SUSTAINABILITY: PERSPECTIVES OF STUDENTS AS STAKEHOLDERS IN THE CURRICULUM

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When groups become institutions, the individuals are often lost, but my professional home, “Community College of the Pacific” is sincerely driven by the

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ABSTRACT

Institutions of higher education are increasingly engaged in sustainability efforts, both in classrooms and on the campus. Yet, little is known about what students really know and believe about sustainability issues. Using Lattuca and Stark's (2009) curricular frame and a single case study approach, this research explored student and non-student stakeholder perspectives on sustainability in a community college setting in Hawai'i. Students were interviewed using a focus group methodology to discern group norms around sustainability. Research questions focused on student attitudes and habits, as well as what they knew about sustainability and where they had learned it. Emphasis was on the perspectives of local public high school graduates in their first and second year of college; nonresident students from foreign countries and the continental U.S. were also included.

Focus groups of non-student stakeholders (administrators and faculty) were also conducted around the question, "what should students be learning about sustainability?" These participants discussed the most effective areas in which to concentrate sustainability efforts, such as curriculum, operations, research, vision, and faculty development. Faculty and administrators had differing perspectives; faculty were most interested in teaching values and behavior change, while administrators expressed interest in a more holistic curriculum.

Student data was analyzed across two spectrums, from low to high engagement and from weak to strong sustainability practices, creating four categories: cultural habits, sustainability habitus, karmic retribution, and dissonance. The study's central findings are that students have greater knowledge but less interest in sustainability than generally

perceived. First year students had experienced sustainability curricula in high school, but home and culturally based practices appeared to have greater impact. Second year students experienced sustainability content in a wide range of college courses, but expressed more confusion than first year students. All resident student groups expressed overall feelings of disempowerment and hopelessness. Implications from this work include: the use of an affective, multisensory curriculum; more coherent sequencing of sustainability experiences in academic curriculum; cooperation of classroom and campus to reinforce learning; and a shift away from problem-oriented curricula toward a leadership development model that instills entrepreneurial attitudes of resilience, optimism, and self-efficacy.

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CHAPTER 1. INTRODUCTION

Rationale for the study

Institutions of higher education have discovered a passion for all things "green." Widespread social consciousness about environmental issues such as global warming, peak oil, natural resources, and loss of biodiversity has increased pressure from external stakeholders in the academic curriculum to ensure that students develop the skills, habits, and attitudes to function effectively toward an uncertain future. The learning outcomes of higher education are in a state of transformation, responding to the temporal context of what former French president Jacques Chirac called "the historic threshold of the irreversible." Futurists at the Tellus Institute project variant scenarios of the year 2100, exploring responses from market-based status quo, governmental policy reform, and deeper militarization by using what they call the "Great Transition" model:

> The world now faces multifaceted and interacting environmental, resource, and social problems, an inauspicious point of departure for all scenarios. The global trajectory can branch in alternative directions in the coming decades, depending on how bio-physical and cultural stresses manifest themselves and how society responds. The destiny of both people and planet rest ultimately with human choice as we anticipate and respond to crises and seize opportunities for positive transformation. Will our actions be tardy and tepid? Or timely and consequential? (Raskin, Electris, & Rosen, 2010, p. 2647)

There is an X factor that determines how quickly and how dramatically projected environmental impacts may occur. That factor is education. To ensure a livable future, the current generation will need a new skill set. According to Odum and Odum (2001),

> [today's college students will need to know how to] …foster the regeneration of natural capital of soils, forests, watersheds and wild areas; clean up the toxic messes from the expansionist phase; restore sustainably habitable cities; relearn the practices of good farming; learn the arts of powering civilization on efficiency and sunlight. (p. 262)

David Orr (2002), an outspoken proponent for curricular transformation toward sustainability, says that today's students deserve to receive "education appropriate to their

future" (p. 1460). However, as laudable as campus sustainability initiatives usually seem to be, curricular change that is haphazardly implemented and poorly assessed proves ineffective in sustainably utilizing campus resources and improving student learning. Stakeholders in higher education will benefit from a greater understanding of student learning outcomes related to global environmental issues and sustainability. This information will be helpful in focusing campus efforts and resources toward the implementation of the curricular change effort known variously as Education for Sustainability (EfS), Education for Sustainable Development (ESD), and Learning for Sustainability (LfS).

Purpose of the study

The purpose of this study is primarily to assess the knowledge, attitudes, and behavioral norms related to sustainability among the student population at one community college campus in the University of Hawai‘i's ten-campus system. (To maintain the anonymity of the college, it will be pseudonymously referred to as Community College of the Pacific, or CCoP.) This study assesses the impact of the many sustainability initiatives, both in campus facilities and in the academic curriculum, that are being swiftly implemented at CCoP and, similarly, at two-year and four-year colleges across the nation. This study provides useful data to help other colleges to decide which sustainability initiative(s) to implement for greatest impact on student learning and determine factors to consider when designing curricula related to sustainability.

Organizational statement

Chapter 1 provides an overview of the current state of sustainability in the college curriculum, the problem under study, Hawai‘i's unique framework for sustainability, and the broader context of the sustainability paradigm. Research questions and hypotheses are introduced, and gaps in the current research on sustainability across the curriculum (most notably, assessment of student learning about sustainability) are cited as a rationale for a more in-depth look at how students experience and respond to sustainability initiatives on and off campus. Definitions and concepts related to sustainability are described at length, and the parameters of the terms "sustainability" and "curriculum" are defined.

Chapter 2 provides an overview of the literature, describing the relationship of higher education to sustainability, and the characteristics of community college students. National campus efforts in both facilities and academic curriculum are explored, along with the emergence of academic programs, certificates, and degrees in sustainability. Existing research on student learning about sustainability is summarized; in particular, the need for an affective component to the curriculum is noted. In addition, relevant scholarship in Native Hawaiian epistemologies and "place-based" learning is explored. Each chapter includes a section focusing on Hawai'i, to provide a particular lens to interpret the study through the "sense of place" paradigm; however, the study can also be read as a case among national community colleges. The situatedness of the college under study invites a unique intertextuality within the broad, timely, and sometimes controversial issue of sustainability in the curriculum.

Chapter 3 describes the theoretical framework of the study based on Lattuca and Stark's (2009) Academic Planning in Context model. The interaction of Learners (their characteristics, goals, and abilities), Sequence, Institutional Resources, and the Educational Environment are explored as impacts on student learning. In addition, Chapter 3 describes the site under study, data collection instruments, research design and methodology, limitations of the study, and the background, role, and biases of the researcher.

Chapters 4 and 5 report findings from student stakeholders (Chapter 4), and non-student stakeholders (Chapter 5). To the extent possible, the voices of respondents are preserved in the findings. Emergent themes of cultural habits, "sustainability habitus," karmic retribution, and dissonance are discussed in Chapter 4, and in Chapter 5, faculty and administrators compare the efficacy of sustainability initiatives in relationship to organizational components such as operations, curriculum, vision, and professional development. Chapter 6 re-views the study through the lens of Lattuca and Stark's (2009) Academic Planning in Context model and suggests sustainable implementation of sustainable practices in curriculum, as well as for pedagogy and campus facilities.

Background: Sustainability and Institutions of Higher Education

Institutions of Higher Education (IHEs) first became involved with sustainability through international policy movements and the leadership of top administrators in both government and higher education. In 1987, the United Nations' Bruntland Report introduced the now common definition of sustainability as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations, 2007, p. 1). The Bruntland Report laid the groundwork for the Earth Summit in 1992, where 30,000 participants, including over 100 political leaders, gathered to discuss global sustainable development, defined then as "a bridge concept connecting economics, ecology and ethics" (United Nations, 2007, p. 2).

In 1990, in between Bruntland and the Earth Summit, the president of Tufts University convened 22 college presidents and chancellors in Talloires, France to "discuss their understandings of the planet's deteriorating environment and come up with solutions that they could offer." This group determined that "universities educate most of the people who develop and manage society's institutions. For this reason, universities bear profound responsibilities to increase the awareness, knowledge, technologies, and tools to create an environmentally sustainable future" (Brodie, 2006, p. 2). They determined that IHEs bore responsibility to "focus their schools' attention on the critical issues by speaking out, acquiring new and mobilizing existing resources, creating incentives and programs for faculty development, and fostering interest in these issues" (ULSF, 2010, para. 1). This group of higher education leaders created the Talloires Declaration, which expresses these intentions of IHEs to transform in response to the sustainability movement. Over four hundred universities have signed the Talloires Declaration (ULSF, 2010).

Sustainability is an international movement in higher education. The United Nations Educational, Scientific and Cultural Organization (UNESCO) declared 2005-2014 the Decade of Education for Sustainable Development (ESD), with the aim of helping people "develop the attitudes, skills, and knowledge to make informed decisions for the benefit of themselves and others, now and in the future, and to act upon these decisions" (UNESCO, 2010, p. 13). Since the Talloires Declaration and the United

Nations' "Decade of ESD" challenge, several other documents have been crafted, allowing leaders in higher education to express a commitment to sustainability. In the United States, the Presidents' Climate Commitment is most well-known for the expressed commitment to attain carbon neutrality in campus facilities, but it also acknowledges the need for higher education to "reorient its curriculum to formally prepare students and thus society with the knowledge and skills necessary to address the critical, systemic challenges faced by the world in this new century" (ACUPCC, 2010, p. 1). There are currently over six hundred signatories to the Presidents' Climate Change agreement. External stakeholders, including accrediting agencies, community members, government, and workforce, have all begun to exert pressure on two and four-year colleges to respond to the issue of sustainability in campus operations as well as in the academic curriculum. Myriad organizations such as the Association for the Advancement of Sustainability in Higher Education (AASHE), University Leaders for a Sustainable Future (ULSF), Second Nature, and College Student Educators International, have attempted to synthesize and publicize the important progress that has been made toward generating a coherent and significant response from IHEs.

Brodie (2006), however, found that signatories to the Talloires Declaration, despite honest intentions, made slow progress toward implementation. Haigh (2005) argued that actual delivery of programs and "winning the hearts and minds of university communities" are still obstacles to be overcome before environmental sustainability on campuses can become a widespread reality. A survey of college administrators revealed that "despite all the talk of climate change, environmental degradation, energy costs, and other issues related to sustainability…teaching and learning about sustainability has been in decline" (Carlson, 2008, p. 25). The National Wildlife Federation's Campus Environment 2008 report, the most comprehensive analysis of sustainability in higher education to date, found that sustainable campus operations were flourishing but that the academic curriculum was not keeping up with the transformation in the campus environment. In short, despite two decades of good intentions, no coherent "sustainability curriculum" exists; the college curriculum remains largely the same. The rigid disciplinarity of academic discourse communities has been maligned as a root cause of our planetary predicament. Orr (paraphrasing Einstein) is widely quoted as saying that

"The crisis cannot be solved by the same kind of education that helped create the problems" (Barlett & Chase, 2009).

Community college students

Community colleges may have a unique role to play in developing the sustainability curriculum. In fact, the Board of Directors of the Association of Community Colleges supports the United Nations' "Decade for ESD" (Rowe, 2005). As the front line institution for more than half of the nation's first year students, community colleges interact with the widest swath of the nation's population. Community colleges serve students with an unmatched diversity of ages, backgrounds, preparedness, and educational goals. As Gail Mellow (2008), president of LaGuardia Community College in New York, said, "What has become clear is that nontraditional students have become the tradition at community colleges" (p. 258). Mellow suggests that the term "nontraditional" be replaced with what is "now traditional" for community colleges. These "now traditional" students carry a particular set of characteristics that may impact their interactions with sustainability initiatives.

Fact: Community colleges are diverse and service a higher proportion of minority students. Nationally, the average age of a community college student is 26 and more students tend to be female.

Fact: A new demographic pattern is emerging with the influx of post 9/11 G.I. Bill students; this is of interest because community colleges were essentially formed out of the original G.I. Bill, which provided tuition for veterans returning from the war in Vietnam.

Fact: Community college students work part or full time, care for relatives and children, and juggle multiple responsibilities.

Fact: Community college students have lower SAT scores and test into remedial courses (Bailey, 2004, p. 26). At some colleges, this number is as high as 90% (Valencia); at the same time, some systems, such as the CUNY system, are removing remedial and developmental education not just from 4-year but also from the community colleges, referring remediation further "down" to adult education programs.

Fact: Enrollment is rising at community colleges. Nationally, 54% of all first year students attend a community college (Mellow, 2008); almost twice as many first year

students enroll at two-year as at four-year colleges. In areas heavily impacted by recent economic turmoil and increasing unemployment, two-year college enrollments rose even when four-year enrollments remained stable. In addition, community colleges are often more responsive and responsible to meet workforce needs, and students have a more employment-oriented motivation to enter a two-year college.

Fact: Success rates in community colleges have always been despairingly low, and they are getting worse. According to longitudinal Integrated Postsecondary Education Data System (IPEDS) data, between 35% and 42% of community college students do not have a degree or certificate six years after starting. Minority students fare even worse. For example, when looking just at Native Hawaiian students in community colleges nationally, 65.4% of them drop out within three years (Hagedorn, Lester, Moon, & Tibbets, 2006). The high attrition rate among community college students has invited new data-driven assessment initiatives, such as the Achieving the Dream project, which studies 22 community colleges with the goal of increasing college success numbers.

These demographic facts about community colleges are relevant because of their consistency across the country. But there is a shortfall to demographic information: while it can depict some interesting patterns, demographic data has not thus far provided solutions to the intractable issues of retention, transfer, and student success. Community colleges labor under new contraints, including data-driven assessment and performance-based funding. These changes are largely driven by President Obama's initiative to increase national graduation and completion rates by 5 million additional degrees, or 50% (Jaschik, 2009). While increasing graduation and transfer rates sounds good, these mandates run counter to some of the values inherent in a sustainability curriculum, as well as those of an open-access institution. EfS calls for flexibility, collaboration, and expansion in the curriculum; at the same time, community colleges are becoming more narrowly focused, with funding closely tied to transfer and graduation rates and career pathways.

College stakeholders, mainly faculty, resist these trends, citing three main reasons: students attend multiple institutions throughout their academic career; students have multiple purposes for attending college; and student success is inhibited by family, work, economic, and personal issues – all of which are outside the control of individual

colleges (Bailey, Calcagno, Jenkins, Kienzel, & Leinbach, 2005, p. 26). Therefore, a successful sustainability agenda will need to account for the current national paradigm that emphasizes assessment, data, persistence, and completion rates.

Kasworm (2005) suggests that the tendency to study student characteristics through demographic factors alone commits an "ontogenetic fallacy" defined as "the practice of treating socially produced and patterned phenomena as rooted in characteristics of the individual organism" (p. 10). Rather than analyzing cumulative characteristics of students, research is needed that values students' individual self-perceptions and navigation of socially constructed identities that operate both on and off campus. This approach has stimulated interesting research. Kim, Sax, Lee, and Hagedorn (2010) used student self-identification to create new insights; for example, rather than just looking demographically at the fact that 70% of community college students work part- or full- time, they discerned a difference between "students who are employees" and "employees who are students." The former group is more likely to skip class, and the latter is unlikely to speak up in class. Understanding subtleties in how students see themselves adds depth to what is known about community college students.

Shaw (1999) observed that community college students struggle with their own self-definition according to 1) roles (employee, spouse, parent, caretaker) and 2) social categories such as race, culture, and gender. These elements contribute to a self-image that is "multifaceted, situation-specific, and fragmented" (p.153). Recognizing this complexity and the fluidity of their identities supports the success of community college students. In addition, Kasworm and Blowers (1994) believe that "adult student identity and agency [is] anchored within these students' contextual beliefs of the mission and goals of community colleges as places of "second chances" (p. 8). Sustainability may offer a new type of "second chance" for community college students – many of whom may respond well to the type of problem-based, active learning strategies typically espoused in sustainability and place-based curriculum design.

Community colleges and sustainability

Curricular options such as certificates, minors, or degrees in sustainability are one form that sustainability may take in the community colleges. The Association for the Advancement of Sustainability in Higher Education (AASHE) website lists only six

traditional community colleges with Associates in Science (AS) degrees related to sustainability; these seem primarily focused on energy technologies. There are 23 Bachelor of Arts (BA) degrees listed, and 23 Bachelor of Science (BS) degrees. (Colleges self-report their programs to be listed on the AASHE website, so this list may not fully represent the national range of degree programs). The BS degrees focus more on ecology and science, while the BA degrees emphasize interdisciplinarity and a public policy perspective. The two-year college AA and AS degree programs, not surprisingly, tend to emphasize technical training related to jobs in the new "green economy."

Over seventy percent of businesses surveyed said that "sustainability knowledge" will be an increasing factor in hiring college graduates (Cortese, 2010). However, Williams (2009) found in his dissertation on the institutionalization of sustainability in community colleges that "little to no" research had been done on this setting, and that "there appears to be tremendous opportunity to gain a greater understanding of the success of sustainability programs at both two-year schools and four-year schools, and to attempt to translate this into applicable meaning for other two-year schools" (p. 10).

Wright (2009) similarly asserts that "there are few studies to date that investigate the level of sustainability knowledge of the major stakeholders within the university" (p.1). In order for sustainability curricula to be effective, all campus stakeholders such as faculty, administrators, community and workforce partners — and students — need to share common knowledge about sustainability in order for learning to translate into effective action.

Community colleges as learning colleges

Barlett and Chase (2004) believe that the process of designing sustainability curriculum can bring diverse campus stakeholders together, but their book *Sustainability on Campus* contains faculty stories of disappointment, frustration, and small gains after years of work to design sustainability curricula. One chapter describes ten years of complex political maneuvering on campus to create a sustainability course requirement. Another describes the arduous process of designing a Leadership in Energy and Environmental Design (LEED) certified campus building. Although administrators may sign declarations or make bold statements in the college mission, vision, or other documents, actually implementing sustainability initiatives is not so easy. The use of

faculty narratives in Barlett and Chase's work reveals the limitations and struggles to truly transform campus culture, organization, operations, and curricula. In a chapter in *Sustainability on Campus* where he describes his work at Oberlin College, Orr (2004) writes: "Can institutions of higher education become learning organizations? On Mondays, Wednesdays, and Fridays, I am inclined to think so. On alternate days, I am not so inclined" (p. 174).

Justification for the study

The dearth of emphasis on community colleges as locations for sustainability curricula is one gap in current research on EfS. Another gap, surprisingly, is that very little research to date has looked at EfS from the perspective of students as stakeholders in their own learning. Scott and Gough (2006) voice this concern:

> Just because educators have identified given educational content as important, or even essential, it does not follow that learners will be willing to learn it. Whenever possible, "what learners want" is likely to be a more effective starting point for curriculum design than "what teachers are worried about." (p. 80)

Enthusiasm for all things "green," if not accompanied by thoughtful inquiry, can lead to haphazard implementation and inadequate assessment of new sustainability curricula, dooming them to failure or marginalization. This study hopes to aid faculty and administrators in understanding exactly what students know about sustainability and global environmental issues, what habits they have developed in response, and their attitudes toward sustainability and their own future on this planet. Discerning differences between what students learn in a classroom versus elsewhere – on campus, in co-curricular activities, from media, or in their personal lives, will help faculty design and assess coordinated curricular changes, and aid administrators in using campus resources effectively. This study might help with other important questions about sustainability as an educational practice: Do students interact with sustainability through cultural curricula, service-learning projects, or campus design and initiatives such as worm composting, gardens, and recycling? How deeply is sustainability currently integrated (formally or informally) into Science, Technology, Engineering, and Math (STEM) courses, liberal arts courses, and vocational courses?

This study proposes a very specific starting point to assist internal campus stakeholders in understanding student learning about sustainability. To design sustainability curricula, faculty and administrators must place themselves off-balance, as today's adolescent students are, with one foot in a confusing present and the other moving toward a precarious future. A greater understanding of what students know, do, and feel about sustainability will help stakeholders explore the gap between what faculty and administrators *want* students to know and what they are actually "learning, feeling, and doing" about sustainability in college today. This "snapshot" of current student learning provides insight on effective curricular change and pedagogical methods; the study is unique in that it focuses on the knowledge, habits, and attitudes of students as stakeholders in the curriculum.

Overview of site and participants

Community College of the Pacific (CCoP) is the largest community college in the University of Hawai'i system, with over 9,000 students. The student population is diverse and "now-traditional," including international and nonresident students as well as state residents. It is hypothesized that graduates of local public high schools know less about sustainability than international/nonresident students and that first year and second year students have different degrees of knowledge about sustainability. For the CCoP, this research uses student learning as a benchmark to measure future curricular changes related to EfS. The study provides recommendations for implementing and assessing sustainability curricula from a learning-centered perspective. Limitations of the study (discussed in Chapter 3) include the facts that the study is not able to follow students over time, in a longitudinal design and that the sample size and single campus design preclude generalization to other contexts.

Research questions[1]

1. What knowledge, habits, and attitudes about sustainability do current community college students have? (What do *learners* know, do, and feel?).

[1] Parenthetical questions use terms corresponding to Lattuca and Stark's (2009) Academic Planning in Context model.

2. Where have they learned their current knowledge, habits, and attitudes about sustainability? (What *instructional resources and processes* influence student learning about sustainability?).
3. What do internal, non-student stakeholders think students should learn about global environmental issues and sustainability in the academic curriculum, and where should they learn it? (In terms of the theoretical framework, what *purpose* has been defined in regards to the role of sustainability in the academic curriculum?).

Definition of terms and concepts related to sustainability

This research focuses on sustainability across the curriculum. Both "sustainability" and "curriculum" are complex and potentially loaded terms, and tracking current terms, definitions and conceptualizations of "sustainability" is difficult. (A glossary of terms used in this paper, with citations to their use in the literature, is contained in Appendix A: Glossary of Terms). Original models grew out of business practices that sought to incorporate the "triple bottom line" of "people, planet, and profits"; thus, sustainability originally referred to a sort of sweet spot where everybody got what they needed.

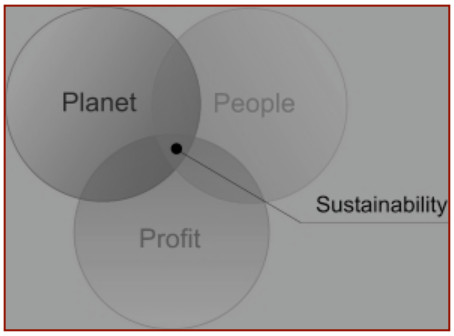

Figure 1: Triple Bottom Line

Social activists and indigenous groups emphasized the importance of social and cultural sustainability, leading to the "four pillars" model of sustainability embodied in the *Earth Charter* (2009), which states, "We must join together to bring forth a sustainable global society founded on respect for nature, universal human rights, economic justice, and a culture of peace" (para.1). These four pillars refer to cultural

vitality, economic health, and social equity dimensions that must complement environmental sustainability.

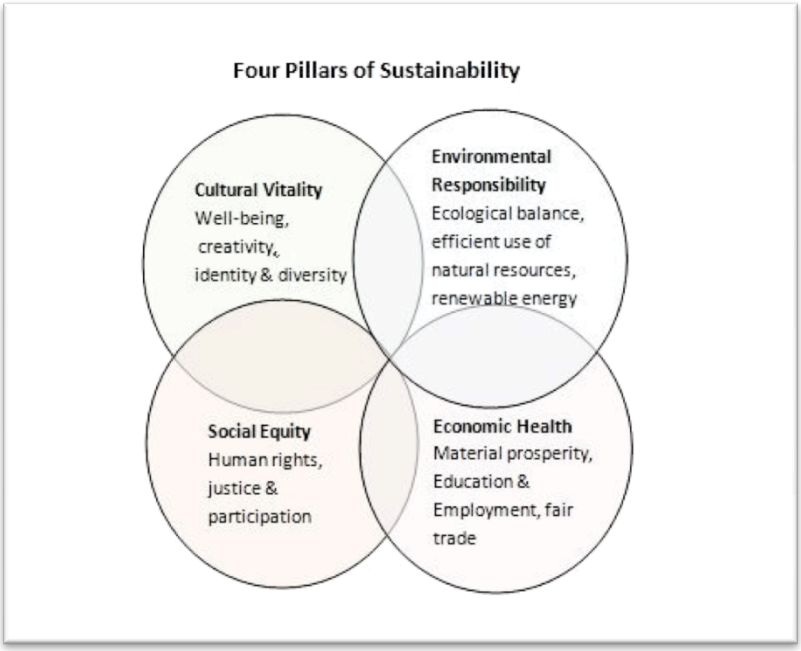

Figure 2: Four Pillars of Sustainability

Kahn (2010), Wright (2010) and others express suspicion with the paradox of "sustainable development" that underlies the "triple bottom line" model and UNESCO's Decade of Education for Sustainable Development (ESD). While recognizing that the terminology is politically loaded, this study intentionally uses the term Education for Sustainability (EfS) when describing existing efforts and the emerging term Learning for Sustainability (LfS) when envisioning future efforts.

Emerging models of sustainability seek to emphasize the dependence of human beings on the environment, not the other way around. Nature becomes not just something to "protect, preserve, and enjoy" as the classic Sierra club motto exhorts, but an external mirror of our internal life forces. The blood and breath inside a human body are not just metaphorically, but actually, connected to the rivers and trees of the biosphere. James Lovelock embraces this concept in his development of Gaia theory, as does philosopher Ken Wilber in *Sex, Ecology, Spirituality* and David Abrams in *The Spell of the Sensuous*. Current models of sustainability emphasize this human/nature interdependence and include the Egg of Sustainability or the Egg of Wellbeing. According to Wright (2009), in this model "the economy is considered only one subsystem of the human system

(others include health and well-being, governance, knowledge, community) and is thus not given equal weighting as is the impression given in the traditional model" (p. 107).

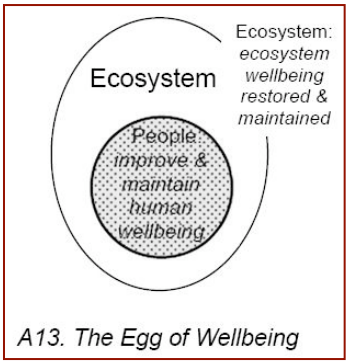

Figure 3: Egg of Wellbeing

Sustainability is related to a wide range of interconnected global issues; it is not just simple solutions and slogans like "reduce, reuse, recycle." The Union of Concerned Scientists (2010), for example, presents a unified outlook that accepts the reality of serious global problems – not just global warming, but species extinction, the vulnerability of the global food supply, the need for clean energy and transportation, and the threat of nuclear weapons on global security. An emphasis on holistic thinking and ecological interconnection has long been a key component of the scientific environmental literacy movement and remains a cornerstone of sustainability thinking.

Sustainability also has an affective component with spiritual overtones. Kelly (2009) suggests that instead of asking "what is sustainability?" teachers and students should be asking "what sustains us?" in order to refocus attention on "everything from the basic necessities of air, water, food, and shelter to beauty and love as well as livelihoods, education, religion, and healthcare" (p. 5). Kelly's inclusive definition of sustainability echoes the term introduced by Edwards (2009), who describes a paradigmatic shift from "sustaining" to "thriving". According to Edwards (2009), thriveability "challenges us to expand our imaginations and create the future we want for ourselves and for future generations…. [It] supports actions that regenerate natural systems and our quality of life" (p. 4). In this sense, the scope of this study is quite large. Do students learn how to live a "thriveable" life by going to college? Who defines quality of life? How do you assess whether a student has learned enough to contribute to a "thriveable" future? What, in fact, does the future hold? *Everything* is part of the

sustainability paradigm. Thus, limits to the terms and concepts of the study are required. For the purposes of this study, I use the four pillars definition of sustainability as a relatively well-known baseline definition that emphasizes the interconnection of economic, political, social, and environmental factors.

Kagawa (2007) discovered that students had a limited understanding of the four pillars definition of sustainability. They were familiar with the components of ecological sustainability but less able to integrate global issues as economic, political, and ethical matters. The environmental pillar of sustainability may be more pronounced in the current academic curriculum, providing a useful starting point for assessing what students know. Student understanding of more abstract conceptualizations of sustainability, such as thriveability and the Egg of Wellbeing, may be harder to assess accurately.

On the other hand, the idea of "curriculum" must be interpreted as widely as possible. Sustainability is a holistic concept that encompasses not just what is taught (content), but how it is taught (pedagogy), and where it is taught (in classrooms, on campus, or beyond). In this study "curriculum" refers to all elements of a student's experience that might influence what s/he is learning about sustainability, such as using a campus recycling bin, participating in a service learning project, being in a student club, and engaging in classroom activities, projects, tests, and papers. Barlett and Chase's (2010) model of sustainability in higher education depicts this integration of curriculum and context.

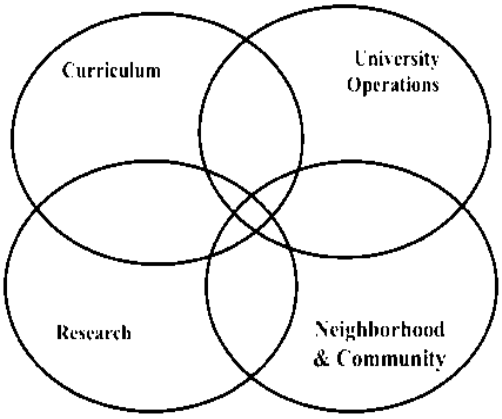

Figure 4: Integration of Curriculum and Context

In this study, the research component is less relevant, since it refers primarily to the activity of faculty at Research I institutions. However, the large overlap between Curriculum and University Operations thus reveals how curriculum encompasses the student's experiences both on and off campus. For example, a student might study the biological processes of composting in a biology class and then use a biodegradable spoon in the cafeteria. So, how do such curricular experiences interact to inform the student's learning and attitudes?

Kelly (2009) omits the community aspect, defining topics inherent to the CORE of the college: Campus, Operations, Research, and Engagement (p. 3).

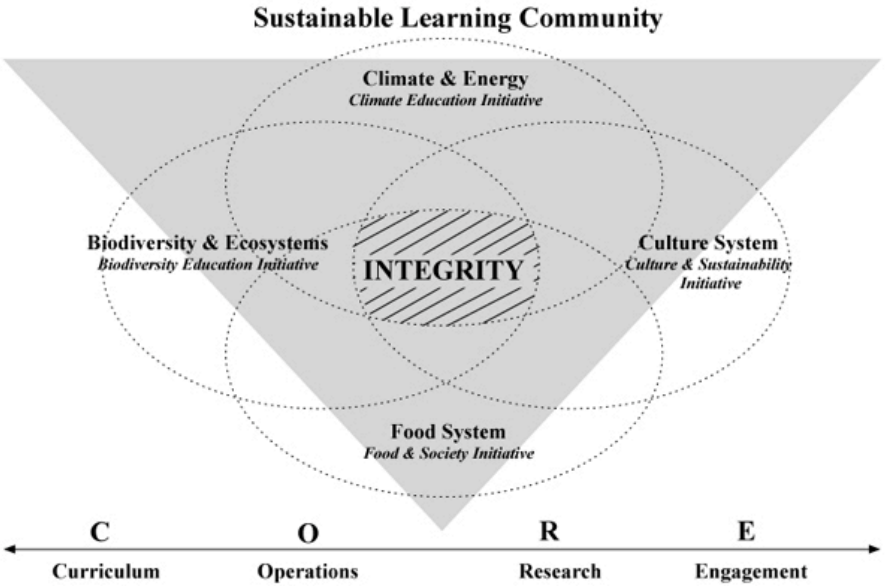

Figure 5: CORE Model

The inclusion of "engagement" is relevant to the sustainability curriculum and includes curricular activities such as service learning and civic action, which provide a spark that inspires students to action. Rowe (2002) says:

> Many students and graduates feel overwhelmed by our society's environmental problems. They feel that the problems are so large and complex they cannot do anything about it, and decide to give up and just take care of themselves. Apathy and cynicism often become the dominant attitudes. Knowledge should be empowering our students to help create a better society instead of making them passive. How do we turn this around while teaching our traditional courses? (p. 1)

The University of Plymouth in the United Kingdom created a unique model based on "…an holistic '4C' model in which Curriculum, Campus, Community, and (institutional) Culture are seen as mutually enfolded and complementary foci of the sustainability university" (Jones, Selby, & Sterling, 2010, p. 7). This model is unique in that it emphasizes how all aspects of a campus exist together to co-create a unique cultural context that pervades efforts in curriculum, campus operations, and the community.

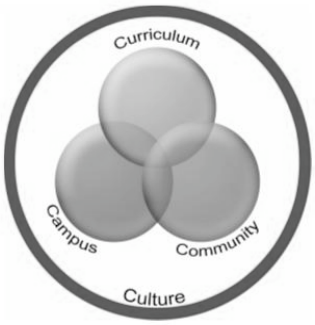

Figure 6: 4C Model

Hawai'i as an educational laboratory for sustainability

Higher education has a role in reshaping the economy of the future. In Hawai'i, policy initiatives such as the Clean Energy Omnibus Bill, which sets state goals for energy efficiency and renewable energy initiatives, and Act 181, which legislates a commitment to implementing sustainability measures, will influence the knowledge and skills that graduates need to create a sustainable environment. However, higher education must do more than technical skills training for new types of jobs. IHEs are responsible for nurturing thinkers who create the next economy; this next stage of transition is being called the "blue-green" economy.

Gunter Pauli, founder of the Zero Emissions Research Initiative (ZERI) network, details the failure of the green economy to transform the lifestyle of most people. Pauli argues how so-called "sustainable" products are actually not as beneficial for the earth as we think they are. Sustainability in the green economy is a feel-good luxury for those who can afford organic food and solar panels, both of which, Pauli explains, are not perfect solutions. He describes the next economic paradigm as the blue economy, in which systems are more deeply applied to economic and lifestyle processes. Pauli asserts

that "we need a whole generation of entrepreneurs" to create the blue economy…."The sky is blue, the ocean is blue, and our earth as seen from the universe is also blue; that's why we call this the blue economy" (Pauli, 2011).

Hawai'i will need to reverse-engineer the state's desired workforce, whether for a green economy, a blue economy, or what some local sustainability activists call a "blue-green economy," working backwards from a vision of Hawai'i as a living laboratory for sustainability. The current curriculum reflects current workforce needs, but the current workforce, reliant on tourism and imported food, is not sustainable. Instead, students and faculty, in cooperation with external stakeholders, should be co-creating the vision of future needs in areas most relevant to the CCoP campus: agriculture and food, hospitality and tourism, business and technology, and STEM.

One inspiration for higher education in Hawai'i to meet this challenge comes from a surprising source. Nainoa Thompson is the master navigator of a unique vessel called Hokule'a, an outrigger canoe of traditional Polynesian design. He says, "Evolution, revolution, shift, whatever you want to call it, I'll just bluntly say it, education has got to change. Who will be the pioneers? Who will make that happen?" The purpose of the Hokule'a and the Polynesian Voyaging Society (PVS) is to preserve and teach celestial navigation. Thompson, a soft-spoken and respected leader in the Native Hawaiian community, spoke to a group of CCoP educators about plans to take the Hokule'a on a worldwide voyage. He described the impetus for the journey, which came from a conversation between a NASA astronaut and Thompson's father. When the astronaut saw Hawai'i from the space shuttle, "he saw the islands and the planet in one vision: that planet earth was just an island like Hawai'i, in an ocean of space, and we needed to take care of them both if the island was to remain a lifegiving home for humanity" (Thompson, 2010). The idea emerged to sail the Hokule'a around the world. Thompson said, "This issue of sustainability, this issue of balance, this issue of adapting to climate change. This is not going to be something that we ought to do…if we don't achieve that, nothing else really matters, because nothing else will be achievable over time" (Thompson, 2010, video).

Thompson provides a bridge between traditional Hawaiian cultural practices and the modern sustainability movement. The two are not always the same. Thompson

suggests that the journey of the Hokule‘a is a model for educational reform in Hawai‘i. For example, preparing the vessel for the voyage involved repairing and redesigning the canoe, and training an extensive crew, 40% of whom he insists must be under 30, as the voyage symbolizes a generational shift in responsibility. This preparation stimulated introspection about the purpose of the PVS and Hawai‘i’s unique geographical position on the planet. Thompson says:

> If Hawai‘i re-navigates its sense of purpose to the earth, globally, what’s its role? If it could rethink itself to see itself as a laboratory, a school of sustainability, the kind of ethics and human values for which we live. And we do. One of the things we typically undervalue is just the issue of aloha. Hawai‘i is not there, but it could be. It could if it chose to. Redirect its course, create a sailplan, become that laboratory of a place that, if you contemplate the strengths that we have.…If you look at the issue of society living together, I don’t know a place on earth where a more diverse people live together as peaceably as we do….When I say education should change, I guess what I would hope personally for the sake of my family would be a core emphasis on how to teach loving and caring and saving the earth. All these standards that we have to meet can be applied to some powerful purpose, the purpose of survival. I don’t know a better place to be a laboratory to do that. (Thompson, 2010)

CHAPTER 2. LITERATURE REVIEW

This literature review attempts to achieve "generativity" in the new, swiftly moving academic research sometimes referred to as Sustainability in Higher Education (SHE). Boote and Beile (2005) note that "generativity grants our work integrity and sophistication. To be useful and meaningful, education research must be cumulative; it must build on and learn from prior research and scholarship on the topic" (p. 3). In addition, the doctoral literature review must effectively consider existing literature so as to propose a new course of action:

> [It must] synthesize the literature, gain a new perspective on it, and clarify what has been done and still needs to be done. Such a synthesis enables the dissertation author to clarify and resolve inconsistencies and tensions in the literature and thereby make a genuine contribution to the state of knowledge in the field. (Boote and Beile, 2005, p. 7)

A body of academic research on sustainability is growing, but the strong emotions associated with what some see as the real possibility of planetary destruction, and vastly differing theoretical stances towards the subject, contribute to a haphazard body of research. Recent doctoral projects in sustainability [see Kahn (2007), Brodie (2006), Williams (2009), Evans (2011)] provide a recapitulation of the evolving relationship of the higher education community toward sustainability curricula. This review joins those projects in forming a relatively new area of doctoral study. This literature review provides both a recapitulation of the research on SHE as well as a casting-forward that posits sustainability in a learning-centered community college context.

Perspectives on sustainability

Some higher education leaders see sustainability as an opportunity to rethink the purposes of liberal education (Rhodes, 2006). Some see it as a moral imperative. Wright (2009) argues, "Higher education has a major responsibility to impart the moral vision and technical knowledge needed to ensure a high quality of life for future generations" (p. 108). Others, however, see a "greenwashing" fad or the imposition of a value system that may not be congruent with the overarching mission (and the tangled history of

political and financial sponsorship) of institutions of higher education (Wood, 2010, Ferrer-Ballas et al., 2005).

Kahn (2010), Evans (2011) and other sustainability scholars regret that the emphasis on "sustainable development" may amount to "little more than the latest educational fad or, worse still, turn out to be a pedagogical seduction developed by and for big business-as-usual in the name of combating social and ecological catastrophes" (Kahn, 2010, p. 17). The original *Earth Charter* document is considered by many in the academic arena to have greater integrity than other recommendations that have come out of UNESCO and other organizations. The *Earth Charter* document expresses the need for "an ethical foundation for the emerging world community…." (para 6). Kahn (2010) proposes a "radical ecopedagogy" that engages the values of the *Earth Charter* and creates "transformative socioeconomic critiques and the sort of emancipatory life practices that could move beyond those programmatically offered by the culture industries and the state" (p. 17).

Evans (2011) connects sustainability to the work of critical pedagogists who "advocate counterhegemonic forms of education and agency as means to confront and alter the destructive and unsustainable trajectory of capitalist society and its central dynamic of domination and oppression" (p. 5). In short, perspectives on the desired scope of curricular change for sustainability vary widely.

Much of the broader sustainability literature has the flavor of a conversion narrative or press release more than academic research. Fien (2003) says that research in sustainability falls into four types: good advice, descriptions of initiatives, narrative accounts of change, and audits of the economic or environmental benefits of programs (p. 244). Research that develops coherent approaches to integrating sustainability into the academic curriculum is needed, as are methods for assessing learning in the academic curriculum and for articulating sustainability learning outcomes. According to Chase (2010), higher education must focus not just on what students should know but also on what they can do with the knowledge. "Thinking about student learning in relation to sustainability is more than covering content. It is about being sure that students have the knowledge, skills, and abilities they will need to build a more sustainable world" (Chase, 2010). As Senge (2000) says, "No question is more germane to any institution of higher

education than, 'Are we preparing students for the future they will live in, or the past we have lived through?'" (p. 1).

Assets and barriers

A sizable category of sustainability literature is the campus "assets and barriers" review. Ferrer-Ballas, et al. (2008) compare the administrative and structural components affecting sustainability curricula in their seven respective universities, representing seven different countries; they concluded that there is no "common path" for transformation and integration of sustainability (p. 312). Not surprisingly, they note that the key barrier for EfS and ESD was a lack of incentive for change; on the other hand, a key asset was the presence of "connectors" or people who are able to bridge disciplines or make connections with businesses or community members.

IHEs are often not suited to interdisciplinary work; in fact, the intellectual parceling out of learning into the curricular boxes of disciplinary study and corresponding mental structures is part of the current problem. Jucker (2002) voices a common criticism of disciplinary division in higher education:

> We cannot stay wedged into individual disciplines, patching on a few environmental courses or a bit of green content here and there: this would not break up the limitations of tunnel-vision…. All the traditional disciplines have been the driving forces behind our unsustainable status quo. (p. 13)

Disciplinary boundaries, faculty reward structures (such as tenure and promotion priorities), and a resistance to Sustainability Science as a legitimate area of study in Research I institutions, are consistently mentioned as barriers to the implementation of EfS and ESD (Ferrer-Balas et al, 2008). The structural components and core values of institutions must be interrogated and reconceived by multiple stakeholders, including faculty, administration, students, workforce, and the community.

Dawe, Jucker, and Martin (2005) surveyed faculty and conducted follow-up focus groups in 26 disciplines from colleges across the United Kingdom in order to create a baseline or "snapshot" of ESD as it currently exists in the higher education curriculum. Faculty seemed to disagree about student perceptions of affective values related to sustainability; some argued that "indoctrination" in sustainability was not the business of the colleges, while others believed it was imperative. The faculty reported that, in the

current curriculum, students' awareness of environmental issues tended to decrease over the course of their degree, effectively "un-teaching" sustainability. Interestingly, the faculty believed that sustainability "activism" was more appropriate for graduate degree programs than for undergraduate programs (p. 22). The perception of sustainability as an activist ideology is an underlying issue that slows curricular change.

What do students know about sustainability?

Even though campus sustainability initiatives promote an image of youth engagement with environmental issues, very little research actually captures the beliefs and behaviors of adolescents. The Monitoring the Future (MTF) study tracked the opinions and practices of high school students on a variety of issues from 1976-2005. The study found an increase in concern for the environment in the 1990s but steep declines in concern as well as conservation behaviors across all other decades since the 1970s. These statistical trends "clearly indicate that youth in the past two decades were not as willing to endorse conservation behaviors of cutting down on heat, electricity, driving, and using bike or mass transit as were young people in the late 1970s" (p. 13). Current faculty members are the ones largely driving the sustainability movement on college campuses, but they may not understand the generational differences of current students.

Kagawa (2007) designed a survey of sustainability literacy specifically to address the "scarcity of publications exploring what students actually know about sustainability" (p. 320). After surveying more than 1,000 students at a university in the United Kingdom, she noted, "What stands out is that the environmental dimension is strongly identified within respondents' conceptions of both terms (sustainability and sustainable development)" (p. 325). Students were less familiar with the other "pillars" of sustainability, such as the social justice and economic dimensions. According to Kagawa (2007), this "dissonance" in student knowledge about sustainability impedes the systemic cultural changes that sustainability proponents believe must be embraced by this generation of college students (p. 333).

Student attitudes and behaviors were another dissonance in Kagawa's (2007) study, which found that 77.5 % of students thought sustainability was "a good thing" but only 20% called themselves "passionate advocate[s]." Kagawa notes, "when it comes to

personal behavior changes, their proposed individual lifestyle changes do not necessarily align with their critical or radical 'in principle' stances" (p. 333). She provides typical student responses as well, such as the following:

> I guess I'm not willing to give up travel by flying or give up having my food shipped round the world so I can have some diversity in my diet, but I am willing to make small alterations to my everyday lifestyle to keep Britain/the world more sustainable. (p. 332)

While negative attitudes towards sustainability were rare, when students were asked about their visions of the future, they expressed "mixed feelings" of pessimism and hope. Kagawa notes this mixture of emotion in one student's remark:

> I don't hold out much hope. Maybe this is all part of evolution. The animals seemed to be doing fine before we came along. Frankly the world would be better off without a single human being existing on this planet. It's too late…we have [disrupted] everything. All I can do is deal with the day-to-day challenge and bring it down to a smaller picture and do what I can to salvage what is left. Contribution for my lifetime is what I can do. (Kagawa, 2007, p. 331)

Kagawa asserts that an *affective* component of learning must be more effectively stressed in the sustainability curriculum (p. 334). On the other hand, curriculum developers of the past have argued that "while affective development is an important correlate, the primary purpose of college instruction is to promote cognitive growth (Lattuca and Stark, 2009, p. 17). Today, researchers in the area of educational psychology have a much greater understanding of the role of feelings and emotions in learning. Hicks (2002) notes, however, that "the emotional impact of global issues on students' learning is still a neglected area of research (p. 70). If knowledge of serious global issues is not introduced along with emotional responses to cope with it (such as developing political self-efficacy), then pessimism and denial can result; this compounds the problem in the future population rather than improves the skill sets to effectively deal with the problems. Ultimately, the conceptualization of sustainability in the academic curriculum, Kagawa (2007) argues, should include not only content but also pedagogies that encourage a positive vision of the future (p. 334).

To better understand student knowledge, attitudes, and behaviors, many universities now conduct broad Internet surveys of student sustainability practices. An overview of these surveys provides an interesting picture of what students know and do with regard to sustainability. For example, St. Andrew's University in Scotland discovered that first year students were less environmentally conscious than older students, indicating how such awareness is indeed learned in college. In this survey, completed by 1,526 students, 27% of students indicated that they always "switch off appliances rather than leaving them on standby," and 59% always "switch lights off when you leave a room" (p. 1). The survey also found that 30% of students use energy efficient bulbs, and 34% use a reusable shopping bag. The percentage of students indicating these types of sustainability habits increased with each year on campus. On the other hand, when it came to air travel, 41% of students said convenience was the largest factor in decision-making, and 11% consider the environmental impact of transit "a lot," while 36% do not consider it at all.

The University of Las Vegas at Nevada (UNLV) Sustainability Survey in 2009 found that 78% of students were familiar with the term "environmental sustainability." This survey also discovered that graduate students were more likely to have pro-environmental values than undergraduates, females were more likely to have such values than males, and non-Caucasian respondents were more likely to have such values than Caucasians (p. 3).

Very few longitudinal studies on student knowledge and attitudes towards sustainability have been conducted. Mertig (2003) completed an annual environmental survey of freshman students from 2000 to 2004, and comparison of the data from year to year indicates that more rigorous longitudinal data might be revealing. In Mertig's (2003) study, in response to the statement, "Protecting the environment should be given priority, even at the risk of slowing down economic growth," 84% of student respondents answered "yes" in 2000, but in 2003, that number fell to 79%. Responses to similar statements as well as scientific content questions indicate a consistent, albeit slight, decline in knowledge, skills and attitudes related to sustainability. Such research indicates the possibility that colleges could foster an "unlearning" of sustainability, whether due to curriculum or other influences.

Weak sustainability versus strong sustainability

Kagawa (2007) noticed that college Internet surveys often focus on consumer decisions such as recycling, carpooling, and turning off lights. Such questions, she says, "fall under the umbrella of reformist responses, in other words, 'light green' on a 'light to dark' green spectrum" (p. 333). Rathzel and Uzzell (2009) make a similar distinction between "weak" and "strong" sustainability education. Weak sustainability education is disempowering, transmitting "right" behaviors such as recycling or reducing waste. This type of learning is espoused in the ESD model; it is about being a "good" consumer (or at least, "less bad") without experiencing any kind of personal or societal transformation. Strong sustainability education, on the other hand, "engage[s] people in collective action to understand and challenge societal relations, relations of production, consumption, and political relations. Learning is about gaining the competence, the development of socio-political skills and an ability to act" (Rathzel & Uzzell, 2009, p. 272). If individuals feel that simply recycling a plastic bottle or turning off the tap while brushing their teeth are all that is needed for them to continue living with their current behaviors and attitudes, this type of environmental t-shirt slogan attitude can actually thwart true behavioral, social, political and economic changes. Strong sustainability education is empowering and transformative, challenging campus stakeholders to accept the idea that the aim of higher education is no longer to reproduce the existing culture but to create something new. The desired transformation depends on a shift in attitude at both the institutional and individual level. Senge, Laur, Schley, and Smith (2006) make this argument in their introduction to the book, *Learning for Sustainability:*

> A new era in human development is not going to arise because governments decree it, or because a few companies change their strategies. It will happen because a diffuse and diverse critical mass of people and organizations decide to live and act differently — as parents, as professionals and as leaders, as suppliers and as customers, as citizens and as entrepreneurs, as friends and as colleagues, as teachers and as students. (p. 10)

Sustainability Learning Outcomes

Some organizations have endeavored to craft learning outcomes for sustainability that might be adopted nationally or could at least guide individual campus efforts.

Svanstrom, Lozano-Garcia, and Rowe (2008) synthesized emerging trends in the articulation outcomes. They describe "systemic or holistic thinking" as one learning outcome that might replace the current mode of "critical thinking" emphasized in the higher education curriculum.

> Analytical thinking is about breaking the things apart while synthetic thinking is about putting things together. Systemic thinking, on the other hand, is about combining these two skills to discern the patterns in a larger system and be able to understand cause-effect chains, understand conceptual models of a system, and create changes within and across systems. (p. 342)

Such theoretical considerations have enormous impact on curriculum design; they ask us to consider the design of mental habits and cognitive skills transmitted in the college curriculum.

Another learning outcome inherent in EfS is the adoption of "change agent abilities" by learners; such abilities have been articulated by the College Student Educators International organization, or ACPA, as part of the recommendations for sustainability curriculum. According to the ACPA website, students must possess not only knowledge about sustainability issues, but also a "value system and self concept to support and undergird the actions of a change agent." ACPA articulates the required qualities. "Change agents are: resilient, optimistic, tenacious, committed, passionate, patient, emotionally intelligent, assertive, persuasive, empathetic, authentic, ethical, self-aware, competent, and curious" ("Change Agent", n.d., p. 1).

Other learning outcomes include interdisciplinarity, relationships in space and time, and being able to make cultural, social, and political shifts in perspective. "Our duty towards education of future professionals is to make it possible for them to participate in the necessary transformation. In higher education, we educate people that will shape the future society" (Svanstrom, Lozano-Garcia, & Rowe, 2008, p. 340). Rather than creating universal learning outcomes related to sustainability, professional development in sustainability curricula incorporates the crafting of such outcomes as an important dialogue on the part of faculty and administrative stakeholders. Barlett and Chase (2010) assert that "Some of the most productive and important discussions faculty from different disciplines can have are those in which they identify learning outcomes that apply to all

students, or to all students in a particular program" (p. 12). Faculty should be engaged with current thinking in their disciplines regarding sustainability, but they may not feel that they know enough about sustainability to articulate this type of broader learning outcome. Drawing from theoretical literature in environmental studies and related fields and understanding current thinking on sustainability learning ensures that "dark green" learning outcomes are crafted for strong sustainability.

Naysayers

While advocates for EfS offer a passionate argument for the integration of sustainability into all aspects of higher education, one issue that arises in the literature is whether EfS represents inappropriate activist ideology and value system for public institutions. Some argue that the purpose of IHEs is not to produce activists or change agents but to instill knowledge reflecting existing social norms. (Ferrer-Ballas et al, 2005, Wright, 2005). Research on these "naysayers" reveals deeper issues about who controls the academic curriculum.

In an online editorial for the *Chronicle of Higher Education*, Wood (2010) claims that the ideology of sustainability supplanted the ideology of diversity on college campuses. He describes "sustainabullies" as students who monitor recycling and other behaviors, questions their rise in leadership over the current generation of students, and claims that "sustainability has the logic of a stampede. We must all run in the same direction for fear of some rumored and largely invisible threat. The real fear is the stampede itself" (para. 4). A "sustainabully" is the product of an oversimplified curriculum, having the passion but perhaps lacking a synthesized view of sustainability.

Campus operations

The "greening" of campus operations has become a high priority, with LEED Building standards and other campus sustainability practices emerging in campus rankings such as the College Sustainability Report Card and AASHE Sustainability Tracking Assessment & Rating System (STARS). According to a Princeton Review survey of entering freshmen in 2011, 69% of first year students said "having information about a college's commitment to the environment would impact their decision to apply to or attend a school" (The Princeton Review, 2011, para 6). Thompson and Green (2005)

voice a similar idea, stating, "Institutions of Higher Education should be obvious candidates for adopting and demonstrating sustainable building, landscaping, and operational practices. IHEs intensely use resources and in many ways they are microcosms of the larger world" (p. 7). Wright (2009) expresses this sentiment as well when he says, "Universities are recognized as key institutions that contribute to the vision of a global sustainable future through research, teaching, and acting as models of sustainability in their own physical operations" (p. 105). Integrating campus facilities into classroom activities is a potential strategy for sustainability curricula. Dawe, Jucker, and Martin (2005) conclude that integrating campus operations into academic curricula is one way of eliciting a more affective component of student learning. This is an important point in considering what students know about sustainability, since their knowledge, skills, and attitudes are informed by the campus culture as a whole, as well as by the external sociocultural context provided by peers and the media.

Sustainability in the academic curriculum

Colleges use a variety of methods to integrate sustainability and environmental literacy into the curriculum. However, according to Rowe (2009), at 45% of institutions, students who are not majoring in environmental science do not even have the option to take such courses as electives, and only between 7 and 12% of public institutions have an environmental literacy or sustainability requirement (p. 3). When the University of Georgia assessed the impact of its environmental literacy requirement, it found that both students who entered the required course with some knowledge of global environmental issues, as well as those who entered with no knowledge, increased their concern or affective response after taking the required course. However, the study observed that the administration of an "add on" requirement is not as desirable as infusing sustainability content throughout the curriculum (Moody & Hartel, 2007, p. 868).

Rusinko (2010) introduced a "Generic Matrix for Integrating Sustainability" into higher education curriculum, articulating different ways that faculty and administrators might choose to integrate sustainability. This framework can guide future research on the effectiveness of the various options for integrating sustainability (p. 251). The advantage of what Rusinko (2010) calls Quadrant I curricular change is that while it only impacts students enrolled in a particular course or section, it "does not require review,

coordination, or support beyond that of the involved faculty member(s) and resource demands are relatively modest" (p. 254). Quadrant II requires more involvement and support from administration in developing new courses such as "Sustainability and Business." According to Rusinko (2010), these courses give sustainability "its own identity" in the curriculum, allowing the discipline or department to take a leadership role in the college's approach (p. 254).

Table A: Generic Matrix for Integrating Sustainability

	Existing structures	New structures
Narrow Discipline specific	I. Integrate into existing course(s), minor(s), major(s), or programs	II. Create new, discipline specific sustainability course(s), minor(s), major(s) or programs.
Broad Cross disciplinary	III. Integrate into common core requirements	IV. Create new, cross disciplinary sustainability course(s), minor(s), major(s), or program(s).

Quadrants II and IV of this matrix are cross-disciplinary or trans-disciplinary, requiring even broader cooperation at the college level. Quadrant IV models can include non-academic stakeholders (Rusinko, 2010, p. 255). For example, the college may cooperate with local sustainability programs, federal government initiatives, or state workforce development plans to develop such programs.

Cusick (2008) examined the efficacy of different curricular formats for sustainability, such as course designation, certificate, or degree programs (p. 251). The biggest difference between Cusick's three formats appears to be whether or not the sustainability component represents additional coursework for the student. For the course designation, it does not, but the certificate and degree models must offer new, not duplicate, curricula. Cusick advocates for capstone projects in the certificate and degree program models, since such projects would facilitate interdisciplinary collaboration (p. 253). He asked, "What evidence will there be that society has been transformed as an outcome of all the rhetoric on sustainability of the past two decades, and how will anyone notice the difference?" (p. 256). Conducting a sustainability audit of the University of Hawai‘i course catalog, Cusick matched courses to sustainability themes such as overcoming poverty, water, and biodiversity. This audit was a useful assessment of how

sustainability can be integrated in the curriculum by shaping what already exists into a more coherent curricular framework.

Lessons can be learned from previous curricular "revolutions" that sought to diversify the academic canon. For example, MacCorquodale and Lensink (1991) recount their experience in the 1970s, when they wondered, "should women's studies build its own relatively independent program or should it work to assure that materials on women are included broadly across the curriculum?" (p. 648). Faculty have engaged in similar conversations regarding the inclusion of African American, Chicano, and Hawaiian studies—should colleges integrate, require, or create new degrees? MacCorquodale and Lensink (1991) note, "This is not an either/or choice, but given finite energy and resources, the pursuit of one strategy necessarily sets limits on the other" (p. 649). They designed professional development to familiarize faculty with feminist scholarship and pedagogy, taking place in a summer workshop, with stipends for participation. This project mirrors AASHE's national effort to provide training for faculty to integrate sustainability in their courses.

MacCorquodale and Lensink's (1991) account of resistance towards the integration of feminist scholarship and pedagogies reveals the petty dynamics that are part of campus life. Faculty participating in the change effort were "subjected to criticism from their colleagues, which ranged from accusations of being 'on a cream puff project' and 'pokes and giggles' to antagonistic criticism" (p. 653). Such criticism had a "pervasive, enduring effect of dampening (faculty) enthusiasm and limiting their involvement in the project" (p. 653). MacCorquodale and Lensink concluded that "what we experienced was a microcosm of academia: those on the margins, who are most willing to change, often remain marginal, while those within the powerful center — of the canon, the discipline, the adrocentric society — are fairly intransigent" (p. 658).

Creating change in the academic curriculum is notoriously difficult. Heppner (1991) recounted his efforts to implement a "rational curricular review" grant in his department of Critical Thought. He warns, "Departments! If you are thinking about changing your curriculum – think twice!" (para 7). Similarly to the sustainability change narratives described by Barlett and Chase (2004), Heppner describes, with a sense of humor, the difficult process of curricular change.

> We spent over 1,000 person-hours in wrangling, bickering, forming and breaking alliances, negotiating, swapping, then propagating and spreading rumors. Very few of those hours were spent on data-generated development of curriculum. The preliminary signs are that our new curriculum is no better than our old one, perhaps even a tad worse (par 8).

Sharing honest experiences in narrative form is valuable to campus stakeholders considering curriculum change. These stories may prevent naïve sustainability activists from stepping into political traps or bureaucratic quagmires. A better approach to curricular reform is needed — one that invites individual transformation, one that includes the campus facilities, and one that includes both degree programs and integration across the curriculum. Faculty on the inside of the sustainability paradigm, such as Evans (2011), who advocates a radically counterhegemonic approach to sustainability integration, feel that curricular change must be swift and comprehensive. In contrast, faculty on the outside of the sustainability paradigm, such as Wood (2010), feel that the "greening of the curriculum" is just another curricular "fad" to be waited out.

Learning for Sustainability (LfS) and the sustainability habitus

O'Banion (1997a) championed the concept of "the learning college" in community colleges, emphasizing a shift in the focus of community colleges from "teaching" to "learning." Learning is more focused on goals, needs, and interests of learners rather than actions of teachers. Given the growing saturation of sustainability in the sociocultural context in which IHEs operate (ie: business, government, K-12 education, and communities), the sustainability curriculum may emerge as a *response to learners* rather than as a new agenda of top administrators or activist faculty.

O'Banion noted that the "inherited architecture" of educational institutions limits change and redefinition. He describes the traditional limits on education as being "Time bound", "Place-Bound," "Bureaucracy-Bound", and "Role-Bound" (1997a, p. 304). O'Banion (1997) especially bemoans the bureaucratic nature of colleges, which fundamentally (and, he argues, possibly fatally) limits their ability to innovate.

> The focus on the learner and learning, if ever front and center, fades to the background as leaders struggle to become more efficient as a way to survive.

> There is no time to pay attention to root causes. All the energy is expended in trimming the branches of a dying tree. (p. 13)

To reform higher education, O'Banion (1997a) emphasizes six principles of the learning college. While O'Banion's schema does not include sustainability per se, replacing "learning college" with "sustainability curriculum" has considerable implications on consideration of learning about sustainability in the college setting.

Table B: Principles of the Learning College

The learning college creates substantive change in individual learners;
The learning college engages learners as full partners in the learning process, with learners assuming primary responsibility for their own choices;
The learning college creates and offers as many options for learning as possible;
The learning college assists learners to form and participate in collaborative learning activities;
The learning college defines the roles of learning facilitators by the needs of the learners;
The learning college and its learning facilitators succeed only when improved and expanded learning can be documented for its learners. (O'Banion, 1997a, p. 47)

Substituting "learning for sustainability" (LfS) for "education for sustainability" (EfS) may seem like more definitional wrangling, but it provides a different theoretical orientation that begins with learning theory and is not reliant on the organizational structure of colleges. Sustainability is a unique curricular reform because it represents the creation of a new culture. The term "culture" was defined by Taylor in 1873: "Culture or Civilization, taken in its wide ethnographic sense, is that complex whole which included knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man (sic) as a member of society" (in Gonzales, Moll, & Amanti, 2005, p. 31). The premise of EfS is that IHEs can be the mechanism for creating a cultural shift toward greater sustainability.

Learning for Sustainability, on the other hand, opens the door to structural reform. Education has traditionally reproduced dominant value systems. However, the sustainability paradigm invites the creation of new knowledge, skills, and attitudes. Students need to be educated for a future that current educators cannot truly envision; we cannot simply recreate our own educational experience and values.

Karol and Gale (2004) appropriate from Bordieu the notions of "capital" and

"habitus," offering the new and useful concept of "sustainability habitus," which is a set of cultural traits, beliefs, and behaviors possessed by individuals inside the sustainability paradigm. The sustainability habitus is a term to describe the culture of the "converted." Sustainability habitus is derived directly from an individual's "environmental capital." Environmental capital is a form of embodied cultural capital that may be recognized through "occupation and hobbies, consuming habits, preferences for attire, conversation, recreation, etc." (Karol & Gale, 2004, p. 7). According to Bordieu (1991), cultural capital is understood as the lens through which an agent makes decisions, while "The habitus provides individuals with a sense of how to act and respond in the course of their daily lives. It orients their actions and inclinations without strictly determining them. (It) also provides a sense of what is acceptable" (p. 13). Creating a culture of sustainability outside of IHEs requires the creation of learners with a sustainability habitus, which in turn emerges from the introduction of environmental capital. This emphasizes the importance of an essential question about sustainability: what do students know about sustainability?

The ideas of sustainability are not new; in fact, the baby-boomer generation maintains some cynicism towards the ideas because the surge of environmental activism they experienced in the 1960s simply dissipated. A "been there, done that" mentality about sustainability exists. One reason ecology movements of previous generations fizzled out is that the academic culture did not support them; in fact, academic culture was moving *away* from this type of universal value system as the academy expanded to include greater diversity of perspectives and definitions of culture.

According to philosopher Ken Wilber (2003), the era of diversity and pluralism was a necessary phase of social evolution that created inclusiveness. He describes the post-postmodern framework as one of "universal pluralism" or "integral-aperspectival" outlook:

> You start with the commonalities and deep structures that unite human beings – we all suffer and triumph, laugh and cry, feel pleasure and pain, wonder and remorse; we all have the capacity to form images, symbols, concepts, and rules; we all have 208 bones, two kidneys, and one heart; we are all open to a Divine Ground, by whatever name. And then you add all the wonderful differences, surface structures,

> culturally constructed variants, and so on, that make various groups – and various individuals – all different, special, and unique. (p. 199)

The spiritual overtones of universal pluralism recur, particularly in the narrative genre of sustainability conversion stories. For example, Senge, Lauer, Schley, and Smith (2006) describe a particular vision of living sustainably.

> [There is] a crucial need today for compelling images of a future we truly want to create: an economic system that operates in accord with natural principles and generates no waste, an energy system powered entirely by net energy from the sun, and an ethic of being common villages who must all live together on an increasingly interdependent planet. (p. 8)

The term "thriveability," which was introduced in Chapter 1, also reflects this shift from *educating about problems* to *learning about new ways of being*. Thus, the term Learning for Sustainability (LfS), first introduced by Senge, is used in this study, particularly when referring to approaches that include universal values, optimistic orientation, and an inclusion of personal transformation and/or spiritual evolution.

Today's sustainability practices

Today's students have one thing that the baby-boomers who catalyzed the first environmental movements didn't have: the Internet. The Monitoring the Future study, mentioned earlier in this chapter, found a positive relationship between environmental action and belief in technology, concluding that "for young people, faith in technology goes hand in hand with personal commitments to the environment" (Wray-Lake, Flanagan, & Osgoo, 2008, p. 16). Technology yields a pervasive influence on the future of higher education in general and sustainability in particular.

Kamenetz (2010) visualizes what she calls the DIY or Do-it-Yourself University, in which students navigate "free, open-source, vocational, experiential, and self-directed learning" (p. 1). As described in Chapter 1, open-door institutions such as community colleges will be shaped by the confluence of nontraditional learners, pressure to achieve ever-higher graduation rates, and changes in educational technology which "upsets the traditional hierarchies and categories of education" (Kamenetz, 2010, p. 1). What Kamenetz ultimately describes is a distributed educational experience.

Distributed cognition is the extension of an individual's cognitive power through

any form. Although the Internet is the most powerful example of distributed cognition, a simple datebook is also a form of distributed cognition, and the way a person might jokingly refer to their Blackberry as "their brain" indicates the degree to which "what we know" is now extended beyond the cognitive boundary of the individual using social relationships, environmental cues, and physical artifacts. The Internet, representing a massive revolution in information and data storage, has made distributed cognition fundamental to how humans learn, even so far as defining what *learning* is. Today's college students do not see the point in memorizing facts, dates, or the elements of the periodic table. The Internet, where information is available "on demand" or "just in time," has rendered this form of learning, which used to be the mainstay of learning, obsolete. So much information is available online that navigating it and deciphering valuable information from the erroneous or irrelevant has become its own cognitive task.

When asked about the difference between today's sustainability movement and the environmental movements of prior generations, University of Hawai'i student sustainability leader Shanah Trevenna answers without pause, "Google." The access to information and collaborative technologies, she says, creates possibilities for learning and catalyze social change. Social networking is an emerging form of distributed cognition that further exploits the Internet. With tools like Facebook, the interaction is not just between one brain and the Internet, but a network of brains navigating together the infinity of available information.

There is also a downside to the use of technology and social networking. White (2010) described the negative impact of "clicktivism" and claims that "as the novelty of online activism wears off, millions of formerly socially engaged individuals who trusted digital organizations are coming away believing in the impotence of all forms of activism" (para 1). Clicktivism describes the tracking of "clicks" to measure engagement with an issue communicated via social media; for example, when an individual "likes" something on Facebook, that "click" is counted as a "vote" supporting an issue. However, "clicktivism is to activism as McDonald's is to a slow-cooked meal. It may look like food, but the life-giving nutrients are long gone" (White, 2010, para 6).

On the other hand, Greenhow (2010) examined the use of social network sites (SNS) in the context of a climate change network called Hot Dish that targets youth and

engages them in information sharing and content production. She found that "young people perceived the social networking environment as more conducive to self-expression and critical conversation than traditional Web sites" (p. 60). Sustainability curricula can exploit the distributed cognition network that connects localized individuals, embedding them in a particular "place" alongside global counterparts. There is a need for both place-based learning and world-minded learning. Distributed cognition via SNS and the Internet provides one solution. For example, if a student in Hawai'i posted pictures of a coral reef, and a student in Australia did the same, then two place-based experiences can meet and share information and perspectives in a socially constructed global learning environment mediated by technology.

Vygotsky and sustainability

Sociocultural learning theory, as described by Lev Vygotsky, supposes that there are always two planes of development: first social, then psychological, first external, then internal, first mediated, then solo. Bakhtin placed similar emphasis on the "social situatedness" of an utterance: "Each utterance is filled with echoes and reverberations of other utterances to which it is related by the communality of the sphere of speech communication" (in Wertsch, 1985, p 118). Bakhtin used the term "ventriloquation" to describe the appropriation and spread of an utterance mediated through social discourse.

To promote LfS, colleges must look at the broadest range of social interactions related to sustainability that the student might have on campus, off campus, or online, whether about a vendor at a farmers market, poster in the cafeteria, or the price of gas. Opinions, perspectives, and facts are all mediated through social exchanges; students benefit from a wide variety of such dialogic exchanges. At first, new ideas are ventriloquated – exchanged with other humans who help the individual to affirm, adapt, or reject the utterance. Eventually, the utterance may be internalized and become self-mediated. Both formal and informal settings such as film screenings followed by discussion, debate panels, and art forums are occasions for students to discuss, advocate, argue, and "try on" a sustainability habitus.

According to Hedegaard (1990), Vygotsky differentiatiated between "everyday" and "scientific" concepts (p. 355). Scientific learning is systematically acquired through instruction, and the other is more informal and embedded in social, everyday reality.

School-based instruction may tend to be fact based, but without the connection to theoretical knowledge, these facts are not learned deeply. Instruction should initiate a "reciprocal relation between everyday and scientific concepts, and how they mediate each other" (Hedegaard, 1990, p. 355). Facts need a theory to connect to, and theories in turn need to be supported by facts.

The use of campus facilities to support LfS supports this reciprocal relationship between theories and facts. Many colleges have eliminated bottled water, exchanged plastic cutlery for soy-based biodegradable, and gone "trayless" to save water. The concept of everyday and theoretical dialogism offers the possibility of creating deeper learning opportunities through social interactions and decision-making on campus. The process also incorporates the constant questioning of assumptions as individuals and departments undergo their own process of transformative learning as part of the campus approach towards sustainability.

Funds of knowledge theory and sustainability

LfS extends the classroom into the campus, and can go even further by valuing the home-based knowledge of students. Gonzales, Moll, and Amanti (2005) developed the "funds of knowledge" theory through study of bilingual Latino students living and learning in U.S. border cultures. The basic idea is that if the "home culture" of the students is authentically known, through ethnographic interviews in the homes and communities of the students, then the economic, mathematical, social, and linguistic knowledge applications of the home culture can be built upon in the school environment. Most teachers are trained to activate prior knowledge "schema," but the pedagogical integration of home culture is often superficial, merely highlighting traditional foods, holidays, and rituals and ignoring important home based knowledge. For example, ethnographic researchers found that students learned complex math in the home through their parents' construction and sewing experiences. When a parent demonstrated "how to make a skirt" for her sewing group, her son's math teacher, who observed the demonstration as part of the ethnographic approach, was astounded at the applied math that was demonstrated (Gonzalez, Moll, & Amanti, 2005, p. 257). The funds of knowledge approach advocates for ethnographic home visits and also bringing parents to the classroom as experts. Much of the sustainability movement is happening outside of

higher education, and higher education may benefit from opening itself to community experts such as farmers, fishermen, and indigenous elders who may not have university credentials.

Dialogic learning and the funds of knowledge that learners bring to higher education should cause curriculum developers in LfS to question the transmission model of traditional education; though co-constructed learning experiences have been advocated in many contexts, the sustainability issue demands revision of the student-as-consumer model. Sustainability learning "requires a positive approach to co-operative decision-making, a respect for democracy and an understanding of participatory processes leading to sustainable actions within the context of people's own lives and environment" (Rathzel & Uzzell, 2009, p. 272). Sustainability as a culture is about revision of socially mediated structures and exchanges in multiple contexts.

Transformative learning and sustainability

It is possible to attend college without having a transformative learning experience. New information and skills can be a simple process of "instrumental" or "instructional" learning (Mezirow, 2003). A student can attend classes and accumulate credits that award a degree, allowing him or her to access an enhanced job field. In fact, this is what many, if not most, students visualize, especially in Career and Technical Education (CTE) fields. However, most faculty teaching in the general education curriculum do envision some form of transformative learning on the part of students. Rooted in the emancipatory pedagogy of Friere and developed by Mezirow, transformative learning theory asserts that "knowledge is not 'out there' to be discovered but is created from interpretations and reinterpretations in light of new experiences" (Baumgartner, 2001, p. 16). Though the theory has many interpretations, there is a basic process of transformative learning:

Figure 7: Transformative Learning Process

(See Mezirow, 1991 and "Mezirow's Ten Phases" para. 1.)

Several scholars have made an explicit connection between transformative learning theory and sustainability because transformative learning focuses on "how we learn to negotiate and acts on our own purposes, values, feelings, and meanings rather than those we have uncritically assimilated from others – to gain greater control over our lives as socially responsible, clear-thinking decision makers" (Mezirow, 2005, p.8). The basis of transformative theory is "becoming critically aware of one's own tacit assumptions and expectations and those of others" (Mezirow, 2005, p.4). These assumptions are known as "frames of reference" that form an individual's values and identity. Transformative learning thus results in the development of a new frame of reference; these new frames inform the sustainability habitus.

Lange (2004) integrates transformative learning, sustainability, and adult education and asserts that the sustainability habitus can be part of the resolution of an adult student's disorienting dilemma. She describes her adult students as "stranded between feeling individually responsible, the seeming futility of individual action, excessive busyness, and no perceived avenues for effective citizen action" (p. 22). For adults, the process may be what Lange (2009) calls "restorative," returning to lost sensations of "wonder, joy, and purpose" (p. 197). For community college students, future career choices or current consumption habits can be analyzed in relationship to the sustainability paradigm. Individual transformation can then lead to social transformation; without it, there is no sustainability transformation.

Sipos, Battisti, and Grimm (2008) organize an approach to sustainability learning that corresponds to "cognitive (head), psychomotor (hands), and affective (heart) domains of learning that facilitate personal experience for participants resulting in profound changes in knowledge, skills and attitudes related to enhancing ecological, social and economic justice" (p. 69). They believe that the contexts of students' home, work, and leisure activities are as important to students' learning as their experience in college. "For this reason," they assert, "the context for sustainability education must be situated in both the university and community environments" (p. 70). In institutions of higher education, we can see distinct phases of curricular change. First, there is teaching for "unsustainability (i.e. the perpetration and perpetuation of social and ecological crises)" (p. 70). Moving towards sustainability curricula may initially involve learning how to be "less bad" by changing consumer behavior. However, McDonough and Braungart (2002) note in *Cradle to Cradle,* the now-classic treatise on sustainable design, that being "less bad" does not make one good. Sustainability involves a deeper level of transformation for both individuals and institutions. It requires "new ways of approaching education and life" (Sipos, Battisti, and Grimm, 2008, p. 71).

Transformative Sustainability Learning (TSL)

Sipos, Battisti, and Grimm (2008) describe TSL as a framework for learning that "facilitates personal experience for participants resulting in profound changes in knowledge, skills, and attitudes related to enhancing ecological, social and economic justice" (p. 74). Their shorthand of "head, hands, and heart" is a useful heuristic for pedagogy that engages "cognitive, psychomotor and affective learning domains" (p. 74). They found that certain pedagogies support TSL: "action learning, community service-learning, critical emancipatory pedagogy, environmental education, participatory action research, pedagogy for eco-justice and community, problem-based learning, and traditional ecological knowledge" (p. 74). They orient each of these pedagogies inside the triad of head, hands, and heart. Each of the pedagogies listed above can be engaged in the cognitive, psychomotor, or affective domains.

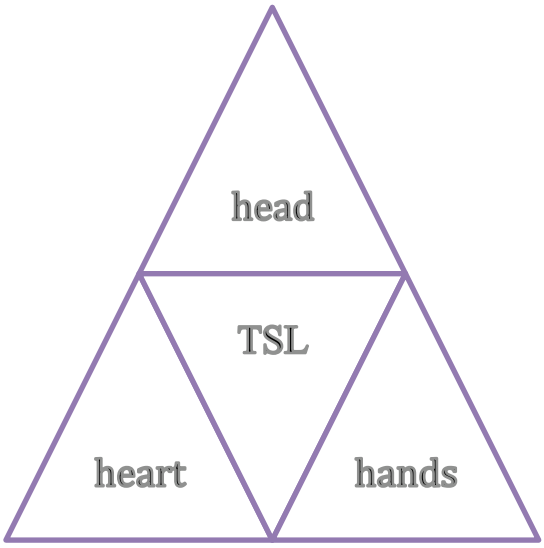

Figure 8: Pedagogies supporting Transformative Learning

The pedagogies mentioned above occur frequently in the sustainability literature and warrant further inquiry. Other emerging pedagogies relevant to sustainability curricula include methods of engaging in systems thinking, and teaching leadership skills. Another important pedagogy is Place Based Education (PBE).

Learning in Hawai'i: Place based and multisensory learning

PBE is emerging as a popular pedagogy supported by research: "The findings are clear: place-based education fosters students' connection to place and creates vibrant partnerships between schools and communities. It boosts student achievement and improves environmental, social, and economic vitality" (Place Based, 2011, p. 1). The scholarship of Native Hawaiians is relevant to this study not only in relation to PBE and because this research takes place in Hawai'i, but also because the topic of SHE replicates the collision of native values with western institutional structures.

One of the most influential indigenous scholars in Hawai'i is Manulani Meyer (2003), whose optimistic book *Ho'oulu (Our Time of Becoming),* seeks to describe Native Hawaiian epistemology and tie native ways of knowing to educational strategies that are effective in Hawai'i, for Hawaiians. She observes, "Hawai'i education, because of its obvious tie to missionary influences and philosophy, was forever out of context and stuck in a predictable power structure that would continue to alienate Hawaiians from culture and language, power and self-determination" (p. 22). Meyer describes the

epistemology of Native Hawaiians in a manner that is accessible to both Hawaiian and non-native readers.

First, a relationship with land and water is fundamental to Native Hawaiian epistemology. This connection is ancestral, spiritual, and deep. Native Hawaiians see themselves as related to taro plant, a primary food source in the Polynesian diet. The plant is their ancestral brother, and thus, they are related to the land. Americans from the continental U.S. have difficulty connecting to this concept, because the U.S. is a nation of immigrants who all came from somewhere else. Many mainland Americans, whose ancestors chose a path of assimilation, come from a broken genealogy, impeding their ability to comprehend the lineage of Native Hawaiians as it connects them to a particular landmass. In addition, mainland Americans and malihini (newcomer) residents of Hawai‘i may not accurately comprehend emotions related to events in Hawai‘i’s history: the overthrow of Queen Lili‘uokalani in 1893, the annexation of Hawai‘i in 1900, and the admission of Hawai‘i as a state in 1959.

Howes (2010), in the introduction to *The Value of Hawai‘i*, implies that the path towards sustainability is related to healing of the wounded relationship of Hawaiians and the land. He says, “Hawai‘i will remain economically, socially, and ethically troubled as long as we refuse to come fully to terms with Hawaiian claims to land and sovereignty… Until Hawai‘i deals with this more than a century-old injustice, bad faith will continue to haunt everything that we do or don’t do” (p. 5-6). This points to a deeper issue of alienation, not just for Native Hawaiians, but also for nonindigenous residents and even tourists. Indigenous scholarship points to the importance of reconnection to the land as native and non-native find common ground in a sense of place and a desire to chart a path towards a sustainable future for Hawai‘i: sustainable in the sense of preserving the land, but also in creating economic, socio-political, and cultural sustainability.

Combined with experiential or active learning, problem-based learning (PBL), and service-learning, place-based education (PBE) invites students to explore areas around their home and colleges: for Hawai‘i, this can mean working in a lo‘i, or taro patch, as well as studying urban issues such as homelessness, brain-drain (the fact that local students have to leave the state to make a living), transitioning towards food sovereignty and energy independence.

Indigenous scholarship also emphasizes the importance of multisensory learning. Meyer says that "Hawaiian epistemology is a radical remembering of our future as it highlights and honors all three domains of knowledge production: sensory, mental, and contemplative; body, mind, and spirit; gross, subtle, and causal" (p. ix). She uses the Hawaiian word for knowledge, naʻau, which "derives from the word for stomach, the seat of emotions, senses, and wisdom" (p. 35). She says that we must learn by literally "reading" place with our bodies and understanding types of rain and patterns of waves, relating to others as a form of wisdom, and living life as art. Important aspects of Meyer's work include multisensory learning, the use of intuitive knowledge (naʻau) and the pedagogy of learning by doing, known as ʻike. She suggests that as part of education in Hawaiʻi, we should surf, fish, put our faces to the rain, and *enjoy* life, while learning and working. We might not work literally in a loʻi, or taro patch, but perceptually, our schools and workplaces can be metaphorical loʻi. We do not all need to become taro farmers, but somehow, farming taro reconnects and re-engages us with the life of the land.

Other scholars, such as Davianna McGregor (2007), look not metaphorically but actually at the practices of native practitioners, Hawaiians who live in "cultural kipuka," where they engage in sustenance farming, traditional barter and communal support. Kipuka is itself an interesting choice of metaphor: a kipuka is an area of life that is sustained or emerges after a volcanic eruption wipes everything else out. The understanding is that the existence of kipuka ensures that Native Hawaiian practices are not lost. We will all need the kipuka as our current form of life plays itself out into a future of depleted resources and environmental stress.

McGregor and Meyer represent a spectrum of "place-based" approaches to sustainability in Hawaiʻi. McGregor describes Hawaiians who are living a true "back to the land" kind of path that incorporates traditional land management practices, traditional diet, and family structures. Given the impact of global capitalism on a place like Hawaiʻi, it is a reasonable suggestion to turn inwards to learn, or rather to re-learn, from the land and from each other how to live sustainably. On the other hand, sustainability addresses global issues and must be understood in a world-centric value system. Meyer's inquiry into Hawaiian epistemology supposes that Hawaiian culture offers valuable forms of wisdoms to be shared with others, particularly in the area of education and learning.

No single place can be sustainable and be removed from the world. The term "world-mindedness" provides a useful contrast to PBE, for it seems that both are necessary to learning in a sustainability framework.

In fact, several sustainability efforts in the state specifically espouse this idea of world-mindedness and envision a global leadership role for Hawai‘i in the area of sustainability. For example, the University of Hawai‘i's Sustainability HUB (Help Us Bridge) student group, which was instrumental in adding sustainability and global leadership to the mission statement of the University of Hawai‘i, believes in a vision of Hawai‘i as a global leader in sustainability. The Blue Planet Foundation, a non-profit agency, is committed to eliminating fossil fuels and to "Making Hawai‘i a Global Leader for Energy Independence." The goal of Blue Planet supports the Hawai‘i Clean Energy Initiative (HCEI) of 2008, which is a partnership of the state and the U.S. Department of Energy, and hopes to achieve 70% clean energy statewide by 2030. It is curious that so many different groups and individuals feel Hawai'i can and should be a global leader in sustainability, when in fact, Honolulu lags far behind other cities of comparable population density in terms of progress towards sustainability.

CHAPTER 3. METHODS

Chapter 2 illustrated the spectrum of theoretical approaches to integrating sustainability in higher education. This chapter describes the construct and methodology chosen to study student perspectives on sustainability – namely, a qualitative methodology and a case study approach, using focus groups to elicit group norms and current perspectives about what students know, feel, and do with regard to sustainability and their experiences in college. The college under study is described, with attention to the existing sustainability context as well as the biases and roles of the researcher. Participant selection, data collection, interview protocols, and approaches to analysis are also detailed.

Theoretical framework

Various internal and external stakeholders, including faculty, administrators, and representatives from government, workforce, accrediting agencies, and community groups have different ideas and strong emotions about what constitutes an appropriate response to the changing sociocultural context of sustainability. In order to assess the impact of sustainability initiatives on student learning, a new lens — one unrelated to the sustainability paradigm — is useful. Lattuca and Stark (2009) provide a definitional framework that provides a systematic model for exploring curricular change initiatives. They note that much of what is described as change in the curriculum is really just "tinkering" with the structural elements of credits, calendars, and course listings, and that "curricular changes should result in substantive improvements in student learning" requiring a more unified perspective on the components of the curriculum (p. 2). These components must be examined separately in order for their impact to be accurately assessed as a whole.

Lattuca and Stark (2009) conceptualize curriculum as a comprehensive academic plan identifying decision points that impact the learning experiences of students. These decision points include Purposes, Content, Sequence, Learners, Instructional Processes, Instructional resources, Evaluation, and Adjustment. This framework has useful flexibility, since it can be applied to a single lesson, course, group of courses such as a major or certificate program, or entire college. These eight decision points constitute the center of the academic plan, and although Purpose and Content are traditionally

addressed first, the decisions about curriculum design may be made in any order. The relevance of each component to this study is described in Table C.

Table C: Elements of Theoretical Framework

Components of Academic Planning model	Definition (from Lattuca and Stark, p. 4)	Application to this study
1. Purposes	"knowledge, skills, and attitudes to be learned"	Desired learning outcomes from various stakeholders.
2. Content	"subject matter selected to convey specific knowledge, skills, and attitudes" Content interacts with purpose.	Concepts, perspectives, facts, and values that are taught. For example: global warming vs. climate change.
3. Sequence	"arrangement of the subject matter and experiences intended to lead to specific outcomes for learners"	Identifying when sustainability enters the student's experience.
4. Learners	"how the plan will address a specific group of learners"	Emphasis on resident students of traditional college age from feeder high schools.
5. Instructional Processes	"the instructional activities by which learning may be achieved"	Pedagogies considered effective for sustainability include: active, experiential, and problem-based learning, service-learning, and civic engagement.
6. Instructional Resources	"materials and settings to be used in the learning process"	Readings, lecture content, and class activities.
7. Evaluation	"strategies used to determine whether decisions about the elements of the academic plan are optimal"	How does the college know if students are learning about sustainability?
8. Adjustment	"enhancements to the plan based on experience and evaluation"	Which sustainability initiatives have greatest impact on student learning?

In addition to these internal planning components in the center of the plan, Lattuca and Stark (2009) include the perspectives and influences of external and internal stakeholders on the academic plan. Stakeholders in this framework that are relevant to this study include external and internal factors, as demonstrated in Table D.

Table D: Internal and External Influences

EXTERNAL	INTERNAL / institutional	INTERNAL / unit-level
Workforce Government Accrediting agencies Disciplinary associations	College mission Resources (funding) Administrative decisions	Faculty Disciplines Student characteristics

The entire plan is represented in the following graphic organizer, which includes the background fields of Educational Environment and Sociocultural Context (Lattuca and Stark, 2009, p. 5).

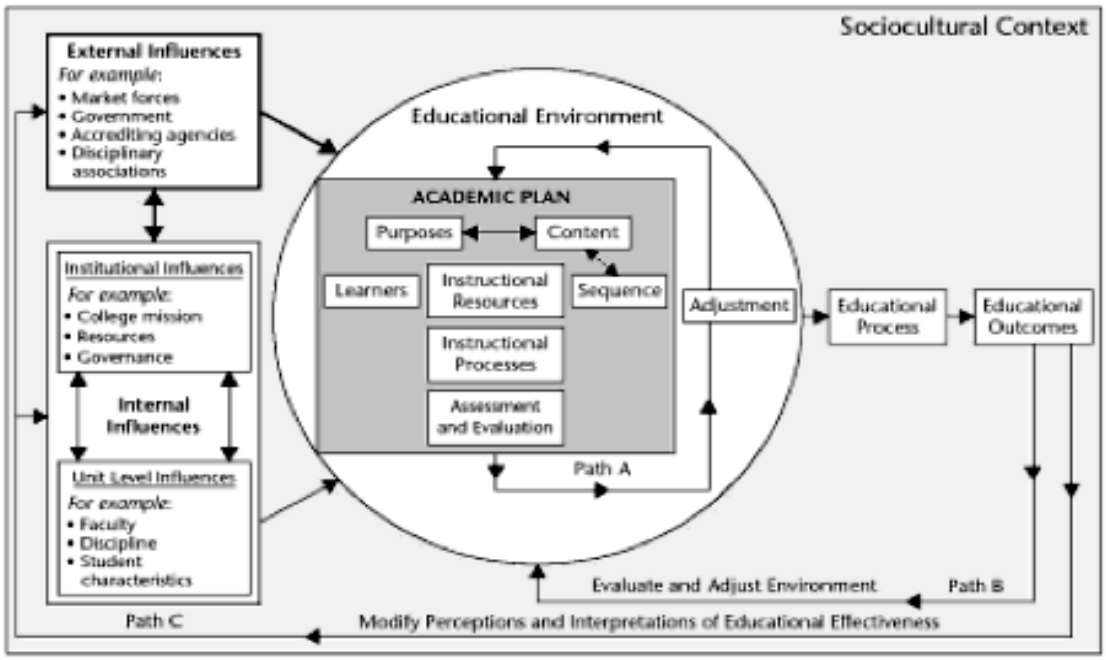

Figure 9: Academic Planning in Context

This model is both comprehensive and specific. Components of the Academic Planning in Context model provided initial codes for analysis in this study, and also helped to focus areas of curriculum planning that were most central to this study, including Purpose, Learners, and Instructional Resources, with lesser emphasis on Processes (including pedagogy), Content, and Sequence. In the area of stakeholder influence, the study focused mainly on Internal, institution-level perspectives of administrators, mission, and strategic planning objectives, as well as Internal, unit-level influences of faculty in different disciplines. This study did not focus on Evaluation, or

Outcomes. Perspectives of institutional (administrative) and unit-level (faculty) stakeholders were contrasted with each other, and against the characteristics and perspectives of student stakeholders.

Research design

This inquiry employs qualitative methodology and a case study design, focusing on one community college campus in a statewide ten-campus system. The purpose of qualitative research is to "reveal how the parts work together to form a whole" (Merriam, 1998, p.6). The purpose of the study is to understand how students have experienced disparate efforts to infuse sustainability into academic planning at the college, in order to determine which "parts" are essential to the "whole" of how students, as a group, respond to the topic of sustainability. As outlined in Chapter 2, changes to the sustainability curriculum may be systemic, encompassing multiple aspects of the student's experience, or local, consisting of a single experience such as a guest speaker or viewing a documentary film. Qualitative methodology is capable of discerning not just what students are learning, but where, and how. The methodology also elicited information about the affective or emotional response of students as a group to global environmental issues and sustainability as well as attitudes and feelings about nature, the future, and Hawai‘i in general.

In recent years, external stakeholders, such as government and accrediting agencies in the community colleges, have shifted to an assessment model that emphasizes quantitative, outcomes-based data such as graduation, transfer, and retention rates. A researcher could assess a sustainability initiative by examining whether it contributed to retention rates or motivated students to select a particular major. However, this study explores student knowledge, behavior, and attitudes related to sustainability. Much of the existing research has explored the perspectives of faculty. The perspective of administrators is also well-documented in literature, as detailed in the Chapter 2 description of commitments such as the Talloires declaration and the Presidents' Climate Change Agreement. However, since little is actually known about how students experience sustainability at college, a qualitative approach was chosen to "address the interests and honor the experiences of stakeholders closest to the programs evaluated . . . by giving voice to their contextualized program understanding" (Greene, 2003, p. 595).

This study preserves student voices at a specific moment in time, providing a baseline for future assessments of sustainability curricula.

The currency of the topic under investigation also points toward the efficacy of a case study approach. Case study is effective for contemporary rather than historical topics, where the investigator has little control (Yin, 2003). Since sustainability initiatives at the site under study have been largely de-centralized, a case study was an effective methodology to reflect on and examine the "big picture" of how sustainability is impacting the experiences of students as stakeholders in the curriculum.

Description of the site

Community College of the Pacific (CCoP) is one of seven community colleges in a unified statewide system that also includes three baccalaureate-granting institutions. CCoP has seen an enrollment increase in recent years, with 7,174 students in Fall 2004 rising to 9,102 students in Fall 2009. The college offers 22 Associates and transfer-level degree programs including culinary arts, health sciences, liberal arts, business, and STEM (Science, Technology, Engineering, and Math) fields. The faculty to student ratio is 18:1.

The student body is ethnically diverse, with a large Asian population of Chinese and Japanese students (26%), followed by Caucasian (14%), Hawaiian/Pacific Islander (17%), and Filipino (13%). The student population is 57% female. The college receives federal funding from both Title III (minority-serving institution) and Tribal Colleges and Universities (TCUP) programs. In addition, a new demographic pattern is emerging in the influx of post 9/11 G.I. Bill students, as there are 400 veterans at CCoP.

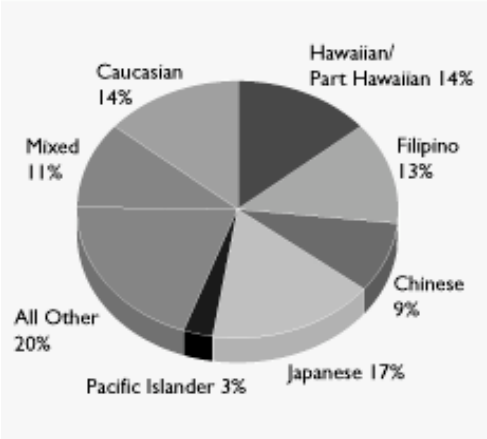

Figure 10: Student Demographics

At CCoP, 89% of the students enroll as state residents, 3% are nonresidents, and 5.8% are international (a sizable percentage for a community college). Of the large resident population, the college recognizes seven public high schools as "feeder" schools. In Fall 2009, 475 students enrolled from feeder high schools; 217 of those came from two local high schools. The college serves mainly state residents and largely public school graduates. However, as at many community colleges, students often do not go directly from high school to college. The average age at CCoP is 24.6, and there is a large non-traditional student population in addition to traditional college-age students. The target population for this study is the primary base of the college's student body: resident (or "local") high school graduates in their first and second year of study. The college uses the terms "first year" to refer specifically to students with under-20 credits earned; "second year" refers to students with 20-40 credits earned. In the study, no distinction is made between part time and full-time status, age of the student, or how many semesters the student actually attended.More than half the students at CCoP are working towards an Associates of Arts (AA) degree, or plan to transfer to the state's flagship campus: 46% are in a general education curriculum, and 22% are pursuing vocational majors in College Technical Education (CTE) programs. The academic goals of students are diverse, as is the range of academic skills and preparation for college. The college uses the COMPASS placement test, and 68% of entering students place into a developmental math or writing course.

The college is situated in a relatively affluent urban area on the island of Oahu, the most densely populated of the Hawaiian islands. There is a strong connection to Hawaiian culture, and the college is located near a striking geographic landmark. The campus is a five-minute drive from the beach and is beautifully landscaped with many varieties of trees and plants native and endemic to the area. The campus buildings are named after native trees, and the campus is nationally recognized for its cactus garden. These features of the campus are mentioned since sustainability curriculum may include "sense of place" as a relevant factor to student learning, and each of these details contribute to the atmosphere and identity of CCoP.

Sustainability context

In 2007, the chancellor of CCoP formed a Sustainability Committee to address sustainability related issues in both campus facilities and curriculum. The college has one nine-credit sustainability certificate offered within a specific department. There is no designated sustainability curricula in the general education curriculum, although course designs with sustainability themes have been offered in the philosophy and biology departments. A group of faculty meets informally to discuss sustainability across the curriculum.

A group of representatives from each of the state campuses met in June 2009 and submitted a report with recommendations for achieving the campus system president's goal of "positioning [the ten-campus system] as a world model and leader in sustainable practices, education, and research" (UHCC Sustainability Report, 2009, par 1). The report emphasized short-term goals of creating professional development opportunities for faculty in a "Sustainability 101" workshop as well as exploring sustainability from their own disciplinary perspectives. Faculty discussed longer-term goals such as creating a Sustainability or "S" designation for courses with sustainability-related content, as well as designing a systemwide certificate or minor in sustainability.

The report also summarized sustainability "assets" in existence in 2009. Among the system colleges, CCoP stood out as having a strong service-learning program, a garden project at a nearby hospital, a sustainability feature in the student newspaper, a Sustainability Committee, and sustainability-related activities offered to culinary students. Culinary program activities, as of 2011, included a campus herb garden, three composting methods, and recycling of cooking oil. The campus also has several recycling bins maintained by the operations staff, experimental lighting and "de-lamping" projects, and compostable cutlery in the cafeteria.

The college integrated sustainability into its current Strategic Plan, which describes the following performance measure: "F4: to increase number of courses, programs, and initiatives that integrate assignments and opportunities leading to improved sustainability learning outcomes" (Strategic Plan, 2008, p. 39) A strategy described in the strategic plan to reach this measure is to "develop student-centered learning and teaching resources to ensure superior academic achievement in the arts and sciences of sustainability"

(Strategic Plan, 2008, p. 42). The strategic plan also includes goals for reducing the energy and waste footprint of the college, and acknowledges a state-planning context that includes "globalizing economy and environment," stating that "deterioration in the global ecosystem requires heightened attention to ecological sustainability on campus and in the community. Opportunities for 'greening' existing certificate and degree programs as well as service-learning and other student learning activities need to be pursued" (p. 11). In comparison to similar colleges nationally, CCoP appears to be a typical institution with regard to sustainability initiatives in both facilities and curriculum; the college is neither a leader nor a laggard.

Role of the researcher

In 2003, I had what transformative learning theorists call an "epochal transformation" (Mezirow, 1991). I was jogging in my neighborhood, crossing a footbridge over a stream and thinking about my work as a college composition teacher. Stopping to stretch, I opened my ears to the sounds of nature: the rushing water, the rustling leaves, the deep thrum of the earth under my feet, the trilling of birds and quacking of ducks. I had not considered myself an environmentalist prior to this moment, but I suddenly, in one somatic "aha" moment, understood definitively that the planet is changing, that the future is unstable and uncertain, and that the thriveability of humans beyond the next 50 or so years is truly a matter of question and deep concern. As the mother of two young daughters, the math began to sink in. What would their futures be like, and what kind of college would best prepare them for this future? How does one go about preparing adolescent college students for future scenarios that are scary and uncertain? I wondered, why is nobody talking about this? And why is it just occurring to me now? What does it mean for my personal and professional work?

Being a believer in higher education, I enrolled in a graduate program at about this time. I sought a degree program in Environmental Psychology, but found that such a program didn't exist in Hawai'i. I d Educational Psychology was close enough. I studied learning and adolescent development. I also took four quantitative research and methods classes: statistics and more statistics. After a few years, when I began to discuss my dissertation research, my then-advisor discouraged me from studying the response of

adolescents to global environmental issues. I was told that I would have to first prove to my committee that global warming was real. After that, I ended up changing departments.

As I developed my research interests, I took quantitative methods and qualitative methods in the same semester and had the opportunity to frame my research interests in both paradigms. I felt myself becoming a qualitative, active, and participatory researcher – all at the same time. Qualitative methods play to my strengths and interests: I love writing "thick description," and I do well in the role of witness. Following my personal interest in sustainability curricula, I learned that I could carry my bias towards sustainability responsibly as a qualitative researcher. Qualitative research does not necessarily seek to "neutralize" the bias of the researcher. It makes researchers conscious of how their roles and background influence their perceptions. Bias need not be a liability; it fact, it can be an asset. Critical ethnography and research in general has activism at its core, and research for social justice is "cast in a prejudugemental framework" (Griffiths, 1998). I came to this research with an agenda to transform the curriculum in higher education to support EfS.

Insider / Outsider

Hawai‘i is a unique place with a special connection to sustainability. It is ironic that the state is among the most "unsustainable" on earth, with its paralyzing reliance on oil to import over 80% of its food. Hawai‘i has the highest gas prices and housing prices in the country as well as large numbers of displaced and homeless families. All of the problems in Hawai‘i affect Native Hawaiians more than any other subgroup. This is ironic because an estimated pre-contact population of 800,000 Native Hawaiians lived sustainably before their exposure to global capitalism. The ahupua‘a system of land management, which divided holdings from the mountains to the sea, was effective at maintaining natural resources, and it continues to provide a relevant metaphor for sustainable living.

As a mainland haole, a Caucasian from the continental U.S., I relate to Hawai‘i through a limited conceptual lens. On the one hand, I can provide a new perspective and insight as well as effective mirroring; I am sometimes able to see the strengths of this place in a different way. On the other hand, I can never really understand Hawai‘i. Without understanding the language and cultural practices, I know that, even with the

best intentions, my ability to learn about the history and ecology of this place is limited. Furthermore, my authority to speak is small, as only Hawaiians can really heal Hawai‘i. Yet the educational institutions of Hawai‘i are modeled on Western schools and within the walls of the college where I work, I do belong, and I do have authority as an expert in my disciplinary area as well as in organizational leadership. I bring something to the place, and I feel a sense of belonging.

Despite being an outsider in Hawai‘i, I am an insider within the institution and a full-time, tenured Associate Professor who has taught developmental and first year composition for eleven years. Since 2003, I have been a strong advocate for sustainability at CCoP. My first activities on campus included the creation of recycling bins made out of reused bleach barrels hand-painted by students. I have served on the Sustainability Committee since its inception and hosted meetings to discuss sustainability across the curriculum. In 2007, and again in 2009, I convened faculty from across the system to discuss sustainability on campus. Recently, I participated in discussions with a renewable energy contract provider with whom the college signed a 20-year energy provider agreement.

My deep and extensive history with campus sustainability efforts at CCoP almost certainly politicized or prejudiced my interactions with focus group participants, especially in the non-student stakeholders group. On the other hand, my involvement with sustainability initiatives and my insider status as a faculty member were useful in gaining access within the institution, among faculty, administrators, and students. Administrators and faculty trust the sincerity of my inquiry and have supported my efforts in assessing the campus’s sustainability initiatives.

Of course, responses to my inquiries were not always positive, and when negative sentiments were voiced in the interviews, I was aware of the politics of my insider role. Would I be comfortable criticizing the institution where I make my living? Would my recommendations support my status on campus, making my research seem self-serving? Would I be labeled as a radical, a cynic, or a Polyanna? Managing the bias of my researcher role felt like constantly spinning a kaleidoscope: no matter what I look at, my “job” is always in the lens, coloring and sometimes distorting what I see.

Insider status was an advantage in terms of understanding barriers in the sustainability paradigm. For example, I might recommend professional development for sustainability curriculum, but I know that faculty are severely overworked and busy and simply will not take part in it. I understand the mechanisms of promotion, tenure, and hiring, and see how these structures can lead to dramatic changes by directing faculty priorities. I also understand issues such as assessment and student learning outcomes. In order to engage administrators with sustainability curriculum, sustainability strategies must be tied to assessment efforts, retention and persistence statistics, and increases in graduation and transfer. Although I may not know everything about Hawai‘i, I do understand the complex mechanisms of an educational institution, and I thus position myself as both insider and outsider to the inquiry.

Data collection

Case studies rely on qualitative methods such as interviews. Interviews can be individual or group-based, structured or semi-structured. This study employed focus groups, formal interviews, and informal interviews for data collection. The primary method of focus groups was chosen to emphasize conversation and interaction of the group rather than responses between the group and the moderator. According to Bloor, Frankland, Thomas, and Robson (2001), “Focus group should be the sociological method of choice for the study of group norms, group meanings that underpin norms, and group processes whereby those meanings are constructed” (p. 4). Madriz (2003) used focus groups in a feminist/postmodern framework because the method “focuses on the multivocality of participants’ attitudes, experiences, and beliefs” (p. 364). The goal in this project is not to assess individual student learning about sustainability, but to read the response of the student body: their knowledge, habits, and attitudes towards the future. Morgan (1998) provides useful insight into the researcher’s use of focus groups:

> Imagine that this chance to communicate with the participants is a special privilege that they are granting to you. Plan for discussions that create a merger between your interests and those of the participants. Create a genuine opportunity to listen to the participants in your focus groups and to learn from them . . . It is your focus, but it is their group. (p. 11)

Focus groups originated in the Social Sciences in the 1920s as a method to design survey instruments; they then evolved into a market research strategy in the 1940s and 1950s. More recently, focus groups have been used to assess group norms and responses; for example, in the 1980s, they were used to better understand the behavior of gay and bisexual men during the emergence of the AIDS crisis (Morgan, 1998). Their use in academic research remains somewhat novel, but according to Morgan there are four effective uses of focus groups in academic research: problem identification, planning, implementation, and assessment. He says that, at the level of program evaluation, "discussions in focus groups can give you insights into how and why you got the outcomes that you did" (p. 15). As focus groups are participant-driven, they are more consistent with a learner-centered approach to curriculum change. Because focus groups are more time-efficient than individual interviews, they provide a broader view of the topic of study. Bloor, Frankland, Thomas, and Robson (2001) further assert that focus groups are an effective practice for discerning group norms:

> The sources of normative influence are more diverse, complex, and interactive; our selves are reflexive constructs, but they are very much more likely to be collective than individual constructs. Focus groups can assess the rich texture of these influences. (p. 5)

Since the goal of this study is to understanding what students know, do, and feel with regard to a complex topic such as sustainability, such group insight is of value.

Participants

Over 60 people participated in this study: 40 students, 10 administrators, and 14 faculty members were formally interviewed. Resident public high school graduates were targeted, as well as international and nonresident students in order to contrast perspectives. Private school graduates were not included. Participants were recruited primarily through faculty teaching in the general education curriculum; a few faculty colleagues offered extra credit to their students for participating in the project, and one professor offered the focus group participation as an option during class time because it was Earth Week. When recruiting and to avoid attracting bias, the term "sustainability" was not used; instead, the project was described as a focus group about "what students are learning in college."

Validity

An obvious limitation of a case study in which the "case" is defined as one community college campus is that the study will not be generalizable to other community colleges, nor to four-year universities. Hamel, Dufour, and Fortin (1993) describe case studies as a concentration of the global in the local, an apt description for this study. Since the topic of sustainability is so vast, examining its real impact in one setting provides a useful contrast to the broad brushstrokes of current research on EfS. Capturing student voices about sustainability and focusing on what students are actually taking away from their experiences at the college provides much-needed data to inform transformation in the academic curriculum.

Another limitation of the case study is its non-longitudinal approach. While some comparisons are made between first and second year students, truly longitudinal work is not feasible for this study. In addition, there is an ethical consideration to not engage with one's own students in research, as the power differential and faculty member's control of the student's grade could overly influence willingness to participate and quality of the responses. Naturally, the desire to "please" a teacher is very strong. Luckily, I was granted a sabbatical, which took my presence off campus as a teacher and lessened the potential for the participants to feel they needed to say the "right" thing. In discussing their actual habits (such as recycling or buying local produce), students might be even more honest with a non-faculty interviewer. In a few of the focus groups, conversation was recorded among the participants without the researcher present; these recordings revealed surprising attitudes among students that indicate student responses might be different depending on the questioner.

Lastly, the sample size of the study was relatively small, with 22 non-students and 40 students participating. However, the use of multiple focus groups in each category of student participants, as well as inclusion of different categories of students, provided triangulation of viewpoints. Member checks were held with both student and non-student stakeholders to confirm that participant voices were accurately represented.

Student participants

"Student stakeholders" were sorted by two criteria: first, where they graduated from high school (resident, nonresident / public, private); second, the number of credits

earned (under-20, or over-20). Resident graduates from CCoP's eight public feeder high schools were targeted since this is the largest population on campus. To better understand the curricular experiences of the majority of CCoP's students who come from public Department of Education (DOE) schools, resident private school graduates were not accepted for the study. The second criteria was the number of credits earned. As stated earlier, CCoP uses the term "first year" to apply to all students with under 20 credits earned. "Second year" refers to all students with 20-40 credits earned. The number of credits was determined by student self-reporting.

International and nonresident students with any number of credits formed one category. This group was intended to serve as a comparison that might illuminate particular knowledge, habits, or attitudes germane to the resident population. First year and second year residents formed the other categories. Table E describes a few characteristics of the "student stakeholder" participants.

Table E: Student Participants

Resident "First Year" (0-20 credits) **17 students / 4 groups**	Resident "Second Year" (21-40 credits) **10 students / 3 groups / two interviews**	Nonresident / International (Up to 40 credits) **13 students / 3 groups / one interview**
12 males, 5 females Two deaf students participated with the aid of an interpreter.	6 males / 4 females, This group included several students of nontraditional age. One participant had graduated high school 40 years ago. One students was a military veteran.	7 males / 4 females Countries of origin included: Japan, Korea, Philippines, Europe, and the continental United States. Two students in this group were military veterans.

Non-student participants

Purposive sampling was used to recruit faculty through direct invitation from the researcher. The chancellor of CCoP supported the research. In total, 14 faculty and 10 administrators were interviewed. Two faculty focus groups were held, covering a range of ranks and disciplines and including faculty who were, and were not involved with current sustainability efforts. One administrator group was held, with the support of the chancellor. None of the administrator group, except for the Vice Chancellor of Operations, were formally involved with sustainability initiatives. Characteristics of the Non-Student Participants are described in Table F, below.

Table F: Non-Student Participants

Role	**Involved in Sustainability (Discipline)**	**Not Involved in Sustainability (Discipline)**
Lecturer, staff	Project Coordinator (2)	Composition
Full time probationary (pre-tenure)	Biology	Hawaiian Studies
Full time tenured	Philosophy Art Culinary	ESOL Psychology Counseling
Department chair, Coordinator	Hospitality	Composition
Administrators (10)	Vice Chancellor (VC) of Operations	VC Academic Affairs VC Student Affairs Grants Coordinator (2) Institutional Researcher Dean of Health Dean of Humanities Culinary Program Coordinator

Focus group protocols: Non-student stakeholders

For the "non-student stakeholders" group, a heterogeneous group of faculty and administrators, both those involved and not involved with sustainability initiatives at the college, were asked to take the Sustainability Assessment Questionnaire (SAQ), a field-tested data collection instrument that was used as a focusing activity, a type of conversational icebreaker, for this group. The SAQ was designed by the University Leaders for a Sustainable Future (ULSF) to aid colleges in assessing sustainability initiatives on their campus. According to the ULSF website, the goals of the instrument are to "raise consciousness and encourage debate about what sustainability means for higher education practically and philosophically; give a snapshot of the state of sustainability on your campus; and promote discussion on next steps for your institution" ("Resources," 2011, para. 2) Although curriculum is only one component of the questionnaire, which also includes categories such as scholarship, operations, faculty and staff development, outreach and service, student opportunities and institutional mission and planning, the scope of the SAQ mirrors that of Lattuca and Stark's (2009) theoretical framework in its inclusion of influences and contexts that shape the academic planning process for sustainability. The SAQ is a questionnaire that is filled out before a group interview, so its use as a focusing activity is consistent with its original design. The SAQ has been administered and updated by the ULSF since 2003.

Results from the SAQ were not analyzed for this study. However, results from this instrument could be compared to other community colleges, used to compare two-year and four-year college responses, or used longitudinally to compare current thinking with future results. The surveys were collected electronically for possible use in a future study or publication. For the purposes of this study, however, the questionnaire served to elicit faculty and administrative perspectives on what Lattuca and Stark (2009) call the "purpose" of sustainability in the curriculum, asking "what should students be learning about sustainability?" Focus groups are an effective method to understand a "gap between people" (Morgan, 1998, p. 57). Here, the goal was to ascertain differences in what the non-student stakeholders understand to be important about the sustainability curriculum and what the students themselves feel they are learning or want to learn.

During the focus group session, non-student participants first completed a short freewrite in response to the following question: "What should students be learning about global environmental issues and sustainability?" This corresponds to Research Question 3: "What do internal, non-student stakeholders think students should learn about global environmental issues and sustainability in the academic curriculum?" Participants were then asked to arrange or rank organizational components described in the SAQ in terms of their relevance to sustainability: Research, Operations, Curriculum, Faculty and Staff Development, Outreach and Service, and Institutional Mission and Planning. Concept maps using these categories were created by the groups, and are contained in Chapter 4. Lastly, the group was invited to talk freely about the freewrite question, the ranking activity, and the SAQ. A protocol for the focus group interview with non-student stakeholders is contained in Appendix B.

Focus group protocol: Students

Two research questions are pertinent to the student focus groups:
first, what knowledge, habits, and attitudes about sustainability do current community college students have? In terms of the theoretical framework, this focuses on the characteristics of the Learners, asking them what they know, do, and feel. Research Question 2 asks, "Where have they learned their current knowledge, habits, and attitudes about sustainability?" This refers to the Institutional Resources and Processes that influence student learning about sustainability such as in-class activities, campus

experiences, and service-learning. This question assesses what students learn about sustainability on campus, or off campus, from peers, media, or other influences.

A structured interview protocol was originally designed with direct inquiry about the topic of sustainability. However, when piloting the interview questions, the trendiness and politicized nature of the term "sustainability" seemed to create confusion and predisposition among the students, especially those who were either unfamiliar with the term or prejudiced in favor or against it. Based on the advice of Bloor, Frankland, Thomas, and Robson (2001), the protocol was redesigned around a "focusing activity" that allowed participants to direct the topic of the conversation based on what they knew the most about and what topic they felt interested in. Though groups could choose to discuss nine different global issues based on the priorities of the Union of Concerned Scientists, the interconnected themes of sustainability and sustainable practices recurred in the conversation. This focusing activity and the group interview protocol is described in Appendix C. Each focus group was held in the same on-campus location, was recorded, and lasted one hour and fifteen minutes.

Data analysis

Qualitative methodology can employ different types of analysis strategies. The style of this study was primarily ethnographic, in which the task of analysis is to "reach across multiple data sources … and to condense them, with somewhat less concern for the conceptual or theoretical meaning of these observations" (Miles & Huberman, 1994, p. 8). At the same time, the qualitative research process is recursive, as data collection, analysis, and reporting can all happen together. Design is emergent. According to Merriam (2008), "The researcher usually does not know ahead of time every person who might be interviewed, all the questions that might be asked, or where to look next unless data are analyzed as they are being collected" (p. 152). Qualitative data analysis relies on what Geertz (1973) called "thick description." The task of analysis is to convey the complexity of the participants' experiences with enough detail so that the researcher can determine for him/herself if the conclusions are valid.

Qualitative analysis engages with data at the level of the smallest piece of relevant information. In this study, that unit might be a word, sentence, or conversational exchange. The goal of analysis is to view all words in the transcription as potentially

relevant to the emergence of themes or patterns. According to Lincoln and Guba (1985), a unit of data must be heuristic: both relevant to the study, and thought provoking on its own in a larger understanding. Existing research on sustainability indicates the importance of affective components; hence, analytic coding in this study prioritized preserving student voices.

Miles and Huberman (1994) suggest that analysis of qualitative data should proceed in three stages: data reduction, data display, and conclusion drawing. Analysis in this study proceeded according to these steps. First, meaningful units of text were "chunked" in the transcripts and then reduced to meaningful units by omitting repetition, filler, and digression. The reduced data were displayed using color coding to attribute the status of the speaker: red for first year students, blue for second year students, and green for international/nonresident students.

Next, a coding framework was employed to select and organize relevant text, group-related passages, and repeated ideas into categories. Abstract concepts consistent with the theoretical framework should be tested as possible constraints for interpreting the data (Auerback & Silverstein, 2003). The predictive codes and categories that had been anticipated to emerge did in fact appear, except for the first category: students did not use any of the definitional language of sustainability.

Table G: Original Coding Framework (Predicted Utterances)

Definitions of sustainability Use of possible definitions that students/nonstudents might know and refer to.	four pillars; economics; social justice; politics; environment; Bruntland; earth charter
Experiences with sustainability Descriptions of where and when students have been exposed to sustainability (or where nonstudents think they have or should be exposed)	high school; classroom; assignment; service learning; volunteer; cafeteria; campus; media; peers
Sustainable practices & habits What participants mention CAN be done (and whether or not they do it).	recycling; save energy; save water; transportation; (etc. … this list is long)
Affective component of sustainability How students feel about the future and about what they learn about the issues discussed (These codes may lend themselves to coding along a spectrum of feeling such as "very depressed" or "somewhat hopeful.")	Depressing; hopeful boring; fascinating local; global
Knowledge of global issues and sustainability	scientific facts; cultural practices; direct experience; peer knowledge; green; ecology/systems

The unit of analysis was sometimes a single word, such as “karma” or “water” or “sad”; they were sometimes sentences or utterances, such as “we are probably going to go back to the ice age” or “nature’s gonna do what she’s gonna do”; and they were sometimes whole conversational exchanges. The units were color coded by category of speaker (First Year, Second Year, Mainland/International) and then sorted into the five emergent content categories shown below: knowledge, habits, feelings and attitudes, curricular experiences, and “Place.” The coding and sorting allowed comparison between, for example, first year and second year knowledge; international and resident attitudes; curricular experiences of first year students and those of second year students.

Table H: Emergent Coding Framework (Actual Utterances)

Knowledge What students know about specific topics, such as water, global warming, and biodiversity (Knowledge may be correct or incorrect.)	water quality; greenhouse gases; pollution; causes of global warming; scientists; invasives; miconia; climate change; etc.
Perceptions and feelings How students perceive things to be How students feel about the future	oil companies; economy; government; the future; sad; angry; karma; apocalypse; etc.
Habits What students think can be done What they actually do	Recycle; carpool; conserve; electric car; tote bag walk; ride horse; etc.
Curricular and extracurricular experiences Specific courses, teachers, papers, films, books, and media	*Inconvenient Truth*; *National Geographic*; TV; Geology class; History; English; research paper; high school; class project; etc.
Place-based Relationship Personal experiences and observations about where and when the students live and have grown up	this place; our home; in my lifetime; etc.

All coding was done manually by the researcher. Although computer programs are available to extract word patterns, the interpretation of the researcher is an asset to the analysis. As Patton (1980) said, “The researcher is the instrument of qualitative inquiry, so the quality of the research depends heavily on the qualities of that human being” (p. 122). The time spent transcribing, coding, and sorting the data was valuable.

Descriptive Analysis

The first round of analysis (contained in Chapter 4) was a descriptive summary of what students know (and don’t know), what they do (and don’t do), and where they learned about sustainability. The results in this category include lists of what students

mentioned; for example, students seem to watch a lot of documentaries and frequently mentioned Public Service Announcements (PSA) as a strategy for creating change.

This data was also subjected to a within-case comparison, as the responses of first year students were compared with second year students, as well as resident students with nonresident/international students. Data from faculty and administrators were more straightforward and summarized mainly to set a context and discern differences between the approach of student and non-student stakeholders.

Typologized analysis

Lofland and Lofland (1995) suggest that when a researcher works authentically with data, a set of terms, either imposed by the researcher (etic) or externally defined (emic) can be used to capture "the process of charting the possibilities that result from the conjunction of two or more variables" (Merriam, 2008, p. 157.) This corresponds to Miles and Huberman's (1994) idea of data display; the way in which data is viewed will influence our perceptions of the data. The researcher chose to visualize the data along two spectrums, based on concepts described in Chapter 2. One spectrum is called "alienation versus engagement," and the other is "weak versus strong sustainability."

Alienation versus engagement

As outlined in Chapter 1, academic alienation and ambivalence is currently a topic of intense scrutiny in community colleges, as pressure mounts to increase student success rates. Could sustainability be related to student engagement? Data in the category of "attitudes" lent itself well to consideration on a spectrum from an attitude of alienation or detachment with sustainability issues, characterized by a lack of interest in learning about sustainability, to a more highly engaged attitude in which the student finds sustainability issues interesting and stimulating. These spectrums emerged from the data. An example of an alienated or unengaged comment is "nature's gonna do what she's gonna do." An example of an engaged comment is "we've just got to get out there and spread the word about this."

Weak versus strong sustainability

The second spectrum used for data display is that of "weak sustainability versus strong sustainability." In Chapter 2, this is also described as "light green" versus "dark

green" behavior. Habits and sustainability practices could be visualized along this weak-strong spectrum. For example, "I use the eco-totebag from the bookstore" is defined as a relatively weak sustainability practice, and "the real problem is global capitalism" is a strong sustainability attitude.

Used together, these two spectrums created a grid that served as an effective data display. While not all data could be charted on both axes, these two spectrums provided a useful method of categorizing student attitudes and behaviors. Results from the typologized analysis formed four useful quadrants, as shown in 11: Quadrants of Analysis. Notice that the horizontal, or X axis, represents a spectrum from low to high engagement with sustainability, while the vertical, or Y axis, represents a spectrum from weak to strong sustainability habits or practices.

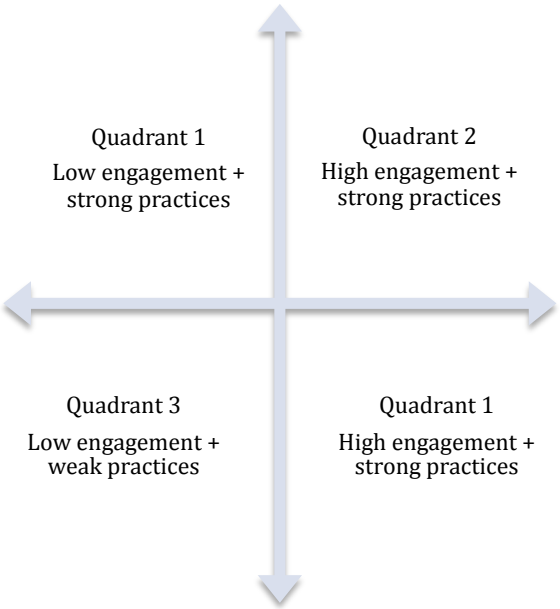

Figure 11: Quadrants of Analysis

Figure 11 is repeated in chapter four, with content analysis, and again in chapter six, with a discussion of related implications.

Drawing conclusions

The final level of analysis was to draw conclusions and make recommendations. This is where the theoretical framework, Academic Planning in Context, was employed to look at all the elements of curriculum design. Observing the data patterns shows which

components of academic planning appear to be effective for student learning about sustainability. The goal of this study's recommendations is to direct the institutional investment of energy and resources into the most productive areas for Education for Sustainability.

CHAPTER 4. FINDINGS: STUDENTS

Overview

The primary goal of this research is to capture the voices of current community college students. This chapter answers Research Questions 1 and 2, which focus on students as stakeholders in the curriculum. Each question is rephrased to use terms from the theoretical framework in order to aid the reader in connecting these concepts.

1. What knowledge, habits, and attitudes about sustainability do current community college students have? (What do Learners know, do, and feel?)
2. Where have they learned their current knowledge, habits, and attitudes about sustainability? (What Instructional Resources and Processes influence student learning about sustainability?)

Student responses are summarized; then a within-case comparison of patterns of response among the categories of first year, second year, resident, nonresident and international students is made. Sources of knowledge are summarized with discussion of student experience in K-12 and college curriculum. Habits are analyzed on a weak-strong sustainability spectrum, and attitudes are measured on an engagement spectrum, resulting in four quadrant areas – each constituting an emergent theme. These quadrants, including the "ideal" combination of strong sustainability habits and engaged attitudes, are explored. A key finding is that students interact with sustainability from a variety of sociocultural perspectives; the "go green" college activist stance is the most limited.

In the "voice of …" tables that introduce each section, comments made in all of the focus groups are synthesized by category of the speaker, and general attitudes are paraphrased in order to provide an overview of the group norms perceived in each group. Such generalizations are intended as a creative and thought-provoking way to capture group norms related to sustainability. They do not represent generalizations. Even so, response patterns did emerge within each classification of student.

The chapter concludes with an emphasis on students' attitudes towards sustainability in Hawai‘i, in order to evoke the students' collective "sense of place."

What students know

As a focusing activity, participants were asked to rank the top five issues according to which ones they "knew the most about." Then, each group selected the issue they "felt most interested in talking about." This activity yields two pieces of information. First, what students know, and then, what they are interested in; noticeably, the two are not the same.

Table I: Ranking Activity, What Students Know

Key:
Bold= most interested in this issue
* = issue added by students
( ) = student requested clarification of issue / did not understand

Group #	First Year	Second Year	Nonres / Int'l
1	**Energy** Global security Transportation Food & Agriculture Invasive species Land management * Gravity * Biodiversity	Poverty* Transportation Energy Global Warming **Food & Agriculture**	(global security) Overpopulation* **Food & Agriculture** Water Energy / Global Warming / Transportation /Biodiversity / Invasive Species (five-way tie) Waste Digital Communication *
2	Energy **Global Warming** Water Waste Management Invasive Species	Waste Management **Food & Agriculture** Energy Water Transportation	Food Water Energy Invasive Species **Transportation** Population*
3	Global Warming Transportation **Energy** * Food Water Pollution* Overpopulation* Overfishing*	Global Warming Transportation Energy Water Global Security Waste	Global Warming **(Global Security)** Transportation Energy Food & Agriculture
4	**Pollution** Invasive species* Global warming Waste management	Global Warming Indigenous rights * **Water** Food & Agriculture	Global Warming Waste Energy Transportation

4	Water	Global Warming Indigenous rights * **Water** Food & Agriculture Invasive species Transportation Energy **Global warming**	Water Global Security

Completing this ranking activity 13 times (in 11 focus groups and 2 personal interviews), the 40 students felt "most knowledgeable" about Global Warming (46%), Energy (15%), Food & Agriculture (15%), and Waste Management (7%).

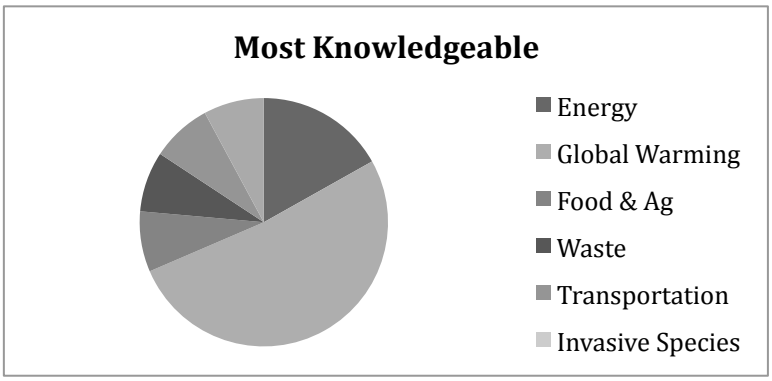

Figure 12: Student Data: Most Knowledgeable

Nearly half of the groups ranked global warming as the issue they were most knowledgeable about. But when asked which issue they were most interested in discussing, only two groups out of 14 chose Global Warming. Groups were most interested in discussing Food & Agriculture (23%), and Energy (15%), with at least two groups each choosing other topics of: Global Warming (7%), Transportation (7%), Water (7%), Global Security (7%), and Pollution (7%).

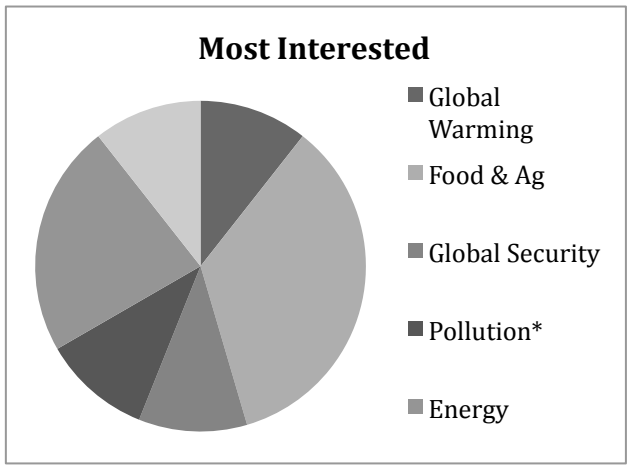

Figure 13: Student Data: Most Interested

Sustainability issues are interrelated, so it was expected that the topics would overlap; no matter the starting point, the conversations spanned many topics related to sustainability. The topics that emerged most within the focus group conversations were Global Warming, Water, Invasive Species, Biodiversity, and Food. In the end, global warming was discussed at length by all three categories of students and in the greatest number of focus groups, most likely because students did indeed have quite a bit of knowledge about it. The following table synthesizes comments across the three groups, because this was one topic that was discussed by all categories of student. The "voice of" section is intended to give the reader a sense of how the different student groups articulated what they knew about global warming.

Table J: "Voice of": What do students know about global warming?

(synthesis of comments across all focus groups)

Voice of First Year Students	Voice of Second Year Students	Voice of nonresident students
Global warming is caused by humans: burning trash, factories, air pollution, big cars. Pollution, specifically carbon dioxide, affects the ozone layer, which makes the sun burn hotter. This is the greenhouse effect. This is making the ice caps melt and the oceans rise and the polar bears die. The hot sun is drying up the water, like the reservoir I used to swim in.	I know a little bit about global warming, or could at least pretend to. Global Warming is caused by burning fossil fuels, which creates greenhouse gases. A lot of the Polynesian islands gotta evacuate to New Zealand because of rising ocean levels. Certain plants can stop greenhouse gases. We can stop global warming but everybody in the world has to do it.	Greenhouse gases are caused by burning fuel, coal, and deforestation. Cars are contributing, but the real causes are unknown. It's a political issue in terms of which countries contribute to global warming. Developed countries are selfish, that's why the problem.

Both first year and second year local students used the term "burning" (of fossil fuels) and "greenhouse" (as in greenhouse effect or greenhouse gases). One first year student described global warming this way: "The carbon dioxide that's been going out in the air makes the ozone layer weak, or something like that, and then the sun just hits us ten times harder." First year students frequently mentioned the plight of polar bears as a consequence, while students in the second year group used more direct examples, such as the evacuation of Tuvalu. These contrasting examples indicate a shift from less abstract comprehension to greater realization of the real impact of rising ocean levels, particularly coming from members of an island culture. Even though most of them were just 18 years old, the first year students asserted a lived experience of global warming in their lifetimes: one student said, "Check the reservoir I used to swim in, all dried up. The cause, what's the cause of it?" The second year students named more ways to slow, down, stop, or reverse global warming, and perceived the need for international cooperation. One student felt that the comprehension of his peers was simplistic:

> Not that many people know what global warming is actually. When I talked about it in my Eng 100 class, a lot of people know that, okay greenhouse gases, too much cars, the gas, the fossil fuels from factories, that's what they told me they knew about global warming, but when I asked them more deep questions they were like, I didn't know it does that, I didn't know that something over here in Hawai'i could affect someone in India, Korea, Japan, Russia.

The sense of global interconnectedness, both of places and issues, stood out as a quality most of the resident students did not have, especially when compared to the nonresident and international students. The nonresident students framed global warming as a political and economic issue caused not just by "burning" but also by deforestation. It is not surprising that international students would mention the disparity between developed and undeveloped countries in terms of producing carbon dioxide; however, this group seemed only vaguely aware of international solutions such as carbon trading.

This summary of what students know about global warming and what can be done about it leads to the following possible conclusions regarding what these three categories of students know about sustainability.

Table K: Knowledge Summary

First Year Resident	Second Year Resident	Nonresident (U.S. Mainland and International)
• First year students have a more abstract understanding of the issues.	• Second year students perceive some solutions.	• Nonresident students perceive political and economic disparity.
• First year students interpret issues (correctly or not) through direct sensory experience. (ie: "it's getting hotter.")	• Second year students understand real consequences.	• Nonresident students are more critical of the United States.

The short answer to the question, "What do students know about sustainability?" is this; they know a lot. The level of transactional knowledge about sustainability issues held even by the "lowest" students (coming from a pre-college remedial English course) interviewed was surprisingly high. However, there were clear gaps in students' levels of scientific literacy as well as other knowledge. For example, one first year student, interviewed right after the March 2011 tsunami that struck Japan, thought the Fukushima power plant was a nitrogen plant. ("You mean nuclear?" "Yeah, right, that's the word.") This group as a whole had no idea how nuclear power worked. However, their overall awareness of global environmental issues and sustainability, especially on a more localized level, was high.

Student knowledge, overall, is similar to what was demonstrated about global warming; they might not get the science exactly right, but they are aware of the problems. As they progress through college curriculum they come to understand more of the real consequences related to global environmental issues. With global warming, first year students tend to mention polar bears, while second year students talk about Tuvalu. Same with biodiversity; first year students mentioned "a bunch of bugs that we don't really care about even though some people do," while second year students could articulate concerns

about bees, pollination, and the real impact of small imbalances. First year students' knowledge appears highly influenced by television media.

Nonresident students, from the continental United States and a wide range of countries, including Japan, Romania, Philippines, Korea, and Germany, had more culturally-learned knowledge of sustainability, particularly in the area of food. Students who are not from Hawai'i have a greater understanding of where food comes from and how it should be prepared and eaten. Nonresident students, not surprisingly, had a much greater sense of global connection and placed greater value on peace, fairness, and the consequences of global capitalism.

Habits: What students do

Toward the end of the focus group conversations, students were asked, "When you think about all of this, what do you think you can do about it?" After listing the group's ideas, they were asked, "Which of those things do you actually do?" Responses fell largely into four categories: transportation habits, food habits, "green" habits (expressed using the "reduce, reuse, recycle" concept), and education and advocacy habits. Responses are summarized in Table L.

In general, first year students did not report very many actual sustainability practices, though they did claim to recycle. Second year students were more creative in linking what they did with sustainability practices; for example, one group discussed nutrition and healthy eating, and called this a sustainable practice. Nonresident students had the most sophistication in terms of the impact of economic and political behaviors, as well as personal modeling and taking the initiative to educate others. Comments about habits and practices are synthesized by group in Table M: "Voice of": Sustainability Practices, which is followed by comparisons between and across the categories of students.

Table L: Sustainable Habits: "Things we could do"

Key:
Listed in order of frequency mentioned.
italic = student actually does it.

	First year	Second year	Nonresident
Transportation Habits	Bus Bike Buy electric car Carpool or rail Stop using oil Stop using factories Skateboard Ride horse	*Take the bus* *Bike or Walk*	Support Rail Better Public transportation *Walk*
Food Habits	(none mentioned)	Grow a garden *Buy local produce* Buy organic Eat whole foods avoid processed foods. Compost Hunt boar	*Buy organic/local* Make all chickens organic Enjoy food
Advocacy & Education Habits	Be in a rally or protest Write your senator Keep yourself updated Make a PSA on local radio Spread the word Make cartoons	*Educate friends* Watch films Show films/clips to friends	Advocacy work *Model for others* *Report invasives* Educate others Educate family Education in preschool
Green Habits	Be more green *Recycle* Reuse Use eco bag Don't keep laptop plugged in, reduce brightness	*Recycle* *Reusable water bottles* *Use plastic grocery store bags as trash liners* *Don't use trash liner at all* *Conserve water, don't leave hose running* Collect shower water	Better city recycling

Table M: "Voice of": Sustainability Practices

First year students	Second year students	Nonresident students
I know what we can do! Move to Alaska and eat fresh salmon right out the river. We can be more green, recycle more. Ride a bike once in a while, like in China. Ride a horse! Make a solar electric rail. Spread the word with cartoons, commercials and radio spots. Protest, make a sign, go on strike. Wait for someone to have the initiative to fix things.	Some habits that are good for the earth are healthier for you, too. I try to eat healthier whole foods, and buy local produce when I can afford it. I think composting is cool, I'd like to do that. If a place is in walking distance, I walk. I turn off the tap when I'm brushing my teeth, and I'm not prone to hour-long showers or anything like that.	We've got to think big. Companies can have a lot of influence, and you need to really move the people. Education is key, especially in preschools, but older people need to be educated too. We can model for our friends and family that it's not that hard. I recycle, but I wish I could recycle more. It seems like we could eat less, get by with less.

First year students, overall, had more fanciful responses when asked about their habits, responding with ideas like "move to Alaska," "ride a horse," "go on strike." The general tone of their conversations was less serious and prone to digression. Students seemed to find solar and electric technologies somewhat exotic. One student had a solar water heater in her home, but when she said that her family used it mainly to heat their pool, the conversation quickly turned to planning a pool party at her house. Alternative energy vehicles seemed to feel out of reach, inconvenient, or imaginary, as demonstrated in the following sequence between the researcher and the students in one first year focus group.

Researcher: Would you buy an electric car?

Brian: And have to charge it every night? I prefer a gas car.

Researcher: What do you think about the proposed rail system?

Jay: Slam some solar panels on the top of that!

Chris: We gotta get new cars, ho – like 30 grand for a little car, man!

Pedro: okay, if you think about it, what would happen if we had flying cars?

Jay: They don't make flying cars! Stop watching Star Wars, brah! Chewbacca is not real!

In another first year group, students were asked, "Do you carpool?" One student, responded with laughter: "We went to car cruise one time, like ten of my friends brought their cars, we was like a train, didn't even stop for a red light!" Several first year students

claimed to recycle, but when other students brought up energy conservation ideas such as turning down the brightness on their laptop, or unplugging appliances, they laughed or seemed incredulous. Brian said, "I don't know what I would do without energy. I need to charge everything, especially technologies nowadays." While they appeared interested in the conversation, they confessed that they did not really think very much about what they could do differently. Joy admitted that her generation was not engaged with sustainability issues:

> Technically, we do kind of think about all this kind of natural disasters, this stuff that's happening, global warming and whatnot, but for us we kind of just barely think about it, because there may be some solutions but we can't really think about planning. The scientists and whatnot take care of it mostly. I guess we depend on other people to do certain things, like find out solutions.

When Joy was asked, "Whom are you depending on?", she replied, "Like, people that have the initiative. Another student in the group expressed a similar feeling, saying that these were issues she might worry about later in life. When asked when she thought that would be, she estimated, "When I'm about 30." This comment could indicate a developmental stage to be reached or perhaps a perception of extended adolescence; sustainability issues were seen in this group as the responsibility of adults, not youth.

The second year students expressed more concern with personal health and wellness, perhaps influenced by the presence of older students and a few students who worked in medical offices or studied nutrition. In all of the second year groups and interviews, there was more interest in food and supporting local agriculture. In one group, three of five students had family gardens. One student said, "My mom kinda has a mini farm in the back of her yard; that's all she eats." Another lived in an apartment and described how his mother had to move tomato plants from the front of their apartment to the back lanai at the request of the landlord.

Conversation about food in the second year groups started from how the food made students feel. Jean described an emerging awareness:

> I used to eat fast food, but then I changed, about two years ago, and I was like, yuck! Your body gets so used to it, then once you stop and start eating healthier

> foods, whole foods I like to say … I try to eat whole foods – you know what I mean, foods that are non-processed.

Sugar and processed foods were discussed, and students understood that fast food not only did not feel good in their bodies but also led to the epidemics of obesity and diabetes. Their conversation connected food issues to personal health, social health issues, and economics.

> Jean: They're doing genetics; that kind of concerns me. You don't know what you're eating sometimes even if you go to the health food store.
>
> Tony: Right! And everybody is going organic right now, but really, how organic is it?
>
> Tommy: Organic is expensive.

They went on to discuss whether organic food was worth the price, and they seemed unsure whether or not pesticides were harmful. One student, Tommy, thought that without pesticides, food would have "more germs on it." Overall, they seemed more interested in "eating local" than "going organic."

The perception that personal health and environmental health were related also emerged from Ellen, who said: "I prefer taking the bus instead of a car because it'll reduce greenhouse gases and it's a lot healthier for you. If there's a place you can go to that's walking distance, walk. Respect nature because without it we wouldn't be here." On the other hand, another second year student, Tony, said, "I live in town, I'm centrally located, I don't even own a car," but when asked, "Do you do that because you see yourself as an environmentally conscious person?", he laughed and said, "Um, yeah, I'm going to say yes to that!" In other words, some sustainable practices result from circumstance, family practices, or not having money for a car.

A similar sense of somatic understanding emerged from another second year student, who talked about reducing his energy footprint:

> Once you start doing it, you're going to notice a difference, like in your head and your body. The more you save energy and electricity, you're gonna notice on your electric bill. But it's not just visual, you're gonna get this sense in your body.

Another student said, "I'm very for reusable water bottles. *It hurts* to go to the beach and see bottles strewn everywhere."

Second year students also seemed to understand the economic impact of supporting local farmers and keeping money in the local economy. Kana described his decision-making process when purchasing groceries.

> I try to support local stuff. Even sometimes that carton of eggs is like a dollar fifty more, and I'm like, I just gotta buy the Hawai'i eggs. It's hard sometimes! You go to Safeway and they have the 2 for one pack, so like I can get 12, or I can get 32. If I have money, I'll try to make the conscious choice at least 3 out of 5 times, you gotta support … Safeway or Sam's [Club], it's all going back to the mainland; nothing is staying here.

Mark expressed the same confusion:

> You can get locally grown avocado and it tastes good. If you was to buy that, it's gonna be like a couple bucks a pound and you get this little manini-looking avocado, and it costs less, but it costs so much just to bring that stuff across the ocean, but then it becomes cheaper! So, you have some guy in there and he's like, should I spend a dollar a pound or should I spend 3 dollars a pound? I think it's just re-education, how do we spend our dollars? Do we spend the three bucks?

Mark's comment illustrates second year students' awareness of the benefits of purchasing local foods but frustration that a local item would cost more, even though non-local items had been shipped thousands of miles.

Food and agriculture seemed particularly compelling in the second year groups, as they had direct experience with those issues in their homes, at work, and in college classes. Jade believed that personal habits provide a starting point:

> A lot of people that I know, they don't really think about food. They're not eating and consuming consciously and so if we can get a conversation going, and have people starting to think about what it is they're putting in their body, and the larger cost of food production and transportation and consumption and what it does not just to people but the environment.

A process of personal somatic awareness or health consciousness seemed to come first, followed by confusion about the economics of food production, which led to bigger-picture thinking about economic and political action.

Nonresident and international students focused less on personal habits, emphasizing the importance of improving City and County recycling efforts, supporting businesses involved in environmental efforts, and having an appreciation and respect for nature, the community, and food. While personal behaviors such as using a reusable steel water bottle were seen as positive, these students emphasized the importance of political leadership and larger numbers of people. For example, one student said, "I know the previous mayor, his most burning issue was waste management. We make all this trash and it's really not going anywhere, I mean the landfill is reaching its boiling point."

Another student, Megumi, understood the reach of green business models and corporate efforts to promote reforestation.

> I saw a movie showing reforestation in Indonesia. A company from Australia, he was trying to get money from urban country and put money to reforestation. I forgot the name of the movie. But for example, Starbucks, they using paper cup from the tree, so Starbucks gave money to reforestation, and the company that does the reforestation that plants the trees.

Bob, a nonresident student from the continental U.S. expressed the idea that one person's habits are not really what make a difference. He said, "You gotta motivate somebody influential, you gotta spike the punch. The master of the idea never controls it … how do you think things get accomplished? You need a mass of people. The volume of the wave." Overall, nonresident students had more of a "big picture" outlook which seemed to sometimes motivate them and sometimes create a sense of overwhelm.

Dissonance

The first year students had the weakest sustainability practices, and group norms seemed to favor a slight disengagement with the issues; in these groups, being "green" did not seem to be perceived as "cool." Second year students seemed more engaged with sustainability issues. However, in some of the conversations, their actions seemed inconsistent with their statements. One student, Kapono, seemed highly motivated to reuse water wasted in the shower:

> Take water, the amount of water that you use. You know the Disney Channel, this one girl talked about how, you know how you gotta wait for the hot water to come on to take a shower or wash the dishes? This girl was an inspiration to me because

> she said instead of wasting the water, just grab a bucket and use that water to water your plants around the house, instead of wasting the water.

Later, he was asked, "So, that thing about saving water in a bucket; do you do that?" He said, "I don't do that, but I take cold showers; I don't waste water, and I turn off the water when I'm not using it." This indicates a high sustainability engagement but a slightly weaker sustainability practice.

Another second year student, Kana, emphasized responsibility and mindfulness:

> We get all this propaganda from the state level; we hear the commercials about conserving water, but then you drive down the road and they got sprinklers that just run all the time. We got golf courses everywhere, you go to the beach and there's a broken shower running 24-7. And yet at the same time we're being told to conserve water, so it's kind of a Mickey Mouse issue to me, a bit. But it's definitely a concern.

Kana returned to the issue of the broken showerhead at the beach:

> I think people taking a more active initiative, like I touched on going to the beach and seeing that broken shower, it's just somebody taking the initiative to be calling the City, the State and say, listen this shower is broken, you gotta get somebody down here and fix this, short of getting a wrench and shutting off the water yourself. I mean, not everybody would do such a thing, but things like just trying to be mindful and doing our best to keep our water as clean as we can.

Later in the interview, Kana was asked, "How about that shower at the beach that was leaking, would you do that, honestly?" He said: "I was down at Rice Bowls the other week and the shower was just leaking, the handle was broken, worn out. It was stuck, on. I wished I had a wrench with me. I was like, if I come back next time and this is still on, I'm gonna call somebody."

The difference between *having a wrench* and *wishing you had a wrench* could be significant. As Kana pointed out, the constant contradiction of being warned about water and then seeing blatant waste of potable water in golf courses and poorly managed facilities may thwart "strong" sustainability practices. Another example of this dissonance between "doing" and "wanting to do" came up with grocery tote bags. Many

students, and faculty as well, joked about always forgetting their tote bags. They have the tote bags, but they don't use them.

Attitudes: How do students feel?

Emotions and feelings are difficult to analyze, especially when expressed in a group setting. Some of the data on attitudes came from direct questioning: "how do you feel about this?" while some emerged from dialogue. Digressions turned out to be a rich area of analysis. Because all groups expressed a strong emotional response when talking about Hawai'i, these attitudes are summarized separately at the end of Chapter 4.

Table N: "Voice of": Student Attitudes

First year students	Second year students	Nonresident students
I feel worried, scared, and negative. This whole thing bums me out! I want things to go back to how it was, where it was kind of stable and everything was useful and cheap. Now, we just have a lot on our plate, and we want to get paid for what we do. We can't really do anything because the voice that is supposed to speak out for us is just letting it go. I might worry about this more later, like in my 30s. I want to do something, but right now, I'm not.	I think we are educating more than we used to. I think we are on the right track. But we've got to put more money into education, science, and research. People are more health conscious, but parents are too busy to feed their kids right, that's why we have all this obesity. Sometimes I feel confused. Do we have a water shortage or not? Is organic food really organic? Are pesticides bad? I think I'm doing enough. . . but then again, now that you mention it, I'm probably not.	To make peace, everybody needs to be a family, to move from nationality to family. People think only about themselves, and that will bring a lot of disaster to the world. These issues are all related: you start with one and end up here, start with this one and end up there. This topic pisses me off. It's just political. I feel worried about the next generation, how are they gonna live? It can be a little bleak, perhaps. But then you have to think, what can we do to prevent this?

As mentioned previously, conversation among the first year groups was most likely to tend towards jokes, digressions, and fanciful ideas such as flying solar cars, riding horses, and moving to Alaska. Even though the conversation was a digression from the conversation, it yields insight into group-held fantasy attitudes about sustainability.

Chris: I'll ride a horse, though.

Pedro: Yeah, straight up.

Chris: Girls, they like horses; they like cowboys. I saw one horse the other day, sandy colored, tan, had one solid white tail, that's like a Barbie doll horse, brah. Chicks love that!

Pedro: Get plenny in Waimanalo.

Jay: Yeah, get stables.

Chris: Imagine having that horse though.

Pedro. I like the biggest one, like Hercules.

Chris: The sunrise coming up behind you.

Pedro: That would be…

Jay: That would be like Avatar!

Even though Pedro and Jay appear to be just goofing around, Chris continues to daydream about the horse, really putting himself into a kind of future-fantasy. This group of boys had another exchange where Chris revealed more of his feelings. In this later conversation, the group shares another fantasy about the human race going into space while the earth regenerates.

Pedro: The sky gets polluted, and everything on the earth gets replenished, and then we go back down to earth. It's like a cycle.

Jay: What are you eating? You know how long it takes for one tree to grow? You think oil going to replenish? Nah.

Chris: Do it over again. It would be pointless. We'd just die again; do everything wrong again. We gotta change.

Despite a tendency towards joking and avoidance, when asked directly about emotions, the most frequently mentioned emotional word in the first year groups was "sad," followed by "worried." One student said, "I'm sad, just sad – because things that are happening are irreversible. It bums me out." This group expressed the least engagement with environmental issues and sustainability. The phrase "too late" occurred repeatedly: "You know in recycling and stuff, it happened so bad where they had to do something about it, but it's too late already." Another student said, "No one actually has taken any action unless something bad goes wrong, then it's too late."

"I'm worried," said Aristy, "because you bring up these points about energy and we're gonna have a hard time, what are we gonna do?" Another first year student, Joy, expressed fears that it might be "too late" for sustainability:

> I feel like we are hopeless. What's the point of having [a senator] as a spokesperson, someone to speak out for people, but you aren't even doing your job, you aren't listening to what we have to say, and we're the ones who are going to end up suffering, because we're the ones who are having to give out the money that's actually being paid to the war, and it's like, what are we going to benefit out of this?

The first year students perceived that the world of previous generations had been different, and that the world would continue to change. One student said, "Everything's not gonna be the same – well kind of the same, but different. It's the whole world." Another student said that the changes could be both positive and negative.

> On the positive side, energy is going to improve, get better, like transportation. More people are going to buy more electric cars, and biodiesel could be used in the future, better than oil. On the negative side, oil is gonna be real expensive, gas will be expensive, everything, airfare, is going to be expensive.

The first year students sense the inevitability of change but have not decided whether they feel it will be a positive or a negative change.

Economic pressure played a role in the attitudes of first year students. They see "getting a good job" as a top priority. One student perceived that in the past "…there was more help, volunteer kind of things before, now things are expensive and whatnot, we need to get back to how people were volunteering. Now it's hard, you have a lot of things on your plate, you want to get paid for it." They sensed increasing expenses and increasing demands, expressing frustration with the amount of money being spent on war and international conflict. One student said, "Shouldn't we focus on the U.S. before other people, because we are already going downhill, and you are thinking about other people instead of what you could do better here before actually going out."

First year students did not see one person as capable of making an impact. Aristy said, "A lot of us know about these things, but we're only one and it takes a majority of people to make a change. I can do what I can to change things, but I can only do so

much." Another student added: "Everybody wants different things. Everybody's got their own opinions and wants different things. It's like, 'what do we do' you know?" Aristy commented on the daunting problem of invasive species and biodiversity:

> Imagine how the future is going to be. I mean, how would you feel, if the animals are destroyed and they bring the mongoose and all that kind stuff, and it damages all the animals that were here, all the native species. And the forests are being damaged as well, and I really think, you know, how can we change that?

On the other hand, first year students were not naïve about oil, economics, and international politics. For example, they believed that biodiesel was not a viable energy solution because "you have the companies who own the gas, in the Middle East…some people own the gas and they don't want [biodiesel] to happen because they'll lose money." They did not express faith in people doing their jobs well. Even though they said television media was their major source of information about global environmental issues, they did not trust the news to deliver information accurately. One student said, "This is a big issue, but you don't usually see it on the news," and another commented, "If something big happens, something bad happens, they report it. But if it's something that we could do something about they don't even report it."

First year students did not trust the media but also did not trust scientists to solve global issues. Brian commented that, "Scientists might be getting a little bit more lazier now. Futurewise, they might be creating robots, and just kind of thinking, and making voice recognition … They aren't in the interest of doing things the old way." Interestingly, the students did not seem to connect the idea that someone else was dealing with these problems to their criticism of journalists, scientists, and politicians. They seem to transfer responsibility, but at the same time they mistrust authorities. At the end of the focus group conversations, they seemed more upbeat and motivated. One student said, "We had a lot of information about what global warming is. This [focus group] really opened my eyes about what other people think."

Second year students were much more active, outspoken, and stayed on topic. They commented on their own emerging voices. Shelly said, "The first year I was here on this campus, I asked questions a lot. Now I give comments! I have more comments to give. I'm like WELL, here's MY thoughts on the matter!" They seemed, as a whole,

very confident and optimistic at first, but the more they talked, the more confused they became about sustainability issues. For example, one student asserted that lettuce from her garden was crispier and had more of the "essence" of lettuce. This led to a discussion of supermarket lettuce being treated with chemicals.

> Jean: You go to the store, and you buy regular lettuce, it's treated or whatever, it's shipped in, it's bland. Blandness is all I taste … try compare the tomatoes your dad grows to the ones at Times and tell me what you think.
>
> Shelly: I don't think organic tastes any different…my boyfriend's family, they just grow their own herbs and stuff to save money.
>
> Tony: Everybody's going organic now, right, but really how organic is it?

In another second year interview, the discussion was about water. Kana expressed deep concern with water issues: "It's our basis for life, so it's a very serious issue to me, and it should be to everyone. On an emotional level, it's scary. Yeah, scary." He brought up a recent news story about chromium in the urban water supply, saying, "My roommate came across that because someone forwarded it to him, and he forwarded it to me, too. I read it, I told everybody in my office. I was like, did you read this? Coconut wireless, right?" He continued, "The whole Erin Brocovich thing pops in your head. You think of chromium you just think cancer and sickness. If there's chromium in there, what else is in there that they're not telling us about?" Kana relied on a combination of government, science, and the "coconut wireless" to inform his perceptions and choices about water.

Of the three groups, the second year resident students seemed to have the most engaged attitudes towards sustainability. Kapono expressed a sense of responsibility:

> I know if it gets worse I will feel bad. Even though I'm doing some stuff, this movie, *Inconvenient Truth*, it didn't just hit me, I'm sure it hit thousands of people. Even though I'm making a change for myself, I want to get the word out, so it's not just me … If it gets worse I will feel bad because I didn't spread the word, I didn't help other people see the picture I'm seeing.

Other second year students have developed an attitude of distrust and cynicism. One student said, "It makes me a little bit angry. Just big business, lobbyists, and oil companies will never die until the last drop is gone, they just do such a great job of lobbying." In another group, Tony said, "Who knows what they are gonna say years from

now, oh by the way they were using this pesticide, spraying on this produce, so now, this is why so many people have cancer, so I don't know." As with the first year students, there is a sense that the past was better than the present. One student said:

> Maybe we shouldn't be looking to the future, we should be looking to the past, to see, that's what we did, back then we didn't eat like this, what life was like back then, compared to what it is now, and then if it is worse, we can probably imagine a few hundred years from now, it's going to get worse.

Similarly, Kana felt that previous leaders had greater vision, and that the current economic downturn would continue:

> We are educating more than we have in the past, and I think we are on the right track … The reason we are such a great country, when things were booming, like we used to be, was because of policies that were set in the 60s. Tons of money went into education, science, research. If we don't start doing that now, we're going to turn into a third world country. The middle class will disappear, there will be rich and poor, that's it. Putting money into education, sustainable living, green energy. I don't think we are doing enough, actually.

Among second year students, there was a trend for comments to start out optimistic but then turn pessimistic as the student talked an idea through, as Kana did above. In the first year group, the more they talked, the more engaged and positive they became, but in the second year groups, the more they talked, the more cynical they became. This is the result of the introduction of new information, called environmental capital in Chapter 2, in the second year students: as a group, they had absorbed more knowledge, some of it conflicting. But not all of the knowledge had been absorbed into their attitudes.

Nonresidents: emergence of special populations

Students from the U.S. mainland and from other countries were interviewed to provide a contrast to group norms among the resident public school graduates. This heterogeneous group turned out to contain special populations that seemed to influence the responses. Especially on the topic of feelings and attitudes, these populations inside of the nonresident group had very different overall responses.

Six students were part of the International Café, a student club that focuses on world peace. One student, Fidelis, spoke for the group: "This group is very interested in world peace, everybody living peacefully. To make peace, everybody needs to be a family, we move from nationality to family. Global warming, we don't think only ourselves, we think more of other people, to make peace, how to make a good world." The International Café students had a more global and future-thinking perspective. One student said, "I feel worried about the future, especially if I have a kid, the kid cannot be happy as much as we do, because of the environmental issues." This was the only group to project their thinking forward a generation. This is interesting, compared to the first year students who projected themselves more into a fantasy-future. Another international student expressed responsibility to future generations: "If we don't take care of the future and then we leave, and our children (have to) tackle the problem, then they're living in horror or in worry, but if we think of this problem and if they have hope and then they make an effort." They seemed able to persevere in the face of a daunting issue like world peace and believe that action was preferable to inaction and that hope motivates effort. One student said, "It can be a little bleak, perhaps, if you feel like there's nothing we can do about it, but then you have to think, what can we do to prevent this, and you try to come up with ideas, or ask other people, or just try to discuss it." The sense of personal efficacy was highest in this group, especially when compared to the first year resident students.

Fidelis, a Korean student, expressed an integrated perspective. "I thought about this issue a lot and I think it's related to thinking nationality. People think only them country, themselves, they don't think about other people. . . .When other people is not happy, then we cannot be happy." This sense of personal global relationships was rare in the resident groups.

Another special population that emerged within the nonresident category was that of post 9/11 veterans. There are 400 post 9/11 veterans at CCoP. Three such students were interviewed in two different nonresident focus groups. These students had much greater knowledge of world geography and politics than any other group. They could name all the Middle Eastern countries and the issues surrounding them. Their attitude towards sustainability, however, was highly cynical and largely negative. These students

had extremely high knowledge, but displayed low engagement with the conversation and the topic of sustainability. For example, Bob commented on treatment of the environment rather cynically:

> The tree huggers say don't give any spending for security, they say keep it all for fixing your fishponds and all this. I believe in fishponds and the whole stop global warming thing, but take away the guns, and somebody's gonna come over here and take you over. That's the nature of man. You're not gonna stop it by compartmentalizing this stuff. So yeah, this is kind of futile.

Noticing elevating tension, the researcher asked, "How does this conversation make you feel?" One veteran replied, "Kind of pissed off, to be honest." When asked who or what caused this sentiment, the student offered this insight:

> Just, the situation I guess because if you really look at it, all of these are connected and if you start out with one and that one has a problem then it leads to others and it just like, if you keep adding things to the list it's just going to keep going and going. It's a whole lot faster to start a problem than to solve it.

The unique subgroup of Post 9/11 military veterans illustrated that direct knowledge and experience can lead to frustration and negative emotions. While the international students brought a perspective of world-mindedness that promoted personal interconnectedness, the veteran students perceived separation of global populations as an "us-them" framework; at the same time, they understood the interconnectedness of global environmental issues and sarcastically joked that the focusing activity, which listed global issues on index cards, was "kind of fun … we came up with almost the same result no matter where we started, pretty funny huh. It's like flash cards for kids!"

Where do students learn about sustainability?

The most common answer to the second research question, "Where did you learn all this?," was media. First year students mentioned television programs such as *National Geographic*, while second year students mentioned films such as *An Inconvenient Truth, Oceans,* and *Erin Brocovich*. International and mainland students were the only group to mention books as a source of information; for example, one student had read *Diet for a Small Planet.* When asked about what they could do to solve these problems, the most common idea was to make a movie, a video, or a PSA clip. Clearly, the genre of

sustainability films plays an important part in transmitting knowledge about global environmental issues and sustainability. Students are consumers of media, users of technology, and believers in the power of visual information.

Students learn about sustainability in college classes but often as an interesting sidebar in the textbook or a digression in class. They felt like their teachers were "proud" of them when they asked questions about sustainability and the future of Hawai‘i. They saw the connection of sustainability as a topic in history, Hawaiian Studies, geography, biology, botany, and composition courses where they could choose research projects.

Two second year students mentioned work experiences; for example, one student worked at a grocery store, where he learned that bananas are shipped green and artificially ripened. Two students in different second year groups mentioned learning information about the dangers of triclosan (a product in hand sanitizer) and why sugar is unhealthy from chiropractors' offices.

In the nonresident student groups, students described learning from their home culture. Pua mentions grocery stores as a source of learning about sustainability.

> When I was living in Europe [sustainability] was not learning that was really in school, it was just in society. That's just how it was, you hear it in the news, or when you go to pick your meat, it says exactly where it came from. You can go to that ranch and say hi to that farmer. That's important, that's how they hold people accountable.

A student from Japan described eating lunch with the teacher as part of her school experience, describing the information she learned about food during those lunchtime conversations. The main sources of knowledge, habits, and attitudes are summarized in Table O, below.

Table O: Where Students Learn about Sustainability

	First year local	Second year local	Nonresident
Media	Videos & Documentaries TV News TV Shows Internet (Malama Hawai‘i Website, blogs) Newspapers, Articles	Documentaries & films *Inconvenient truth* *Erin Brocovich* TV news	Documentaries *Story of stuff* Books News Internet
School	Field trip in middle sch Field trip hs Hs Biology College class	ESS course Eng 100	300 level course in nutrition. School in Japan College course Eng 97 Club activities
Family/Home/ other	home solar panel	Parents Doctors/Chiropractor Work Farmers market vendors	Family knowledge European culture, food shops

Sustainability in the K-12 curriculum

When discussing sustainability in the K-12 curriculum, there was a noticeable difference between more recent graduates and some of the older students. The oldest student interviewed, Jean, had graduated from a local public high school forty years ago, and she said that sustainability issues were “not on our radar at all.” In contrast, Thomas, a twenty-one-year-old student in the same focus group as Jean, said, “I just graduated three years ago, and they were always talking about this, global warming, and security and stuff. But I never paid attention. I thought the TV teaches more than the teachers. Teachers just give you a D, even if you listen and know a lot.” Another younger student, Mark, said, “I think maybe like when I was a sophomore (in high school), we started learning about it, but we didn’t really go into detail about it.” Graduates of local public high schools mentioned field trips to H-Power, and school projects in aquaponics.

When asked specifically about the college curriculum, first and second year students had different experiences and opinions about whether sustainability should be a separate class or integrated into the general education curriculum.

Table P: "Voice of": Curricular Experiences

First year students	Second year students	Nonresident students
Yeah, I studied energy in high school, agriculture, and aqua science. We don't really talk about it in college, like, it's not on the test, but in class sometimes we'll talk about it. There should be one class for this, like a mandatory elective so we can prevent everything in advance and not have to worry about it. Everybody is just here for whatever their reason is, to get a good job and develop a social network.	I'll be the first to say I had a terrible education in high school. It was a while ago, and this stuff wasn't really in our vocabulary. Or maybe they did talk about it but I just wasn't paying attention. You come to college, and at first all you care about is getting an A. After a while you learn how to think and how to talk more in classes. You can just rack up credits or you can really use what you learn in your life.	I don't know, it seems to me like this is the kind of thing you get from the culture, from your parents. Where I'm from, it's just part of how we buy food and how we eat. When I've encountered (sustainability) in college classes, it really brings it all back to me. I like it when I hear about things like the trash gyres, and I know what they're talking about because I did a presentation on it.

First year students supported the idea of having an elective or required class in sustainability or environmental issues. They claimed they would take such an elective, especially if it gave them practical information they could use. When asked if they were learning about sustainability in college, one student explained that college courses did not cover sustainability issues:

> No, we're not. The last time I learned about this was in high school. Here, for example geology, that has to do with your prerequisites, they're trying to pick classes for us. If you want to talk about it (sustainability), it's either your electives or your major. Unless you get one class that gets all this in one semester. They should make one class like that, to be prepared for what's going on. Like, how to be prepared for a tsunami, and what's going on.

A second year student felt that sustainability was very present in the curriculum, if haphazardly so. "A lot of these issues just sort of hopscotch all over the place in some classes." He noted that "global warming always kind of right there as a kind of key issue in a lot of classes, it comes up a lot." Another second year student mentioned Geography

102 as an eye-opener. “When I learned about the melting ice caps and the polar bears, I realized that global warming is a really big issue.” A wide range of second year courses was mentioned as having sustainability content: history, anthropology, Hawaiian studies, geology, English, and exercise sport science class. Students seemed to connect most to sustainability content when it was directly usable. Tony described how he would talk to friends at the gym about what he was learning in college:

> When I was in that ESS class, even though I hated it, I learned valuable information, and I would share it … I couldn’t wait to share that kind of information with other people because it’s valuable information; it’s really good. I think education is really important.

Tina agreed that talking about the content of her classes with friends was important: “It seems like whatever I’m studying, a situation with my friends will bring up an idea or concept I learned in class.” This group of students expressed the need to learn for themselves: “Educate, but don’t preach. I feel like anyone tries to shove anything down my throat, like religion or their views about anything, I just want to turn my back. To educate, just come from a place of like, hey, this is what I found out, you can do your own research.”

Second year students seemed less interested in a dedicated course, seeing the value of infusing sustainability into the general education curriculum. Kana said,

> I do think everybody gets a cross section [of sustainability], just in the core classes. Everybody has to take anthro, or history, or some kind of science. I can’t see how they could NOT. How could you wiggle around that one? Even if you are a culinary student you’re gonna touch on food and nutrition, that’s biodiversity and water. Nursing, that’s a science. Even liberal arts guys gotta take those classes. How could you miss [sustainability]?

Students were insightful in their discussion of the options of making sustainability into a degree or certificate program versus across the curriculum. One student said, “If you make it into a degree and a program, you’re just separating it off. That gives students the opportunity to go the other way, because they have no interest, and that’s part of the problem is the ones who think they could care less, when it’s a real issue to deal with.”

Kana noted the importance of disciplinary specialization: "You still need chemists, and geologists, but some people might want to focus on green living."

The international students mentioned experiences of sharing meals with teachers and learning about food and nutrition in that way. They felt that other cultures, particularly in European countries, had a more sustainable approach to food and a greater connection to where it comes from. They felt sustainability could be an optional class for students with an interest in it but that the real emphasis should be on changing the culture outside of school and supporting parents, families, communities, and elementary schools. There was an attitude that college was for specialization and sustainability could be an "offshoot, an extension, an optional choice." But one student argued, "depends how critical, I guess. If it's the point where we might all suffer as a human race then maybe it could be mandatory."

Bob, a student from the continental U.S., was cynical about the impact of college curriculum, believing that education about sustainability has to pervade the home and school environment: "We're not teaching our children. Parents are not teaching children about learning, about questioning the way man works the way he does …We're not going to change it in the curriculum; we're gonna change it in the parents." The attitude that college was not necessarily the most effective location for changing attitudes or instilling habits was somewhat pervasive across all student groups.

Emergent themes

As described in Chapter 3, comments describing habits/practices and attitudes/perceptions were visualized along two spectrums with regard to sustainability: from low to high engagement and from weak to strong practices. Used as a way of grouping qualitative data, these spectrums created the patterns or themes described in 11, which is elaborated below. Recall that the horizontal, X axis represents attitudes from alienated to engaged, while the Y axis represents habits and practices on a weak-strong sustainability scale

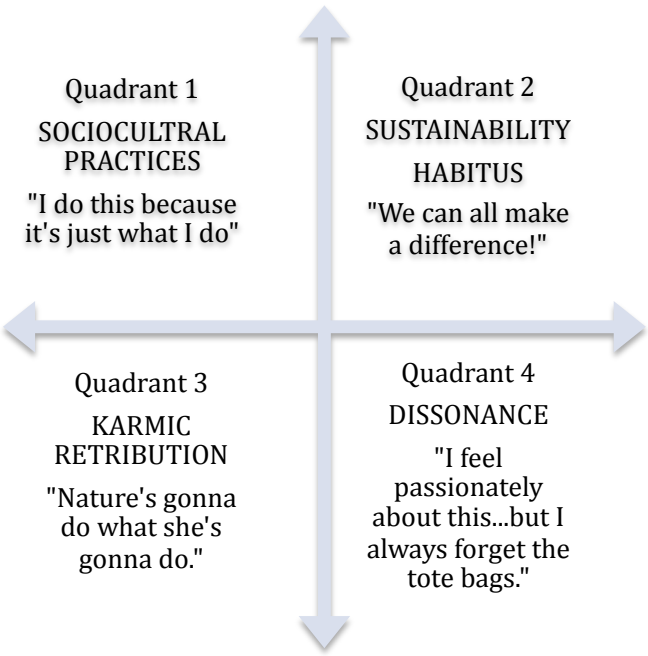

Figure 14: Quadrants of Analysis (II)

Quadrant 1: Sociocultural habits

The combination of low engagement with sustainability and strong sustainability practices seems counterintuitive, but this quadrant holds behaviors and attitudes embraced for different reasons than an engagement with sustainability, such as boar hunting as a family practice, and gardening to save money. Recall the student who walked to school, and jokingly claimed to do so from an environmental perspective. In fact, he did not have money for a car. Several students mentioned the price of gas as motivation to take the bus or bike: strong sustainability practices with no engagement in sustainability required! Such practices are related to home-based knowledge, economic reality, or cultural practices, and not to the sustainability movement as it is generally perceived.

Quadrant 2: Sustainability habitus

The concept of a sustainability habitus was introduced in Chapter 2, describing the adoption of sustainability as a culture and employing Bordieu's concept of habitus to describe the influence of culture on individual decision-making. Individuals possessing the sustainability habitus deeply embrace the culture of living sustainably, and make personal choices based on not just being "less bad" but making a positive contribution to

change in society as well as "enjoying and appreciating" nature. This engagement takes the form of a positive attitude closer to "thriveability" than to sustainability. Sustainability habitus represents what Mezirow would call a "frame of reference," something that pervades an individual's outlook, influencing behaviors and attitudes at a deep and lasting level.

Quadrant 3: Karmic retribution

Overall, the largest number of student comments fell into Quadrant 3: weak sustainability practices combined with disengagement with learning about sustainability. A theme of "karmic retribution" emerged in every focus group and across all three categories of students. More one quarter of the participants specifically expressed this idea, which may explain their low engagement with sustainability and their lack of sustainability habits. For example, one second year student, Pua, expressed the concept of retribution: "I guess mother nature is paying us back for what we're doing to the earth. Earth is like her baby so whatever we are doing to Earth, she's gonna do it back to us. It's like a revenge." A first year student expressed a similar karmic aspect. "I would say we would deserve to have all this disaster. If we don't take charge now, it's gonna affect us a lot and we can't change it; it's gonna be too late." Another student expressed a commonly apocalyptic view:

> I think that the earth we live in is very alive. If we don't do something about it, it will. It has a way of purging itself. I feel like it's almost symbiotic, nature, whether it's like a disease or something. If we don't do something about our problems, whether it's population growth or global warming or whatever, it will. It will clean itself.

The following comment about karmic retribution was recorded as another digression in the first year focus group. This conversation was recorded when the researcher was not present in the conversation.

> Chris: What's the two biggest nuclear things in history – both Japan.
>
> Pedro: They getting nuclear problems.
>
> Chris: Karma, dog, karma.
>
> Pedro: I know, ah.

> Chris: That's what I'm saying, that's just the way nature works. That's what they get for killing all the whales.

The idea of karmic retribution was a social meme originating from *Fox News* coverage following the tsunami that struck Japan in March 2011. Whether the student, Chris, was parroting something he had heard on television or from parents, or whether it was his own idea, the comment is nonetheless distressing when viewed as an acceptable conversational norm for college students. This particular focus group, highly prone to digressions and thus providing one of the most interesting and authentic transcripts, also made a racist joke about Micronesians. After one student joked that humans could colonize the moon when Earth's resources were depleted, another student chimed in with this joke: "What do you call one Micronesian on the moon?" (One problem). "What do you call all the Micronesians on the moon?" (Problem solved!). Contrasting this comment with the world-minded attitude expressed by a Korean student: "When other people is not happy, then we cannot be happy" leads to the possibility of racism as a corresponding characteristic of the Quadrant 3 perspective.

Quadrant 4: Dissonance

Quadrant 4 is also counterintuitive: how could you have a high engagement without strong practices? But in fact, Kagawa's (2007) research found that such dissonance is in fact common among college students, who claim to be "passionate advocates" for the environment but in fact do not engage in strong sustainability practices. While Kagawa connected this dissonance to the oversimplification of sustainability into prescribed practices such as recycling and reusing bottles and tote bags, this research proposes that such dissonance in fact results from incongruity between ideas and reality or between curriculum and real experiences. This dissonance between high engagement and weak practices is exemplified by the "tote bag problem." Tote bags were mentioned throughout this research, among student groups as well as faculty and administrators. Everybody seems to have multiple tote bags, with the intention not to accept plastic grocery store bags, yet everybody forgets to bring the tote bags in to the store.

Attitudes towards sustainability: Sense of place in Hawai‘i

Looking at how Quadrant 1 and 3 share the spectrum of engagement, what emerges is that engagement in sustainability issues is grounded in sense of place. This is consistent with the national conversation about sustainability curricula. Place-based pedagogy addresses issues, solutions, and practices grounded in local topics and real places.

Although they were never directly asked about how sustainability issues related to Hawai‘i, it was natural for students in all three groups to talk at length about problems and possibilities for a sustainable future. This is one area where the responses of resident students who grew up in Hawai‘i were not very different from the students who grew up on the continental U.S. or in another country. All of the students seemed to care deeply about Hawai‘i and to interpret what they knew about global environmental issues and sustainability through their knowledge and experience of Hawai‘i. In this section, quotes from each category of student are presented by topic, with an indication of the speaker's resident category in parenthesis after the comment: Resident First Year (RFY), Resident Second Year (RSY), and Nonresident/International (NRI).

There is one exception to this pattern about place: the resident students shared an emotional attitude of irreplaceable loss that they have personally witnessed in their lifetimes. A few students, especially one woman named Lani, seemed to have detached themselves entirely from Hawai‘i. She said:

> It saddens me. I know the island is changing; it's not what it used to be when I grew up. Oh yeah, it was beautiful. The water was clean, the air was clean, and we didn't have to worry about any of this back then, you know. You seen the island, how beautiful it is, but everything is changing – oh yeah, the climate is changing and I'll never get to see it. I want it to look like how it was before. Right now. (RSY)

Lani was an older student in her late thirties. Kana, the student described earlier as possessing the sustainability habitus, was of a similar age and from Kaua‘i.

> I'm only in my thirties now, but I've seen a lot of things change from when I was a kid to now. We used to call it the Garden Island but now we call it the Gated Island; now we've got blocked access from all these places we used to go when

> we were kids and now you can't get there. Yeah, environment has just always been in my face. It's just, Hawai'i. (RSY)

There was a marked difference between Lani and Kana, though. Kana was engaged in learning about sustainability, while Lani seemed to have just detached herself from the issues. For example, she stopped swimming in the ocean after getting a staph infection at Ala Moana beach.

> One guy, he fell in to the Ala Wai river, and he had a cut, and they thought he would be fine, but he got an infection and he ended up dying. They had to cut off his arm first and he ended up dying. Factories, cars, boats, airplanes, there's just so many different pollutants. Not just here, but on the mainland as well. Is it everywhere? (RSY)

Her sadness, and a tendency to conflate one issue with another, permeated almost every comment she made. This kind of "lost paradise" was a theme that emerged in the comments of several students, both local and nonresident, as they described Hawai'i.

For example, one student described a particular hotel beach. She had learned from a high school teacher that it was artificially created.

> The sand, it's not real! Somebody brought it in from the mainland or somewhere else, because underneath the sand right there the reef is more rough and hard, so they cover it over to make a nicer area, but they are damaging what is actually supposed to be there (RFY).

A nonresident student echoed this sense of artificial Hawai'i.

> It's manmade; it's manicured. You put blinders on and you go to Waikiki and then you go to the airport; I swear, it's built like that. You have this screen over your eyes; there's nothing else outside of Waikiki. I don't even like to go there … It's too fake – I hate to say it. (NRI)

Some students mentioned tourism as a factor that influenced sustainability. For example, Hawai'i has to feed "not only the ones who live here but the visitors," and that means dealing with the visitors' trash as well. One student blamed the attitude of tourists:

> People are coming and going, nobody is here for a long time, and people come here to be hedonistic, just go surf and have a good time. Hawai'i is a really beautiful place too where it's hard to see behind the curtain because it's really

> nice here. It's not like in San Francisco or New York City where it gets dirty and you can see it right in front of your face, whereas in Hawai'i it's not as it as easy to find. It sometimes looks beautiful, but…

Lani, the sad student who felt Hawai'i was ruined, described what she had learned from her hana'i father.

> He showed me a lot of things: how Hawaiians made their own irrigation system through the mountains … he took me up in the mountains and taught me all the pukiawe and moani and different trees. He taught me how the westerners came, brought the cattle and the cattle ate the plants that the birds feed off of, and the birds became extinct and there's no food left for the birds. He taught me a lot just taking me to that place. (RSY)

The local students carry more history about Hawai'i, and there is no avoiding the fact that for Hawaiians, it is a sad history. Kana, who is Native Hawaiian, described his understanding of capitalism in Hawai'i:

> It was our own great king who effectively started this change when he brought capitalism into his kingdom. He started that capitalist mentality and it just trickled down, and the other ali'is got into it, and the maka'ainana just ended up being slaves to these people. Before that they always had enough. The ahupua'a system really worked, because anybody upstream who wanted stuff from downstream would just open trade, I mean, it wasn't bartering it was just, oh here, you need? It was just, for the common good. It was just willing, just the way it was done. Now? No. Pretty hard pressed to get that back. I don't think it's impossible, but it would be quite a feat.

Even this quotation indicates how important attitude and sense of place are to the way students learn about sustainability in Hawai'i.

In summary, students seemed to know quite a lot about global environmental issues and sustainability. Students graduating in more recent years had more exposure to topics such as global warming and local agriculture in the K-12 curriculum. Students claimed to know the most about global warming but were least interested in discussing it. Second year students had more information and knowledge than first year students did, indicating that sustainability-issues are widely present in the college curriculum, but not

in developmental and first year English and math courses. Students felt that sustainability was something they could connect to as a sidebar in the textbook or a digression in the class rather than a core element of the course content. They mentioned connections to sustainability in a wide array of college courses from history to Hawaiian studies to geography. The fact that some students did not express an interest in sustainability, but nevertheless exhibited strong sustainability practices indicates that a greater understanding of student's sociocultural perspectives on sustainability would benefit the creation of sustainability curriculum as well as marketing of certificates, programs, and activities beyond a "green" type of ethos.

CHAPTER 5. FINDINGS: NON-STUDENTS

This chapter summarizes data collected from non-student stakeholders. Ten faculty members were interviewed in two focus groups, and ten administrators were interviewed as a group. The focus group format was used to elicit group norms and perspectives on Research Question 3: What do non-student stakeholders think students should know about sustainability (and where should they learn it)?

What should students be learning about sustainability?

While faculty may have more direct interactions with students, administrators understood their own need for considering sustainability curriculum, noting that "the students coming up definitely have more awareness of it … It's kind of pushing the issue this way, towards us, if nothing else." The Vice Chancellor for Academic Affairs said:

> Sometimes, students do drive the curriculum. And I do hear them talking about sustainability. In some ways it's more important to them than to us, because they're going to live on the planet longer than us. The planet is changing faster now than it was when we were young. They're going to have to deal with it longer than we are.

Faculty members tried to understand student attitudes towards sustainability. One felt that, "It's cool right now to be into recycling for some of them, right now this is a cool thing. At least, it's not cool to say you don't recycle." But another faculty member expressed frustration with trying to get students to recycle: "I told them there is a box about fifty steps next to the ladies bathroom. They will not carry that can down the hallway for thirty seconds!" In a different focus group, another teacher perceived a similar apathy among students in regards to sustainability behaviors.

> The attitudes that I have found with some students are just so egregiously ignorant. . . . it takes six years [to get a recycling program] on campus, but it's going to take a generation to get students to understand that their lives don't need to be based on a premise of consumerism. This culture has an extreme view of "me" and needing material stuff all the time to be happy.

From the focus group interviews, it was unclear who is seen as the motivator behind campus sustainability initiatives. Administrators seemed to think students are leading the way, but faculty seem to see themselves as drivers of campus sustainability, more than students. A remedial writing instructor felt that the developmental stage of adolescence or emerging adulthood should be taken into account when considering student apathy towards sustainable practices such as recycling:

> My students are 18 and 19 years old, and basically they believe, if you smile the wrong way they think you smiled the wrong way at them; everything's about them, so they don't really see any kind of responsibility. I mean, they're just still developmentally in a space where they don't see how they are connected to other people in a way, responsible for other lives or even responsible for their own life. They still believe that things happen magically in the world. I have students that believe that they are just going come to class and magically pass the class without doing anything! To me that's a developmental issue with our students, where they are in their head space.

In the focus group conversations, administrators and faculty seemed to relish the opportunity to shift perspectives away from their usual roles: administrators discussed a wide range of ideas about what students should learn, while faculty focused on campus organizational structures. Faculty seemed to perceive a lack of interest in sustainability from students and a lack of support for it from the administration. On the other hand, when given a chance to talk about "what students should be learning" the administrators seemed to not only share the faculty's vision of sustainability curricula, but to go beyond what the faculty said students should be learning. For example, the administrators added topics such as spirituality, international travel, and personal wellness; topics that the faculty did not mention.

Faculty conversation focused on personal behavior and engagement in community activities and global events. Administrators shared this as a top emphasis, commenting that "students need to learn that they have a role to play in setting directions, that they have contributions to make in solving the problems on an individual basis and as leaders in their communities and that they may be agents of the problems themselves. And we all

need to do that too." Faculty and administrator responses to this question are summarized in Table Q, below.

Table Q: What should students be learning about sustainability?

(In order of frequency mentioned)

Faculty Group 1	**Faculty Group 2**	**Administration**
Behaviors Engagement Decision making Attitude of it's cool to recycle Awareness of Triple Bottom Line Economics (ie: Wal Mart) Science of global warming	Behaviors How to make a difference Decision making Choices Budgeting money	How their behavior contributes to problems How to find information Spiritual perspectives Politics of global issues Food and healthy nutrition The limits of science Health literacy How food is grown and produced Issues relating to their own experience or interest Travel to other countries Diversity Indigenous practices An understanding of themselves in relation to others and the environment

Global warming and scientific literacy

As in the student focus groups, faculty groups and the administrator group all discussed global warming. A philosophy professor teaching environmental ethics expressed surprise about how many students said, at the end of the semester, that they didn't understand what global warming is. She said, "I had not addressed it! I assumed that everybody was kind of aware of the controversy and the debate, so it will now come much more front and center. I will not assume that they know anything." When asked, "How do you teach something like global warming?", she replied:

> I will start next time by bringing up the debate, these are the two sides, and then I would like to have some scientists come in and talk to them about evidence, because there is clear evidence for global climate change, and learning to think critically about it, what kind of questions can be raised and what answers are available to us at this point.

This response was interesting, since the biology teacher who participated in the focus group said that scientists have agreed that they will no longer engage in debate

about global warming. Just as the teacher was surprised at what the students didn't know, the biology teacher was surprised by what her colleagues didn't know:

> I went to that [summer faculty development institute] and did the active learning thing, and I was with all these Maui teachers, and we just happened to pull the question "what causes global warming" and here I was sitting there with five English teachers, and nobody could explain it. They ended up turning to me, and I was like, I don't want to give you the answer because I teach this in my class, but it was really eye opening to me, that they were all 'against' global warming, or whatever, but they didn't know why it was CO2 emissions … I think that piece is often missing, and that's part of what people don't understand. The science piece. If you teach the science piece, then the rest falls in to place. Students learn the science, and they go 'oh, whoa, of course we have to start changing this.' This is what the science shows us. It's less of a feel good issue as to just a facts issue. I often find that piece is missing a little from the equation.

These comments about global warming illustrate that faculty may not understand these issues as well as they think they do. Furthermore, different disciplines may not agree on approaches to teaching it (for example, teaching the "facts" versus a "debate"). Even though students ranked global warming as an issue they "knew the most about", it became clear that faculty had different perceptions of the issue, based on their disciplinary background, but that not everyone understood the science of global warming. Well-intentioned faculty could in fact confuse students by approaching sustainability topics from varying disciplinary stances.

Where should they be learning it?

Faculty and administrators were given a focusing activity to stimulate discussion about campus organizational structures and where to concentrate sustainability initiatives. Each group was first asked to take the Sustainability Assessment Questionnaire (SAQ), an instrument developed by University Leaders for a Sustainable Future (ULSF). The survey was intended to elicit perceptions of sustainability on campus; it is divided into the following six areas of institutional focus: institutional mission, vision, and values;

operations & facilities, faculty development, course curriculum, research, outreach & service.

Each group of faculty and administrators was given a set of index cards, each with one of the organizational areas printed on it. They were asked, "If you had to choose *where* to focus the college's resources (time, money, effort), where should we focus in order for students to learn what they need to learn about sustainability? Please rank these areas." Although they were asked to prioritize or "rank" the different organizational areas where sustainability could be implemented, all the groups preferred instead to arrange the cards in a web or map that showed relationships between them. At one point in the discussion, a department chair blurted out in frustration:

> You know, ranking things is so western. To me—one two three four—it makes you like, who do you want to throw out the boat first?…I would just make the old Hawaiian circle, run everything through it, put the highest priorities on top, put 'em all interconnected; they just weave throughout each other…One can't survive without the others.

Discussion of the complexity and integrated nature of campus organization pervaded the mapping activity dialogue, and this complexity is represented in the graphic organizers or "maps" made by faculty and administrators as they arranged the index cards while they discussed campus organizational components. The organizers made by faculty are shown in 14, below, and the administrators' maps are shown in 15 on p. 118.

Organizational maps: Faculty

The faculty participants represented a range of disciplines and rank and included both faculty who had and had not been involved with campus sustainability issues. Caucasian, Asian, Native Hawaiian, resident and nonresident backgrounds (Canada, Japan, and the continental U.S.) were represented in each group.

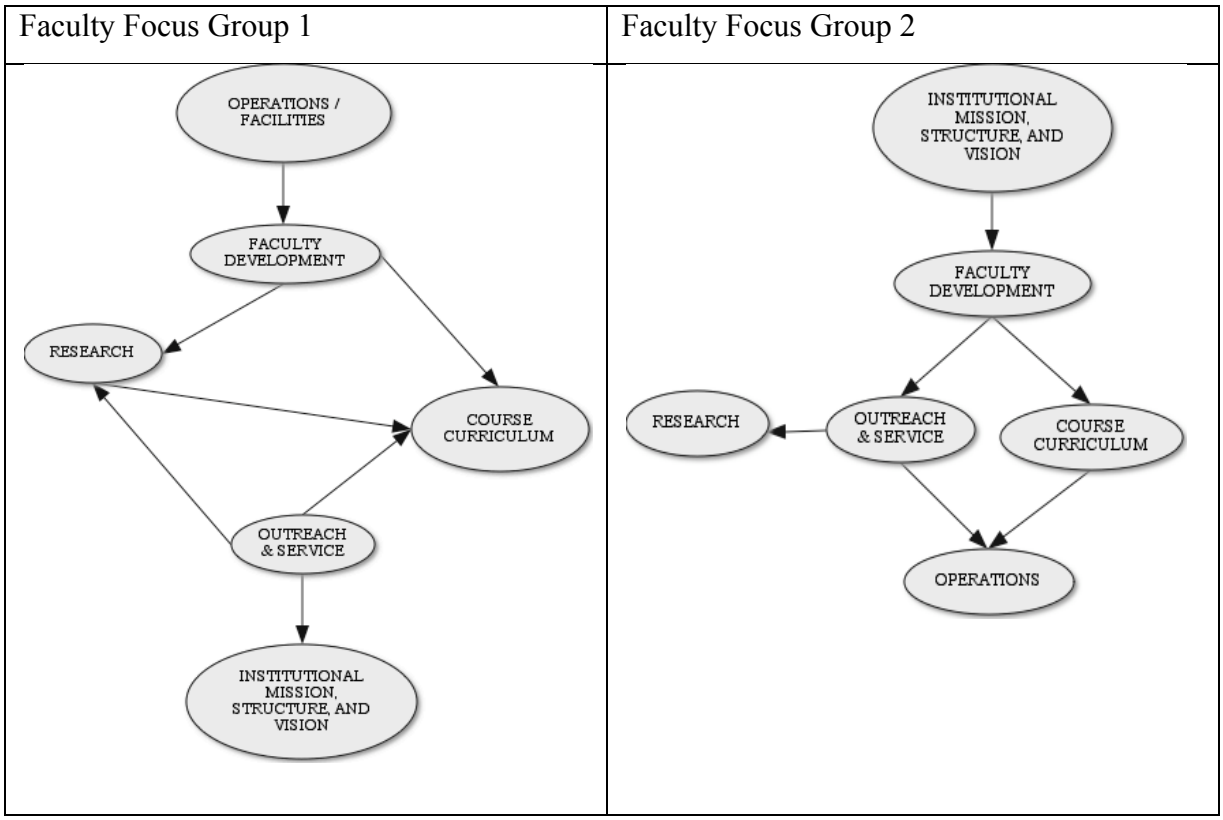

Figure 15: Faculty Organizational Maps

The two faculty maps are essentially identical, except for the relationship of research to faculty work and the inversion of Operations and Institutional Mission as the top item. In Faculty Group 1, Research is integrated into curriculum development, and is informed by Faculty Development and Service. In this map, operations is external to the faculty role. However, in the second map, research is the more external component, and operations is tied in with curriculum, development, and outreach. The second faculty group viewed both operations and mission as the purview of administrators.

Faculty Responses

A biology teacher brought up the ambiguity of the term "sustainability," saying, "I don't mean to be the cranky science person, but there's one person's definition of sustainability vs. another and maybe we need a campus definition that we as a campus kind of promote or support. A lot of times people don't truly understand the science behind a lot of these issues." A composition teacher said:

> It was nice to read the definition (in the SAQ) of sustainability in terms of reaffirmation of indigenous culture, and localized culture. That broadened my concept of sustainability, which is important because then I realized that I had it in my classes … sustainability to me is recycling, that's what comes to my mind, so I didn't realize that I'm actually doing it to a certain extent.

These comments indicate that defining sustainability and sustainability curricula is an important starting point. It is clear that faculty from different disciplines may have very different approaches to sustainability that stem from their disciplinary expertise, and that some faculty are really discussing "weak" sustainability (recycling), while others envision "strong" sustainability (eliminating single serving beverage containers altogether), as described in Chapter 2. In addition, faculty approach sustainability from different "pillars" as described in the "Four Pillars" definition which includes social, political, and economic sustainability in addition to the environment. For example, a tourism and hospitality professor said, "I wanted to bring up the issue of cultural sustainability, because it's a really big issue for us in tourism, we truly believe you cannot operate tourism if you're not perpetuating the place, and the people. So that is something we work at in a variety of approaches."

Faculty may relate to the topic of sustainability from a personal passion or from a disciplinary focus. Some care about pesticides, some care about cultural practices, some are interested in thinking, and some are into radical behavioral reform. Faculty, especially those who self-selected to participate in a study such as this one, may tend towards a liberal political stance but at the same time maintain caution in "preaching" sustainability to students. As one composition instructor said, "Hey, I'm ultra-left liberal, but I don't expect you to think like me." Other faculty felt that modeling their personal and political values was not only appropriate, but desirable.

Even within the group of faculty who consider themselves active in campus sustainability, personal behaviors and beliefs vary. For example, on faculty member commented on the new biodegradable cutlery in the cafeteria, saying, "I saw that and I was like 'yay' finally someone got that, no more Styrofoam in the cafeteria!" However, a program coordinator disagreed that the cutlery was a success, saying, "It might be better if we went back old school and were using, you know, like silverware." The hospitality

department chair agreed with her, adding, "Yes, it is actually better to use silverware and wash it." Then another, younger and more radical staff member really spoke up:

> If you're going to be disposable every day, you really should pay the price. Why not charge students for a fork and plate and bowl, and if you come with your own stuff then it's not a charge because you're going to take it home and clean it. It comes along with this lifestyle of convenience and throwing things away and making trash. We don't need to make as much trash as we do. But we need an incentive to move towards that lifestyle and to show the real cost of continuing a different lifestyle.

The perspectives of the different faculty in this exchange illustrate the impossibility of capturing one normative attitude towards sustainability in the faculty groups. What is a major success to one person (soy cutlery) is an affront to another (who feels each person should bring their own cutlery). The range of sustainability practices is practically infinite, and faculty saw almost all areas of the campus as relevant to sustainability. Responses focused mostly on four areas: operations, outreach, professional development, and course curriculum. In comparison to the administrator group (whose responses follow), institutional mission was not mentioned at all by the faculty, nor was research. While the administrator group added the area of assessment, faculty did not mention assessment or learning outcomes in their conversation.

Learning from campus operations

Campus facilities and operations were seen as an obvious learning opportunity by faculty. One group put it on top of their priority map, noting that a greater number of students could be educated by facilities. She said, "Students don't have to be in a specific class, as far as getting them more involved, they're walking to class they're going by a recycling bin, I think that from a student perspective operations might be a good one on top." Another faculty member commented:

> It's almost [operations and curriculum] go hand in hand; seeing recycling bins all over triggers to students, 'well maybe we should be recycling,' so then when you talk about recycling in class the uptake is more efficient than if you are

> introducing it brand new. You always have an extra obstacle to jump over when you're trying to do something they haven't been exposed to.

Another faculty member felt that campus projects such as recycling, gardens, and composting were "walking the talk in a sense. You're seeing it." Faculty mentioned several campus features that they liked but didn't feel included in, such as a new worm bin. There was a sense of not understanding whose "jurisdiction" such projects were under and whether or not they were institutionally supported.

Faculty want the campus facility to support what they teach, as one coordinator commented: "When I come into a place, if we're talking about ways that we can do it, and yet we're not in a space where that is being modeled, that seems counterintuitive to me. This whole campus should model the innovation and forward thinking of sustainable practices." In a different group, a faculty member echoed this sentiment but took it further, remarking that "it's very frustrating when you're teaching a class and you're talking about that stuff and then they go to the cafeteria, or they go somewhere, and they go, like, well it doesn't exist on this campus." This led to sarcastic joking about a sustainability initiative on another campus, which was seen as disingenuous:

> Does sustainability mean having vegan kiosks? I mean, that's basically what it comes down to, they're serving vegan food, so they're 'sustainable' … The elevator doesn't work, it's not efficient, the rooms have mildew, it's disgusting, but hey, it's sustainable because there's vegan food in the courtyard!

Food emerged as an important sustainability issue. "Okay so you buy a tomato," said one faculty member, "or maybe a banana that came from South America, and it was cheaper than a local banana, but why, again? I need help on how to get there in explaining this to students, because they don't get it." Another faculty member said, "It's interesting you mention that about bananas, you were saying students don't quite get it with the bananas, when you were trying to teach it in your classroom, because look at what they're seeing in our cafeteria." Another added, "They don't know how to examine those trade offs. Do you buy the organic avocado, or do you buy the avocado produced

on the Big Island that's not organic? How do you make that choice?" The complex decision making process of "buying local" was discussed at length by students, as reported in Chapter 4. The topic struck a personal chord with teachers as well – one in particular who said:

> Just yesterday, I'm trying to buy my salad, and the student in front of me in line, her French fries and hamburger was $2.80, and my salad was eight dollars! … I mean, we are a culinary institute, the students are up there chopping the vegetables for free! I want them to reduce the price of healthy food! We need to close this gap.

The vehemence of her comment pointed to the potential for using the campus environment to reinforce academic learning about sustainability. This faculty member seemed to feel that the campus should provide healthy, sustainable food priced to make it more desirable than traditional cafeteria food. This thinking has implications for management of campus budgets to support student learning.

Learning from outreach

The other faculty focus group focused more on how outreach could work together with curriculum, possibly influenced by the presence of the campus service learning coordinator in the group. They described all the organizational components as needing to be "holding hands." One faculty member noted, "The students are on what happens in the cafeteria, what happens with Earth Day activities on campus, what happens with service learning, that's what's really going to have an impact on students." Unless, as another teacher noted, the service activity occurs without connection to curriculum: "Without reflection there's not an understanding of the context in which they, their study, whether it be in a particular discipline, science or philosophy or culinary, or . . . nothing has any meaning, it's just an activity, like I'm gonna pick up weeds because I'm getting some credit for it." The same teacher was a passionate advocate for service learning:

> I think it's absolutely important that they get out of the classroom and do something, do something as an individual with respect to their community … It's hard to come at it from the global perspective; it's too abstract for them. They don't get it. Start with the community. The guy that did the [local landmark] service learning project picked it because it was easy to get to, across the way, but

> he learned that people are living [in the park]. 'Oh my goodness I had no idea that people were living [there] until I started cleaning up their feces!' Well, gee! Gee! … That was the most profound thing he learned – that within his community there was this whole population of homeless people he never knew about. So I think that does impact the way I teach the class. Absolutely.

In addition to service learning, one faculty member mentioned classroom pedagogy as a way to contribute to student learning about sustainability:

> One of the ways we work on it is that pretty much every day we are working in groups, what they bring to the classroom affects everyone in the class, they have to work collaboratively in my classroom, constantly. I really feel like that builds community, they understand that their actions, their choices affect how the class runs.

Learning from professional development

Similarly, if professional development is not "holding hands" with sustainability initiatives, then even well meaning efforts are seen as peripheral. One faculty member expressed cynicism about the use of funds for a Native Hawaiian cultural initiative: "In our department they're always talking about it, but they're not training faculty to bring it into the classroom. They're just getting the funds to say they're part of it, but there's no real connection. Real staff development would have to be part of that at some level." Another faculty added, "If we were able to talk with each other about ideas we have, what we use, bulbs would be going off in everybody's head. Like 'wow, I didn't know I could do that,' we could share ideas and brainstorm, how would you bring it in to a statistics class, how would you." The comment was interrupted by ideas on how teachers could communicate better with each other to integrate class activities.

Faculty mentioned the value of their personal interactions with students and the way they convey values to students through modeling and informal interactions. "If there was an opportunity for faculty and staff, the people who are the constants here, to be better examples to the students, then we can get somewhere, then the curriculum actually means something," said a project coordinator. It was suggested that faculty could study sustainability practices as a form of professional development. "It's important you have time where you can go work on your worm bin. I just brought mine into my office, now

we have worms in our office, so that we can be a good example and say, look this is something that you can do." Similar ideas were expressed in relation to bicycling to work, having life-work balance, and shopping at the farmers market on campus.

Learning from classroom curriculum

Faculty feel that curriculum is their area of expertise. One faculty member said that curriculum is the one area where faculty have "100% control." On the other hand, one Hawaiian Studies teacher noted that "we don't teach 'sustainability.' That's not the title of our course; we integrate it as much as possible, but that would be at the expense of something else that we need to cover. We have to find creative ways." Even though they perceive themselves as having "100% control," faculty recognize that external factors such as course outlines, program accreditation, and articulation agreements create an emphasis on "covering material," and some faculty perceive that integrating sustainability would be at the expense of that material.

Many of the faculty, even those who were not directly connected to campus sustainability initiatives or the Sustainability Committee, did feel they integrated sustainability in their curriculum. There was an emphasis on teaching decision-making and critical choice making. "One of the things we teach in [English as a second language] 94 is decisions and alternatives and analyzing the consequences of your choices. A lot of our students don't think about it." Several faculty members expressed that this type of personal choice making was part of their course, which included helping students with personal finance, time management, and consumer decision-making. Courses emphasizing skills such as communication, writing, research, and speech were seen as more likely to have a direct connection to sustainability than "content" courses such as History or Hawaiian Studies.

Organizational map: Administrators

The map created by the administrators was more complex and represented less consensus. Administrators seemed to speak from their respective role or area of responsibility. For example, the Vice Chancellor Academic affairs confidently started out, asserting, "Where do we focus our energy as administrators? Clearly operations gotta be one, faculty and staff, curriculum. Clearly curriculum." But then, another

administrator said that community partnerships were as important as operations and faculty. At first, the group dismissed research as a relevant category, since it is not core to a two year college mission, but later a dean observed, “It’s interesting we are talking so much about research when we said it’s not important.” In the administrators’ map, research and the institutional vision came to be embedded both below and above the central area of the map, with a circular “net” of faculty development, curriculum, operations, and outreach all embedded in a cycle of assessment. The administrators described a central “net” that is informed by research from multiple directions, including faculty research in curriculum as well as in disciplinary areas, with an emphasis on student research; STEM courses involving students in research like biodiesel and fuel cells was mentioned. Research also was related to faculty development and curriculum, as faculty must also be consumers of research to inform their curricula and classroom practices.

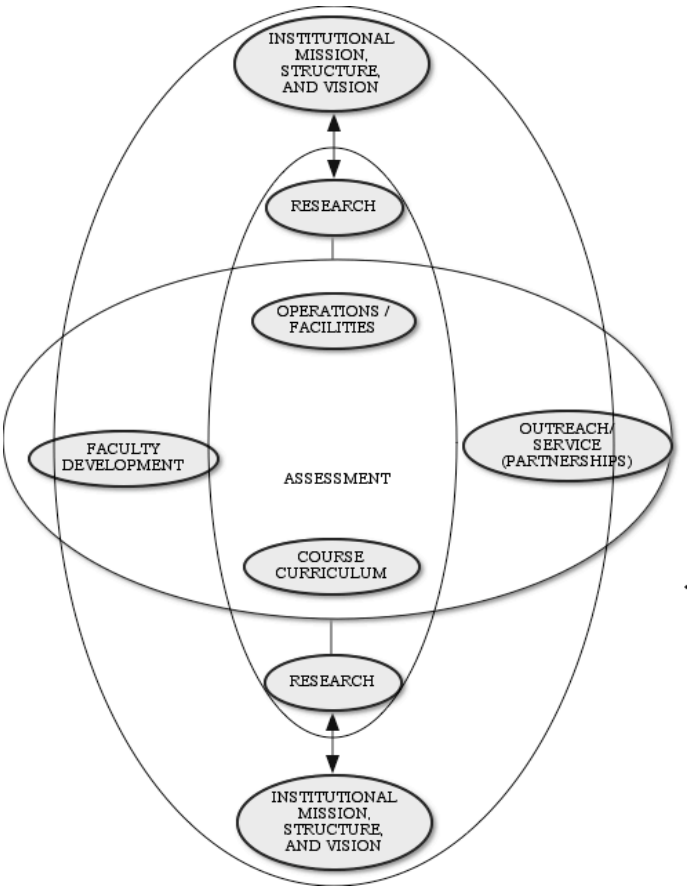

Figure 16: Administrators' organizational map

A program director observed that assessment could be a relevant category to add, noting that assessment could apply to operations, both in assessing the energy use and student awareness of sustainable features. She said, "Is this improving our sustainable use of energy? Are students more aware of how to use these materials? [Assessment would] give some sense of feedback, you know." This is how assessment came to be included as a "backloop" to the central portion of the map.

Administrator responses

Administrators shared their personal experiences with sustainable practices, particularly in other countries such as Japan as well as the continental United States. One dean grew up in Hawai'i, but had moved away to the Pacific Northwest, and then returned to Hawai'i. He said, "These things are a little bit of an inconvenience, that's built into your life in Seattle. You are going to be inconvenienced. You must ride the bus. If you drive your car, we're going to make you pay a lot for a parking permit. It's not really like that here. We're just not there yet." The idea that sustainability represents a "sacrifice" seemed unique to this group, perhaps because their job involves the management of resources: time, money, and effort. The campus "vision statement" as outlined in strategic planning documents seemed to sincerely inform the administrators' values. It states:

> [Community College of the Pacific] prepares students for lives of critical inquiry and effective engagement and leadership in careers which strengthen the health, well-being, and vitality of the individuals, families, and communities that support all of us, the cultural traditions that shape and guide all of us, and the land and sea that sustain all of us.

One administrator used the language of the vision statement from memory to express the idea that all campus stakeholders were equally invested in sustainability: "Our vision statement really speaks to all of this, the land and sea that sustains us, sustains all of us. It isn't just sustaining students, it sustains all of us, your family, my family." He continued, "This is something that faculty and students and all of us have a role to play in, and a role to model, it's different in that way than other topics." All of the administrators seemed to echo this sincere commitment to the vision statement, while

faculty never mentioned the vision statement. In their talk about sustainability, the conversation of the administrators focused mainly on the areas of operations and course curriculum.

Learning from campus operations (again)

Like faculty, the administrators noted that, "The thing that operations does is it makes everything visible. If you have solar panels on a roof, it's a visual reminder that you're working on this aspect, it's really important because it underpins what you do, it kind of delivers on your concepts." One administrator, who had overseen a major campus renovation project, described the decision making process of the renovation budget:

> The optimistic part for me is that, I hear a lot of people talking about [sustainability] in every field. In all the different meetings and different departments I meet with, and certainly with the work I'm doing, the question comes up, often, with the renovations, what are we doing, what kind of materials are we using, what effort can we do, it's a cost issue quite often and that's often the big stumbling block, but sometimes we get to do simple things, like can we recycle as much of the material.

The Vice Chancellor for operations said, "Energy consumption is the thing that drives everything. So whatever solutions they talk about now get impacts, and sacrifices, tradeoffs, that need to be made." He discussed the many factors involved in implementing sustainability initiatives in campus operations:

> Wind, damage the birds, solar too, I mean, you don't know what the impacts are. It's easy to talk about, but it's clear to me anyway what's going on, when you talk about these things it's cost, it's investment. Who makes the investment, who makes the sacrifice?

Referring to the campus's new energy procurement contract with Johnson Controls, Inc. (JCI), a national engineering company that manages conservation and renewable energy investment in exchange for future energy returns, he added:

> It may not be economical on a Return on Investment basis, projects, what they call energy services, but when you purely do it on a ROI basis, which these contracts are normally structured as, it would never be included, because of the capital, the financing. But because we made it an emphasis in the contract,

> because we are an educational institution, to do that, hopefully we will see some movement, some of the things that people can see how the facilities are being run.

A program director suggested that a more expansive definition of sustainability that included cultural sustainability would enable the campus to work more from its strengths:

> We have to broaden our definition of sustainability so operations isn't straddled with this burden of, it's just energy. Sustainability is cultural, its diversity, indigenous population, and how do those coexist, and how can they support and help each other, and all of our programs? We have this vast laboratory called Hawai‘i, and are we using it to its full potential?

Two ideas emerge here. One is the idea of Hawai‘i as a laboratory, which echoes the idea of Nainoa Thompson that was introduced in Chapter 1. The other is the theme of sacrifice that seems unique to the administrator group. Whether referring to the cost of energy-saving measures, transportation policies in mainland cities, or the installation of wind turbines on the island of Moloka‘i, the group as a whole seemed to see sustainability as a sacrifice and an expense, which is a more short-term point of view.

Curriculum

The administrator group ultimately agreed that faculty had "ownership" of the curriculum. A Vice Chancellor said, "Faculty and staff development is a kernel that could lead to changes in curricula, or changes in operations, so, I see that as kind of like a seed." A dean added, "Faculty are the owners of curriculum. Our job is not to control the curriculum; it's to provide people the tools they need to do their jobs to develop curriculum. Our job is to provide people those tools and develop the skills so that they can do things like develop the curriculum." Another program director added, "Before you can develop curriculum you need to do research, you need to know what you're doing!" "It goes both ways," added the Vice Chancellor of Student Affairs, while another administrator acknowledged that, "We haven't systematically woven in the notion of research into curriculum development. There's not a lot of research that goes on in curriculum development, but there ought to be, particularly in this field as it changes pretty quickly." They expressed the idea that research into sustainability curricula,

encompassing both new content and new pedagogies, could be an area for two-year faculty scholarship.

The administrator group also discussed STEM curricula and the broader topic of scientific literacy at length, believing that students need to understand both "the limits of science and the value of science in trying to understand the complexity of this." For example, the Vice Chancellor of Academic Affairs mentioned:

> Even in the paper yesterday I was reading about the people who believe that global warming is a hoax. We have to be able to give students a sense of, how to evaluate those kind of statements. If so many people believe this it must be true, but what are they using to come to that conclusion, that's the critical thinking piece. This is life sustaining so it's really critical.

Administrators did not share a coherent view of scientific literacy or exactly what should be taught. As one administrator asked, "Who's defining the problems?" Another, agreeing, noted that "There's a science vs. non science issue here that is really, really interesting, goes deeply into issues of faith, populism, and elitism." While the issue of scientific literacy is beyond the scope of this paper, the perceptions of science and the role of STEM programs on campus were an important thread in the conversation of the administrators.

Internal and external influences

Like faculty, the administrators agreed "there are pockets of really great activity but they're not coordinated. Stuff going on in culinary, stuff going on in service learning, stuff going on in STEM." The Vice Chancellor of Academic Affairs noted that sustainability is not part of the college's formal planning process: "It's not planned at a meta level, where everybody who's interested in sustainability is necessarily planning out the next three years, where in curriculum this is going to go, where in operations. . . there's not that kind of holistic look at the big picture." She joked, "We don't have a home for this, we need a dean for this." This referred to conversations about whether sustainability initiatives were more successful as grassroots faculty efforts or formalized, administration-led efforts. The Sustainability Committee had been recently moved from being under supervision of the Vice Chancellor for Operations to the Vice Chancellor for Academic Affairs; hence the joke about its "home."

Administrators felt the impact of accrediting agencies as an external influence on the curriculum, much more acutely than faculty did. Most strikingly, the Dean of Health Science said, "From a health point of view we tend to be still focused in critical care and secondary treatment rather than primary prevention. And if we are really talking about environmental sustainability, really looking at population health, you have to have those other pieces, but that needs to happen." When asked, "What keeps you from making that shift?," she replied, "The western model of medicine focuses on critical care, and that's important, but it's not the place that you're going to get the long-term sustainability and the healthy population, it's not going to happen." The Vice Chancellor agreed, adding, "It's our accrediting agencies, none of which is attuned to sustainability at this point. [Accreditors] haven't put sustainability into the culinary program standards, and the health guys aren't there yet either, so if you're trying to manage your curriculum to meet those standards, everything else is extra, do we do it or do we not do it, and how do you incorporate it into the programs that already exist?"

Both faculty and administrators felt that sustainability needed to move further in the sociocultural context before the college could really change. A dean said, "I think in a lot of ways this college is like a microcosm of sort of the bigger attitudes that people have, about wellness, and about the environment, and about what our role is … We don't have the structures in place. But we're there, we could."

Hawai'i as a leader in global sustainability

Both the faculty and the administrators' discussions included frustration with why Hawai'i seems to lag behind other places in terms of sustainability infrastructure. "Being an island you would think we would be in the forefront," said one administrator. "I know, the irony!" added another. "We are way behind the nine yards, way behind," said the Director of Culinary Arts.

> In Japan for example, when you cook in Japan, in any kitchen, if you throw your disposal in the wrong container there is someone that comes around behind you to pick it up and put it in the right container just to give you the message that you did it wrong. They don't tell you that you did wrong, but they'll pick it up, and put it in the right container. That's living it. What we don't do well, is we don't live it. Basically because we don't have the infrastructure set up to do so, and it starts

> from the top. It just can't be one community college. . . it starts bigger than that, and it has to be really a statewide initiative, if not federal, or global. I really believe we have a long way to go.

Faculty shared the general sense of being behind the curve on sustainability, recognizing the limits of their own grassroots efforts. The college seemed caught between effective grassroots initiatives and looking for ways to scale up through broader systemwide or state-level initiatives. The institution was described as a "big ship that's hard to turn." One program coordinator lamented how much harder change efforts are in a college than in the K-12 curriculum:

> I see a lot of that stuff in grade school, and I think oh that's awesome these children are being trained with this, and then if they get here and we're not doing any of those thing. . .When I read, make your school plastic-free, I'm like, yes! But it's like, yes . . .when your school has 300 students or 500, but when you have 9,000, I get really discouraged. I don't know how we get [CCoP] to be plastic free, but why are all these elementary schools, middle schools, high schools moving towards this and where are we? How come we're not leading this initiative? We seem to be at the tail end of what is going on in our community, in other education locations, and what is going on in high schools.

Overall, both faculty and administrator groups seemed to feel paralyzed in regards to substantial changes in the curriculum. At the end of the administrator's focus group interview, a dean wondered out loud whether or to what degree students could be stakeholders in the curriculum. Her question was profound: who controls the curriculum, and how much of students' experience is determined by national accreditors, faceless groups of people who don't even live in Hawai'i? Considering also the faculty view of student apathy, do students really want sustainability in the curriculum? Whose curricular revolution is this anyway?

Faculty and administrator groups believed that sustainability content was important for students as an issue that includes cultural awareness. Faculty emphasized the opportunity to learn personal decision-making and the impact of consumer decisions.

Administrators were more holistic in their view of sustainability curricula, mentioning health, wellness, and balance as important for students to learn. The issue of green workforce development did not seem present, which raises the question of whether the curriculum is preparing students for current workforce needs, or for the projected needs of a more sustainable society.

The two groups do not communicate with each other clearly; the faculty saw the administrators as somewhat hostile to sustainability, possibly because there was no formal structure, planning, or administrative leadership for sustainability. On the other hand, administrators see faculty as in control of the curriculum, and as leaders in research on curriculum, pedagogy, and science related to sustainability. Administrators mentioned assessment and accreditors as important components of sustainability, while faculty did not. Both groups saw potential in the use of campus facilities to demonstrate sustainability, although the Vice Chancellor of Operations was skeptical about the cost burden. In conclusion, the role-oriented perceptions of the different non-student stakeholders appeared to stymie the vision of significant transformation related to sustainability in the curriculum.

CHAPTER 6. IMPLICATIONS

Introduction

The goal of Chapter 6 is to ascribe meaning to the year-long journey through this inquiry into sustainability, curriculum, and the direction of higher education. Chapter 1 introduced the sustainability paradigm, the context of community college students, and the vision of Hawai‘i as a laboratory for sustainability. Chapter 2 explored the wide-ranging literature of sociocultural learning theory, indigenous scholarship, and Sustainability in Higher Education (SHE), exploring the question, “What should students know about sustainability?” from many different perspectives. Chapter 3 described the qualitative data collection procedures and methods of analysis. Chapter 4 presented student perspectives in their own voice in order to discern group norms and their knowledge, habits, attitudes, and experiences related to sustainability. Chapter 5 did the same for faculty and administrators, capturing their perspectives as non-student stakeholders in the curriculum and answering the research question, “What do non-student stakeholders think students should be learning about sustainability?”

Chapter 6 shifts from the participant perspectives to the researcher’s interpretations. The primary research question, “What do students know, feel, and do about sustainability” is revisited in relationship to the current literature on sustainability and curriculum in higher education. The second research question, “Where have they learned their current knowledge, habits, and attitudes about sustainability?” is explored through the application of the Academic Planning in Context model to sustainability curriculum development. Recommendations for evolving the Academic Planning in Context model are made, along with implications for practice in curriculum, pedagogy, and campus operations. The chapter concludes with suggestions for future research, and a description of the impact of this inquiry on the researcher’s own knowledge, practices, and attitude.

Contributions to the literature

The primary research question in this study was, “What knowledge, habits, and attitudes about sustainability do current community college students have?” In terms of the Academic Planning in Context model, which served as the theoretical framework for the study, this question focused on *learners*, which is a category that Lattuca and Stark

(2009) place in the center field of the Academic Plan model, equivalent to *purpose, content, sequence, instructional resources, processes, and assessment.* They include arrows in the planning model to imply that most faculty consider purpose, content, and sequence first in the planning process; however, all seven elements are important and no particular order is prescribed.

Although understanding learners is a central component of curriculum design, the perspective of learners is a noticeable gap in the current literature on sustainability, as noted by Hicks (2002), Wright (2009), and Scott and Gough (2006), who observed that "just because educators have identified given educational content as important, or even essential, it does not follow that learners will be willing to learn it" (p. 80). Community college students in general are an under-studied population, especially in regards to sustainability education. Even the general research on community college student engagement, retention, and persistence tends to be quantitative and statistically descriptive. Kasworm (2005) described an "ontogenetic fallacy" of existing student engagement data. The fallacy lies in extrapolating conclusions about groups from individual characteristics; each individual success or failure is a unique story, and Kasworm (2005) suggests that we must better understand the learner's self-perceptions as we interpret data about students. The same idea applies to engagement with sustainability and related global issues.

The higher education community seems to believe in a similar fallacy that the current generation of college students is "greener" than they really are. While this case study of one community college is far too small to be conclusive, this study presented little evidence that the current generation of college students is likely to drive significant transformation towards sustainability across the curriculum, towards majors and degrees in sustainability, or towards green workforce career attainment. The Monitoring the Future (MTF) data, as analyzed by Wray-Lake, Flanagan, and Osgoo (2008), appears to support the reality that adolescent interest in environmental issues has in fact been in decline since the 1970s. A more current analysis of the MTF data might show an increase in interest after the 2005 release of the film *An Inconvenient Truth*, which was mentioned by many students in the current study. However, Hannigan (1995) says that familiarity with a topic can lead to "issue fatigue" when new developments and attitudes in solving

the problem of sustainability are not acquired along with information about the problem itself. Issue fatigue seems to be a more present condition than lack of knowledge in the population of local public high school graduates that were the focus of this study.

This study does not support an idealized vision of a "green generation" of college students, which is surprising in light of the momentum and investment in campus sustainability efforts. The point of the study was to understand student perspectives towards sustainability. It is unclear whether the relative apathy seen in this study represents a community college phenomena or a broader generational trend. At minimum, it can be concluded that a range of perspectives towards and engagement with sustainability exists in the current college student body. No assumptions can be made about what these learners want to learn about sustainability, or what motivates them towards sustainability. Understanding learners' perspectives towards these issues is central to designing and marketing sustainability curricula, programs, degrees, and campus initiatives.

To answer the question of what current community college students know, do, and feel about sustainability, student knowledge and attitudes were analyzed on a spectrum of engagement with sustainability — high engagement would represent an activist student making college and career choices based on sustainability; low engagement would mean being neither familiar nor interested in concepts and practices related to sustainability. Student behaviors were also analyzed on a spectrum from light green to dark green, also known as weak to strong sustainability or shallow to deep themes that emerged from this analysis offer a useful lens for understanding students and sustainability, confirming much of the known literature while provoking new questions for further research.

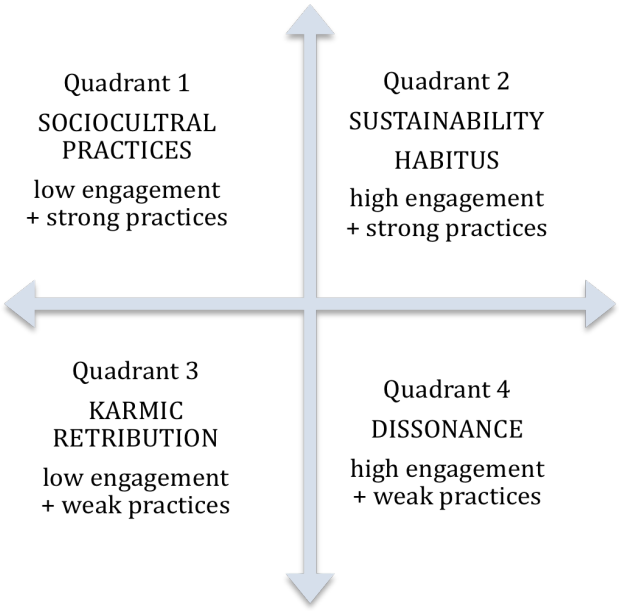

Figure 17: Quadrants of Analysis (III)

Cultural habits

The most frequently mentioned source of sustainability learning for the resident high school graduates was television media. However, the second most-frequently mentioned source was home-based and cultural practices and work experiences. Such knowledge is not adequately validated by the academic sustainability curriculum. A surprising number of the students interviewed had gardens at home – not to be "green" but to save money. Such students might not identify with curriculum that is packaged as "sustainability" such as an S-designated course, a certificate program, or a "green" type of student club or project. Students who grew up on neighbor islands of Kaua'i, Hawai'i, and Maui had even more direct experience, through programs like Future Farmers of America, as well as interaction with local issues related to landfills, aquifers, and the economic un-sustainability of communities with high unemployment, and the highest gas prices in the nation. Because they understand sustainability through lived experience, this would obviously be an effective starting point for sustainability curriculum.

The emergence of the "cultural habits" theme confirms the Funds of Knowledge literature presented in Chapter 2. Funds of Knowledge theory suggests that educators do not adequately consider the wealth of academic knowledge in students' home

communities. Gonzales, Moll, and Amanti (2005) suggest that ethnographic research in the homes of students, and the inclusion of their parents in the classroom, would boost the success of the K-12 Latino students they studied. This research has not been applied in a higher education context, even though first generation college students are recognized as an at-risk population because of the perceived differences between home and academic cultural values.

Lange (2009) also supports this concept of holistic home/work/school engagement with students and sustainability curricula, asserting that individuals are "fundamentally individuals-in-social-relations" and it follows that the family may be an even more constructive unit of analysis than the individual student (p. 195). Lange (2009), found that "a holistic concept of sustainability had power to foster cultural critique and new possibilities for living and working" (p. 197). In other words, the connection between academic learning about sustainability and home-based or cultural practices is reciprocal, and can be built upon for greater engagement with sustainability.

Sustainability habitus

Quadrant 2 represents the type of student described above, the idealized sustainability activist who exhibits what Karol and Gale (2009) called (appropriating from Bordieu) the *sustainability habitus*. This category of student is informed with sustainability knowledge, or what Karol calls "environmental capital" as well as being motivated towards sustainability practices. This quadrant describes the students who take science classes, choose to watch environmental documentaries, and share with their friends about topics such as algae, water safety, global warming, food scarcity, health, energy, and waste. Some of these engaged students came to college already engaged with sustainability issues, and others were motivated by academic exposure in general education courses. It is unclear from this study what drives their choice of major or their involvement with sustainability. Of the students demonstrating high engagement with sustainability along with strong sustainability practices, two students, Kana and Kapono, stood out as having a strong activist ethos towards sustainability. One was a Botany major, and one was a dance major. One was of nontraditional age, and one was of traditional college age. One was from neighbor island, and one was from Oahu. One described a rural upbringing, and one described an urban childhood. Though both

students chose Hawaiian names as pseudonyms, one was Native Hawaiian, and one was not. Of all these different traits, one thing that these two "exemplary" examples of the sustainability habitus shared was an extensive participation in service-learning.

Their participation in service learning supports the literature of civic engagement. Rowe (2002) emphasized that sustainability curricula is not just about content, but also about helping students to become "positive change agents" (p. 1). Such students are solution-oriented, able to envision a sustainable future, and possessing political efficacy (Rowe, D., Bartleman, D., Khirallah, M. Smydra, M., Keith, G., & Ponder, M., 1999). Rowe envisions a unique role for community colleges in producing positive change agents, simply because community colleges are the primary interface with higher education for almost half of all college students in the United States (Rowe, 2005).

Service learning has also been uniquely connected to the community college setting, and CCoP has a nationally recognized service learning program. Franco (n.d), notes that service-learning can contribute to educational reform as a pedagogical strategy, as curricular content, and by creating community partnerships. Service learning "enhances what is taught in the college by extending student learning beyond the classroom and providing opportunities for students to use newly acquired skill and knowledge in real-life situations in their own communities" (p. 8). A key conclusion of this study is that some form of active, engaged pedagogy – whether it be service learning, place-based education (PBE), problem-based learning (PBL), or interaction with change agent skills, political efficacy, or civic engagement – is necessary to bring sustainability curricula to life. Without the "spark" of active, engaged pedagogy and civic engagement, delivering the content of sustainability curricula and environmental capital can actually impede the development of sustainability practices. This study both confirms the effectiveness of service learning as a contributor to the sustainability habitus, and extends the possibility that this "spark" can be provided by other active-learning pedagogies described in the literature. Otherwise, as Rowe (2009) says, students may feel discouraged, sensing that "the problems are so large and complex that they can't do anything about [them], and decide to just take care of themselves. Apathy and cynicism become the dominant attitudes. Knowledge should be empowering our students to help create a better society instead of making them passive" (p. 2). Other examples of active,

place-based pedagogical strategies that would activate the development of the sustainability habitus could include faculty-student research collaboration, examination of localized topics in economic, political, social, or environmental sustainability, and campus facilities waste and energy auditing as a unique form of place-based learning.

Karmic retribution

The emergence of the "karmic retribution" theme of student responses was noted across all groups, though slightly more in the local students than in the mainland and international students. Some of this attitude, summarized in the student quote that, "the earth's gonna do what she's gonna do" could be attributed to the March 2011 tsunami in Japan, an overwhelming natural disaster that occurred in the weeks just before these interviews. A widespread Facebook meme suggesting that the tsunami was a retribution for Japanese attacks on Pearl Harbor may have influenced these student comments, although student comments related to the concept of "karma" were more generalized than just discussion of the tsunami. An article in the *Huffington Post* described the Facebook phenomena, and the author noted, "I'm most disturbed by the range of people spouting this garbage: Looking at their Facebook profile pictures I see young and old, white, black, Hispanic faces (no Asians, thankfully) and both men and women" (Arakawa, 2011, para 10). The appearance of this meme in the student focus groups represents a disturbing group norm, exposing shallow, racist attitudes. Disturbingly, students mentioned the tsunami as retribution for Japanese whaling practices and for historical aggression in the Philippines. One group of students also made racist jokes about Micronesians, who are a frequent scapegoat for social problems in Hawai'i. The Facebook tsunami meme also illustrates a negative application of social networking, with Facebook being used to spread negative ideas rather than catalyze sustainability activism as Greenbow (2010) suggested.

At the very least, the repetition of karmic retribution as a theme illustrates a pervasive lack of empowerment in response to environmental issues of global magnitude. Moore (2005) notes, "There is a tendency in many environmental texts to emphasize the enormity of the current ecological crisis and to suggest responses that would turn every student into an environmentalist or sustainable citizen (p. 88). Both habits are problematic. First, they emphasize how the crisis creates what one faculty member in

this study described as a "shock and awe" approach to sustainability. Second, the habits that are suggested, such as declining to use plastic bags or choosing to purchase a local avocado over an imported one, feel so small in the face of the problem that even if such choices do have a global impact (which is not certain), it is not possible for students to feel the impact of their personal behaviors as a solution to global scale problems.

A YouTube video of a young boy on a roller coaster titled "The Definition of an Emotional Roller Coaster" metaphorically captures the way college students might experience the current sustainability curriculum. The boy anticipates the ride, looking around eagerly at the new vantage point it offers; then on the first downhill his face crumples and he looks like he's going to cry or throw up. The ride slows, and he laughs nervously and wants to do it again … if perhaps less enthusiastically ("Definition," n.d.) . If we continue to embed sustainability into the curriculum using problems and issue-based media in this type of "shock and awe" strategy, we will ultimately exhaust the student's emotional and intellectual capacities by repeating a roller coaster ride of concern. One of the students described writing a research paper on GMOs, saying, "I wish I could unlearn what I wrote … I wrote about a bunch of things I could do about it, but I don't really believe any of them." Shock and awe curriculum creates not only a lack of desire for deeper learning but also a personal detachment from sustainable practices that may be articulated but not enacted.

The current sustainability curriculum does not appear to engage students' affective capacities. Sipos, Battisti, and Grimm (2006) assert that higher education curricula must engage "cognitive, psychomotor and affective learning domains," which they name education of "head, hands, and heart" (p. 74). They expand EfS to include aspects of transformative learning, with a particular emphasis on perspective transformation, where "the ultimate goal of transformative learning is to empower individuals to change their frames of reference or worldviews" (p. 4). Many of the faculty and administrators interviewed in this study did espouse "personal transformation" as a goal of higher education, although students tended to focus more on career goals than a quest for personal transformation. Moore (2005) acknowledges that putting transformative learning at the center of the curriculum would require major shifts in organizational structures to accommodate the interactions of such learning, which may not fit in the traditional

Carnegie units of credit hours and classroom time. In addition, higher education would need to accommodate the uncomfortable stages of the transformation process. Despite being an advocate for both transformative learning and sustainability education, Moore (2005) notes, "Transformative learning with a particular endpoint in mind is different from transformative learning for the purpose of empowerment and freedom of thought" (p. 12). In other words, the inclusion of emotional, affective components of learning leads back to the idea of personal transformation as a core value in higher education, which leads back to the ethics of introducing sustainability as an activist ideology into higher education, as discussed in Chapter 2. This choice is at the heart of curricular change towards sustainability.

Is the planetary crisis real and urgent enough to espouse a sustainability ethic, and at what point does promoting the ethic of sustainability become "sustainabullying" (Wood, 2010)? A student comment about sustainability in the curriculum echoes here. When asked whether there should be a sustainability course requirement, one student in this study first said, "no," but then added, "well, maybe if it gets bad enough that we are all going to really be impacted then it should be." While the literature on sustainability in higher education advises curricular change with an almost frenetic urgency (Jucker, 2002; Bowers, 1993; Odum and Odum, 1999; Wright, 2009; Evans, 2011), it appears that the ideological foundations of traditional educational institutions have a resistance to Education for Sustainability. Even if it is a planetary ideology rooted in survival, sustainability does represent a prescriptive stance towards personal choices in lifestyle, values, and career choice.

Dissonance

The last category of student response to what they "know, do, and feel" about sustainability is captured in the theme of dissonance. This quadrant describes the students who claim to care about sustainability but do not make significant choices or adopt life practices based on their advocacy. This quadrant describes a majority of the students interviewed, consistent with the research of Kagawa (2005) who found that even though students tended to espouse "critical or even radical statements on behalf of environmental and social justice," their related behaviors and practices did not agree with their "in principle" beliefs (p. 333). Faculty expressed frustration with student behaviors, seeing

students as “me” oriented, consumer-driven, and unmotivated to engage in sustainability practices such as recycling. This may represent an additional dissonance between faculty and student perceptions.

The root of this dissonance appears to lie in the contradiction of academic learning about sustainability with the broader sociocultural context. What is taught is not experienced in real life. Students from other countries, in particular, described their sustainability learning as coming from “everyday life” rather than from school. They described experiences in grocery stores and at dinner tables – not in classes. Some students from European and Japanese cultures seemed surprised to even think about sustainability as an academic topic; they saw it more as something in the domain of the broader sociocultural context.

Students may choose different ways of demonstrating their sustainability awareness. For example, one student described reusing plastic grocery bags as trash bags, and another student one-upped her by saying he didn’t use a trash bag at all. It is possible that sustainability activists, and faculty who are such activists, operate in a bit of a cultural blind, valuing certain “green” behaviors like recycling or reusing water bottles or power strips, but failing to recognize other sustainability practices.

Tote bags are a great example of sustainability dissonance, and it was uncanny how often tote bags were mentioned by students, faculty, and administrators in this study; everybody owns multiple tote bags but forgets to bring a bag when grocery shopping. At some stores like Whole Foods, shoppers save a nickel by bringing their own tote bag – a small carrot incentive, but if forgotten, goods are placed in paper bags. Shift again to a small local food coop, and you might feel uncool for not having one or even get a subtle eye-roll from the cashier. Shift again to a farmers market, where tote bags and baskets have become part of the aesthetic. In other words, the sociocultural context seems to be where behavioral change really happens. As Kagawa (2005) noted, teaching a particular set of specific, prescribed sustainability behaviors is not the same as empowering students to problem solve sustainability in their own lives and in their own way.

When sustainability practices such as bringing a tote bag, declining a Styrofoam container, providing your own cutlery, or asking about the source or farming practices of meat served in a restaurant require going against the normal grain, they are obviously

harder to do. When the culture in which the individual acts begins to shift its norms, change is easier for the individual. It's a feedback loop. Individuals create the culture, which in turn creates new behaviors in individuals. For educators, this means turning an eye outwards, to promote learning not just by teaching inside the classroom, but through personal actions and off-campus impacts.

Using the Academic Planning in Context model

Overall, the connections of this study to the current research on sustainability suggest that small groups of campus stakeholders, mainly faculty, are driving efforts to shift the academic curriculum towards the introduction of sustainability content, values, and practices. Although consensus can never be achieved by the entire faculty on a college campus, much less in higher education consortiums across the United States, the next best thing is top-level administrative leadership. Without an administrative plan for sustainability curricula (which does not exist at this time at CCoP) sustainability curricula has a grassroots, renegade feeling that is haphazardly implemented, poorly communicated, and not assessed at all. The faculty groups in this study did not know what their colleagues were doing about sustainability, nor were they involved with campus facilities projects such as energy contracts, composting facilities, and the management of the cafeteria.

The current approach to sustainability curriculum development, as advocated by national organizations such as AASHE, is largely concentrated in increasing access to faculty development to create interdisciplinary, place-based sustainability curriculum (Call to Action, 2010, p. 4). While laudable, this study indicates that the emphasis on faculty as stakeholders driving curricular change is problematic in that it leads only to slow, incremental change and may be coupled with faculty burnout, frustration, and cynicism towards the institution.

Lattuca and Stark's (2009) model of Academic Planning in Context was selected as the theoretical framework for this study primarily because of its broad application to curriculum development and change. Lattuca (2004) described the original model as a "small t" theory, intended as an "analytical tool that directs attention to the many elements of a given curriculum, and the many influences on what students learn, how they learn it, and why they learn it" (para 11). The plan provides a useful tool for

considering sustainability curricula in various areas of the institution. This section discusses the use of the current Academic Planning in Context model as a tool to plan sustainability curriculum. Components of the theory that emerged as relevant in this study include: 1) sequencing; 2) the educational environment, which Lattuca and Stark (2009) describe as the non-tangible characteristics of the institution; and 3) sociocultural context, the external field in which the entire curriculum and all of its stakeholders are embedded. According to Lattuca (2004), the external field of sociocultural context was added to the original theory as understanding of sociocultural influences on learning increased. Lattuca (2004) comments that the original model included internal and external influences that "*act on* the plan," but the addition of the sociocultural context field "also suggests that social, cultural, and historical influences *act in* the plan, as student and instructors bring their personal understandings to classrooms and programs" (para 14, italics in original). The current model is repeated in Figure 18, below.

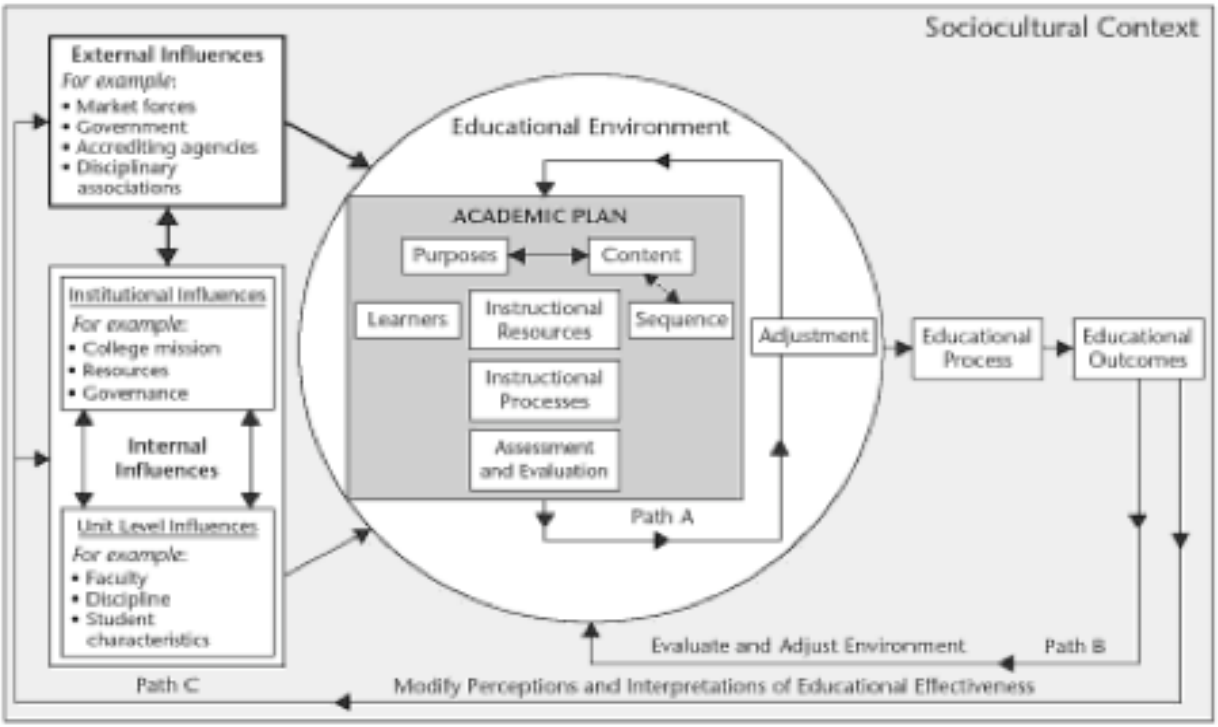

Figure 18: Academic Planning in Context:

Sociocultural context

Sociocultural context, the outer field of the model, is a vital area of curriculum theory. Rudolph (1977) said that the academic curriculum in American universities can be read as the history of America, "revealing the central purposes and driving directions of American society" (p. 24). It is helpful to understand sustainability as a curricular change effort similar to other shifts in history, some of which mirror quite precisely the issues and tensions of SHE. For example, the process of creating a more inclusive curriculum in the area of women's studies was a struggle that some professors and administrators in the 60s and 70s felt just as passionately about, as described by MacCorquodale and Lensink (1991). The curriculum is better because of that work; it has expanded to reflect the diversity of American culture and thus is more appropriate for a wider college-going population. An inclusive curriculum educates for an inclusive society. It follows that sustainability curriculum educates for a sustainable society. The question is how, and to what degree, higher education chooses to respond to sustainability as an issue in the broader sociocultural context.

Colleges leading the sustainability movement are reconsidering campus boundaries and becoming more integrated into communities. For example, the Oberlin Project, led by campus sustainability champion David Orr, is a development project intending to revitalize a 13-block area surrounding Oberlin College. "By combining urban revitalization, green development, sustainable agriculture, sustainable energy, education and arts into a single project, the collaborative effort is at the forefront of a national trend to broaden the scope of the campus sustainability movement" (Wagner, 2011, para 1). This trend shows an ability for the academic curriculum to engage more deeply with social context, to both create it and learn from and with it.

Educational environment

Lattuca and Stark (2009) describe the educational environment as the general atmosphere created by institutional type, the student population, and the structure of faculty and administrative relationships and governance, among other things. External influences on the educational environment include current assessment and funding mechanisms. CCoP, like many other public colleges, is affected by the growth of "performance reporting as the preferred accountability mechanism in public education"

(Lattuca and Stark, 2009, p. 60). Institutions of higher education must simultaneously respond to social needs and meet increasingly prescriptive conditions of external accountability criteria. Accountability and assessment cycles as well as the influence of external stakeholders such as national accrediting agencies were mentioned by administrators in this study but not by faculty, indicating that there is not yet a shared understanding of all the external factors that influence curriculum planning.

Faculty members have formal responsibility for student instruction, curriculum design, degree requirements, and pedagogical methods, as set forth by the American Association of University Professors (AAUP). This general perception that faculty have "100% control" of the curriculum was confirmed by both faculty and administrators in this study. However, Lattuca and Stark (2009) note that administrators bear responsibility for "accomplishing change so that institutional environments support and enhance the contributions that faculty members can make to their institutions" (p. 76). In other words, administrators create the educational environment in which the curriculum and cooperation between faculty and administration is essential in creating an adaptive educational environment to support the development of sustainability curricula.

Sequence

In this study, sequence emerged as a much more significant factor for sustainability curriculum planning than originally hypothesized. In the student focus groups, first year student attitudes were much more jokey and lighthearted than second year students. The college curriculum does seem to be exposing students to global environmental issues and sustainability, and the second year students demonstrated greater knowledge than the first year students. However, while they had more information, the second year students were also more confused, unsure if things were likely to get better or worse. They were more likely to use words like "sad" and to feel disconnected from their sense of place, with a "lost paradise" view of their home, Hawai‘i. Because of poor sequencing and contradictory perspectives, students had difficulty assimilating different information about topics such as global warming.

Implications for theory

Overall, the Academic Planning in Context model provides a useful tool to examine the multi-faceted influences on curricula. Use of the theory helps to shift emphasis from faculty as drivers of sustainability curriculum to a more comprehensive account of myriad factors influencing curriculum. The model is comprehensive, and sound. However, one missing component that this research suggests is a clarification of the role of the physical campus in the curriculum. Lattuca and Stark (2009) consider classrooms and technology only cursorily in the category of Instructional Resources. The sustainability curriculum, however, creates a unique opportunity to view the physical environment as not just a resource but also an essential component of the academic plan. Sociocultural learning theorists such as Vygotsky posit that the dialogic interplay of internal and external, theory and application is essential to learning. Bahktin, similarly, emphasizes the need for dialogue as a way to "ventriloquate" new ideas through social exchanges (in Wertsch, 1985). Lastly, transformative learning theory has an important stage of "trying on" new frames of reference. All of these theories, described in Chapter 2, can be employed through conscious interaction with the physical campus.

For students, the most commonly mentioned sources of sustainability learning were daily practices, work experiences, family practices, and popular media. Students did not mention classroom-based curriculum until questioned directly about it. In this study, students also did not mention campus facilities; that is a lost opportunity. The "greening" of college campuses, which began as a money and energy-saving initiative, has gained more momentum than corresponding changes in the academic curriculum, providing an opportunity to use the campus environment to reinforce and complement classroom content. If the physical campus is an important component to reinforce classroom activities related to sustainability, then the use of the physical campus as a learning environment should also apply to other topics of curricular planning. The revised model might simply include "Physical Environment" as distinct field inside the Academic Plan field. This component could include consideration of online classes, which still take place in a physical environment. Faculty using the Academic Plan model would use this aspect to consider experiences on campus that could be designed to reinforce classroom content (such as having students explore a campus garden), or to be

interrogated as contradictions to what is taught (such as having students measure food waste, energy use, or transportation practices). Explicit use of the campus environment in the academic plan would decrease the experience of dissonance between academic curriculum and actual experiences on campus.

Implications for practice: Physical environment

a. Use campus and community as laboratory for sustainability

The idea of Hawai‘i as a “laboratory for sustainability” was eloquently expressed in Chapter 1 by navigator Nainoa Thompson, who sees the state as a global laboratory for sustainable practices, driven by the cultural value of aloha. To activate this vision, the University of Hawai‘i college campuses, and the community colleges in particular, can expand the concept of the classroom to include the physical campus and the surrounding community including green spaces, businesses, schools, and homes.

The campus itself can be a laboratory for sustainability. Investing in food practices on campus, including local produce and healthier choices, could also include the elimination of plastic and single-serving beverage containers. This has become a common sustainability practice on many campuses. It is attention-getting, and makes students think about how they purchase, consume, and dispose. Again, since faculty emphasized the importance of personal consumer decisions, and the research indicated that sociocultural context can support behavior change more than academic learning, the campus should create a unique context for practicing sustainable practices.

Lastly, several students mentioned posters, video displays, and film screenings as ways to promote sustainability on campus. These are all good ideas. In addition to reinforcing academic content, the campus can be the interdisciplinary environment that links disparate academic areas of study. Posters and student projects displayed around campus can showcase different approaches to sustainability and appeal to different perspectives on sustainability such as culture, politics, and spirituality.

b. Subsidize and assess learning interactions with campus facilities

Specifically, campus operations could be subsidized to support classroom instruction by creating a dialectical relationship between theory and practice, fact and application, knowledge and behaviors. Unique experiences in sustainable food,

transportation, and energy could be provided; the more the campus can be a model of creative solutions and sustainable practice, the more likely students might be to adopt sustainability practices off campus. This may mean changes in the budgeting and management of campus facilities, as well as the creation of assessment strategies to measure the impact of the learning environment.

c. Integrate student families and homes with academic curricula

Because students do have home-based sustainability practices, it follows that greater inclusion of student families on campus would bring cultural practices and inter-generational wisdom to sustainability curricula. Students can also study their own homes and families to connect personal practices to global sustainability.

d. Strategize faculty service

Faculty service is an underutilized component of faculty workload, and could be concentrated towards creating more sustainable communities surrounding the college campus. Such efforts would not only increase participation in service learning and develop stronger community partnerships, but would, in the long run, reinforce student learning, and be as effective in creating student behavioral changes as classroom instruction, as seen in the following recommendation.

e. Behavior change comes from context, not classrooms

The transmission of attitudes towards sustainability is strongest when it comes from home-based and cultural knowledge. Such knowledge provides a schema that helps students to access sustainability curricula in college. Thus, faculty interested in impacting sustainability learning could focus attention to modeling sustainable behaviors on campus and working directly with sustainability initiatives in the community.

Implications for practice: Curriculum

f. The K-12 sustainability curriculum is not sticking

The good news is that students in Hawai‘i’s local public high schools are learning about global issues and sustainability in the K-12 curriculum. Students who graduated from one to three years ago reported different curricular experiences than those who graduated five, six, or forty years ago. Public school students have been on field trips to

H-Power (a local waste-to-energy facility) and the landfill. They have seen aquaponics in action, and they have taken biology, ecology, and geography. They may have some gaps in their knowledge, and they may not have the skills, emotional maturity, or academic preparation to adequately engage with the information. But they consistently demonstrated some exposure to sustainability curricula.

However, one of the most alarming results of this research is that even though students are quite aware of global environmental issues, they have not adopted the practices that could contribute to a more sustainable future. Neither are they interested in learning more about sustainability or entering a green workforce career field. While 46% of 11 groups said they knew the most about global warming, only 5% of the groups said they were interested in talking about it.

It is possible that high school is not the right age to engage with global environmental issues: the developmental stage of adolescence is, in a Piagettian scheme, largely ego-based and may preclude real comprehension of abstract consequences, especially those that may be 20 or 50 years away. The prefrontal cortex, the area of the brain believed to be responsible for understanding consequences, is not fully "connected" to the rest of the brain (Knox, 2010). Perhaps the adolescent brain cannot truly process the deeply future-oriented consequences of environmental issues such as global warming. As one student in this study said, "I learned that stuff, but I wasn't paying attention." A group of students in this research had studied nuclear power, but forgot the word nuclear. In fact, neuroscience indicates that there is a decrease in the brain's "grey matter," from age 12 to 30, and that synaptic connections may be literally reorganized after adolescence (Blakemore and Chaudhury, 2006).

In short, the social and cognitive transition from high school to college should be considered in the context of sustainability education with implications for First Year Experience (FYE).

g. Support service learning and civic engagement

Service learning, or any type of community and civic engagement, is essential to curriculum planning for sustainability. Service learning gives students real world experience with non-academic professionals who are interacting with sustainability in a

real context. Service learning curriculum should be well-planned and scaffolded to support both course content and sustainability concepts.

h. Promote travel abroad and world-centric perspectives

The fact that international students had more sustainability knowledge and, in general, stronger sustainability practices indicates that exposure to sustainability practices in other countries and some cities on the U.S. mainland would increase awareness of sustainability. The presence of international students at CCoP is an opportunity to expand the experience of resident students and reduce underlying racism that may exist in the student population.

i. Work with national accrediting agencies and disciplines

Accrediting agencies could have a sizable impact on sustainability curriculum. If accreditors prioritized sustainability in campus facilities and curriculum, then colleges would put it in the mission, and carefully track progress towards sustainability goals. Similarly, national disciplinary organizations can help faculty to connect their disciplines to sustainability.

Implications for practice: Pedagogy

j. Incorporate multisensory, somatic learning

An affective, multisensory education built around "heads, hands, and heart" would be consistent with the experiences that lead to the sustainability habitus. One of the most fascinating statements in the focus groups was from the student, Kana, who happened to be a dance major. Kana described his sustainability practices as a somatic sensation, "Once you start doing it, you're going to notice a difference, like in your head and your body. The more you save energy and electricity, you're gonna notice on your electric bill. It's not just visual; you're gonna get this sense in your body." Multisensory learning also resonates with what Meyer (2002) describes as the na'au, the seat of knowledge in Hawaiian epistemology, which is situated in the stomach.

k. Stop teaching problems

While both mainstream media and environmental media play an important role in educating young people about environmental issues, such media may over-package environmental issues into formulaic "eco-tainment" experiences that are ultimately passive and disempowering. When such films are used as introductions to sustainability issues, they create a cycle of interest-despair-action. But the action part is never in equal proportion to the despair part. Such films are often followed by research paper assignments on global warming, genetically modified food, peak oil, and social problems like homelessness.

Faculty must agree to collaborate on a more scaffolded approach to sustainability curriculum. If the roller coaster ride is rough in one class, imagine what it would feel like in three or four or five uncoordinated classes, each of which might engage with a different topic related to sustainability, if the Sustainability Across the Curriculum effort were deeply integrated into general education courses. Faculty indicated that personal behaviors were the most important result of the sustainability curriculum, but this research indicates that scaring students does not make them change their behaviors. Fear creates belief in nature's karmic retribution, leading to detachment, denial, or negative emotions such as resentment and anger. The frequency of the "karmic retribution" type of comment across multiple focus groups, along with negative comments such as "this topic pisses me off" that were recorded when the researcher was not present indicates that detachment or negative attitudes about sustainability could be widespread in the student population. This may be true even as some students adopt the sustainability habitus and become champions for campus sustainability initiatives.

Of course, students must learn about real problems such as global warming, loss of biodiversity, global security, and food supply, as well as issues of social justice, consumerism, and global capitalism. However, such learning can be scaffolded to come later in the curriculum, after some affective qualities, future-thinking, systems-thinking, problem-solving, and self-efficacy strategies are learned. Global warming should be taught, but it should be taught accurately, by science experts whose training equips them to understand and teach the issue. Deeper engagement in such problems can happen

through student/faculty research and collaborative inquiry, with attention to sequencing in the student's curricular experience.

Instead of using problems to engage students with global issues and sustainability, the general education curriculum could be creating vision and expectations of thriveability and the entrepreneurial Blue Economy described in Chapter 1. Students will not graduate into a changed economy; they will graduate to create it. This curriculum emphasizes creative, entrepreneurial thinking along with the systems thinking that is emphasized in LfS. But the curriculum can also create lifestyle practices, through campus experiences and community engagement.

l. Leverage collaboration and communication technology

A final pedagogical recommendation is to leverage technology wherever possible. While it may not be a pedagogical panacea, and certainly brings its own set of problems such as the empty activism of "clictivism," and the potential to spread negative thought memes, technology is the tool that defines the modern sustainability paradigm, making it different from previous environmental movements. Faculty can leverage existing student technology, such as cell phones and social networking, to uncover the potential for technology to catalyze positive social change.

Implications for further research

Most of the above recommendations can be accompanied by further research to explore these recommendations as contributors to LfS. For example, more in-depth understanding of the students who graduate with a strong sustainability habitus would be very useful as a way of reverse-engineering education to produce this type of student. Such research would help to develop leadership curriculum that promotes the positive change agent skills and values. In addition, curriculum developers will benefit from continued research into effective service learning practices, as well as active pedagogies such as problem-based and place-based learning.

Ethnographic research following the work of Gonzalez, Moll, and Amanti (2005) to explore students home-based and cultural knowledge would be revealing not just for sustainability, but for student engagement research in general. In particular, ethnographic, home-based research in Native Hawaiian families would be useful to increase Native

Hawaiian educational attainment, integrate families and cultural values into the campus community, and more effectively connect Native Hawaiian cultural practices and activism to the modern sustainability movement.

The Monitoring the Future data on adolescent attitudes towards environmental issues has not been analyzed for the period from 2005-2010. Analysis of this data, and further research explicitly comparing the attitudes of high school students, community college students, and four-year college students towards sustainability would be of interest. The use of one survey instrument for campus sustainability assessment, such as the ULSF Sustainability Assessment Questionnaire (SAQ) would be more effective than the diverse web-based surveys that are currently used to assess student attitudes on campus.

Researchers in cognitive science, developmental psychology, and environmental psychology should collaborate and investigate the long-range efficacy of K-12 sustainability curricula. Higher education faculty should take more interest in what is being taught in high school, to more effectively scaffold a sustainability curriculum that encourages leadership, creativity, and entrepreneurial thinking.

Conclusion: Personal experience

The most important thing I learned from this research experience is that every organization is made up of individuals, and individuals are what drive change efforts. What matters in the end is not the broad application of these recommendations but each individual stakeholder's opportunity to discover them for him/herself. The truth of what scientists, psychologists, and indigenous scholars have to tell us about the reality of humans' 50- and 100-year outlook can only be absorbed as a personally transformative experience.

This research changed my personal view of LfS and my stake in it as a teacher, parent, and individual. Unfortunately, I have become more discouraged, more suspect of the sustainability curricula, and less certain that institutions of higher education are capable of responding adequately to the sustainability paradigm. Too many different pressures have been placed on higher education to solve too many different problems, and the core vision of personal transformation has been lost in the increasing complexity of educating for a technologically complex, pluralistic, capitalist global economy. It is

like a Jenga tower of blocks built too high and destined to collapse under its own weight. Kamenetz (2010) offers a realistic vision of what she calls the DIY or Do-it-Yourself University, in which individuals will increasingly navigate their own path through the increasingly accessible information and skills they require: "The whole project of formal education has been based on the idea of society transmitting its ideas, values, and technologies from one generation to the next" (p.133) But as the world becomes more complex, so does the definition of the values and knowledge needed by the next generation. The current teachers may not actually know what skills, values, and attitudes students will need. Compounding this problem is the amount of information that institutions need to teach to more people. Kamenetz offers this dark outlook:

> Well, now the world is changing too fast, and the need is growing too much, for institutions to keep up. Scientists say we have less than ten years to reinvent how we get energy, how we get around, and how we make things if we don't want our civilization to collapse from the effects of global warming. (p. 134)

While I share some of Kamenetz's pessimism and punk-rock attitude towards higher education, I am also intrigued by the possibilities that the very problem of sustainability poses for scholarship on transformative learning. I had previously thought that Place-Based Learning was limited to activities like a field trip to a taro patch or the landfill, to study the cultural assets as well as the needs of a particular place. What I see now is that every campus is a place, and this inquiry was a place-based education for myself as well as the students, faculty, and administrators who participated in these conversations about sustainability.

The process of designing sustainability curriculum on the physical campus and in the classroom can be, itself, the needed process to evolve more holistic, peaceful, and fun approaches to learning and to life. Nainoa Thompson described the process of preparing the Hōkūleʻa for a worldwide journey as an important means to transfer knowledge from the current generation of navigators, who were trained by the masters, to the next generation. Instead of the old adage that "the journey is more important than the destination," I appreciate Thompson's idea that the planning for the journey is even more important than the journey itself.

GLOSSARY OF TERMS

clicktivism: the use of social media to organize social change movements. "Clicking" is a way of quantifying social support, but the term is perjorative since it implies a passive form of activism. See White, M. (2010).

curriculum: broadly defined as "the purpose, design, conduct, and evaluation of educational experiences" (Ratcliffe, 1996, p. 7), the term "curricular" can be used expansively to include all experiences on a college campus (ie: the presence of recycling bins, or articles in the student newspaper).

Education for Sustainable Development (ESD, or sometimes EfSD). This is the most frequently used term to describe transformative curriculum, as defined by the specialist journal, the *International Journal for Sustainable Development in Higher Education*. ESD refers to "all aspects of public awareness, education, and training to create or enhance an understanding of the linkages among the issues of sustainable development and to develop the knowledge, skills, and values which will empower people of all ages to assume responsibility for creating and enjoying a sustainable future" (Rebello, 2003, p. 4).

Education for Sustainability (EfS). Used in Jucker (2002, p. 13), Kahn (2010), and other critics of the UNESCO emphasis on "sustainable development" as an alternative to ESD.

four pillars: used in Fein (2002) and The Earth Charter (www.earthcharterinaction) to illustrate integral nature of sustainability to encompass *economic, ecological, political, and ethical* concerns and practices.

Sustainability in Higher Education (SHE). Used in Wright (2006) to describe "any research that is directed at advancing our ability to incorporate sustainability concepts and insights into higher education and its major areas of activity" (p. 121).

LEED (Leadership in Energy and Environmental Design) Green Building Rating system provides criteria for environmentally sustainable buildings. Points are assigned for aspects such as recycled content, certified wood, water use reduction, and renewable energy. (United States Green Building Council, 2003).

Learning for Sustainability (LfS). Used in Senge, P., Laur, J., Schley, S., & Smith, B. (2006). Also used in this paper to blend sustainability education with Peter O'Banion's concept of the Learning College, emphasizing impact of curriculum on student learning.

light green / dark Green: First used by Porritt and Winner (1998) to describe a spectrum of behavioral change. Dark Green behaviors propose a "radical, visionary and fundamentalist challenge to the prevailing economic and political world order" (p. 11).

Monitoring the Future (MTF). Annual national survey of high school students that has been running for 36 years. Focuses largely on adolescent attitudes towards drugs, alcohol, and smoking, but also includes measures of environmental attitudes.

place based education (PBE). Pedagogical approach developed by The Orion Society. PBE uses local community as a resource for learning.

postmodern: Critical Theory term used to describe pluralistic societies often characterized by distrust of ideologies.

problem-based learning (PBL). Pedagogical approach developed as a medical school instructional method. PBL emphasizes the development of problem-solving skills and intrinsic motivation.

sustainability practices / sustainability habits. Used interchangeably to describe personal or institutional behaviors that contribute to conservation and renewal of resources.

sustainability habitus. Originally coined by Karol (2004) with appropriation from Pierre Bourdieu's concept of social "habitus." Used in this paper to describe the ideal combination of knowledge, behaviors, and attitudes towards sustainability that lead to an engaged, activist stance among students experiencing sustainability curriculum in college.

sustainability. Defined by the Brundtland Commission Report as: "development that meets the needs of the present without compromising the ability of future generations to meet their needs."

Sustainability Assessment Questionnaire (SAQ) a survey instrument developed by University Leaders for a Sustainable Future (ULSF).

sustainability literacy, sustainable thinking: terms used in ESD literature to describe knowledge, skills, and attitudes related to sustainability, as well as associated behavioral changes.

Sustainability across the Curriculum (SaC). Term used to describe course and assignment-level integration of sustainability concepts; parallel to the widely used term "Writing Across the Curriculum (WaC)" which is an established initiative on most campuses to facilitate writing pedagogy in disciplinary areas.

thriveability. Coined by Edwards (2010) to describe a shift in thinking from behaviors that are "less bad" to ways of living that are energizing and improve quality of life for all.

transformative, transformative learning: terms adopted from Mezirow's (1990) educational theory of how learners recognize the assumptions of themselves and others, and use this information to create long term behavioral changes.

Transformative Sustainability Learning (TSL). Specific term proposed by Sipos, Y, Battisti, B., & Grimm, K. (2008) to describe a holistic pedagogical approach to sustainability.

world mindedness. Term coined in 1932 by Edmond Meras in the Journal of Higher Education to describe an emerging learning outcome that emphasizes global connectedness and harmony.

APPENDIX A. STUDENT FOCUS GROUP PROTOCOL

1. Participants are welcomed and given a release form to read and sign. Participants are informed that the session will be audiotaped.
2. Participants are asked to introduce themselves using a pseudonym of their choice. These names will be used in the final document.
3. Participants are introduced to the broad subject of sustainability with a projection of the "earth from space" image that has become synonymous with sustainability. The research study is introduced: "Hi, my name is X, and I'm a doctoral student at UH Mānoa, as well as a teacher here at X. I'm interested in what students are learning about sustainability."
4. Then, a focusing activity is introduced, showing the website of the Union of Concerned Scientists. "The Union of Concerned Scientists is an alliance of 250,000 scientists and citizens from all walks of life: parents and businesspeople, biologists and physicists, teachers and students, whose mission is to combine scientific research and citizen action to develop innovative, practical solutions and to secure responsible changes in government policy, corporate practices, and consumer choices." The Union of Concerned Scientists has identified the following topics as the most important issues. Some entries have been modified for clarity, and some topics have been added at the suggestion of local sustainability experts.

   TOPICS

Global Warming	Invasive Species
Transportation	Biodiversity
Energy	Water *
Global Security	Waste Management *
Food & Agriculture	

5. When you look at this list, what else would you add? What else have you learned about that you think relates to sustainability? (new topics are added)

6. Now, I'd like you, as a group, to RANK the top five of these topics (including added topics) that you think you know the most about. Participants are invited to arrange a set of index cards with the topics printed on them, on a table.
7. Good. Now, of these five, which would you like to talk about? Which interests you?
8. Good. What do you know about X?
9. You know quite a bit about X. Can you talk about where you learned this?
10. What do you think you can do about X?
11. You said that these things can be done (repeat back) Which of these things do you actually do?
12. In general, how do you feel about X?
13. Is this something you think you should be studying in college? Why or why not?
14. Is there any other topic you'd like to talk about? (Repeat questions 8-13 as time allows).

APPENDIX B. NON STUDENT PROTOCOL

1. Thanks for taking the time to complete the Sustainability Assessment Questionnaire and join this conversation today. The question I would like you to talk about as a group is, "What should students be learning about global environmental issues and sustainability?"
2. Participants given release letter to read and sign. Do you have any questions about this focus group?
3. The SAQ instrument is divided into the following sections. As a group, I'd like you to rank the areas that you think are most relevant to the question "what should students be learning about global environmental issues and sustainability?"
    a. CURRICULUM
    b. RESEARCH ON SUSTAINABILITY
    c. OPERATIONS
    d. FACULTY AND STAFF DEVELOPMENT
    e. OUTREACH AND SERVICE
    f. INSTITUTIONAL MISSION, STRUCTURE, AND PLANNING

(Participants are invited to rank the above topics, printed on index cards. Researcher records order of priority.)

4. Okay, good. Can you talk for about 20 minutes about how you think X1 (topic 1) should (or should not) be changed in order for students to learn about global environmental issues and sustainability?
5. Some ideas that I heard were (repeats back). Can you now shift your conversation to talking about X2 (topic 2) and how this aspect of the college should (or should not) be changed in order for students to learn about global environmental issues and sustainability?
6. Overall, what do you think is most important for students to learn about global environmental issues and sustainability?
7. How do you think the college is doing in regards to sustainability?

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