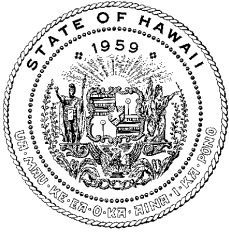


SB

1096

EDT/HRE/

EDH



**DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM**

LINDA LINGLE
GOVERNOR
THEODORE E. LIU
DIRECTOR
MARK K. ANDERSON
DEPUTY DIRECTOR

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Statement of
THEODORE E. LIU
Director

Department of Business, Economic Development, and Tourism
before the

**COMMITTEE ON ECONOMIC DEVELOPMENT AND TECHNOLOGY,
the COMMITTEE ON HIGHER EDUCATION, and
the COMMITTEE ON EDUCATION AND HOUSING**

Friday, February 13, 2009

1:00 p.m.

State Capitol, Conference Room 016

in consideration of

SB 1096

RELATING TO TECHNOLOGY WORKFORCE AND DEVELOPMENT.

Chair Fukunaga, Chair Tokuda, Chair Sakamoto, Vice Chair Baker, Vice Chair Kidani
and Members of the Committees.

The Department of Business, Economic Development, and Tourism (DBEDT) supports the intent of SB 1096 which provides funding for STEM and creative media programs. We deeply appreciate the Legislature's commitment to these programs as critical to providing Hawaii's students with the kind of education that will help them be successful in today's economy. As indicated in the bill, these programs have been very successful. A brief summary of the status of the Act 111 (SLH 2007) and Act 271 (SLH 2007) programs, the Music and Entertainment Learning Experience (MELE) program, and the Creativity Academies is attached to our testimony.

The Administration also is committed to the success of these programs and has included funding for them in its Biennium Budget. Recognizing the fiscal constraints that the State is

facing, DBEDT worked closely with the University of Hawaii (UH) and Project EAST program managers to develop budgets that would maintain programs at their current levels or provide for limited expansion. This approach will preserve the program structures and the momentum that has been gained with your support. The Administration also has introduced a bill to provide a tax credit for individuals donating to certified STEM academies which, if passed, could provide additional funding for valuable programs.

We believe that providing the funding through the budget is most appropriate for the following reasons:

1. It is already accounted for in the financial plan;
2. It will expedite the use of the funding administered by UH if it is in the UH budget and doesn't have to go through the UH and Administration release processes; and
3. It will move the programs toward sustainability, with the ability to do long-term planning, to have them in the Administration budget, rather than dependent on separate appropriations every biennium.

The following requests are contained in each fiscal year of the Administration's budget:

1. \$1,102,000 for the FIRST Pre-academy program for robotics and the Research Experience for Teachers program;
2. \$175,000 for STEM professional development programs; and
3. \$624,000 for Project EAST.

In addition to the programs mentioned specifically in this bill, the Administration's budget also includes the following to support creative media programs:

1. \$690,00 for the MELE program; and

2. \$1,600,000 for Creativity Academies.

Regarding the funding mentioned in Section 6, to be appropriated for the Department of Human Services (DHS) to augment, not replace, funding for STEM programs and K-12 creative media education programs, we are unclear about the specific intended uses of this funding and why the funds would be expended by DBEDT. Current funding for the HiEST academies from DHS is administered by the University of Hawaii Community Colleges.

Thank you for the opportunity to provide these comments.

STEM Education Update



FIRST ROBOTICS

Acts 111 and 271 (SLH 2007)

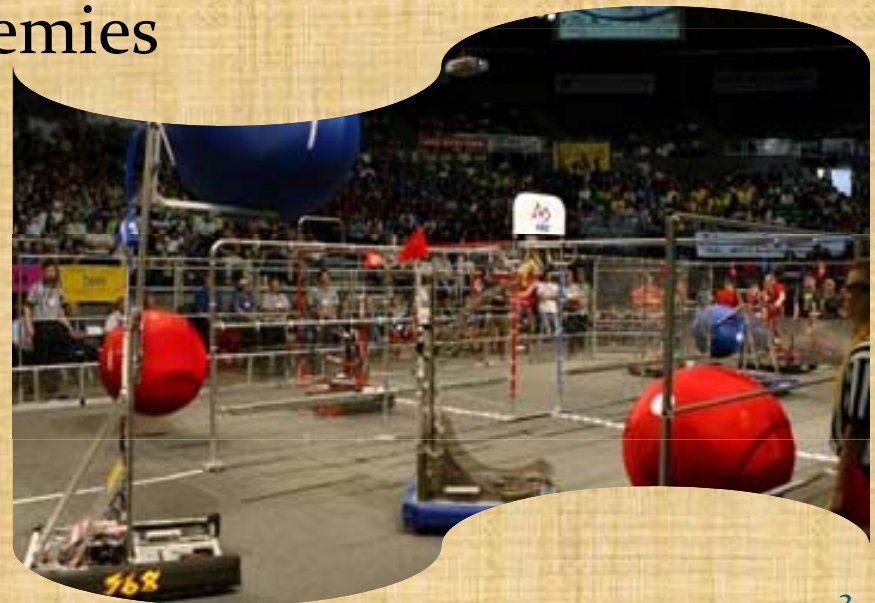
NGA Grant

Creativity Academies

MELE

Outline

- Update on Act 111 Programs
 - HiEST, FIRST, Professional Development & Transition to Teaching, Internship/Mentorship
- Update on Project EAST
- Update on NGA Grant
- Update on Creativity Academies
- Update on MELE
- FB 09-11 Budget Request
- Impact Summary



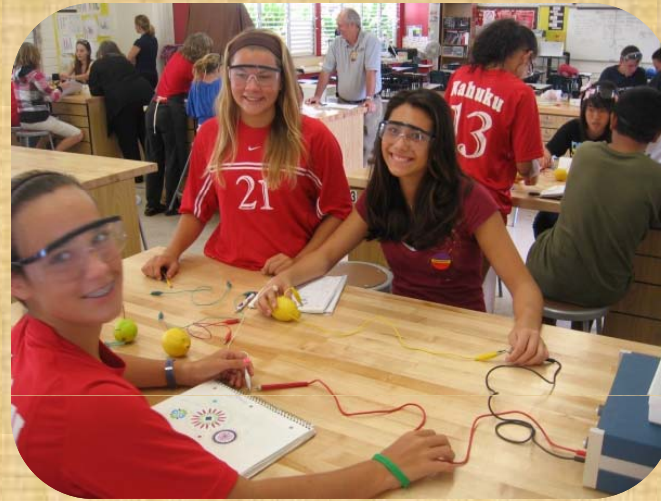
HiEST Academy Program

UH Community Colleges

- Act 111 (SLH 2007) funding of \$261,020 per year to Kauai Community College for pilot program in two high schools. Kauai focused on math readiness instead of implementing CORD curriculum as proposed (funding was insufficient in any case.)
- DBEDT provided \$100,000 to fund abbreviated pilot program at Waipahu High School for the 07-08 school year.
- DHS is providing \$1.9 M to fund seven schools for the 08-09 school year and has committed to continue funding through the next biennium.

Status

- Waipahu High School
- Campbell High School
- Baldwin High School
- Ka'u High School
- Olomana School
- Waialua High and Intermediate School
- Kahuku High and Intermediate School



New lab benches and equipment at Kahuku

IMPACT

Math: 408 students Physical Science: 630 students

Sustainability & Scale-up

- UH Community Colleges elected to wait to expand beyond the seven schools until data are collected to assess the effectiveness of the CORD program.
- Projected costs at one class per school for 47 DOE and 16 Charter schools with grades 9-12 (2006 data)
 - Average cost per new school added: \$362,200.
 - 56 schools without a program = \$20.3 M
 - Average cost per school to maintain program: \$37,000 + One FTE Faculty per school: \$60,000
 - 63 schools = \$6.1 M per year
- Sustainable funding in UHCC or DOE budget.

FIRST Pre-Academy Program

UH College of Engineering

- Act 111 funding of \$1,402,230 per year provided to establish contextual learning programs, including expanding robotics and the Research Experience for Teachers (RET) program
- Established STEM Intercommunity Portal to attract young people to join the STEM workforce by providing an internet conduit for interaction and collaboration with university resources and personnel

Sip-hawaii.org

Status

- Robotics
 - Half-time technical mentor hired
 - Conducted teacher, mentor & student workshops
 - Over 300 Hawaii teams participating in variety of competitions
- RET
 - 25 schools = 66 teachers with access to 14,000+ students
 - 200 laptops and 130 PDAs in classrooms
 - Wireless networks in 30 classrooms
 - Delivered multi-media content in range of STEM topics
 - New proposal submitted to NSF to expand program to high schools
- Awaiting release of FY 09 funds



Sustainability & Scale-up

- 9 positions need to be made permanent – difficult to fill otherwise.
- Funding in UH budget preferred, provided it doesn't replace UH priorities.
- Projected administrative costs at current level = \$352,500 per year
- Projected costs for one RET class per middle school with 54 DOE and 16 Charter intermediate/middle schools
 - Average cost per new school added = \$30,000
 - 45 schools with no program = \$1.35 M
 - Average cost per school to maintain program = \$10,000
 - 70 schools = \$700,000 per year

Sustainability & Scale-up (cont.)

- Projected costs for at least one robotics program in every school
 - Tournaments = \$500,00 per year
 - Start up costs for all DOE & Charter schools (one team per school) = \$2.5 M
 - Cost to maintain one team in each school = \$1.25 M + travel costs for competitions

Professional Development

UH College of Education

- Act 111 provided \$175,000 per year for PD in math and science
- Actual program costs were higher, additional resources provided by faculty volunteers and other programs
- Intensive PD provided in:
 - Math – 12 elementary and 24 secondary teachers
 - Science – 175 elementary and 86 secondary teachers

ESTIMATED IMPACT

3,800 elementary and 7,800 secondary students

Status & Sustainability

- Under current DOE plans for cutbacks, this would be the only STEM professional development program
- FY 09 funds released in December '08
- Funding in UH budget preferred to decrease delays due to time needed for release of funds
- \$175,000 per year is minimum to maintain program

Transition to Teaching

UH College of Education

- Act 111 provided \$175,000 per year to replace federal Transition to Teaching program funds
- 18 applicants, 15 accepted
 - 11 science education majors
 - 4 mathematics education majors\
- Graduated in December '08
- Comprehensive support/retention system
 - Tuition stipends
 - Praxis™ support
 - Professional development workshops
 - Experienced mentor teachers

Status - Sustainability

- Awaiting release of FY 09 funds
- Similar program activities will be sustained with new federal funding – not from the Transition to Teaching program
- No new State funding is being requested



Internship/Mentorship Program

DBEDT and University of Hawaii

- Leveraged Act 111 funds with EPSCoR matching funds at UH Office of Technology Transfer and Economic Development (OTTED) under STEM Workforce Development Program Office
- Organized workshop to explore ways to increase number and rigor of internships and co-op opportunities
- Established STEM Internship Steering Committee with reps from industry, government & academia
- Fielding surveys to industry and students to define needs
- Putting together cookbook of best practices
- Working on Sustainability Internship Program

Status & Sustainability

- The UH-DBEDT partnership, facilitated through the STEM Workforce Development Coordinator can provide a mechanism to coordinate Hawaii STEM programs in order to increase efficiency, productivity, and delivery of services to students
- Proposed funding beyond FY 09 included in EPSCoR matching funds request



Project EAST

Economic Development Alliance of Hawaii

- Act 271 (SLH 2007) provided \$1.1 million to the Economic Development Alliance of Hawaii (contracted through DBEDT) to maintain Project EAST programs in 10 existing schools on the Neighbor Islands and expand the program to four schools on Oahu
- EAST (Environmental and Spatial Technology) is a national project-based and service oriented elective that uses technology and cutting-edge software to address community needs
- Facilitators guide students in a self-driven learning process enhanced by interaction with technical advisor/mentors



Status

- Hawaii EAST students do well at National Conventions
- New facilitators trained and equipment provided, software training underway
- Three new programs established on Oahu, fourth school to be recruited

IMPACT

2400 students since program start
600 students annually at current level



NGA Grant

DOE and DBEDT

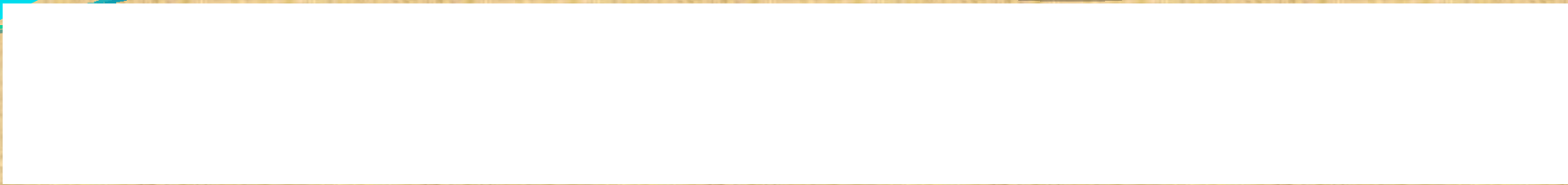
- Hawaii selected as one of 6 grantee states for \$500,000 STEM grant funded by Bill & Melinda Gates Foundation and Intel Corporation – **great cooperation among states sharing best practices**
- Hawaii's strong bid based on commitment to STEM education evidenced by Innovation in Education initiatives and support of administration, legislature and business community
- Grant focused on three main deliverables:
 - Outcomes Accountability System
 - Professional Development
 - STEM Web Portal
- STEM Communications Team formed & strategy produced





Status

- Outcomes Accountability System
 - Collaborating with P-20 Council to incorporate STEM activities into HI-PASS
- Professional Development
 - Increased awareness of STEM programs incorporated into DOE PD programs
 - Act 111 Professional Development increases STEM proficiency
- STEM Web Portal
 - Collaborating with UH STEM Workforce Development Program Office to develop mystemhawaii.org
 - Phase I: Branding by KCC Graphics students mentored by Booz Allen and HyperSpective Studios
 - Phase II: Managed by UH ICS Laboratory for Interactive Learning Technologies (LILT)



mySTEM hawaii

skills that **excite**
empower me!
employ



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Innovation and Technology in Hawaii : An Economic and Workforce Profile
in News

Login or register to post comments [Read more](#)

Pan Pacific VEX Robotics Championship
in Events

Pan Pacific VEX Robotics Championships
DATE: December 4-6, 2008
LOCATION: Convention Center, Honolulu, HI

For more information, please visit:
<http://www.robotevents.com/event.php?eid=791>

Login or register to post comments

Two Hawaii STEM Entrepreneurs Profiled in Hawaii Business Magazine
in Interviews

How Wez Made Millionz Wit Dis Foto

Two entrepreneurs turn a quirky culture of creating misspelled captions for cat photos into one of the most popular Web sites. Lessons about commerce in the 21st century

By Jolyn Okimoto Rosa and Scott Radway

This site is currently **Under Construction.** It will be released to the public shortly.

User login

Username: *

Password: *

Log in

- [Create new account](#)
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Public Service Announcement



Creativity Academies

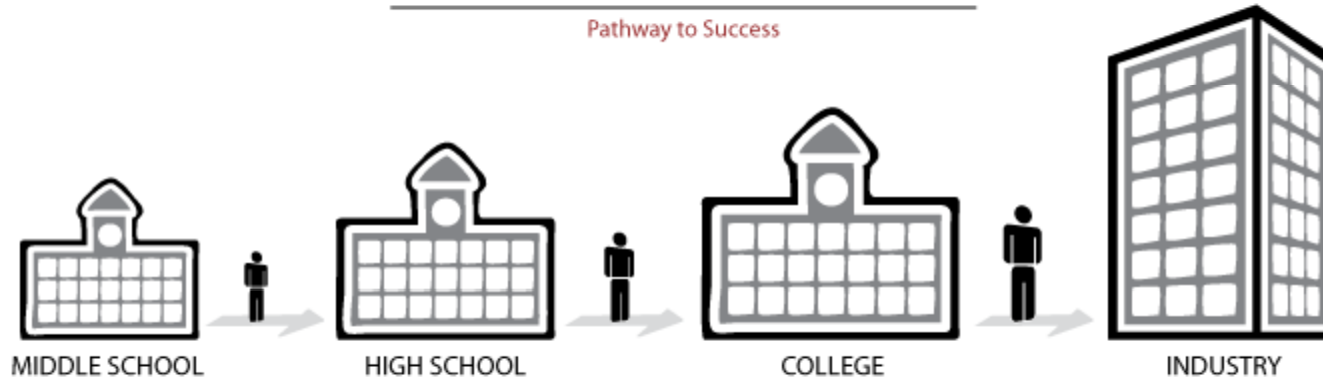


- Engages students in STEM education via fusion of creative disciplines
- Middle School > High School > College > Workforce
- Landmark collaboration UHCC/DOE/DBEDT/Industry
- Integration with existing STEM HiEST Academies

Art + Science = Innovation

CREATIVITY ACADEMIES

Pathway to Success

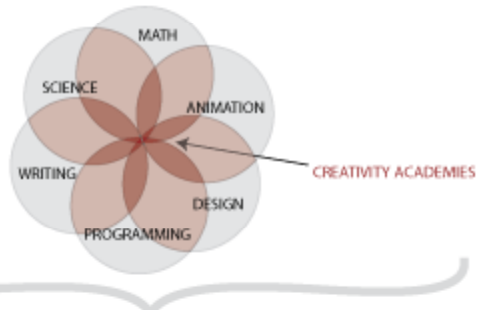


CURRENT



Needs:
 - Higher Math and Science Scores
 - More Hi-Tech Skills
 in High Growth & Demand areas

CREATIVITY ACADEMIES



Learning Outcomes:
 - Conceptual Thinking
 - Creative Problem Solving
 - Creative Writing
 - Graphic Design Skills & Technology
 - Animation Skills & Technology
 - Programming Skills & Technology
 - Team Work

Dual Credit Art 112

Creativity Academies



- 2008-09 - Budget year one : \$1.1 M
 - \$370,000 each from DBEDT, DOE/CTE and KapCC to launch program
- 2008-09 deliverables :
 - Standards-based curriculum + articulation agreements (DOE/UH)
 - CA Visioning Team
 - Online portal, teacher tool kit, communications materials
 - After school programs Spring 2009
 - Teacher training workshops Summer 2009
 - CA curriculum modules launched in 5 HS and 1 MS Fall 2009
 - CA curriculum available to HiEST / STEM academies Fall 2009

IMPACT

150 HS seniors, 30 MS students, 30 teachers

Status



- Summer 2008 - submitted NSF / ATE Grant for \$900,000.
- Fall 2008 - CA workshops conducted at CTE Pathways Conference.
- Fall 2008 - 35 teachers and 13 schools on waiting list.
- Spring 2010 - integration of MELE feeder program into CA HS programs
- Fall 2010 - integration of CA into Arts First! Elementary School
- KapCC developing new inter-disciplinary course of study: “visioneering”
- 2010 - Hawaii recognized as leader in revolutionizing STEM education via establishment of the CA program

PROJECTED IMPACT by 2011

1050 high school students, (35 HS), 300 middle school students (21 MS), 60 elementary school students (3 schools), 90 teachers, graduate 25% more students into STEM, Arts, and business degrees

Sustainability



- **FY10-FY11 : \$1.6 M in administration budget** via UH/KapCC for Creativity Academies program
- **FY10 : NSF / ATE Grant** submission **\$900,000** over 3 years beginning 2009 to support CA teacher training and establish UH/KapCC BLAST Center (**B**lended **L**earning in **A**rts, **S**cience and **T**echnology)
- **Act 88** – enlist financial support of producers/production companies utilizing tax credit to contribute via DOE or KapCC Creativity Academies special fund
- **DHS – TANF** funds for after-school/at-risk CA programs statewide
- **EPSCoR FY10-11** STEM workforce development funds
- **Harold K.L. Castle Foundation** - \$75,000 teacher training
- **Disney Resorts** – \$100,000 per year for 10 years

MELE



- Develop workforce in music industry, music business, audio technology, creativity
- Create infrastructure to accelerate creation and development of ideas, products and services in music related fields
- Provide practical, professional education in music and supporting industries
- Establish Hawai`i as the premier Pacific Basin training center for music business and production supporting development of a creative economy

Status



- 2007 Belmont University and UHCC/HCC partnership formed to deliver course content in Hawaii (\$150,000 appropriated FY08-09)
- 2007 DBEDT/CID \$120,000 distance learning link between Nashville and Hawaii
- 2007 pilot program with 3 sections Music Business & Production (MBU) curriculum, and some portions of Audio Engineering Technology (AET)
- 2008 6 sections with enrollment increasing from 25 to 45 students

Status

- 2008 UH BOR approves Associate in Science in Music Business & Production, Associate in Science in MELE - Audio Engineering Technology track
- FY09-10 \$750,000 (Title III) utilized for design and renovation of additional classroom upgrades and production facility
- 2010-11 Expand MELE into HS as part of Running Start and/or Creativity Academies
- 2009-10 Outreach and mentorship programs with DBEDT/CID Live from the Lawn, January 2009, SXSW March 2009, Grand Old Opry concert/telecast/radio broadcast, April 2009



Sustainability

- FY08-11 Title III grant for \$750,000 program development and faculty
- FY 10-11 UHCC/HCC \$690,000 (\$490,000 faculty/program expansion, \$200,000 to support mentorship, outreach programs and high school integration w/CA)
- Industry and private foundation contributions
- Grammy Foundation support “MELE Grammy Camp”



Summary of FB 09-11 Request

- \$1.6 M (FY10) and \$1.35 M (FY11) HiEST Academies (to UHCC from DHS)
- \$1.102 M FIRST Pre-Academies (at UH CoEn)
- \$175 K Professional Development (at UH CoEd)
- \$624 K Project EAST (currently at UH)
- \$500 K EPSCoR Match (at UH)
- \$1.6 M Creativity Academies
- \$690K MELE (\$490K for positions/equipment, \$200K for mentorships, outreach, HS implementation)

Summary of Student Impacts

Program	FY 08	FY 09*	FY 10**	FY 11**	Comments
HiEST	52 (1)***	1038 (7)	1038 (7)	1038 (7)	
FIRST - Robotics	1462 (123)	1462 (123)	1462 (123)	1462 (123)	Competitions & workshops funded through Act 111, does not include all robotics programs.
FIRST-RET	3822 (25)	3822 (25)	3822 (25)	3822 (25)	
Prof. Dev. Teachers	297	325	325	325	
Students	11,600	14,500	14,500	14,500	
EAST	420 (10)	600 (14)	600 (14)	600 (14)	No new funding in FY09
CA	n/a	180 (6)	900 (30)	1410 (59)	CA launch 08-09 2011 Fully integrated into DOE/Charter schools HS, MS, elementary
MELE	42 (1)	58 (1)	70 (1)	85 (1) 90 (3)	FY 11 add MELE in CA pathways 3 HS

* Pending release of funds. ** Pending new funding. *** Number of students (number of schools).

Date of Hearing: February 13, 2009

Committee: Senate Economic Development and
Technology/Higher Education/
Education and Housing

Department: Education

Person Testifying: Patricia Hamamoto, Superintendent

Title: S.B. No. 1096, Relating to Technology Workforce and
Development

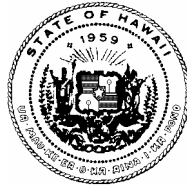
Purpose: Appropriates funds for science, technology, engineering, and math-
related programs and K-12 creative media education programs.

Department's Position: The Department of Education (DOE) supports S.B. No. 1096 as
long as its implementation does not impact or replace the priorities
set forth in the Executive Biennium Budget for Fiscal Year 2009-
2010. It is in Hawaii's best interest to continue the expansion of
the outstanding and the new Science, Technology, Engineering,
and Math (STEM)-related programs (including FIRST Lego
League, Junior FIRST Lego League, botball, underwater ROV,
VEX, Micro-Robot, and robotics camps) and the K-12 creative
media education programs. These programs continue to foster
inspiration and relevance through problem-based science and
technology projects.

However, the DOE recommends that the legislature considers
including Career and Technical Education Career Pathway
initiatives in the scope of STEM-related programs. Career
Pathway programs and initiatives integrate workforce development

initiatives with academic skills, knowledge and concepts necessary for real-world problem solving and critical thinking.

LINDA LINGLE
GOVERNOR



LILLIAN B. KOLLER
DIRECTOR

HENRY OLIVA
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF HUMAN SERVICES
P. O. Box 339
Honolulu, Hawaii 96809-0339

February 13, 2009

MEMORANDUM

TO: Honorable Carol Fukunaga, Chair
Senate Committee on Economic Development and Technology

Honorable Jill N. Tokuda, Chair
Senate Committee on Higher Education

Honorable Norman Sakamoto, Chair
Senate Committee on Education and Housing

FROM: Lillian B. Koller, Director

SUBJECT: **S.B. 1096 - RELATING TO TECHNOLOGY WORKFORCE AND
DEVELOPMENT**

Hearing: Friday, February 13, 2009; 1:00 p.m.
Conference Room 016, State Capitol

PURPOSE: The purpose of S.B. 1096 is to appropriate funds for science-, technology-, engineering-, and math-related programs and K-12 creative media education programs.

DEPARTMENT'S POSITION: The Department of Human Services defers to the Department of Business, Economic Development and Tourism on this bill.

Thank you for the opportunity to provide comments on this bill.



UNIVERSITY OF HAWAII SYSTEM

Legislative Testimony

**Written Testimony Presented Before the
Senate Committee on Economic Development and Technology
Senate Committee on Higher Education and
Senate Committee on Education and Housing**

February 13, 2009, 1:00 p.m.

by

Virginia S. Hinshaw, Chancellor

and

Peter Crouch, Dean

College of Engineering

University of Hawai'i at Mānoa

SB 1096 RELATING TO TECHNOLOGY WORKFORCE AND DEVELOPMENT

Chair Fukunaga, Chair Tokuda, Chair Sakamoto, and committee members:

Thank you for this opportunity to provide testimony on SB 1096 to appropriate funds for science-, technology-, engineering- and math-related programs. We recognize and respect the importance of these programs to ensuring the success of Hawai'i's students in the global economy by offering support for innovative educational programs in fields of science, technology, engineering and mathematics, and to prepare students for further education and employment.

While we strongly support these programs, the current and projected budget reductions for the University of Hawai'i at Mānoa require us to make difficult choices, just as the Hawaii Legislature has to do. While many programs, especially those in SB 1096, are definitely worthy, not all can be funded, and we must base our decisions on the basis of campus priorities – the highest of which continues to be our tremendous need in the area of repairs and maintenance. This is defined in the Board of Regents' approved budget and reflects the critical importance of repairs and maintenance to our ability to perform our core mission for the State of Hawai'i. Therefore, while we both have been very supportive and involved with these efforts, we can currently only support the concept proposed in this bill at this time.

We definitely appreciate and share the interest expressed in this legislation for supporting students' interest in pursuing math/science and technology careers. In addition to existing College of Engineering programs that provide support in these areas, UH Mānoa's Stan Sheriff Center is proud to host the For Inspiration and Recognition of Science and Technology (FIRST) robotics teams' regional tournament. We agreed to host the 38-team competition at no charge in 2008 and have recently extended this agreement for another three years.

Thank you for this opportunity to testify.

Testimony Presented Before the
Senate Committee on Economic Development and Technology
Senate Committee on Higher Education and
Senate Committee on Education and Housing

February 13, 2009, 1:00 pm

By

Song K. Choi, Assistant Dean
College of Engineering
University of Hawaii at Manoa

SB 1096 RELATING TO TECHNOLOGY WORKFORCE AND DEVELOPMENT

Chair Fukunaga, Chair Tokuda, Chair Sakamoto, and Committee Members:

Thank you for this opportunity to provide testimony on SB 1096 relating to Technology Workforce and Development, especially the STEM (Science, Technology, Engineering, and Mathematics) related programs through ACT 111 – Fostering Inspiration and Relevance through Science and Technology. We clearly recognize and respect the importance and relevance of these programs to ensure successful nurturing and preparation of our (Hawaii's) youth for higher education and employment in the ever competitive global economy.

I would like to give specific testimony with respect to the Robotics arena under ACT 111. Since my return to UH in 1991, I have been involved with robotics outreach as a teacher, facilitator, mentor, organizer, volunteer, judge, cheerleader, etc. through my laboratory at the College of Engineering. However, this was limited to the number of students who I could physically invite to the laboratory. With the growing popularity of robotics in the State, several faculty members of the College and I began teaching Central Oahu District middle school teachers about robotics and its incorporation in their respective programs in mid to late 1990's. In 1999, I became involved with Waialua and McKinley high schools in the FIRST Robotics Competition as a mentor. This was followed by involvement with Mr. Art Kimura in developing various smaller robotics tournaments. All these were very small in scale, but with the passing of ACT 111, the robotics programs have exponentially escalated to encompass elementary, middle, and high schools at all levels of knowledge and competition. These programs include – Junior FIRST Lego League (Jr. FLL), Robofest, FIRST Lego League (FLL), Botball, Big Island ROV Regional (BIRR) and Hawaii Underwater Robot Challenge (HURC), VEX Robotics, FIRST Robotics Competition (FRC), and International Micro Robotics. To briefly expound on the above mentioned programs, the Junior First Lego League involves students as early as 5 years of age, and the International Micro Robotics engages in competition with not only high school but college students. The student participation numbers are staggering! In 1999, the total number of students involved in robotics programs was around 50. This year, total student participation is at 1700 and rising!

I understand the severe budgetary challenges faced by the State and would like to express my support of the intent of SB1096. I also want to take this time to thank you for your commitment and support of STEM initiatives these past years.

Once again, thank you very much for this opportunity to testify.

The University of Hawaii at Manoa supports the intent of the bill provided it does not adversely affect our UH priorities as set in our budget request, most notably in health & safety and repairs & maintenance issues. Addressing these urgent needs is critical to our ability to perform our core mission for the State of Hawaii. We recognize that you have many priorities and issues to weigh for the State, so we hope the information provided may be of assistance in your decision-making process.

**Testimony Presented Before the
Committee on Economic Development and Technology
Committee on Higher Education
Committee on Education and Housing**

February 13, 2009
1:00 p.m.
State Capitol, Conference Room 016

by

Magdy F. Iskander

Professor and Director, Hawaii Center for Advanced Communications
College of Engineering
University of Hawai'i at Mānoa

SB 1096 – RELATING TO TECHNOLOGY WORKFORCE AND DEVELOPMENT

Chair Carol Fukunaga, Chair Jill Tokuda, Chair Norman Sakamoto, Vice Chair Rosalyn Baker, Vice Chair Michelle Kidani and Members of the Committee on Economic Development and Technology, Committee on Higher Education, and Committee on Education and Housing.

My name is Magdy Iskander, Professor of Electrical Engineering and Director of the Hawaii Center for Advanced Communications, College of Engineering, University of Hawai'i.

Thank you for the opportunity to testify regarding this bill. Last year I testified that It takes time for an effort of such magnitude to establish roots and bear fruits. This year I am happy to testify as to the actual accomplishments directly impacting our middle school teachers and students.

- Accomplishments of RET program as funded under ACT 111 and supplemented by NSF funding, corporate sponsorship (AT&T), and Partners in Development (PID) Foundation, include:
 - Middle School Participation
 - 26 schools (including 4 PID schools) on four islands (Oahu, Kauai, Maui and the Big Island)
 - 66 teachers (with direct impact to all of their students)
 - Impacting over 14,000 students in the participating schools
 - Hardware and Software delivered to participating schools
 - STEM Multimedia Modules
 - 11 modules covering aspects and applications of wireless technology including, fundamentals of waves and propagation, antennas and wireless coverage, GPS and applications of wireless in robotics networks and controls, as

well as in life sciences such as water quality monitoring and applications in conservation biology.

- Hardware
 - 222 Dell and HP laptops with VISTA operating systems
 - 140 PALM Tungsten PDAs
 - 30 LEGO Mindstorm NXT robotics kits
 - 10 Vernier sensors sets for water quality field trips
 - 32 Linksys Wireless Routers for classroom wireless networks
 - Virtual Organization
 - Comprehensive website that provides a virtual organization for participating schools and provides online collaboration among teachers. The website is currently in final stages of testing.
 - Workshops
 - 2-day Teacher Workshop, attended by 44 teachers (including educators from PID),
 - 2 one-week STEM summer programs for Underwater Robotics, attended by 100 middle school students.
 - In-class Support
 - Highlands Middle School – 2 days, Robotics, Electromagnetics
 - Washington Middle School – 1 day, PDA training, Vernier sensors, Water Quality field measurements
 - Kalama Middle School – 1 day, Wireless Technology
 - Moanalua Middle School – 3 days of Robotics, 146 students, included 3 UH field trips to HCAC labs and loan of 76 LEGO Mindstorm NXT kits
 - Dole Middle School – 2 days, PALM Tungsten and Water Quality sensor training
- Therefore, to maximize and build upon the ties and collaborations, strong commitments, and to ensure continued success, it is important that we maintain stability, continuity, and sustainability of the currently successful program. The University of Hawai'i at Manoa supports the intent of the bill provided it does not adversely affect our UH priorities as set in our budget request, most notably in health and safety and repairs and maintenance issues. Addressing these urgent needs is critical to our ability to perform our core mission for the State of Hawaii. We recognize that you have many priorities and issues to weigh for the state, so

the following substantive information on this program is provided to assist you in your decision-making process.

- Thank you very much for the opportunity to share with you these thoughts and provide this supporting testimony.



February 13, 2009
1:00 p.m.
Conference Room 016

TESTIMONY TO
THE SENATE COMMITTEES ON
ECONOMIC DEVELOPMENT AND TECHNOLOGY,
HIGHER EDUCATION,
AND EDUCATION AND HOUSING

RE: SB 1096 – Relating to Technology Workforce and Development

Chairs Fukunaga, Tokuda and Sakamoto; Vice Chairs Baker, Sakamoto and Kidani; and Members of the Committees:

My name is Robert Witt and I am executive director of the Hawaii Association of Independent Schools (HAIS), which represents 97 private and independent schools in Hawaii and is a member of the Hawaii Educational Networking Consortium (HENC).

The Association supports Senate Bill 1096 – Relating to Technology Workforce and Development, which appropriates funds for programs related to the STEM disciplines (science, technology, engineering, and math) and kindergarten through twelfth grade creative media education programs.

Through HENC's Hawaii Schools Digital Media Grant Program, schools across the state are able to receive much-needed support for their digital media programs and projects; however, although nearly 60 public and private schools were awarded grants by this wonderful program last year, this group represents only a small fraction of the total number of elementary and secondary schools in Hawaii. HAIS believes that SB 1096 will not only enable schools to improve their creative media facilities and provide their students with greater 21st century learning opportunities, but it will also broaden HENC's reach across the public and private school spectrum and allow the consortium to better fulfill its mission of promoting the use of technology in education and research.

We appreciate the Legislature's acknowledgement of the important role that creative media and STEM programming play in our schools' efforts to prepare students for college and work in the 21st century and ask that the Committees give their approval of this measure and the technical amendment recommended by HENC in its testimony.

Thank you for this opportunity to testify.



Hawaii Educational Networking Consortium

*East-West Center / Hawaii Association of Independent Schools
Hawaii State Department of Education / University of Hawaii*

Testimony Presented to the Senate:
**Economic Development and Technology Committee
Higher Education Committee
Education and Housing Committee**

February 13, 2009 - 1:00 P.M.

Marlon Wedemeyer, Program Director for the
Hawaii Educational Networking Consortium

SB 1096
Relating to Technology Workforce and Development

Chairpersons Fukunaga, Tokuda, Sakamoto; Vice-Chair Baker, Sakamoto, Kidani and all members of the Committees: This testimony is to express the viewpoint of the Hawaii Educational Networking Consortium (HENC).

HENC is a collaborative relationship formed by a Memorandum of Understanding between the Hawaii State Department of Education, the University of Hawaii, the East-West Center, and the Hawaii Association of Independent Schools. The mission of the consortium is to encourage and promote the use of technologies in education and research in the State of Hawaii.

HENC agrees that creative media and STEM offer important opportunities for diversification and strengthening of Hawaii's economy in the 21st century. We appreciate the Legislature's recognition and support of our work, especially in these difficult financial times.

Because HENC is an informal consortium facilitated by the Research Corporation of the University of Hawaii (RCUH) rather than a registered 501(c)3, we request that Section 7 of the Bill be amended to state that: The sums appropriated by this section shall be expended by the Research Corporation of the University of Hawaii as directed by the Hawaii Educational Networking Consortium for the purposes of this Act.

HENC supports SB 1096 and we are convinced that such an investment will enhance the economic vitality of the State. We ask that you permit this measure to move forward. Thank you for giving us the opportunity to testify.



Hawaii Agriculture Research Center

Administration: P.O. Box 100, Kunia, HI 96759

Ph: 808-621-1350/Fax: 808-621-1359

**TESTIMONY BEFORE THE SENATE COMMITTEE
ON ECONOMIC DEVELOPMENT AND TECHNOLOGY
ON HIGHER EDUCATION
AND
ON EDUCATION AND HOUSING**

SENATE BILL 1096

**Relating to Technology Workforce and Development
February 13, 2009**

Chairs Fukunaga, Tokuda and Sakamoto and Members of the your Committees:

My name is Stephanie Whalen. I am Executive Director of the Hawaii Agriculture Research Center (HARC). I am testifying today on behalf of the center and our research and support staff.

HARC strongly supports Senate Bill 1096 which funds technology programs from K-12.

HARC is the process of completing a new laboratory for agricultural science. It is designed to provide the opportunity for school aged children to see the connection of technology to agriculture and the broad range of employment opportunities for those interested in our food and fuel.

The recent national ranking of our education system does not bode well for providing opportunities for our own to stay at home to work and play. HARC plans to be a part of improving the chances of our children to not only work in an exciting rapidly advancing field but to be able to actually see and experience those opportunities that are here right in their back yard.

This type of funding will help in that effort to supplement that effort and to create new teaching opportunities.

We strongly urge you to support **Senate Bill 1096** and thank you for the opportunity to testify.



Hawaii Chapter AMERICAN PUBLIC WORKS ASSOCIATION

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Past President
Chandra Yunaka
Actus Land Lease

February 12, 2009

FAX: 586-6659 Senate Sergeant-At-Arms

Hearing Date: Friday, February 13, 1:00 p.m., Conference Room 016 (Committee)

Honorable Senate, Chairs, Carol Fukunaga – EDT; Senator Jill N. Tokuda – HRE; Senator Norman Sakamoto - EDH

Subject: SB 1096, Relating to Technology Workforce and Development

The American Public Works Association Hawaii Chapter represents over one hundred engineering design professionals in public and private sector. **We proudly Support SB 1096 Relating to Technology Workforce and Development.** Although this Bill is requesting funding for the development in Science, Technology, Engineering and Mathematics we feel that it is critical to help stimulate our younger generation to develop critical skills in math and science. Our country and State are always in need of bright young students our future generation of engineers and scientists. Although the industry like all others are hurt by this downturn in the economy, most of the new stimulus money will focus on engineering and construction. Our nation and State infrastructure is in critical need of upgrades, repair and maintenance and development of new roadways, mass transit, and utilities.

We urge you to Support SB 1096, Thank you for an opportunity to express our views regarding this bill.

Sincerely,
American Public Works Association, Hawaii Chapter

Lester H. Fukuda, P.E., FACEC
Legislative Affairs



Hawaii Crop Improvement Association

Growing the Future of Worldwide Agriculture in Hawaii

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Testimony By: Cindy Goldstein

SB 1096, Relating to Technology Workforce and Development

Senate EDT/HRE/EDH Committees

Friday, Feb.13, 2009

Room 016, 1:00 pm

Position: Strong Support

Chairs Fukunaga, Tokuda and Sakamoto, and Members of the Senate EDT/HRE/EDH Committees:

My name is Cindy Goldstein, Government Relations Chair of the Hawaii Crop Improvement Association. The Hawaii Crop Improvement Association (HCIA) is a nonprofit trade association representing the agricultural seed industry in Hawaii. Now the state's largest agricultural commodity, the seed industry contributes to the economic health and diversity of the islands by providing high quality jobs in rural communities, keeping important agricultural lands in agricultural use, and serving as responsible stewards of Hawaii's natural resources.

Appreciation is expressed for this bold measure in these economic times. SB 1096 is an investment for the future of Hawaii's young people, as well as for the well being of Hawaii as a science, technology and innovation state.

As Hawaii looks at ways to diversify the economy, and develop our science and technology sector that offers higher paying jobs, investment and support of the named programs that encourages students to develop an interest in science goes hand-in-hand with these goals.

The seed industry, as is the case for many technology companies, are finding it difficult to fill science and technology jobs. We look at and support a range of ways to encourage more of Hawaii's young people to pursue studies and jobs in science and technology to meet our needs for employees.

Thank you for the opportunity to testify.



3D Innovations, LLC
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February 12, 2009

Senate Committee members,

Please consider this a letter of support for the proposed SB 1096, Relating to Technology and Workforce Development and STEM Education. I strongly support the Project EAST program to increase the readiness and exposure of technology being offered to public high school students allowing them to learn about technology being used in the industry that will foster their interest in pursuing post secondary training and career options in science, technology, engineering, and mathematics (STEM) disciplines. This program provides opportunities for students to become interested and engaged in STEM fields, but also to gain valuable knowledge from industry professionals who integrate their technological tools with educational programs.

I have experienced first hand how Project EAST is able to connect with industry partners to provide students with training and skills needed to become competitive in a 21st century workforce environment. Students will be able to take advantage of engineering technology that allows for the use of industry design and engineering tools that will benefit their learning ability in Robotics and engineering technology programs. Our high school Robotics teams have been able to take advantage of this unique opportunity to compete on a national level while learning about engineering and technology.

Application of STEM concepts and utilization of industry standard software and learning tools will be critical in developing the interest, engagement, and retention of students who seek to pursue post secondary and career options in these high demand STEM fields.

This bill will foster new technology growth while providing unlimited opportunity for our students to learn and gain knowledge in the technology industry. I strongly urge that you pass this bill.

Sincerely,

Collin Kobayashi
President & CEO
3D Innovations, LLC

**Testimony Presented Before the
Senate Committee on Economic Development and Technology
Senate Committee on Higher Education and
Senate Committee on Education and Housing**

February 13, 2009

1:00 p.m.

State Capitol,

by

Judith Inouye

RET teacher coordinator

SB 1096 – RELATING TO TECHNOLOGY WORKFORCE AND DEVELOPMENT

Chair Carol Fukunaga, Chair Tokuda, Chair Norman Sakamoto, and committee members.

I appreciate this opportunity to provide testimony in support of SB1096, relating to Technology Workforce and Development, especially STEM related programs.

I am Judith Inouye, the RET Teacher Coordinator. Since 2004, I have seen RET grow from one school in Honolulu District to 24 schools statewide. This expansion to more middle schools was made possible by Act 111. It is allowing many middle school teachers to engage students in exciting STEM activities in their classrooms.

As teacher coordinator, I have had the opportunity to communicate with teachers statewide about their problems and their desires. The funding provided by this legislation is giving teachers a means to solve their problems and realize their dreams. One 6th grade teacher on the Big Island expressed to the graduate students at HCAC (Hawaii Center for Advanced Communication) her desire for an antenna lab activity to enable student understanding of the electromagnetic spectrum and wireless technology. Last year she implemented an antenna lab which was developed by HCAC grad students and today this lab

is one of the learning modules being disseminated to all the participating RET teachers.

Another example of an effective RET implementation is the program at a Honolulu middle school where the focus on teaming and collaboration is providing a very encompassing and integrated curriculum for their 8th graders. The Social Studies teachers developed a unit called "Technology through the Ages" where University of Hawaii and other community resources assisted in engaging students. Michael Titterton of Hawaii Public Radio gave an outstanding presentation on Marconi and the development of wireless communication. This was followed by a major field study on the water quality at two sites where low and high tech methods were used to measure pH, phosphate, nitrate, turbidity, etc. The science teachers passed on the collected data to Math teachers who then had their students use various software to graph and analyze the data. Finally, English teachers helped with the writing and dissemination of the water quality study. Resources provided by grad students at HCAC were extremely helpful to the teachers as they strove to develop quality lessons for their students.

This year throughout our state more classroom teachers like those mentioned above are developing a host of STEM activities to meet the diverse needs of their students. I believe that Act 111 funding is allowing classroom teachers to creatively problem solve in meeting the Hawaii State Curriculum Standards. I also strongly believe that providing teachers with needed resources will in the long run have a great impact on teacher retention in our public schools.

I'd like you to know that I strongly support the intent of SB 1096 and appreciate your commitment to STEM.

Thank you for giving me this opportunity to testify for SB 1096.

fukunaga4 - Michelle

From: Mark Rognstad [mrognsta@hawaii.edu]
Sent: Friday, February 13, 2009 8:53 AM
To: EDTTestimony
Subject: Testimony in support of SB 1096, Hearing on Feb 13, 2009 at 1 pm.

Senators Fukunaga, Sakamoto, Tokuda and members of the Committees - aloha!

I would like to urge support for SB 1096, to continue the programs initiated by Act 111. Together with other volunteers, I manage a competition for high and middle school students building underwater robots on O'ahu, and provide what help I can to a similar competition on the Big Island. Both of these events are regionals that lead to an international competition sponsored by the Marine Advanced Technical Education Center.

The top teams from Hawai'i meet the top teams from across the United States, Canada, China and the United Kingdom not only to compete, but to learn about careers in ocean science and engineering. Thanks to the funding from Act 111, we have been able to expand the number of teams in our competitions, particularly to include middle school students, and have increased the technical content of the parts kits that each team receives.

In addition to the Hawaii Underwater Robot Challenge, I help to mentor FIRST Robotics teams at Waipahu High School. With both HURC and FIRST Robotics competitions, I see how students are inspired to study science, technology, engineering and mathematics, and to go on to study these fields in college.

Some of the first such students are entering the high technology workforce today, and mentoring the next generation of students.

Mahalo nui for your support of these students and for SB 1096.

Mark Rognstad
1296 Kupau St.
Kailua, Hawaii 96734

fukunaga4 - Michelle

From: Dr R Yonover [seerescue@juno.com]
Sent: Friday, February 13, 2009 10:34 AM
To: EDTTestimony
Subject: Support for SB 1096

To Whom It May Concern,

I strongly support SB 1096 regarding STEM education bills and continued funding for programs initiated by Act 111, including funds for robotics programs and the Research Experience for Teachers program, as well as funding for Project EAST, and creative media education programs.

I personally give scientific presentations to students across the islands in regard to STEM and I can assure you that talent pool is rich in Hawaii, however the opportunities and emphasis is not commensurate (to date) with the capabilities. All STEM programs encouraging students to go into the Science and Technology fields is critical to develop and sustain a Technology business sector and related jobs in Hawaii.

I cannot make the hearing, but I strongly urge you to support SB 1096 and other bills relating to STEM.

Please feel free to contact me directly for any further information.

Thanks you for your consideration.

Aloha,

Dr. Robert Yonover
President
SEE/RESCUE Corporation

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