STATE OF HAWAII

ACT 111 (SLH 2007)

BUSINESS/EDUCATION INTERNSHIP

AND MENTORSHIP PROGRAM

ANNUAL REPORT

TO THE TWENTY-FIFTH LEGISLATURE

2007-2008

This report is in fulfillment of Act 111, SLH 2007, and can be found on the internet at:

http://hawaii.gov/dbedt/main/about/annual

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Annual.

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LC1072.I58.H3.2008

Background

In 2007, The Hawaii State Legislature approved several measures supporting Innovation in Education and Workforce Development. These measures incorporated important components of Science, Technology, Engineering and Mathematics (STEM) skill development for Hawaii's youth. One of these measures became Act 111, funding programs to provide Hawaii students with skills needed for job entry and postsecondary success.

Act 111 directed funding to the Department of Business Economic Development & Tourism (DBEDT) to establish a business/education internship and mentoring program. The purpose of this program is to establish, with the cooperation of educational institutions, internships, mentorships, and other experiential learning arrangements for Hawaii high school students and Hawaii high school graduates attending college in Hawaii or elsewhere. The goals of this program are to provide Hawaii students with experience in the working world to improve their career choices and to provide opportunities for Hawaii employers to establish relationships with students who represent an essential source of skills for Hawaii's future economic growth and prosperity. The Act 111 are being leveraged with State matching funds for a National Science Foundation (NSF) Experimental Program to Stimulate Competitive Research (EPSCoR) grant. A STEM Workforce Development Program has been established at the University of Hawaii within the Office of Technology Transfer and Economic Development and a program coordinator was hired in March 2008.

VEX Pan Pacific Regional Robotics Competition (December 2008) depends heavily on mentors from industry and academia.

Strategy

The strategy developed by the STEM Workforce Development Program Office is two-pronged. The first approach is to leverage existing programs that show promise of greater success with additional resources. The second approach is to identify areas where there isn't an existing program, and work with other partners in the community to create new programs as models that can be turned over to community groups and replicated across the state. To support these efforts, the Program Office is developing web-based tools to be incorporated into the MySTEM Hawaii portal , a joint project supported by the EPSCoR matching funds and a STEM grant from the National Governors Association.

Process

The first task of the STEM Workforce Development Program coordinator was to research existing STEM internship and mentoring programs both nationally and locally. The next step was to convene a group of stakeholders including members of business, academia, government, and non-profit organizations. In June 2008, a workshop was held where the stakeholders shared best practices and discussed how to increase internships and mentoring opportunities for Hawaii students. Over 90 people participated in the all day workshop held at Honolulu Community College. Important points resulting from workshop discussions included:

- Interns should always have access to his/her mentor,
- Course credit, if letter grades are allocated, can be an effective substitute for compensation,
- Businesses should explore untraditional academic major-industry sector combinations since interdisciplinary studies can provide new ideas and benefits, and
- Internships can be a highly effective marketing tool for companies.

Upon completion of the workshop, a steering committee was formed to continue the work of the larger group, come up with recommendations and report back to the larger group in the spring of 2009. The steering committee met twice in the fall of 2008 and decided to survey both students (Attachment A) and employers (Attachment B) to catalog what is being offered locally, assess the level of interest from both groups in new opportunities and identify any challenges. The survey questions were vetted by the steering committee and then were sent to the UH Committee on Human Studies (CHS) / Institutional Review Board (IRB) for approval. The IRB approved the survey questions in early December 2008 and the survey was sent to both employers and students via a web based survey tool.

Although it is still early in the survey period, the following is a sample of student survey results to date:

Department/Major	Response Percent
Botany	30.8%
Public Health	11.5%
Astronomy	7.7%
Physics	7.7%
Accounting, Cell & Molecular Biology, Civil & Environmental Engineering, Curriculum Studies, Educational Technology, Electrical Engineering, English, Mechanical Engineering, Ocean & Resources Engineering, Urban & Regional Planning, Zoology	3.8%

How strongly are internships encouraged by your department/major	Response Percent
Required	6.7%
Strongly	16.7%
Somewhat	50.0%
Not at all	26.7%

What challenges have you encountered in your internship search (all that applied)	Response Percent
Lack of internships in general	48.1%
Lack of internships in my field	51.9%
Inadequate monetary compensation	40.7%
Unproductive applications	11.1%
Lack of assistance from college/campus	48.1%
Don't know where to look	55.6%
No challenges	14.8%

The following is a sample of employer survey results to date:

Commercial Market	Response Percent
Agricultural	2.0%
Astronomy	6.1%
Biotechnology/Life Sciences	18.4%
Defense/Aerospace	32.7%
Engineering/Professional Services	32.7%
Environmental	8.2%
Film/Digital Media	6.1%
Information/Communication	24.5%
Ocean Sciences	8.2%
Renewable Energy	16.3%

Number of employees in organization	Response Percent
1-4	13.2%
5-20	32.1%
21-40	22.6%
41-100	11.3%
>100	20.8%

Reasons for offering/considering internships	Most Important >				Least > Important
Fill "gaps" in employees' regular tasks	18.4%	28.6%	18.4%	16.3%	18.4%
Build relationships with and train future employees	58.8%	29.4%	7.8%	2.0%	2.0%
Give back to the community	30.6%	42.9%	22.4%	2.0%	2.0%
Infuse your company with fresh ideas and knowledge	14.0%	28.0%	32.0%	20.0%	6.0%
Other (i.e., relationship – friend, family, etc., give intern experience)	60.0%	0.0%	20.0%	0.0%	20.0%

STEM Internship and Mentoring Programs

The STEM Workforce Development Program Office has been working with educational institutions to support the following internships, mentorships, and other experiential learning initiatives.

- Sustainable Saunders Internship Program (Attachment C)
- Vertical Garden Program (Attachment D)
- Olelo's Youth Xchange
- US Dept. of Energy, Real World Design Challenge (Attachment E)
- Chamber of Commerce, Education Committee mentoring initiative
- MySTEM Hawaii, Program Directory (Attachment F)

Business/Education Internship and Mentorship Program: Going Forward

The programs and initiatives funded this year will be expanded during the coming year. The goal is to replicate these programs across the state and increase participation by students in both high school and college. We expect to increase contextual learning opportunities and help build life-long relationships between potential employers and their future workforce.

Program Contacts

For additional information regarding this program, please contact:

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or

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Student survey

1. Please indicate your department / major

Please indicate your department/major

2. How strongly are internships encouraged by your department / major?

- Required
- Strongly
- Somewhat
- Not at all

3. How actively are you looking for internship opportunities?

- Actively
- Somewhat
- Not at all

4. What kind(s) of compensation must an internship offer in order to interest you? (Check all that apply)

- College credit (co-op)
- Volunteer recognition (service-learning)
- Stipend/hourly wage (paid internship)
- None

5. Please indicate which challenges, if any, you have encountered in your internship search (Check all that apply).

- ☐ Lack of internships in general.
- ☐ Lack of internships in my field.
- ☐ Inadequate monetary compensation.
- ☐ Unproductive applications.
- ☐ Lack of assistance from college/campus.
- ☐ Don't know where to look.
- ☐ No challenges.

Other (please specify)

6. Please rate the usefulness of the following resources in your internship search.

	Very helpful	Somewhat helpful	Not helpful	I have not used this resource
Campus career/placement office	☐	☐	☐	☐
Department notices	☐	☐	☐	☐
Recruiters	☐	☐	☐	☐
Employers' web sites	☐	☐	☐	☐
Bulletin boards	☐	☐	☐	☐
Online job boards (e.g. Monster.com)	☐	☐	☐	☐
Professors	☐	☐	☐	☐

	Very helpful	Somewhat helpful	Not helpful	I have not used this resource
Parents or relatives	☐	☐	☐	☐
Friends	☐	☐	☐	☐
Other	☐	☐	☐	☐

If you selected "Other", please specify.

7. Please indicate your citizenship / visa status.

Please indicate your citizenship/visa status.

☐ U.S. Citizen

☐ B-1/B-2 Business/Tourist Visa

☐ F-1 Student Visa

☐ H-1B, H-2B, H-3 Work and Trainee Visa

☐ J-1 Visiting Scholar

☐ O-1, O-2, O-3 Extraordinary Ability Visa

☐ Alien Resident

☐ I Don't Know

Other (please specify)

8. I believe prior work experience is _____ for getting my preferred position in my field after graduation.

- ☐ Necessary
- ☐ Helpful
- ☐ Unhelpful

Employer Survey

1. Which commercial market segment do you serve?

- [ ] Agricultural
- [ ] Astronomy
- [ ] Biotechnology/Life Sciences
- [ ] Defense/Aerospace
- [ ] Engineering/Professional Services
- [ ] Environmental
- [ ] Film/Digital Media
- [ ] Information/Communication Technology
- [ ] Ocean Sciences
- [ ] Renewable Energy

Other (please specify)

2. How many employees does your organization have?

- [ ] 1-4
- [ ] 5-20
- [ ] 21-40
- [ ] 41-100
- [ ] >100

3. If you offer / are considering offering internships in your organization, please rank the reasons for doing so.

	Most important				Least important
Fill "gaps" in employees' regular tasks	☐	☐	☐	☐	☐
Build relationships with and train future employees	☐	☐	☐	☐	☐
Give back to the community	☐	☐	☐	☐	☐
Infuse your company with fresh ideas and knowledge	☐	☐	☐	☐	☐
Other	☐	☐	☐	☐	☐

If you chose "Other", please specify.

4. In addition to a college education, how important is prior work experience for potential employees?

☐ Necessary

☐ Important

☐ Unnecessary

5. What kind of compensation is available to interns in your organization (Check all that apply)?

☐ College credit (co-op)

☐ Stipend/hourly wage (paid internship)

☐ Credit and pay

☐ Volunteer experience (service-learning)

6. Please rate the effectiveness of the following resources in helping you to find qualified interns.

	Very effective	Somewhat effective	Not effective	I have not used this resource
UH Career Development and Student Employment Office	☐	☐	☐	☐
Department notices	☐	☐	☐	☐
Career fairs	☐	☐	☐	☐
Your organization's web site	☐	☐	☐	☐
Bulletin boards	☐	☐	☐	☐
Online job websites (e.g. Monster.com)	☐	☐	☐	☐
Word of mouth	☐	☐	☐	☐
Other	☐	☐	☐	☐

If you selected "Other", please specify

7. If you are actively seeking interns, have you encountered any challenges in finding or managing qualified interns? Please explain.

8. Would you be willing to periodically update information about your internship program on a clearinghouse website?

☐ Yes

☐ No

9. Please provide us with your organization's contact information if you would like the STEM Workforce Development Program to contact you regarding internships.

Name:

Company:

Address:

Address 2:

City/Town:

State: -- select state --

ZIP:

Email Address:

Phone Number:

* DRAFT *

Sustainable Saunders Internship Program (SSIP)
Confidence – Connections - Careers

Mission To create opportunities for students to gain empowering experience, supportive connections and access to careers in sustainability related fields through paid internships both on and off campus.

Needs for the SSIP Program

1. Students want opportunities in sustainability.

A recent study shows that current freshmen are twice as likely to choose a school based on sustainability efforts compared to the entering freshman class just three years ago.[1] Another recent study reveals that an all-time high number of new freshmen—83.2 percent—volunteered during their final year of high school.[2] Dr. Carol Schneider, president of the Association of American Colleges and Universities says, "these new data should encourage educators to redouble their efforts to create new connections between academic study and challenges in larger society."[3]

2. UHM needs a higher national score and student retention rate.

UHM recently scored a 'C' sustainability rating in a nationwide assessment.[4] The SSIPP program would be integral in raising this grade through student involvement and the implementation of projects. UHM's low retention rate of approximately 35%[5] could be attributed to a lack of opportunity and community on campus. Traditionally a commuter school, UHM students support themselves with part time jobs unrelated to campus life or their academic and professional pursuits. Being a valued community member of a Sustainability Internship Program would provide opportunities to meet like-minded students and to stay engaged in campus life while meeting their professional and financial needs.

3. UHM needs lower energy bills.

UHM uses 3.2 times the amount of energy per square foot as UC Santa Barbara. If UHM could achieve similar efficiency in energy use, the campus could save over $1 million per month. A recent survey by The Manoa Faculty Senate revealed a broad consensus for energy conservation especially to meet the budget restrictions for the current year.[6] Students focusing on energy audits have identified no-to-low cost initiatives at Saunders Hall which would reduce energy use by 30% in the first year. Preliminary results at Hamilton Library indicate a potential savings of $700,000 annually with minimal costs. Trained

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[1] Mark Orlowski, "Survey Report Campus Greening Efforts," (The College of William & Mary, Va.), 2008.

[2] "UCLA study shows more freshmen care about civic responsibility". Diverse Issues in Higher Education. FindArticles.com. 08 Oct. 2008. http://findarticles.com/p/articles/mi_m0WMX/is_1_23/ai_n26791164

[3]

[4] Referenced to be added

[5] http://www.hawaii.edu/offices/app/opp/msn/msn07brochure.html

[6] http://www.hawaii.edu/uhmfs/minutes/2008_09/cab_min_20081002.html

energy audit teams comprised of SSIP Interns could audit all of UHM's buildings as well as train others on energy efficiency creating savings campus-wide.

4. Hawaii needs a workforce experienced in sustainability.
Jobs related to sustainability are amongst the fastest growing sectors in Hawaii's economy with Renewable Energy growing 8.4% and Environmental Consulting growing 4.1%, greatly exceeding Hawaii's average growth rate of 2.1%.[7] With average salaries of $58,498 and $66,971 respectively, students with experience in sustainability can be on track to well paying, rewarding careers in Hawaii.

Value of the SSIP Program

For the student:

- Creates the opportunity to stay engaged in campus life while working
- Provides training in sustainability practices and principles not found elsewhere
- Adds credibility and financial viability to students' volunteering interests
- Builds student's resume toward a green career
- Builds confidence and empowerment through paid experience
- Generates supportive professional and academic networks

For the campus:

- Creates a national reputation for sustainability
- Creates capacity to greatly lower the campus energy bill
- Attracts and retains the growing cohort of students interested in sustainability
- Creates a flagship program for UHM's sustainability efforts
- Creates a channel for new funding sources based on sustainability
- A proven business model that can be self-sustaining in the first few years

For Hawaii:

- Creates an experienced, educated workforce for growing economic sectors
- Creates affordable workforce for entry-level positions in sustainability
- Gives employers the opportunity to pilot long-term positions and candidates
- Employers benefit from intern's campus training and interdisciplinary resources
- Helps retain Hawaii's best and most dedicated students

Where is the SSIP Program?

While SSIP will be operationally self-sufficient under the director, an upstream chain of command is required. This could lie within Facilities, as a major portion of the program is consistent with Facilities' goals, such as reducing the energy bill. In addition, sustainability goes beyond academic theory and must be learned by real experience working with Facilities to provide solutions. The Public Policy Center which currently houses Sustainable Saunders has also offered to house the program if it should receive funding. It could also be directly under the Vice-Chancellor of Students, Vice-Chancellor of Facilities or the Chancellor, depending on who is most interested in the program. If there is support for expanding the program at the system level (which would be ideal), it could be housed under the system Vice-Chancellor of Facilities or under the President.

[7] Reference to be added

It is proposed that the physical location of the SSIP office be located in Saunders Hall since this is already perceived as the center for students interested in sustainability due to the Sustainable Saunders Initiative. It is also central to campus and near other student centers such as Campus Center. Saunders' close proximity to Student Services will foster bridging with similar programs housed there which include Career Development and Student Services (CDSE) as well as Students in Service.

The initial SSIP office requirements include a work station for the director, a work station for the mentor and preferably at least one work station for SSIP students, bookshelves to build a sustainability library and reference center, and a cabinet for tools such as light meters which can be signed out as needed. The space must also contain or be able to convert into a private area for interviews and meetings with visiting employers and sponsors. It is preferred that this space demonstrate as many principles of sustainability as possible including day lighting, using trade winds rather than A/C, plants etc. A local company has offered to furnish the office with products made from natural material using sustainable manufacturing processes. An outside office in Saunders or the computer lab area on the 6th floor of Saunders would be ideal.

What are the Roles within the SSIP Program?

SSIP Director

Ultimately responsible for all aspects of the program including:

- Launch and continual growth of the program
- Marketing and special events
- Identify and create internship opportunities
- Generate partnerships and sponsorships
- Post and advertise positions
- Interview and place candidates
- Approve work plans
- Create and teach orientation sessions collectively called "Sustainability 101: Basic Training for Sustainable Action"

SSIP Mentors

Directly accountable and responsible for the intern's experience. Responsibilities include:

- Develop the Intern's work plan
- Spending one in every ten hours of the intern's scheduled time in one-on-one mentorship
- First go-to person for the intern and responsible for their day to day management (The first go-to person will initially be the SSIP Director. Experienced Interns can become Mentors as the program grows.)

Academic Sustainability Consultants

Faculty who have offered to consult SSIP Interns one to three hours per week. As Interns bring questions with challenges to their Mentor, the Mentor can schedule one-hour appointments to gain expertise and guidance from the Academic Consultants.

Professional Sustainability Consultants

Members of the non-academic community who have offered to consult SSIP interns approximately one to three hours per week. Professional Consultants could eventually become Sponsors.

Sponsor
Sponsorships are for on or off campus internships that are housed at the Sponsor's location. Mentorship still comes out of the SSIP Program since it is Harvard's experience that Sponsors should not have day-to-day management of the Intern.[8] While the SSIP Mentor *manages* the Intern, the Sponsor *owns* the Internship since they give objectives and deliverables and they are the physical host. While the format is flexible, they usually meet with the student twice in the first month, once every subsequent month and are present for the student's final presentation.

SSIP Think Tank
A one to two hour weekly meeting of the interns to share their challenges and brainstorm solutions together guided by a mentor or the director.

Friends of a Sustainable UH
Provide funding to the SSIP Program for specific internships and/or the general SSIP fund.

What are the Types of Internships?
Department Sustainability Coordinators:
Adding sustainability role to existing student positions (i.e. Grad Assistantships and other paid student positions).

- Sponsor: Faculty Advisor for student position
- Mentor within the SSIP Program
- Deliverables: attend all Sustainability 101 training sessions
- The sponsoring department must agree that the student may spend a minimum 5 hours a week toward sustainability coordination for the department including recycling, replacing Styrofoam and plastic with biodegradables, planting, composting, etc.

Campus Energy Auditors
This portion of the SSIP program will work specifically toward reducing the campus energy bill. Teams of four SSIP Interns led by a GA (paid Grad Assistant) will audit one building at a time. A detailed report will be provided suggesting no-to-low cost energy saving initiatives as well as calculated return on various investments. In some cases, students will perform the initiatives such as removing or swapping out incandescent light bulbs. The members of each team will be expected to work 15-20 hours/week. Returning a portion of the energy saved for a defined time window to the SSIP fund will be a mandatory agreement on all audits. The details are TBD, but as Harvard discovered, some variation of this model MUST be in place for the program to be sustainable. (A recent development indicates that Sea Grand and Facilities might co-sponsor and fund this program)

Off-Campus Energy and Waste Auditors
Similar to the on-campus Energy Audit team of four SSIP Interns led by one team leader, except they are hired by off-campus entities including businesses, non-profits and other government entities. While the details are TBD, all audits will be paid for according to an hourly or stratified rate system.

[8] http://www.greencampus.harvard.edu/greenteams/SSIP_sponsorship.php

On-Campus Sponsorships
The Intern is hired and paid directly by the on-campus Sponsor within a department, but is managed by their SSIP Mentor. The Sponsor also pays a small fee to the SSIP fund for management costs.

Off Campus Sponsorships
The Intern is hired, housed and paid directly by the Sponsor, but is managed by their SSIP Mentor. The Sponsor also pays the SSIP fund for management and overhead fees. Harvard charges $1000-$2000 per 12-week placement. A similar model could be used for on-campus hires.

Some examples of interested Sponsors willing to pay 10-17$/hour:

Company	Contact	No. Interns	
The Gas Company	CEO Jeffrey Kissel	2	To model energy in/out of Hawaii
The Coast Guard	Commanding Officer John Hickey	2	Waste and energy audits of grounds
Board of Water Supply	Engineer Cat Sawai	2	Implement water conservation and water recycling programs

Intern Orientation and Training
Sustainability 101:

- What is sustainability?
- Sustainability Coordinating for your community /department
- Recycling
- Waste Reduction (Double sided printed; fast draft, black-out on photocopying)
- Light Measuring and Removing and Changing light bulbs
- Waste Auditing
- Water Conservation
- Food Composting
- Green procurement i.e. biodegradables
- Campaigns – turn off lights + bring your own water bottle
- Guest Speakers: Industry + Campus Consultants
- Free workshops offered by Green House on renewable energy and "Garbology"
- Free workshop offered by The Board of Water Supply on water catchment
- Free workshop offered by M'ao Organic Farm on sustainable agriculture
- Launch Party: Community gathering for each cohort for community building
    - › Sponsors + Academic+ Professional Consultants invited

Additionally, skills such as how to run meetings, business/proposal writing, and how to write a resume (in conjunction with CDSE) will be provided.

Marketing and PR

- Run poster campaign of students' pictures holding up signs saying things like "surfer, skater, SSIP intern" with the website listed
- An open event every semester where interns each give a five minute presentation and awards are given out to honor Sponsors + Academic+ Professional Consultants
- KaLeo and KTUH spots

- Web site portal with current features, as well as highlighting mentor, academic and sustainability consultant of the month
  http://cdse.hawaii.edu/careers/sustainability.php

Timeline: (Soft Start in Jan.09, Full Launch in Sept.09)

Oct 2008:

- Develop Criteria for fairness + hiring (HR Logistics)
  - How to create new positions
  - Bridge with Students in service + CDSE (was very successful!)
- Expand initial proposal to business plan
- Marketing Plan: Strategic distribution of internship posting
- Research different funding sources
- Create hiring plan for SSIP Director + Mentor to get the program started
- Begin developing web-site portal (was successful modeled with CDSE)

Nov 2008

- Finalize web portal for SSIP including searchable data base of employers and opportunities, as well as pages for campus classes, campus groups, email community, calendar etc. (coming along beautifully http://cdse.hawaii.edu/careers/sustainability.php)
- Develop + publish 5 internship positions for Spring 2008
  (As of Nov.26 17 positions have been requested…all requesters know the program may or may not happen depending on funding
  Board of Water Supply 1 water auditors
  Army, 2 energy auditors
  HECO, 1 engineering intern
  Coastguard, 2 waste auditors
  Pacific Business News, 1 Sustainability Coordinator/Office Mgr.
  State, 1 Legislative Assistant
  The Gas Company, 2 energy modelers
  UHM,
  2 Earth Day coordinators
  4 Energy Auditors
  1 Department Sustainability Coordinator)
- Recruit for SSIP positions
  (as of Nov.26 15 potential interns have been interviewed and 12 have been approved for potential positions. All know that the program may or may not happen depending on funding)

Dec 2008

- Hire for SSIP positions…notify all parties of placements and process
- Create work scopes for each position
- Develop Sustainability 101 Orientation

Jan 2009

- Run first “Sustainability 101” session
- Run educational workshops every two weeks
- Mentor and guide think tank sessions

Spring 2009

- On-going management of program, refinement of processes
- Launch larger marketing campaign
- Expand the program with goal of 30+ internships for start in Fall 2009

Vertical Growing Project

The University of Hawai`i STEM Workforce Development Program Office proposes to create an agricultural pilot project in vertical farming techniques in 3 to 5 high schools. This project will provide contextual learning opportunities to students in collaboration with UH faculty specializing in sustainable farming systems at the College of Tropical Agriculture and Human Resources, and with the participation of CTAHR student mentors. Successful aspects of this pilot project will be incorporated into a template that can be applied in schools across the State.

Farming is a vocation that fails to appeal to many young people because of a perceived lack of prestige and financial payoffs. This perception, and indeed some of the reality behind it, may be improved by exposing young people to innovative technologies, such as vertical growing, that can increase the productivity of local farms, the median size of which is a relatively modest four acres. Hands-on learning opportunities, particularly those in which students make a real contribution to science and society, have a well-documented and positive effect on student engagement and retention rates, regardless of whether students go on to pursue careers or further study in agriculture.

As oil prices and consumer preferences for fresh, local, food increase, farmers in Hawai`i will have the opportunity to capture a greater proportion of the roughly 4 billion dollars spent locally on agricultural food products currently imported from outside the State each year. In so doing, they will increase food security in Hawai`i, which retains an estimated twelve-day supply of food on island at any given time. The current situation leaves Hawaii's populations vulnerable to immediate food shortages in the event of a disruption of trans-Pacific cargo passage.

Agricultural land-use is forced to compete with other kinds of development in Hawai`i, including most recently, crops for biofuels. This trend diminishes the ability of Hawaii's population to support its own nutrition, and necessitates the adoption of growing systems that optimize the available space. This approach is also immediately applicable in urban school and backyard gardens, which are typically soil and space-limited.

Under the direction of experts in sustainable farming systems, and with the support of college students in the agriculture program, high school students will carry out experiments to quantify the productivity of commercially available vertical garden systems located on their school campus, while at the same time working to develop a more cost-effective system that can be reproduced locally.

The vertical garden project will readily complement related sustainability and health programs at the participating high school. One example is partnering with the food services provider to use produce grown on campus in the cafeteria and recycle composted cafeteria waste in the vertical growing system. This partnership will provide a natural context in which to educate students about nutrition and the culinary arts. Alternatively, setting up a mini farmers market to sell produce grown at the school is an option that would provide students with a entrepreneurial experience and elevate the visibility of the program.

The organic agriculture class at UH Manoa has already identified a market for their produce among such entities as the Straub Hospital dining service, homeless shelters administered by the Institute for Human Services, Hawai`i Helping the Hungry Have Hope and Kokua Market, with the demand exceeding their current productivity.

This pilot project is a collaborative effort between UH CTAHR, Dept of Agriculture, UH College of Education CTE, Future Farmers of America, and other organizations.

Vertical Garden Pilot Project
"Promote food production. Encourage enthusiasm about agriculture. Develop skills."

Vertical Garden Project, Kua O Ka La Charter School, Hawaii Island

US Department of Energy's Real World Design Challenge

The University of Hawai`i STEM Workforce Development Program Office invites you to participate in the US Department of Energy's Real World Design Challenge, an exciting program that aligns secondary education with 21st Century workforce needs. All tools, design problems and participant roles are based in reality, making the experience relevant and compelling to students.

Professional development for teachers:

- Each team will receive FREE permanent licenses and upgrades of Pro/ENGINEER Wildfire design software (300 seats plus student home use, worth $900,000) and one license of EFD.Pro fluid dynamics simulation program.
- FREE hands-on teacher training, project-based curriculum and online support from professionals at national laboratories.
- Learn a cutting-edge and multi-purpose CAD software program including collaboration tools.

Opportunities for students:

- Learn professional tools and work with mentors from the US Department of Energy (DOE), the Federal Aviation Administration (FAA), industry experts and higher education.
- Tackle a real-world engineering problem in a context that addresses national standards in science, mathematics and technology.
- Have submissions evaluated by a Peer Review Committee, just as professional work is reviewed.

Each participating Hawai`i team will be invited to attend an awards ceremony hosted by Governor Lingle. The winning Hawaii team will be sponsored (all expenses paid, up to 7 students and 1 teacher) by the US DOE to represent Hawai`i at the National Challenge in Washington, DC, March 27-30, 2009 (tentative).

Upcoming program dates:

- Challenge is released October 1st and teams may begin registering
- Governor's kickoff ceremony: 3pm October 8
- Free Two-day teacher training: October 20 and 21 at U.H. Manoa, Keller Hall, Room 204
- Team registration deadline: November 15
- Challenge submission deadline: February 2

MySTEM Hawaii Program Directory

There are a number of internship and mentoring initiatives established across the State of Hawaii offering guidance, support, and encouragement. Following is a preliminary catalog of existing programs as listed on mystemhawaii.org.

1. Hawaii Island Economic Development Board

   Huiana Internship Mentor Program 2008

   HIEDB partners with the State Department of Education, the Department of Labor and Industrial Relations-Workforce Development Division, and the Makana Mentor Network at Hawaii Community College. In 2008, 83 students have enrolled together with nearly 30 organizations.

2. Women in Technology

   - KE ALAHELE PROGRAM: In 2006, the Maui Economic Development Board established the Ke Alahele Education Fund in Maui County to strengthen the education to workforce pipeline in the STEM fields.

   - MENTORNET: MentorNet is the award-winning national e-mentoring network that addresses the retention and success of those in science, technology, engineering and mathematics.

3. Kahuku Renewable Energy Innovation Center

   Building a Sustainable Ko'olauloa Community with Creative Innovators and Mentors

   Provide $1 million each year in scholarships, college opportunities and careers to KHIS students working on sustainability projects. Grants will help students network with renewable industry experts, get job experience through senior projects and internships, earn scholarships, college opportunities and high paying jobs that will allow them to stay on the islands with their families. High paying jobs in a low-income community will pay back the investment in grants paid by the government.

4. One+One Student E-mentoring Program

   Provides online mentors for high school students to foster STEM (i.e., science, tech, engineering, and math) interests in high school and beyond. Students have the rare opportunity to communicate directly with successful role models in high-level, in-demand science- and math-related fields in a convenient, efficient way.

5. Islands of Opportunity

   Provides internship and research experiences for those pursuing studies in STEM disciplines.

6. Pacific Internship Programs for Exploring Science

   The Pacific Internship Programs for Exploring Science (PIPES) is a university level program housed within the Pacific Aquaculture and Coastal Resources Center at the University of Hawaii at Hilo. PIPES is committed to increasing the recruitment and retention of local students, especially those of Native Hawaiian ancestry, into fields of study, and ultimately careers, related to the natural resources of Hawai'i and the Pacific region.