the present without jeopardizing the needs of the future," while addressing the four pillars of sustainability:
1. Cultural vibrancy
2. Economic prosperity
3. Environmental responsibility
4. Social justice

The University of Hawaiʻi system has agreed that the Key Competencies in Sustainability as outlined by Arnim Wiek, et al, 2011 [9] provide a strong starting point for program-level development and assessment. The key competencies are:
1. Systems thinking competence
2. Futures thinking competence (Anticipatory thinking)
3. Values thinking competence (Normative thinking)
4. Strategic thinking competence (Action-oriented thinking)
5. Collaboration competence (Interpersonal thinking)

In goal 3 of our project, we wanted to investigate assessment methods used to evaluate sustainability programs in higher education. The first step was to define

sustainability in the institution or campus. Based on our findings from goal 1, it was determined that each UH campus approaches sustainability in a manner that will leverage the strengths of their particular faculty, staff and student body. Therefore, each campus should develop sustainability education and curriculum accordingly. Consequently, the method(s) used to assess sustainability education and curriculum will have to be tailored to each UH campus.

The next step in developing an assessment to evaluate sustainability programs on each UH campus is to define the plan, metrics and goals of the program. The rationale for the sustainability program must be defined by determining why we need the program. The goals and intended outcomes of the sustainability program must be identified. The types of activities and actionable steps that will be used to address each goal must be planned. The materials and resources that will be utilized to address each goal must be identified. Finally, we must determine the output that we hope to produce from achieving each goal (e.g. tools for achievement of outcomes, training courses delivered, resources produced, etc.), the outcome that would be achieved by the program (e.g. possible changes brought about by the program at the University level, how the program enhanced student education or professional development of the faculty and staff, etc), and the overall impact of the sustainability program (e.g. everything that accrues from the program).

After we define the rationale, goals, activities, inputs, outputs, outcomes and impacts of the sustainability program at each campus, each campus will need to determine the type of evaluation to be used.

Define the type of evaluation to be used
- Do you want to focus on the outcomes of the program? Do you want to gather information during the programme to review progress and make judgements as you go along (Formative evaluation)?

- Do you want to focus on the outcomes of the whole process? Do you want to make judgements about the overall effectiveness of the programme (Summative evaluation)?

After determining the type of evaluation that will be used, the sustainability committees at each campus should determine the approach they will use to evaluate the program at their campus. Several things to consider when determining the approach include:

1. Deciding who will be included in the evaluation (e.g. staff, facilitators, participants, volunteers, partners, users, others)
2. Deciding what kind of data you need to collect
    a. Qualitative: descriptive or narrative data based on experiences and perceptions
    b. Quantitative: numerical data based on scores and frequencies
3. Determining the method of assessment (e.g. user-friendly, time-efficient, cost-effective, number of sample to be useful and representative)
4. Determine the validity of method of assessment: does your method or tool measure what is supposed to measure?
5. Determine the reliability of the assessment method: Is this reproducible if the same method or tool was used to assess the same group at the same time.
6. Incorporate triangulation: to reduce bias, use more than one method of collecting information and gather views from different groups of respondents. (e.g. questionnaires, direct observations, face to face interviews, focus groups)

Data Analysis:

Upon completion of the assessment, the information will be analyzed. While analyzing the information, we should ask the following questions:

1. Did we achieve our aims and objectives?
2. Did participants meet their own objectives?
3. Did partners meet their objectives?
4. Were the approaches or learning activities appropriate?
5. What else did we learn?
6. What else happened that was significant?
7. What might we do differently?
8. What will we do next?
9. What are the strengths of our program and how do we improve or build on this?
10. Do we need to review priorities and resources?

Data analysis involves determining how to organize, synthesize, compare and present the assessment results. These are guided by the questions we ask, the assessment method, and what information we hope to gain from the evaluation of the program. Information may be interpreted in various ways. Therefore, discussing the data in groups and involving others in reviewing the results will result in a greater understanding of the outcomes and impacts of the sustainability program through different perspectives. Statistical analysis of the assessment data could be performed using statistical software packages such as Igor Pro and IBM Statistical Package for the Social Sciences (SPSS).

Available assessment tools:
1. Program Sustainability Assessment Tool: https://sustaintool.org/assess
2. Evaluation of PSAT for public health programs:
   https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3900326/
3. Sustainability Assessment and Management: Process, Tools and Indicators
   https://www.nap.edu/read/13152/chapter/6

Recommendations

Recommendation 1: Clearly articulate and disseminate a definition of "sustainability" to set the foundation for a coherent representation of sustainability throughout the University of Hawaiʻi system.

While interviewing Sustainability committee members from different campuses, as well as other faculty, staff and students, it became apparent that the definition of sustainability was different for each person. In order to determine the appropriate method to assess the progress of a sustainability program in education, "sustainability" must be clearly defined. The majority of the people who were interviewed defined sustainability as environmental sustainability, indigenous sustainability or social justice. The three definitions of sustainability are described below.

1. Environmental Sustainability

   Ensure steady improvement in the quality of life for this and future generations, in a way that respects our common heritage – the planet we live on. Education for sustainable development challenges individuals, institutions and societies to view tomorrow as a day that belongs to all of us, or it will not belong to anyone. Put simply, sustainability is about reducing our ecological footprint while simultaneously improving the quality of life that we value, the liveability of our society. Education for sustainability is oriented in both the present and the future. It involves learning to design and implement actions for the present, in the knowledge that the impact of these actions will be experienced in the future. This leads to students developing an overall capacity to contribute to a more sustainable future in terms of environmental integrity, economic viability and a just society for present and future generations.

2. Indigenous knowledge as the foundation of indigenous environmental sustainability education.

   Indigenous knowledge is local knowledge that is unique to a culture or society, which is passed on from generation to generation by mouth and cultural rituals. This has been the basis for the sustainability of societies in many parts of the world. Indigenous people have a broad knowledge of how to live in a way that is sustainable. Formal education systems have disrupted the everyday aspects of indigenous knowledge and ways of learning. Formal education has replaced indigenous knowledge with abstract knowledge and academic ways of learning. There is a grave risk of losing indigenous knowledge including knowledge about ways to live sustainably. Indigenous sustainability is:

   a. To appreciate indigenous perspectives on ways of living together and using resources sustainably.
   b. To appreciate the role of indigenous knowledge and traditional ways of learning in maintaining the sustainability of a community.
   c. To understand the role of modern education in undermining indigenous knowledge and ways of teaching and learning.
   d. To identify opportunities for integrating relevant aspects of indigenous knowledge and approaches to teaching and learning in a school curriculum.
   e. To integrate Indigenous knowledge into education and thereby, bring the benefits of helping to sustain indigenous.

3. Social Sustainability

   A pervasive ethnic and racial disparity in education follows a pattern in which under-represented minority groups such as Native Hawaiians and Pacific Islanders underperform academically, compared to non-minority groups. There are programs that address this education disparity. Sustainability education could address disparities in education and social sustainability.

Such disparate interpretations of sustainability could result in frequent miscommunication, competing agendas, and strained relationships. To mitigate this potential, the University should clearly define "sustainability."

Recommendation 2: Capitalize on the momentum of ongoing sustainability efforts across the system to organically transform curriculum through sustainability, rather than establishing a sustainability requirement.

Based on our interactions with various UH stakeholders, it became painfully apparent that formally incorporating an "S" requirement into the existing General Education curriculum requirements was not realistic. General Education committees are currently dealing with higher priority, long-standing issues. In some cases, simply adding the "S" designation, let alone making it a requirement, is an arduous process that could take months, if not years to accomplish. And, as is the case with any new proposal, there is prevalent resistance to change. People fear change and this will be a major obstacle to implementing sustainability education. Establishing an "S" requirement would require existing courses to be altered to meet the "S" designation or new courses to be developed. This will certainly be met with opposition from faculty.

Moreover, the very concept of establishing an "S" requirement seems to run in contrast to the fundamental nature of the sustainability initiative. Advocates for sustainability in the curriculum are adamant that an opt in approach needs to be taken. Dr. Krista Hiser notes that the "S" designation is not about the designation, but about the process. She states, "the designation is merely a mechanism for stimulating interdisciplinary dialogue, peer-to-peer development, and discovery of creative solutions."

Although the opposition to change will continue to persist, there are pockets within the system where change has been successfully implemented. The number of "S" designated courses continues to grow and new certificates in sustainability are being developed. At the recent Hawai'i Sustainability in Higher Education Summit, a "Meeting of Wisdoms" to explore the relationship between ancestral knowledge and modern sciences as it relates to sustainability. The UH Office of Sustainability is collaborating with Manulani Meyer of UHWO and Hui 'Ike Hawaii to discover what it means for sustainability to embrace indigenous wisdom. Thus, a momentum is building and the University needs to be prepared to capitalize on it.

Recommendation 3: Coordinate the efforts of UH's sustainability initiative and the Hawai'i Papa O Ke Ao initiative to implement a unified, synergistic solution.

It may be appropriate for some UH campuses to develop sustainability education through a strictly environmental sustainability perspective. The majority of the

students, faculty and staff at these campuses may perceive environmental sustainability as separate and distinct from the goals of Hawai'i Papa O Ke Ao.

However, Hawai'i Papa O Ke Ao is a UH systems initiative. Sustainability education is also a UH systems initiative. In order to address both initiatives successfully, it is imperative that they are both developed in a way that is synergistic rather than antagonistic.

For example, if sustainability is developed as a separate and distinct initiative from Hawai'i Papa O Ke Ao, it may succeed. However, eventually the administration will attempt to address Hawai'i Papa O Ke Ao in sustainability curriculum. This will be faced with opposition by faculty because the curriculum will have to be changed. People fear change and it will be a major challenge trying to integrate the two initiatives after they are developed separately.

If sustainability education is developed while simultaneously addressing Hawai'i Papa O Ke Ao, the efforts will be synergistic. In other words, the curriculum has to be developed, and developing sustainability curriculum using indigenous knowledge as a foundation will address both initiatives simultaneously. In addition, this would address educational disparities and social sustainability.

Conclusion

Our investigation of the integration of sustainability and education in the UH system has led to further questions to be explored: What does sustainability mean to the campuses and the UH system? How does the UH system approach adding new General Education requirements? Specifically pertaining to sustainability, a centralized hub may be helpful that reaches out to the individual campuses in order to have a collaboratively built set of definitions and approaches for the integration of sustainability (indigenous efforts). This effort would aid in the unification of efforts across campuses. As these efforts are carried out, one specific hurdle to be mindful of is resistance to change (cultural and workload for faculty). It will be important to develop Informed decision makers at each campus who will help communicate a singular goal.

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