

**SB 1096**



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

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

No. 1 Capitol District Building, 250 South Hotel Street, 5th Floor, Honolulu, Hawaii 96813  
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804  
Web site: www.hawaii.gov/dbedt

Telephone: (808) 586-2355  
Fax: (808) 586-2377

Statement of  
**THEODORE E. LIU**  
**Director**

Department of Business, Economic Development, and Tourism  
before the

**COMMITTEE ON WAYS AND MEANS**

Monday, March 2, 2009

9:30 a.m.

State Capitol, Conference Room 211

in consideration of

**SB 1096 SD1**

**RELATING TO TECHNOLOGY WORKFORCE AND DEVELOPMENT.**

Chair Kim, Vice Chair Tsutsui, and Members of the Committees. The Department of Business, Economic Development, and Tourism (DBEDT) supports the intent of SB 1096 SD1 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.

Thank you for the opportunity to provide these comments.

# STEM Education Update



## FIRST ROBOTICS

Acts III and 271 (SLH 2007)

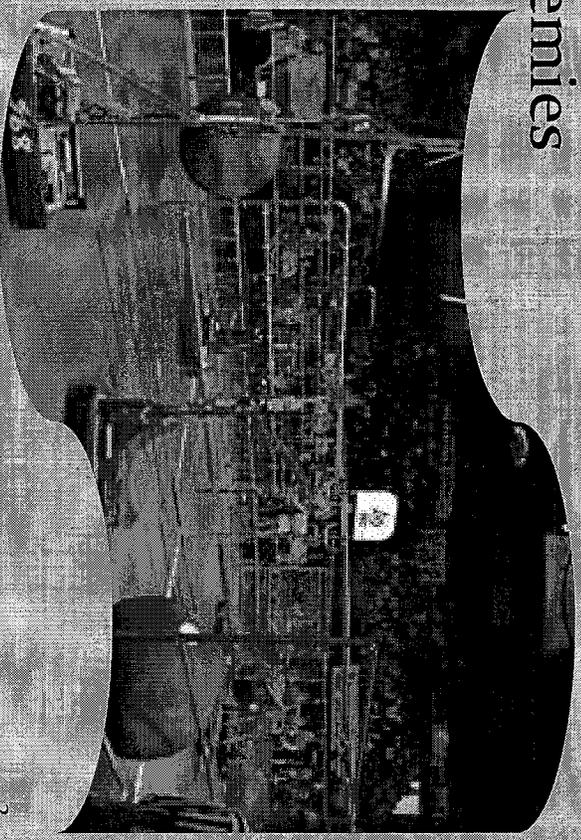
NGA Grant

Creativity Academies

MELLE

# Outline

- Update on Act III 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 CORRD 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 CORRD 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 in 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](http://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 III 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 III 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 III 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

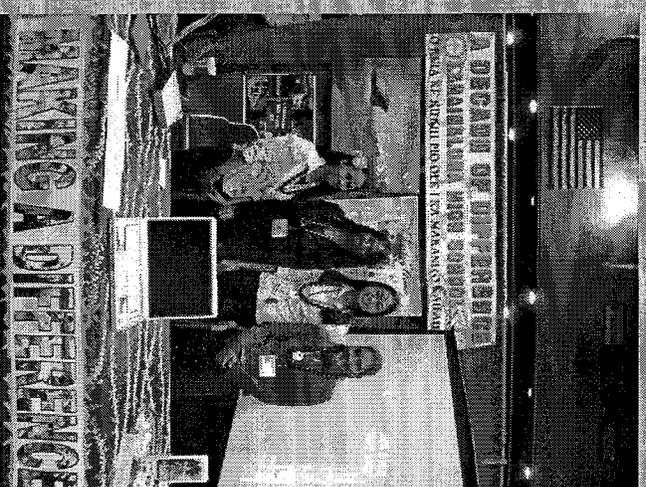


# Status

- 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

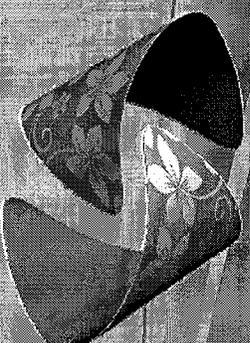
Grant focused on three main deliverables:

- Outcomes Accountability System
- Professional Development
- STEM Web Portal

STEM Communications Team formed & strategy produced



# Status



mySTEM hawaii

## 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 III Professional Development increases STEM proficiency

## STEM Web Portal

- Collaborating with UH STEM Workforce Development Program Office to develop [mystemhawaii.org](http://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)



mystemhawaii

skills that

excite  
empower me!  
employ

[home](#) [news](#) [events](#) [interviews](#) [contact](#) [about](#) [programs](#)

### 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: \*

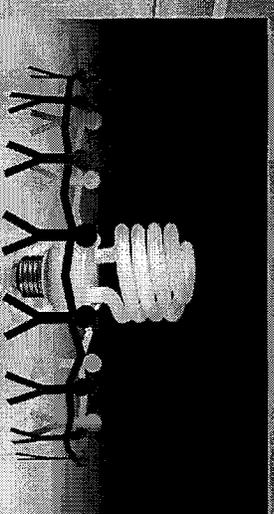
Password: \*

- [Create new account](#)
- [Request new password](#)

#### Public Service Announcement



# Creativity Academies



Engages students in STEM education via fusion of creative disciplines

• Middle School > High School > College > Workforce

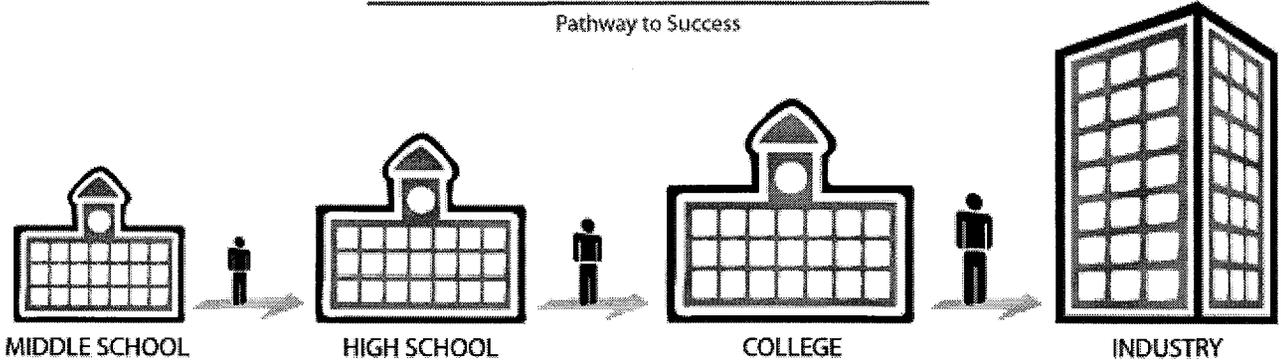
• Landmark collaboration UHCC/DOE/DBEDT/Industry

• Integration with existing STEM HiEST Academies

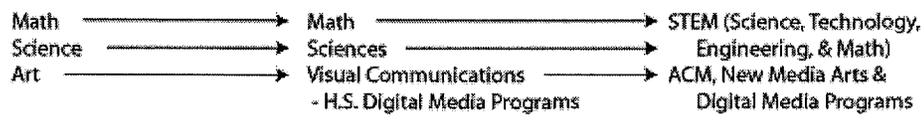
**Art + Science = Innovation**

# CREATIVITY ACADEMIES

Pathway to Success

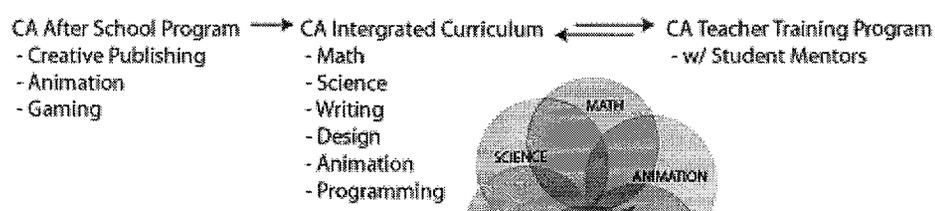


CURRENT

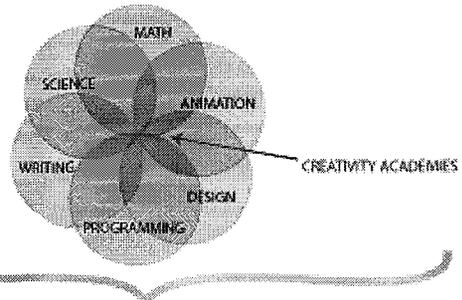


Needs:  
 - Higher Math and Science Scores  
 - More Hi-Tech Skills  
 - in High Growth & Demand areas

CREATIVITY ACADEMIES

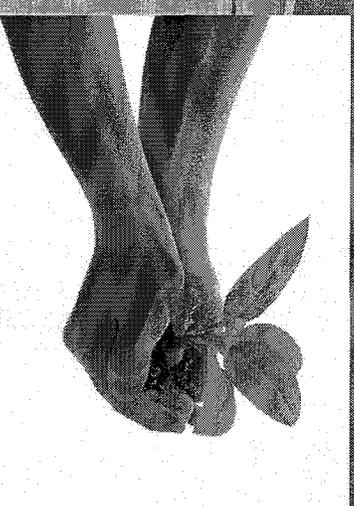


Learning Outcomes:  
 - Conceptual Thinking  
 - Creative Problem Solving  
 - Creative Writing  
 - Graphic Design Skills & Technology  
 - Animation Skills & Technology  
 - Programming Skills & Technology  
 - Team Work



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

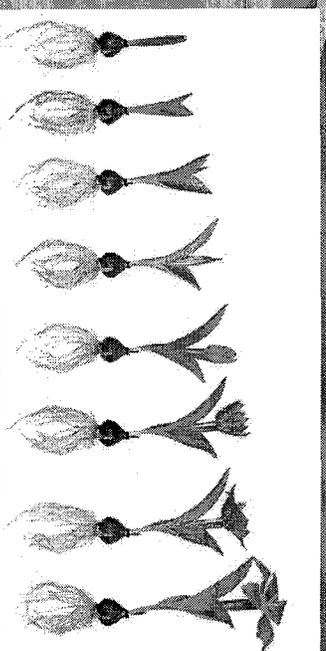
CA curriculum modules launched in 5 HS and 1 MS Fall 2009

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 MELLE feeder program into CA HHS 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 (Blended Learning in Arts, Science and Technology)**

**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

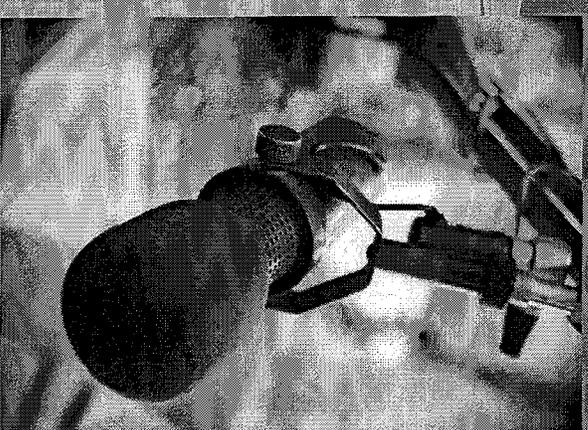
# Status

- 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 “MELF 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)

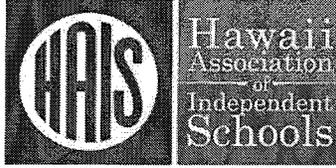
\$1.6 M Creativity Academies

\$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 Students	297 11,600	325 14,500	325 14,500	325 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).



**LATE**

March 2, 2009  
9:30 a.m.  
Conference Room 211

TESTIMONY TO  
THE SENATE COMMITTEE ON WAYS AND MEANS

RE: SB 1096 SD1 – Relating to Technology Workforce and Development

Chair Kim, Vice Chair Tsutsui and Members of the Committee:

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 statewide and is a member of the Hawaii Educational Networking Consortium (HENC).

The Association supports Senate Bill 1096, Senate Draft 1 – 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 of awardees represents only a small fraction of the total number of elementary and secondary schools in Hawaii. HAIS believes that SB 1096 SD1 will not only enable schools to improve their creative media facilities and provide their students with greater 21<sup>st</sup> 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 via this bill of the important role that creative media and STEM programming play in our schools' efforts to prepare students for both college and careers in all fields in the 21<sup>st</sup> century and urge the Committee to pass this measure.

Thank you for this opportunity to testify.



**UNIVERSITY OF HAWAII SYSTEM**  
Legislative Testimony

**LATE**

**Written Testimony Presented Before the  
Senate Committee on Ways and Means**

March 2, 2009, 9:30 a.m.

by

Virginia S. Hinshaw, Chancellor

and

Peter Crouch, Dean

College of Engineering

University of Hawai'i at Mānoa

**SB 1096 SD1 RELATING TO TECHNOLOGY WORKFORCE AND DEVELOPMENT**

Chair Kim, Vice Chair Tsutsui, and committee members:

Thank you for this opportunity to provide testimony on SB 1096 SD1 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 SD1, 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.