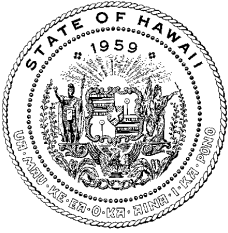


SB 1120

EDT



NEIL ABERCROMBIE
GOVERNOR

RICHARD C. LIM
INTERIM DIRECTOR

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

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

RICHARD C. LIM
Interim Director

Department of Business, Economic Development & Tourism
before the

COMMITTEE ON ECONOMIC DEVELOPMENT AND TECHNOLOGY AND COMMITTEE ON EDUCATION

Friday, February 4, 2011

1:15 p.m.

State Capitol, Conference Room 016

in consideration of

SB 1120

RELATING TO THE ECONOMY.

Chairs Fukunaga and Tokuda, Vice Chairs Wakai and Kidani, and members of the Committees. The department supports SB 1120 to appropriate funds for continuation of science, technology, engineering and mathematics (STEM) initiatives including Hawaii excellence through science and technology (HiEST) academy Kauai Community College pilot program; fostering inspiration and relevance through science and technology (FIRST) pre-academy program; robotics and problem-based, applied learning program; research experiences for teachers (RET) program; professional development program for public school science and mathematics teachers; business/education internship and mentorship program; incentives for people who hold degrees in science, technology, engineering, and mathematics subjects to obtain teaching certificates through the University of Hawaii's post baccalaureate certificate in

secondary education program; project EAST continuation and expansion.

Through the legislature, funding to support these important programs was originally created through Act 111 and 271, Session Laws of Hawaii 2007. DBEDT's Science and Technology Branch was tasked to administer these funds, in conjunction with University of Hawaii College of Education and College of Engineering. Additional support for these programs was provided by National Governor's Association, EPSCoR as well as American Recovery and Reinvestment Act.

We request the committee's consideration of amending section 5, pages 5 and 6, appropriating general revenues to "support business/education internship and mentorship program to be expended by the department of business, economic development and tourism" and suggest these activities and funding be instead directed to the University of Hawaii, in an effort to centralize STEM program management.

STEM initiatives are critical to Hawaii's future development supporting a knowledge-based economy, and a key component of the administration's and legislature's shared vision to expand and improve the opportunities for practicing teachers, attract highly qualified individuals to the STEM teaching profession, and better align the State's workforce needs with industry needs – particularly in emerging, new industry clusters.

Thank you for the opportunity to testify on this bill.



UNIVERSITY OF HAWAII SYSTEM

Legislative Testimony

Testimony Presented Before the
Senate Committee on Education

Friday, February 4, 2011 at 1:15 p.m.
Conference Room 016

Written Testimony
By
Christine K. Sorensen
Dean, College of Education
University of Hawaii at Mānoa

SB 1120: RELATING TO THE ECONOMY

Chair Tokuda, Vice Chair Kidani, and Members of the Committee:

My name is Christine Sorensen, current dean of the College of Education at UH Manoa. The College of Education supports SB 1120, Relating to the Economy. I am here today to provide the committees with additional information and to recommend friendly amendments on sections 6 and 7 that relate specifically to the College of Education.

As drafted, SB 1120 echoes the Legislature's intent to improve science, technology, engineering, and mathematics (STEM) education in the state and in turn positively impact workforce development in STEM related fields by supporting experiential learning initiatives through Acts 111 and 271. The College of Education participated in Act 111 efforts in two components: 1) providing professional development to K-12 teachers and 2) in recruiting and supporting individuals who graduated from college with a degree in science or mathematics to become licensed teachers.

We provided the Legislature with reports on the Act 111 supported COE efforts and outcomes of both initiatives in 2009 and 2010 (*Report on STEM Professional Development and Status of the Transition to Teaching program, November 2008; Report on the Implementation of the STEM Professional Development Programs for 2009, Act 111, Section 15, SLH 2007 (SB 885 SD2 HD3 CD1), December 2009*).

STEM Professional Development

Act 111 provided \$175,000 in each year of the 2007-2009 biennium to establish a professional development program for practicing elementary, middle and high school teachers of science and mathematics with opportunities to increase their knowledge and understanding of recent developments in science, technology and mathematics and improve their ability to provide inquiry-based education.



UNIVERSITY OF HAWAII SYSTEM

Legislative Testimony

With the FY 08 funds, intensive training was provided to 20 elementary and 6 secondary mathematics teachers, and 175 elementary and 75 secondary science teachers, impacting an estimated 3,800 elementary and 7,800 secondary students. FY 09 funds provided training for 111 math teachers and 125 science teachers, impacting an estimated 5,208 elementary students 11,200 secondary students. Late release of the funds in March of both years of the biennium likely reduced the number of teachers that could be recruited and participate. By March/April each year teachers have generally already made plans for professional development they attend in the subsequent summer.

There were no additional funds appropriated or released in 2010. Despite reduced funding, the Curriculum Research and Development Group (CRDG) of the College of Education continues to provide professional development opportunities, funded primarily by grants obtained by CRDG faculty. Both mathematics and science faculty continue their work with HIDOE and charter schools statewide. We can provide specific data on their efforts at the committee's request.

Transition to Teaching Program

The Transition to Teaching (TTT) program was established within the COE in 2003 with a five-year grant from the U.S. Department of Education. The TTT program provided support for individuals who graduated from college with a degree in a subject area other than education and wished to pursue a teaching career in science or mathematics through the COE Post-Baccalaureate Certificate in Secondary Education (PBCSE) Program. Before this federal grant expired in 2008, the Legislature appropriated \$175,000 for each year of the 2007–2009 biennium to the COE to continue the TTT program. FY08 funds for TTT were not released until March 2008, reducing the College's ability to recruit and prepare STEM teachers. Despite the late release of funds, the Office of Student Academic Services received over 100 inquiries and identified 18 qualified applicants in science or mathematics that met the admissions criteria for entry into the PBCSE program. Of those 18 qualified applicants, 15 were accepted into the TTT program. FY09 funds were never released.

The TTT program has made significant contributions to the teaching profession throughout Hawai'i. For the past few decades, there has been a shortage of qualified and licensed mathematics and science teachers in the HIDOE, particularly in rural areas. In response to this need, the TTT program has offered a viable solution to alleviate these challenges by implementing a comprehensive support program that consists of tuition stipends through the PBCSE program, PRAXIS test preparation support, access to the program through hybrid delivery models using both face-to-face and technology based instruction, professional development workshops, and mentoring support. Unfortunately, the TTT program has been discontinued due to lack of funding.

Need for STEM Professional Development

Common Core State Standards—Legislative support to continue these two programs is needed more now than ever. The state's recent adoption of Common Core State Standards (CCSS) in



UNIVERSITY OF HAWAII SYSTEM

Legislative Testimony

mathematics, with science expected to follow in 2012, will require a significant increase in professional development and funding for over the next five years. Because implementation will require substantial teacher content knowledge upgrades and changes in methodology and approaches to teaching, as well as the adoption of new curricula, a system wide effort in professional development impacting all K–12 mathematics and science teachers must be launched. Implementation of mathematics CCSS is beginning this month to be followed by science in Spring 2012. The College of Education is working in partnership with HIDOE on designing and implementing professional development in support of CCSS.

Highly Qualified Teachers—Another ongoing issue is how to support teachers to become highly qualified by federal definitions. For example, there are 251 science teachers statewide who are not considered highly qualified based on federal standards. Additional professional development is required to bring these teachers into compliance and provide ongoing support for future teachers to become highly qualified.

Friendly Amendments to Section 6

Given the extensive impact of the COE-provided professional development under Act 111, we respectfully suggest lines 11–12 specify that the funds are to be expended by the College of Education, and more specifically by the COE's Curriculum Research & Development Group, to ensure that the unit within the University most capable of designing and providing the necessary professional development programs receives any appropriation for this purpose.

Regarding a permanent appropriation for this part, and realizing the current fiscal crisis, we recommend an appropriation totaling \$350,000 (\$175,000 per year) to continue this work. While much more funding is needed to address the STEM professional development needs, there are other funds available and we are pursuing them. An appropriation by the Legislature will be leveraged for optimal effect.

Friendly Amendments to Section 7

Similar to the recommendation to amend Section 6, we respectfully suggest that lines 21–22 specify that any appropriation for the TTT program be expended by the College of Education, as the primary provider of mathematics and science teachers in the UH system and with the largest alternative routes to teacher licensure through post-baccalaureate and masters programs in the state.

In light of the TTT program's past success and the benefits to STEM education and workforce development, we recommend biennium funding totaling \$350,000 to continue this work (\$175,000 per year).

As in all such cases of legislatively initiated support to the University, our support for these items is contingent upon appropriated funding which does not supplant UH priority biennium budget requests.

Thank you for the opportunity to testify.



UNIVERSITY OF HAWAII SYSTEM

Legislative Testimony



UNIVERSITY OF HAWAII SYSTEM

Legislative Testimony

Testimony presented before the
Senate Committee on Economic Development and Technology and
Senate Committee on Education
February 4, 2011 at 1:15 p.m.

By Linda K. Johnsrud
Executive Vice President for Academic Affairs and Provost, University of Hawai'i

SB 1120: RELATED TO THE ECONOMY

Chairs Fukunaga and Tokuda, Vice Chairs Wakai and Kidani and members of the Senate Committees on Economic Development and Technology and Education:

Thank you very much for this opportunity to testify on Senate Bill 1120 that appropriates funding to the University of Hawai'i for a number of programs: a) the science and technology pre-academy program pursuant to Hawai'i Revised Statutes (HRS) Section 304A-1861, the robotics and problem-based learning program pursuant to HRS Section 304A-1862, and research experiences for teachers pursuant to HRS Section 304A-1863; b) for the development of professional development programs in the science, technology, engineering, and math (STEM) disciplines for practicing teachers; and c) to provide stipends for STEM graduates to pursue post baccalaureate certificates in secondary education. The bill also proposes appropriations to the Department of Education for a "Hawai'i excellence through science and technology academy pilot program" at Kaua'i Community College.

The University of Hawai'i (UH) very much appreciates the support shown for Kaua'i Community College as well as the intent in the various provisions of SB 1120 to strengthen STEM education for students and practicing teachers, and to provide incentives for STEM college graduates who may be interested in pursuing a career in teaching. As noted in the language of the bill, producing more STEM graduates is a vital part of the state's ability to respond to emerging or high growth industries.

Producing more STEM graduates is one of the performance indicators in our strategic outcomes for 2008-2015, and a high priority for the University. This is reflected in our biennium budget operating fund request for 2011-2013. The development of our budget strategy was grounded in our strategic outcomes, and particularly in President Greenwood's three initiatives that include the Hawai'i Graduation Initiative, Project Renovate to Innovate, and Workforce Development and Technology Advancement. Aligned with this, the University is requesting Outcomes Based Funding that holds us accountable for meeting these strategic priorities that address the state's educational and economic needs. Our Outcomes Based Funding request targets an increase in the number of graduates, and also attaches an additional weight for the production of STEM graduates at each campus.

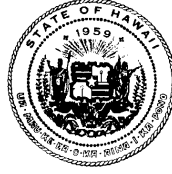
The University's biennium budget proposal also includes program change requests (PCRs) developed by systemwide groups of administrators, faculty, staff, and students and approved by our Board of Regents. Preference was given to PCRs for new and emerging

programs that address state needs for an educated workforce, with added consideration given to programs that spanned campuses and supported the movement of students from two to four year programs.

The list of PCRs in our biennium budget request reflect these priorities and include: a) from UH Mānoa an engineering consortium that partners with community colleges at the pre-engineering and lower division level with a goal of facilitating the flow of transfer students in engineering program; b) from UH Hilo a best practices in STEM education initiative; and c) various STEM-related initiatives from the UH Community Colleges.

While the University appreciates the intent of SB 1120 to support STEM education, we urge the legislature to refer to the University's biennium budget request which specifies University priorities in this area. These have been vetted with our campuses and reflect strategic priorities and alignment with capacity and supporting programs.

Thank you very much for the opportunity to testify.



**STATE OF HAWAII
DEPARTMENT OF EDUCATION
KEAAU HIGH SCHOOL**

16-725 Keaau-Pahoia Rd.
Keaau, HI 96749
(808) 982-4220

February 2, 2010

RE: Support Senate Bill SB1120

Please support SB1120. Continued and expanded investment in valuable programs that partner education with other government agencies and the private sector are essential to the educational needs of Hawaii's youth.

Keaau High School has been a participating school in the EAST Initiative since 2000. The program has had numerous successes over the years. It has provided students with an engaging, technology intensive, service oriented educational opportunity. Through the EAST model, students have been involved in such technologies as 2 & 3D design and modeling, FLASH animation, GPS/GIS applications, digital imaging and video production, graphic design and web design.

Through the support of the Women in Technology Project of MEDB, our students benefit by being able to access ongoing skills development, synchronous and asynchronous tutorials, and hardware and software resources that are beyond the affordability of an individual classroom or school. Students are able to view and participate with students, teachers, and professionals in real-life projects and collaboration. Through the networking with other EAST/STEMWorks schools and mentors, students are introduced to numerous post-secondary opportunities.

We are excited about the expansion into STEMworks. The academic model provides great potential for expanding the level of rigor our students will experience and take with them. Our students will benefit from exposure to additional fields such as gaming, creative and digital media, and pre-hardware design and engineering.

It is crucial to support companion programs such as MEDB/WIT. Without their support to the schools, we would be unable to carry out many of the cutting edge activities that engage and benefit our students.

Sincerely,

Mark T. Watanabe, MEd, NBCT
IGAEA, GATF

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

February 4, 2011, 1:15 p.m.

Conference Rm 016

by

Michael S. Inouye, P.E.

Vice President, Ralph S. Inouye Co., Ltd.

SB 1120 RELATED TO THE ECONOMY

Chair Fukunaga, Chair Tokuda, Vice Chair Wakai, Vice Chair Kidani and committee members:

Testimony in support of SB1120.

I am writing to you in support of SB1120. As a licensed Civil Engineer, I can appreciate the importance of science and math-related programs in our educational system. More importantly if we are to develop our young people to find high quality jobs in the fields of science, technology and engineering, we need to develop, encourage, and inspire passion for these topics. The middle and high school teachers are critical in doing this. The funding that you provide to these programs give them the necessary knowledge, tools, and networking to successfully create programs, lessons, and “teachable moments” for our young people to give them the foundation and inspiration to become successful leaders in the technology and engineering fields.

I participated in one of the FIRST PreAcademy RET Workshops where I saw first hand the dedication and enthusiasm of our middle school teachers. They were very engaging and had a strong desire to use the material in the workshop in their classroom. My participation was to provide “real-world” examples and experiences of how 3-dimensional modeling and drafting is being utilized in the construction and engineering fields today. The basic concepts of 2-dimensional and 3-dimensional space are important building blocks in any engineering field as we communicate our 3-dimensional visions in 2-dimensional drawings. There were other industry professionals that provided networking connections to our educators that will translate into partnerships with their respective schools.

I am in full support of these types of programs that provide our educators with the necessary tools and audiences with industry professionals that will touch our students and inspire them to pursue careers in the science and engineering fields. The future of growth and employment opportunities will be in these fields and anything we can do to help our educational system provide programs to foster this development should be a priority. I encourage your continued support SB 1120 to provide permanent funding for STEM experiential learning.

Thank you for this opportunity to provide testimony on SB 1120 to appropriate funds for science-, technology-, engineering- and math-related programs.

Michael S. Inouye
Vice President
Ralph S. Inouye Co., Ltd.

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

February 4, 2011, 1:15 p.m.
Conference Room 016
SB 1120 RELATED TO THE ECONOMY

By
Nick Dizon
President, NIDON Computer Corporation

Chair Fukunaga, Chair Tokuda, Vice Chair Wakaj, Vice Chair Kidani and committee members:

Testimony in support of SB1120.

Thank you for this opportunity to provide testimony on SB 1120 to appropriate funds for science, technology, engineering and math related programs.

I have been involved in the information technology industry for over 20 years. Technology advances occur every year. The need for a qualified and skilled workforce is absolutely required to keep up with technology.

I strongly support the programs outlined in this bill to provide professional development for our educators and STEM curriculum for our students. Engaging students with technology skills throughout their educational term will better prepare them for the real world challenges.

Thank you for the continued support of education and workforce development and for your support of the industry.

Sincerely,

Nick Dizon
President
NIDON Computer Corporation

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

February 4, 2011, 1:15 p.m.
Conference Room 016

SB 1120 RELATED TO THE ECONOMY

By: Sean M. Fox
Managing Partner, New Horizons of Hawaii

Chair Fukunaga, Chair Tokuda, Vice Chair Wakai, Vice Chair Kidani and committee members:

Testimony in support of SB1120.

Thank you for this opportunity to provide testimony on SB 1120 to appropriate funds for science, technology, engineering and math related programs.

New Horizons of Hawaii is the premier computer training company in Hawaii. After 10 years of teaching and working with Hawaii's businesses we have an understanding of the needs and limitations of Hawaii's workforce. Feedback from Hawaii's businesses is that their employees need continued education to help them be competitive.

As a parent, my daughters were fortunate enough to take part in a science program at their public school. The 30 children that have gone through this program are all continuing to excel at science and looking at careers in that field. However, only 30 out of 1,200 students were able to take part in this program. Programs detailed in SB1120 can help build programs like this for all students.

Thank you for the continued support of education and workforce development and support for the industry.

Sincerely,

Sean M. Fox
Managing Partner
New Horizons of Hawaii

From: [Barbara Rogers](#)
To: [EDTTestimony](#)
Subject: Testimony for SB 1120 - Feb. 4, 2011
Date: Thursday, February 03, 2011 1:03:05 PM

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

February 4, 2011, 1:15 p.m.

Conference Rm 016

by

Barbara Rogers

946-9394

SB 1120 RELATED TO THE ECONOMY

Testimony in support of SB1120

Chair Fukunaga, Chair Tokuda, Vice Chair Wakai, Vice Chair Kidani and committee members:

My name is Barbara Rogers and I am a retired science teacher, having taught at McKinley High School for many years. This past year, I had the opportunity to be involved with the FIRST Pre-Academy RET Program as a volunteer and as a presenter at one workshop.

The FIRST Pre-Academy RET Program is most impressive. It has been able to outreach to 85% of middle schools across the state. Most important is the fact that it has been able to impact students through direct support of middle school teachers. Activities are teacher driven. The support teachers receive is very timely and relevant to their work with students. The STEM Intercommunity Portal provides a mechanism for teachers to share ideas and work toward solutions to common problems. Indeed, this is the type of program that truly makes a difference in the classroom and needs to be sustained into the future.

I strongly urge you to provide funding for this exemplary program. Thank you very much for your consideration.

Barbara Rogers

From: Brandt_Like/KALAKAUA/HIDOE@notes.k12.hi.us
To: [EDTestimony](#)
Subject: SB 1120 RELATED TO THE ECONOMY
Date: Wednesday, February 02, 2011 2:26:20 PM

Written Testimony Presented Before the
Senate Committee on Economic Development and
Technology and
Senate Committee on Education
February 4, 2011, 1:15 p.m.
Conference Rm 016
by
Brandt Like at Kalakaua Middle School

SB 1120 RELATED TO THE ECONOMY

Chair Fukunaga, Chair Tokuda, Vice Chair Wakai, Vice Chair Kidani and committee members:

Testimony in support of SB1120 or Testimony in opposition (you'd state upfront for efficiency).

I am in testimony for SB1120. My students have been provided with 15 Dell Laptops that they use frequently for research, projects, and collaborative projects. Through the use of these laptops I have been able to teach my students how to use technology to increase their academic success. Many students who are apathetic and unresponsive in the class are excited to use a laptop in their education. I have had much success with students presenting their PowerPoint presentations to the class with what they learned in their collaborative groups. These students fail to complete assignments but when they are presenting to the class they are excited and willing to learn. Many of these students frequently use Facebook and Twitter but fail to see the connection to education. Making this connection allows them to use these skill sets to increase their academic success.

In my classroom I also have an aquaponics prefabricated system setup in my room. This system teaches the students about sustainability and growing organic food using fishes and plants. This system was bought in

support of SB1120 is critical in teaching our future students about key issues in the future. How will we support our future generations with limited resources such as clean water, land to grow crops, and clean air with an exponentially growing population. This aquaponic system has impacted my students because they have purchased their own units and built their own hydroponic systems at home. It is important to reach the future generations that we teach them the skill sets they will use in their lifetime.

I am a firm believer that we should make this funding permanent and be held accountable through showcases of student work that it is making an impact to students. Also, it keeps teachers in the classroom because of the turnover rate due to lack of funding in the classroom due to budget cuts.

Thank you for this opportunity to provide testimony on SB 1120 to appropriate funds for science-, technology-, engineering- and math-related programs.

Sincerely,
Brandt Like

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

February 4, 2011, 1:15 p.m.

Conference Rom 016

By

Candice Frontiera

SB 1120 RELATED TO THE ECONOMY

Chair Fukunaga, Chair Tokuda, Vice Chair Wakai, Vice Chair Kidani and committee members:

Testimony in support of SB1120

My name is Candice Frontiera, and I am middle school math teacher in support of SB 1120. As you know, there is a divide forming between students who use technology in school and are prepared for today's workforce and those who are not. When I started working at Kalakaua Middle School a few years ago, my classroom did not have a single piece of technology for students to interact with. Fortunately, our school has been able to partner with others who are passionate about investing in science, technology, engineering and math, specifically the University of Hawai'i.

As a participant in the University Of Hawai'i College Of Engineering's Pre-FIRST Academy Research Experiences for Teachers Program, I received high quality training about how to connect students' experiences in the classroom to the industries built upon the foundations of math and science. One presenter that stood out was a local surfboard designer who uses math, science, and 3-D modeling software to create more efficient molds for his boards. To bring those experiences alive for our students, the Pre-FIRST Academy provided Kalakaua Middle School's campus with three laptop carts with 15 laptops each, a printer/scanner, and licenses to 3-D fabrication software. Students enjoyed seeing how their learning could actually lead to jobs they'd enjoy.

I never thought I could engage my students in such innovate ways amidst budget cuts, but thanks to this partnership our students are able to learn mathematics with cutting edge technology. I am constantly finding new math resources online, virtual manipulatives, and other creative websites that allow students to explore the concepts we'd typically be learning from a textbook. With access to the global Internet, my classroom is no longer bound by four walls. This opportunity has opened up endless possibilities for learning.

Thank you for considering my testimony on SB 1120 to appropriate funds for science-, technology-, engineering- and math-related programs.

Thank you,
Candice Frontiera

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

February 4, 2011
Conference Room 016

By
Candy Suiso

Program Director – Searider Productions, Wai`anae High School

SB1120 – RELATING TO THE ECONOMY

Chair Senators Fukunaga and Tokuda and Members of the Committees

We are writing this letter to express our strong and wholehearted support for Senate Bill SB 11206 requesting permanent funding for STEM experiential learning initiatives. We would first like to thank the committee members in advance for their time in considering our testimony.

As educators in the Searider Productions (SP) integrated journalism and digital media education program at Wai`anae High School, we feel compelled to describe in more detail why we believe the passage of SB 11206 is important for Hawaii.

Many of you are familiar with the success our program. We feel that we have validated the fact that digital media education programs can reach Hawaii's youth, even the most at-risk and disaffected, and prepare them for success in higher education and the workplace. We thank all of you who have helped us in the past with previous bills that have supported digital media education in Hawaii, and are again grateful for your continued support and allowing us to be part of the FIRST Pre Academy.

One of the most important reasons for our success is our belief that all of our kids, like most humans, have an innate desire to tell stories. We harness that desire and involve students in projects incorporating the following activities:

- students must conduct research and capture their findings in writing, activities most similar to traditional academic disciplines such as Language Arts and Social Studies
- students must create final products using the latest digital media technologies with multimedia components including video, audio, web, computer-based design, animation, and motion graphics
- students must work in groups modeled on production-based teams like those found in print and broadcast journalism or creative media industries

We believe that by providing our youth these types of experiences, we are preparing them to become leaders in making Hawaii's diverse innovation-based economy a reality.

Every year we take our kids from Wai`anae to mainland conventions and competitions with kids from all over the US, many from schools in America's most affluent communities. Last year, Hawaii was represented by Moanalua, Maui, and Waimea High Schools as well as Wai`anae Inter, Chiefess Kamakahale & Kawanakoa Middle Schools. Each year, our Hawaii students, many of whom are considered some of the most at-risk in the country, not only hold their own but often win. For our students, this is often an eye-opening, life-changing experience. They really come to believe that they are good at what they do and can perhaps make a career of it.

While our experience and successes have been with creative media production, we believe the same type of success can occur in engineering programs where students both explore problems and design solutions

using technology, scientific inquiry, and mathematical analysis. In our case, we leverage the innate human desire to tell stories and share ideas with others. But we also believe that the innate human desire to solve problems and understand the world around us is just as powerful a motivator for success. We see many parallels between the successful technology-based engineering programs, such as robotics, and digital media production programs such as ours.

A true innovation economy allows a broad range of creative human endeavors to flourish, whether one is telling a story in a new way or coming up with an innovative solution to a vexing problem. And to build this diverse, strong economy for Hawaii in the 21st century, we must encourage our youth to leverage their creative interests, whether those interests involve creative media production, designing engineering solutions, or solving scientific problems.

We strongly support this bill because it encourages all students, no matter what their creative interest, to help create and become successful participants in Hawaii's innovation economy.

L. Candy Suiso	Michael Oconnor	John Allen III	Jason Britt	Na`a Makekau
Program Director	Digital Media	Video Adviser	Journalism	Graphic Design

COMMITTEE ON ECONOMIC DEVELOPMENT AND TECHNOLOGY

Senator Carol Fukunaga, Chair
Senator Glenn Wakai, Vice Chair

COMMITTEE ON EDUCATION

Senator Jill N. Tokuda, Chair
Senator Michelle Kidani, Vice Chair

NOTICE OF HEARING

DATE: Friday, February 4, 2011
TIME: 1:15 p.m.
PLACE: Conference Room 016
State Capitol
415 South Beretania Street

RE: SB 1120 related to the economy

In Strong Support

Dear Chairs Fukunaga and Tokuda, Vice Chairs Wakai and Kidani and members of the Committees:

Thank you for the opportunity to testify today.

My name is Chris Lee and I am the Founder and Director of the Academy for Creative Media at the University of Hawai'i. I write today in strong support for SB 1120, relating to the economy, which will, among other things,

- (1) Provide a permanent funding source for STEM experimental learning initiatives that have yielded strong student performance outcomes and expanded the reach of the program through teacher-driven efforts;
- (2) Provide recommendations to maximize the benefits of STEM and creative media experiential learning initiatives (e.g., expanded participation throughout Hawaii's public and private schools, opportunities to leverage public-private resources in broadening the reach of innovative experiential learning programs throughout the State);

Last May, I was fortunate enough to work with Dean Peter Crouch of the College of Engineering, University of Hawai'i, Mānoa and Cheryl Ishii of UH with their FIRST Pre-Academy program to provide \$10,000 each in ARRA funds to Olomana School, Stevenson Middle, and Waialua Middle and High School to start or enhance their Creative Media programs as part of the Academy for Creative Media System's efforts towards a P-20 pipeline. These funds were used to purchase computers and software for animation as well as cameras and video equipment.

In our global digital economy, it is vital that students have the tools and the leadership to express their stories through visual media, collaborate via project based learning, and

engage with each other with the technology they are so much more proficient at than ourselves.

Funds have been used at Waialua for 23 students and 3 teachers, at Olomana by 23 students and 6 teachers, and at Stevenson by 30 students and 3 teachers. But these numbers do not do justice to the actual deliverables of the students themselves who have used their creative instincts and digital tool belts to create informative and entertaining public service announcements on topics ranging from global warming, teen pregnancy, healthy eating habits, avoiding drug and alcohol abuse and more.

A couple of my favorites are a flash two dimensional PSA from the students at Stevenson with animated polar bears and penguins who have to car pool across the arctic to stop global warming and an extended news piece at Waialua with a life guard who has been saving lives at Pipeline for 30 years which will now be submitted to the new Hiki No statewide student newscast on PBS.

In addition, these funds have provided training for both students and faculty through Waianae's Searider Productions Bootcamp held twice a year at their campus offering inspiration and networking for students and professional development for teachers from across the state.

This year I have continued these efforts distributing an additional \$10,000 each to six new middle schools on all islands, including Waipahu, King and Highlands Intermediates on O'ahu, Konawaena on the Big Island, Hāna High on Maui, and Waimea Canyon on Kaua'i. Training will also take place on the Big Island, Maui and Kaua'i utilizing faculty and student mentors from Searider Productions.

Thanks to these funds, soon hundreds of students from schools on every island will start their journeys in creative media enabling them to tell their own stories and train them for jobs in the 21st century innovation economy. Hawai'i has a growing intellectual property industry including employers like Hawai'i Animation Studio and this year a record setting \$400+ million in direct spend by film and television productions.

SB 1120 is part of the foundation of the glidepath for our students to this new economy right here in our island state and I thank you for your support.

Sincerely,

Chris Lee
Founder and Director
Academy for Creative Media, System
2800 Woodlawn Drive
Suite 165
Honolulu, HI 96822
808 956-4578

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

February 4, 2011
Conference Room 016

By **Clint Gima**
Program Coordinator/Teacher – Maui High School

Leilani Green
Teacher – Maui High School

February 4, 2011

SB1120 – RELATING TO THE ECONOMY

Chair Senators Fukunaga and Tokuda and Members of the Committees

We are writing this letter to express our strong and wholehearted support for Senate Bill SB 1120 requesting permanent funding for STEM experiential learning initiatives. We would first like to thank the committee members in advance for their time in considering our testimony.

I personally started teaching video production when computer based editing was only found in multimillion dollar facilities and the cameras we could afford were the size of a small suitcase. In fact, Leilani was one of my first students. Also at that time, teachers worked independently and had very little support. Since then, I have met many other teachers from across the State and Nation who share the same passion of providing creative and productive learning experiences for our students through digital media production. However, digital media is not only about using technology. Digital media is about telling stories. Hawaii's rich history is based on storytelling. Hawaii's rich future will be based on the stories from these students. Students learn writing and communication skills while using up-to-date hardware and software to tell stories. In doing so, students meet and exceed the DOE's General Learner Outcomes:

- ***Complex Thinker:*** *The ability to be involved in complex thinking and problem solving.*
- ***Quality Producer:*** *The ability to recognize and produce quality performance and quality products.*
- ***Effective Communicator:*** *the ability to communicate effectively.*
- ***Effective and Ethical User of Technology:*** *the ability to use a variety of technology effectively and ethically.*

Past FIRST Pre Academy funding has been instrumental in providing non-traditional opportunities for our students. "Our" students include students from Wai'anae High, Wai'anae Intermediate, Moanalua High, Cheifess Kamakahalei Middle, Hilo High, Waiakea High, Baldwin High, Lahaina Intermediate, Maui Waena Intermediate, Lokelani Intermediate, and Maui High School. One of the main uses for these funds were to conduct workshops at Wai'anae High School, the

best high school journalism and digital media program in the Nation. Students received hands on, project based instruction from not only one of the top creative media specialist in Hawaii in John Allen, III, but we were able to bring Les Rose of CBS News for one of our week long training sessions. Les has an extensive resume in journalism, photography, and writing. He produces segments for The CBS Evening News, CBS Sunday Morning, 60 Minutes, 48 Hours, and The CBS Early Show. For almost 6 years he was the photojournalist for the “Everybody Has a Story” series with Steve Hartman, and together they produced more than 125 feature stories. They are currently working together on the “Assignment America” series whenever Steve is west of the Rockies. Les’ awards include a Murrow and a DuPont with Steve Hartman, and nine local Emmys. The students were able to work one on one with Les on interviewing techniques and telling the story similar to how Les and Steve develop their stories.

SB1120 will allow us to continue our collaboration and help with the implementation of our common vision of expanding our existing creative media programs throughout Hawaii. Support from SB1120 will allow successful existing programs to expand training to other teachers and their students to develop their own programs at their schools. For example, in April we are going to hold additional training sessions for Hana and Molokai High Schools. SB1120 can be a conduit for our students and the State of Hawaii’s economy. I urge you to please support it.

I appreciate the opportunity to provide testimony in support of SB 11206. Thank you for the opportunity to testify.

Clint Gima
Maui High School

Leilani Green
Maui High School

Jody Nakanelua

From: mailinglist@capitol.hawaii.gov
Sent: Monday, January 31, 2011 12:24 PM
To: EDTTestimony
Cc: akocurtiss@gmail.com
Subject: Testimony for SB1120 on 2/4/2011 1:15:00 PM

Testimony for EDT/EDU 2/4/2011 1:15:00 PM SB1120

Conference room: 016
Testifier position: support
Testifier will be present: No
Submitted by: curtiss ako
Organization: Individual
Address: 777 elepaio st Hon Hi 96816
Phone: 7321890
E-mail: akocurtiss@gmail.com
Submitted on: 1/31/2011

Comments:

We need teacher-driven models. I am a middle school public school tchr. Have been in science education for over 18 yrs.

February 3, 2011

RE: Senate Bill SB1120, Strong Support

E ke hoa, Aloha Aina. O wau no o Kumu Gandharva Mahina Hou Ross, ke kumu alakai ma O Hina I Ka Malama, ke kula kaiapuni olelo Hawaii ma ke kula kiekie o Molokai He leka kakoo keia no ka papahana EAST/STEMworks. Greetings friend, love the land. I am Kumu Gandharva Mahina Hou Ross, the lead teacher at O Hina I Ka Malama, Hawaiian Language Immersion Program at Molokai High School. This is a letter in support of the EAST/STEMworks program. The EAST program has been the progressive learning environment, which models a 21st Century technology workplace for the past 11 years within the Hawaii Department of Education. The program continues to build capacity through professional development training, providing software and technical training, internships, career shadowing, equity based and inquiry-led pedagogue skills and invaluable connections to industry. The students that have enrolled in the EAST programs have shown a marked increase in STEM career interest and intent.

At O Hina I Ka Malama, our curriculum focuses on doing place based, culture based scientific inquiry. We use technology as a way to connect traditional practices of resource management with the students enrolled in our program. The EAST project has provided us with many opportunities to put the latest technology in our student's hands and allows them to make connections with traditional resource management practices and the world we live in today. We use underwater cameras, GPS, Vernier Lab probes, and video cameras to document our resources in different marine environments around the island of Molokai. With this information students make multimedia presentations that they use to present their findings to the Molokai community, as well as present at different conferences in Hawaii. Last year all of our 19 students attended the 1st annual Hawaii STEM conference. We are very thankful to MEDB's Women In Technology for all of their support and training. We ask for your continued investment in this tested model to sustain and expand its reach to more students in our public school system.

Thank you for your time and consideration.

Mahalo,

Gandharva Mahina Hou Ross

Kumu

O Hina I Ka Malama Hawaiian Language Immersion at Molokai High School



February 3, 2011

RE: Senate Bill SB1120, Strong Support

The EAST program has been the progressive learning environment, which models a 21st Century technology workplace for the past 11 years within the Hawaii Department of Education. To date, 15 Hawaii DOE schools are participating in the program. The schools include Maui High, Baldwin High, King Kekaulike, Lahainaluna, Kihei Charter, Molokai Middle and High (Immersion/Non-Immersion), Chiefess Middle, Kauai High, Kealakehe High, Kea'au High, Farrington High, McKinley High, Millani High, and Roosevelt High. The program continues to build capacity through professional development training, providing software and technical training, internships, career shadowing, equity based and inquiry-led pedagogue skills and invaluable connections to industry. The students that have enrolled in the EAST programs have shown a marked increase in STEM career interest and intent.

The EAST project-based, service learning national model provided a strong framework to build upon, however the homegrown Hawaii network provided in partnership with the Women In Technology (WIT), has exceeded what the national affiliation with EAST can provide. A strategic planning team has developed a new model entitled **STEMworks**, which will launch this Fall 2011 replacing EAST. It will continue the successful project-based, high end software access and service learning elements from EAST, but will bring in new technologies in gaming, creative/digital media, pre-engineering hardware and design. These new additions are in response to the growing and projected industry skill demand, with a particular interest in clean energy and sustainability solutions.

The **STEMworks** program will entail STEM/Service Learning curriculum, an online STEM portal (through a partnership with the University of Hawaii Manoa, College of Engineering & Referentia), Industry community partners, and the continued partnership with other project-based STEM programs like robotics, Creative Academies (CA), career-shadowing and internships.

MEDB's Women In Technology (WIT), in partnership with our sister Economic Development Boards, have been honored to facilitate the County, State, Federal, and private sector investment in STEM/Service Learning, including contributions to upgrade hardware, software and training opportunities. We ask for your continued investment in this tested model to sustain and expand its reach to more students in our public school system.

Thank you for your time and consideration.

Mahalo,

Isla Young
Project Manager, MEDB's Women In Technology

**Personal Testimony Presented Before the
Committee on Higher Education
Committee on Education**

February 4, 2011
Conference Room 016

By
James Ah Heong
Undergraduate Student
University of Hawai'i at Manoa, College of Engineering

HB1120 – RELATED TO THE ECONOMY

Chair Senators Fukunaga and Tokuda and Members of the Committees

My name is James Ah Heong, Undergraduate Student at the University of Hawaii, College of Engineering.

I appreciate the opportunity to provide testimony **in support of HB1120** and the Legislature's commitment to STEM education and technology workforce development.

And these are the reasons why:

- Exposure to science technology engineering and mathematics helps to solidify the understanding of these traditionally rigorous fields of study. The initiative helps to encourage the investment of the valuable time needed to master STEM skills. It is imperative that the teachers of STEM love the subjects they are teaching. One of my favorite professors told us that the goal for him as a teacher is to make his students love the subject he is teaching as much as he loves the subject. Only then will they pursue the subject with enough passion to really learn the subject. Supporting programs like the FIRST pre-Academy have the personnel needed to provide students and teachers with the extra expertise to provide worthwhile projects that will inspire interest in STEM.
- Having experts in the fields STEM available to teach or at least supplement the learning of STEM is invaluable. The access to such qualified people allows students to explore subjects on a much more fundamental level, which is crucial to succeeding in the sciences. On a personal note I have been able to work on some of the FIRST projects and I wish that this kind of support was available when I was in middle school. FIRST provides the students with real world experience, some of which could already be put on resumes.
- The type of experience gained from working directly with technology from a young age is irreplaceable. It has been my experience that when working with real technology the motor skills required for dexterous confident operation of high-tech devices become muscle memory and allow a great deal more concentration to be

expelled upon problem solving and innovation. Trouble shooting skills also become sharp and natural with experience. These types of skills are very difficult to teach without exposure to environments where the skills are readily used. The FIRST pre-Academy program provides many opportunities for students and teachers to interact and train with modern techniques and equipment. Working with FIRST allows both the teachers and the students to grow in their abilities to interact with various types of technology and to really understand the applications of the science they are teaching and learning.

- Exposure to technology begets the advancement of technology. It is clear to see that technology has advanced out of necessity. It is through the use of technology that shortcomings in the technology are identified and solutions are pursued. I find that I am constantly looking to update my understanding of engineering concepts so that I can better apply myself to my jobs as well as day to day tasks. Take my word for it, if you really want to see what technology is capable of... provide hungry minds with the means to advance their capabilities through experience.
- I am profoundly impressed with the great ideas voiced by the teachers I've met when working with the FIRST pre-Academy. Often times the teachers are in need of interaction with individuals who can provide the insight and experience needed to bring their ideas to life. Just the other week I had a great conversation with middle school teachers who want to provide their students with materials so that the students can create their own small electric generators. The quick science project brings to life some of the fundamental rules of electricity. Ideas which took brilliant people decades or longer to solve are now easily demonstrated by middle school students when they are given the opportunity to explore. This initiative increases the availability of technology and techniques for students and teachers across the board. The exposure alone is a benefit to the community as it increases public awareness of the worldwide benefits that accompany the pursuit of knowledge.

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

From: Jennifer_Ainoa/MOLOKAI/HIDOE@notes.k12.hi.us
To: [EDTestimony](#)
Subject: Fw: Support for SB120
Date: Wednesday, February 02, 2011 7:10:47 PM

----- Forwarded by Jennifer Ainoa/MOLOKAI/HIDOE on 02/02/2011 07:06 PM -----

Jennifer Ainoa/MOLOKAI/HIDOE

To HEDtestimony@Capitol.hawaii.gov?subject=testing

cc

02/02/2011 07:00 PM

Subject Support for SB120

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

February 4, 2011, 1:15 p.m.

Conference Rm 016

by: Jennifer Ainoa

SB 1120 RELATED TO THE ECONOMY

Chair Fukunaga
Chair Tokuda
Vice Chair Wakai
Vice Chair Kidani
Committee members

Testimony in support of SB1120

Thank you for this opportunity to provide testimony on SB1120 to appropriate funds for science, technology, engineering, and math related programs.

Please allow me to express how great of an impact the First Pre-Academy RET Program has had on the students of Molokai Middle School. This year, Molokai Middle School has achieved something never accomplished before, and that is one of our students, a seventh grader, will be representing our school at the State Science Fair. Please understand that having access to reliable technology and the other related services provided to our school through the First Pre-Academy RET Program was paramount in this success.

As a long-time educator, I have seen many programs come and go. I have also attended many seminars and been willing to implement new strategies into my teaching. Never in my career has student engagement and achievement been as high as this year, and the single most significant factor leading to this success is the fair and equitable access to technology that the First Pre-Academy RET Program has provided my students.

I have been approached by colleagues many times in my career to write testimony in support of one thing or another, but this is the first time I have felt enough conviction to speak up. I can say with full certainty that the First Pre-Academy RET Program is effective and is taking education in a direction

our state and country need to go.

Sincerely;

Jennifer Ainoa
Science Teacher
Molokai Middle School
jennifer_ainoa@notes.k12.hi.us

From: Holly_Stockwell/IAO/HIDOF@notes.k12.hi.us
To: [EDTestimony](#)
Subject: Written Testimony- for RET
Date: Wednesday, February 02, 2011 8:44:57 PM

Written Testimony Presented Before the
Senate Committee on Economic Development
and Technology and
Senate Committee on Education
February 4, 2011, 1:15 p.m.
Conference Rm 016
by
Holly Stockwell Lee

SB 1120 RELATED TO THE ECONOMY

Chair Fukunaga, Chair Tokuda, Vice Chair Wakai, Vice
Chair Kidani and committee members:
Testimony in support of SB1120

Thank you for this opportunity to provide testimony on
SB 1120 to appropriate funds for science-, technology-,
engineering- and math-related programs.

I am a middle school science teacher at Iao
Intermediate on Maui.

I am writing to ask for continued support of the teacher
driven FIRST Pre-Academy RET program.

This program has been an invaluable resource for
engaging middle school students in science. Middle
school is often the time when students, especially girls,
lose interest in pursuing a career in science. With the
RET program, I have personally been able to facilitate
hands on, interactive labs which engage and inspire

students. I also lead an engineering club after school. Last year our team actually won first place in one of the state engineering competitions. This program has given students opportunities to explore and learn about science that otherwise would not be available to them. Hawaii recently ranked second to last in the national NAEP science exams for 4th and 8th grades. Students in this state need increased access to technology, opportunities to explore science in and out of the classroom, as well as teacher driven programs to inspire and educated our youth in the sciences.

Please continue to fund and support the FIRST Pre-Academy RET program.

Sincerely,

Holly Stockwell Lee

Iao Intermediate School

Wailuku, Maui

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

February 4, 2011, 1:15 p.m.
Conference Rm 016

by
Judith Inouye
Teacher Facilitator
FIRST PreAcademy RET

SB 1120 RELATED TO THE ECONOMY

Chair Fukunaga, Chair Tokuda, Vice Chair Wakai, Vice Chair Kidani and committee members:

I am writing this to express my strong support for SB 1120

Thank you for this opportunity to provide testimony on SB 1120 to appropriate funds for STEM (science, technology, engineering, math) related programs.

I am very grateful for your previous support through Act 111 and ARRA which allowed us to develop and promote a **unique teacher driven model**. This model allows us to have a very close relationship with teachers such that their needs to impact middle school students are met in a fairly short time period.

Here is one example. In June of 2010 a Maui teacher told us that she wanted to learn more about aquaponics. In October we had a workshop at Windward Community College where Dr. Clyde Tamaru of CTAHR not only gave an excellent research based presentation but also allowed teachers to have an on-site tour of his aquaponics research facility. In November and December we provided aquaponics units to teachers at 16 schools on Kauai, Maui, Oahu and Hawaii for developing hands-on lessons covering major STEM curriculum areas. In January, Brandt Like, Kalakaua science teacher and his students developed a desktop aquaponics (smaller) unit for presentation at the Farrington Complex Science Fair to be held this month. The turn around time from the need expressed by a teacher to student impact was less than 6 months. Professional and industry support made this happen.

Our workshops are proving to be an effective means by which we can meet the needs of teachers. We had four workshops in the 2009-2010 SY and two thus far for this school year. Two more are in the initial planning stages. The last workshop held on January 22 involved Problem Solving Methodologies. 50

teachers from 24 schools, 11 from neighbor island schools participated in the workshop. The agenda included a tour of five UH College of Engineering labs as well as presentations focused on research methodologies. Two outstanding retired science teachers, Edith Watanabe and Barbara Rogers provided some “how to” support for middle school teachers who are being encouraged to do more project based activities in their curriculum. Also included in the workshop agenda was a strong focus on engineering problem solving methodology, an area that is becoming more and more significant in our society where engineering is impacting so much of our lifestyle. Through the mentorship of Dr. Scott Miller, UH College of Engineering, fifteen schools are now participating in an engineering design process follow-up activity which will involve external review of the student works by individuals with expertise in the engineering design process.

At the 3D Workshop held in May, 2010, a cutting-edge software, Fabware, was presented to the teachers. We have installed this software in all FIRST PreAcademy RET computers. Fabware was piloted at several schools in the 4th quarter. Nohea Goo, math teacher at Dole reported that her students were “fighting” about who had the correct solution to some math problems. This is the first time she has seen such excitement over math problem solutions. She also remarked that one student told her that she should have allowed them to work on the software before they took the HSA test and that he might have been able to do better if she had done so. As more schools implement this software, we may be able to show some significant desirable performance outcomes.

These workshops are not the only means by which our program is meeting the needs of teachers. Another teacher driven aspect involves per teacher or per school mentorship. Currently James Ah Heong, an engineering student intern is working with the Mililani School 6th grade teachers to develop an activity where students can make an electromagnetism device. Very early in our project, a Keaau Middle School teacher asked and through the help of a UH College of Engineering graduate student developed an activity where students made their own antennas and tested them using a software program. Russ Ogi, of Rapid Printing, an industry presenter at our 3D Workshop is now working with a Maui teacher who wants to learn more about Maya.

Listening to teachers and providing resources where possible is important in this model. What is resulting from this process is a diversity of enriching mini project implementations. Teachers are beginning to share these new lessons on SIP (STEM Intercommunity Portal). I believe that this teacher driven model is truly raising the professionalism of teachers!

We now have 43 middle schools throughout our state participating in FIRST PreAcademy RET. 18 of the 43 schools are neighbor island schools. Funding has provided opportunities for the teachers at the 18 neighbor island schools to attend the workshops. Margaret .Magonigle of Hana, drives 2 hours to Kahului

Airport and Arlene Uehara of Honokaa 1 hour to Hilo Airport to attend the workshops because they want to learn more on topics that are interesting and important to them. We have received the same kind of comment from Jennifer Ainoa of Molokai. We have gained tremendous feelings of satisfaction to know that the students in Hana, Honokaa, and Molokai are being given the same opportunity to participate in aquaponics and engineering process design activities as their counterparts in our larger Oahu schools.

In a short time the RET program expanded from one school to 43 middle schools statewide. ACT 111 and ARRA funding that you supported is resulting in significant expansion, not only in more schools coming on board but also in more teachers at existing schools coming on board. Teacher interest in this model is spreading in our middle schools! Some of our larger schools, Mililani, Dole, Kalakaua, King, and Waipahu are close to impacting 100% of their students.

Teachers enter the teaching profession because they want to make a difference and we are often told that the teacher **is** the key factor. Permanent funding for this unique teacher driven program will enable teachers to make a difference!

I urge you to be a part of this process to make a difference by supporting SB # 1120.

Thank you very much.

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

February 4, 2011 1:15 p.m.
Conference Room 016

By
Justin Akagi, FIRST Pre-Academy Program Manager
College of Engineering, University of Hawai'i at Mānoa

SB1120 – RELATED TO THE ECONOMY

Chair Senators Fukunaga and Tokuda and Members of the Committees

My name is Justin Akagi, FIRST Pre-Academy Program Manager at the University of Hawaii, College of Engineering.

I appreciate the opportunity to provide testimony **in support of SB1120** to appropriate funds for science-, technology-, engineering- and math-related programs.

As a product of the State of Hawaii public school system at all levels, from kindergarten through graduate school (1988-2008), I believe that I can provide a useful perspective on Hawaii's education system and the importance of programs such as FIRST Pre-Academy. Throughout my years as a student, I have experienced first-hand and witnessed second-hand how meaningful curriculum can better motivate and educate students. As a student, I admit that I carried a strong interest in math and science throughout elementary and middle school. However, my first meaningful career-related experience was at the high school level in a course that included hands-on activities, such as bridge building, catapult launchers and robotics competitions. Although I was fortunate to have this experience, which inevitably motivated me to pursue undergraduate and graduate degrees in engineering, I also understood that many other students did not have the same opportunity, since the course was taught at a single school by a single teacher.

After finishing my graduate studies, I started working for the UH College of Engineering and have had the pleasure of managing the FIRST Pre-Academy program. This program has a vision of developing Hawaii's future high technology workforce and preparing students for 21st century careers by creating a pipeline from the K-12 system to University and beyond. By improving middle school teachers' technical knowledge and research-based skills across a broad spectrum of science, technology, engineering and mathematics (STEM) disciplines, they are able to more effectively engage and educate students in all aspects of STEM. Teachers are exposed to state-of-the-art technology, research areas and applications through direct interaction with university researchers and industry professionals. In turn, they have been able to introduce their students to a broad range of STEM-related topic areas, including sustainability, 3D modeling and fabrication, aquaponics, water quality, data collection and analysis, robotics, microbial oceanography, creative and digital media, and many more.

In the year that I have been involved with this program, I have witnessed huge growth and impact at participating FIRST Pre-Academy schools. During the past six months alone, this program has grown from 57 middle schools, 176 teachers and 4,512 students to 68 schools, 308 teachers and

9,063 students. And, student involvement numbers are still growing. Based on participating schools' plans, by the end of the 2010-11 school year, more than 10,000 students will be involved in FIRST Pre-Academy activities annually.

I would also like to re-iterate that 68 middle schools are involved with FIRST Pre-Academy. This represents 85% of all public and public charter middle schools in the State of Hawaii, a testament to the success and critical importance of this voluntary program. (Please note that although we encourage all public and public charter middle schools to participate in this program, each school's participation is entirely voluntary.)

As an individual who has graduated from Hawaii's public school system and seen the impact of a program that promotes STEM education, I would like to encourage the State to continue its commitment to STEM learning by supporting SB1120 so that we may continue to impact more teachers and students in the years to come.

Thank you for the opportunity to testify.

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

February 4, 2011, 1:15 p.m.

Conference Mr. 016

By

Kara Nakashima

SB 1120 RELATED TO THE ECONOMY

Chair Fukunaga, Chair Tokuda, Vice Chair Wakai, Vice Chair Kidani and committee members:

Dear Education Committee Members,

I support funding of this bill. I am a teacher at Dole Middle School. I have been fortunate to be apart of FIRST Pre-Academy RET program for the last 5 years. I have seen first hand the trials and tribulations of this program. Also, being a 15-year teacher on Maui and Kalihi, I understand the struggles of providing our students the skills to succeed in the 21st century.

The FIRST Pre-Academy RET program has grown and developed into a wonderful program that services the state. The neat thing about this program is that it is teacher driven with the help of experts in the fields. This program is the bridge between cutting edge professors in the STEM fields and the middle school teachers on the front lines. From its infancy to its current statewide status, we have benefited from these relationships. This program has provided workshops, equipment, and expertise to help us impact our students.

Although we have benefited greatly from all aspects of the program, I want to highlight some of the many examples of how this program has helped us. Some of our students were fortunate enough to tour the Engineering labs at the University of Hawaii at Manoa. One student started off wanting to be a lawyer, but after her experiences there she wants to go into medical engineering. Another example is our experiences with the Fab Lab program that was provided by this program. Fab Lab is an interactive geometry based program. Some of our teachers piloted it last year. The students were actually fighting over how to do a Math problem. Some of them said that they wish they had the opportunity to use this before the HSA. Others said that they finally got it. It made Math fun.

STEM education is critical to the success of our students. Without it, they cannot be competitive in academics and the job market. In order for us to compete against foreign countries and other states we must beef up our education in this area. In order for us to level the playing field and give opportunities for all of our children, regardless of economic status, we must increase STEM education in the schools. The only way for this to happen in a consistent intentional manner is through permanent funding of wonderful programs such as the FIRST Pre-Academy RET program.

Thank you for your time.

Thank you for this opportunity to provide testimony on SB 1120 to appropriate funds for science-, technology-, engineering- and math-related programs.

Jan. 30, 2011

To: EDT- EDU committee

Testimony for bill #SB1120

My name is Karen Shimomura. I am a teacher at Wahiawa Middle School. I wanted to let you know that I am currently a participant in the RET program which is part of the STEM program. I wanted to express how valuable this program has been in helping me as a middle school teacher to inspire my students in the field of science, math, engineering and technology. My students are doing more inquiry based learning thanks inspiring workshops held for teachers at the University of Hawaii Engineering department. With the support of this program we are able to borrow some advanced technology (probes), computers and experts usually not available to us at the school level. It helps our students move beyond just the usual paper and pencil exercises to more experiential means of learning. Please help us and our students by continuing to support these programs so teachers such as me are not limited to what we offer our students. Thank you.

Sincerely,

Karen Shimomura

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

February 4, 2011
Conference Room 016

By
Kevin Matsunaga
Media Production Teacher, Chiefess Kamakahelei Middle School

SB1120 – RELATING TO THE ECONOMY

Chair Senators Fukunaga and Tokuda and Members of the Committees

My name is Kevin Matsunaga, Media Production Teacher at Chiefess Kamakahelei Middle School on the island of Kauai.

I appreciate the opportunity to provide testimony **in support of SB 11206** requesting permanent funding for STEM experiential learning initiatives. I have been fortunate to be a part of the FIRST Pre Academy along with my creative media colleagues at Waianae High School, Waianae Intermediate School, and Maui High School. Over the past several years, we have collaborated to create a creative media curriculum and training program that we've instituted on these three islands. This year, we had the pleasure of adding schools on the Big Island to expand our training to our entire state. We feel we have come up with a successful program for training middle and high school students in the area of creative media and would like to continue with your support.

Funding through the FIRST Pre Academy has allowed us to purchase standardized media equipment in all of our schools which allows for a seamless training experience. By using the same equipment at all of our schools, when we travel to each site to conduct creative media training, we don't have to waste time to adapt our lessons to fit the equipment that is at each site. Students at all five sites on our four islands are taught using the same curriculum and the same equipment. Likewise, when we conduct training sessions at our sites for our schools on our respective islands, FIRST Pre Academy funding has allowed us to purchase the same standardized equipment for some of our participating schools. This has proven to be a huge factor in the success of our training as students are able to focus on the concepts taught instead of how to use the equipment.

Our funding has also allowed us to travel to each of the neighbor islands to help each other conduct these training sessions. When colleagues are able to team teach with one another, not only do our students learn new things, but we as teachers learn and grow with each new training by observing each other. It really becomes a training session for all of us. We then bring those new techniques to our own programs and islands to further expand the experiences we provide to our students through our own lessons.

We have also been able to bring our students to these different training sessions throughout our state to either learn more and expand their knowledge, or to help train the other students as mentors. Personally, my students have gained a much more thorough understanding of creative media concepts by attending these training sessions. Each of our teachers has something different to share or bring to the table and my students have had the benefit of learning from all of them, including the student mentors. In the 2010 Student Television Network National Convention held in Anaheim, California, my students won or placed in the top three in five out of the six video competitions we entered. I attribute their success to the experiences they have had through the FIRST Pre Academy.

My colleagues and I would like to continue to expand creative media in the schools across our state and humbly ask for your continued support. We each share the same passion, dedication, and commitment to teaching creative media and permanent funding will help us to continue this expansion. Through our combined success in national competitions Hawaii is already on the map as far as having strong media programs in our schools. Imagine what that map would look like with permanent funding?

Thank you for the opportunity to testify.

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

February 4, 2011, 1:15 p.m.

Conference Rm 016

by

Kristen Miyazono

SB 1120 RELATED TO THE ECONOMY

Chair Fukunaga, Chair Tokuda, Vice Chair Wakai, Vice Chair Kidani and committee members:

Testimony in support of SB1120. I would like to support SB1120 so that funding will be provided for the future years for the Pre-First Academy to support middle schools in Hawaii integrate STEM (science, technology, engineering, and math) activities into the curriculum. I am a teacher at Waiakea Intermediate School on the Big Island, serving 150 7th grade students ranging from special needs students to the gifted and talented. Through the Pre-First Academy, I was able to get a mobile lab of 14 laptops to use solely in my classroom to help my students achieve the science benchmarks set out by the State of Hawaii. My students conduct inquiry lab investigations to solve problems and understand science concepts, and they need to have access to a computer and the internet in order to do so. I also have a team of 25 students ranging from 6th – 8th grade in my extra-curricular robotics afterschool program who need to use the computers to program their robots for competition. I have two students who recently arrived from China, who know very little of the English language, and I have them use the computers almost daily to complete individualized instruction that I create for them. Not only does this program support equipment for the students, but this program also provides professional development workshops for teachers to teach us how to integrate specific STEM activities into our curriculum. Being from the Big Island, not much PD is provided for science teachers, as most of the workshops/classes are held on Oahu, so being a part of the First Academy allows me to have access to the various PD workshops that they offer throughout the year to help me improve my curriculum, instruction, and assessment. As you can see, there are many benefits to this program which directly impacts the students of Hawaii, and I would like to please ask you to continue to support this program and SB1120.

Thank you for this opportunity to provide testimony on SB 1120 to appropriate funds for science-, technology-, engineering- and math-related programs.

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

February 4, 2011, 1:15 p.m.

Conference Rm 016

by

Michael S. Inouye, P.E.

Vice President, Ralph S. Inouye Co., Ltd.

SB 1120 RELATED TO THE ECONOMY

Chair Fukunaga, Chair Tokuda, Vice Chair Wakai, Vice Chair Kidani and committee members:

Testimony in support of SB1120.

I am writing to you in support of SB1120. As a licensed Civil Engineer, I can appreciate the importance of science and math-related programs in our educational system. More importantly if we are to develop our young people to find high quality jobs in the fields of science, technology and engineering, we need to develop, encourage, and inspire passion for these topics. The middle and high school teachers are critical in doing this. The funding that you provide to these programs give them the necessary knowledge, tools, and networking to successfully create programs, lessons, and “teachable moments” for our young people to give them the foundation and inspiration to become successful leaders in the technology and engineering fields.

I participated in one of the FIRST PreAcademy RET Workshops where I saw first hand the dedication and enthusiasm of our middle school teachers. They were very engaging and had a strong desire to use the material in the workshop in their classroom. My participation was to provide “real-world” examples and experiences of how 3-dimensional modeling and drafting is being utilized in the construction and engineering fields today. The basic concepts of 2-dimensional and 3-dimensional space are important building blocks in any engineering field as we communicate our 3-dimensional visions in 2-dimensional drawings. There were other industry professionals that provided networking connections to our educators that will translate into partnerships with their respective schools.

I am in full support of these types of programs that provide our educators with the necessary tools and audiences with industry professionals that will touch our students and inspire them to pursue careers in the science and engineering fields. The future of growth and employment opportunities will be in these fields and anything we can do to help our educational system provide programs to foster this development should be a priority. I encourage your continued support SB 1120 to provide permanent funding for STEM experiential learning.

Thank you for this opportunity to provide testimony on SB 1120 to appropriate funds for science-, technology-, engineering- and math-related programs.

Michael S. Inouye
Vice President
Ralph S. Inouye Co., Ltd.

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

February 4, 2011, 1:15 p.m.

Conference Rom 016

By

Minna Chanhboury

SB 1120 RELATED TO THE ECONOMY

Chair Fukunaga, Chair Tokuda, Vice Chair Wakai, Vice Chair Kidani and committee members:

Testimony in support of SB1120

My name is Minna Chanhboury and I am in support of SB 1120. I am a sixth grade math teacher at Kalakaua Middle School. Since becoming a part of the University Of Hawai'i College Of Engineering's Pre-FIRST Academy RET (Research Experiences for Teachers) Program last year, I have experienced a new found exhilaration in my day to day duties as an educator. Pre-FIRST Academy's teacher driven model is the key to empowering teachers to create challenging, engaging, and meaningful learning experiences for each and every one of our students. They have also provided teachers with tools we could only dream of as well as valuable STEM related professional development workshops.

Through this program, the students have benefitted from a wealth of technology to learn with such as a mobile lab (15 laptops and a cart), printers, 3D modeling software, and a digital cutting tool. These invaluable tools have made an immediate, direct, and positive impact on student learning and their overall disposition toward the math learning.

During a spatial visualization unit, the classroom was always buzzing with engagement, learning, and wonder as each student designed and built 3D models with the use of the laptops and software. Math class was no longer, "Turn to page . . ." A particular student identified for special education easily designed models that often *exceeded* that of his peers in creativity. Without such priceless tools, he would never have had this venue to "shine" amongst his peers. Another student identified as at-risk and English Language Learner stated that he now would like to work with computers when he grows up because of this opportunity. Many students who had little experience with computers gained confidence as they skillfully maneuvered their way through the 3D modeling program.

These tools, professional support, and teacher empowerment have opened new doors for my students that may well have nudged them toward STEM career paths. This renewed spirit of wonder and excitement in math class would be very difficult to create without permanent funding for this program.

Thank you for this opportunity to provide testimony on SB 1120 to appropriate funds for science-, technology-, engineering- and math-related programs.

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

February 4, 2011, 1:15 p.m.

Conference Rm 016

by
name

SB 1120 RELATED TO THE ECONOMY

Chair Fukunaga, Chair Tokuda, Vice Chair Wakai, Vice Chair Kidani and committee members:

Testimony in support of SB1120 or Testimony in opposition (you'd state upfront for efficiency).

Thank you for this opportunity to provide testimony on SB 1120 to appropriate funds for science-, technology-, engineering- and math-related programs.

My name is Nohea, Goo and I am an 8th grade math teacher at Dole Middle School. I have been at Dole for 8 ½ years. When I first came to Dole the only technology that the kids were exposed to was the worksheets that I made from my teacher computer that got printed from my printer. For the past 3 – 4 years, my students have had the opportunity to work on computers (that are not out-dated) and use equipment (water probes, PDA's, graphing calculators) that they would never get the opportunity to use otherwise.

Due to the fact that my students come from low socio-economic backgrounds, many do not have access to a computer outside of school. They have never seen a PDA, or have never used a graphing calculator. The use of this equipment has made my students more literate in terms of technology. I have been very happy with the results – little things like using the mouse from the pad on the laptop, or being able to analyze data on the laptops, or using the internet to do research has really made my students more confident.

For the past three years the students have been doing community service at Kokua Kalihi Valley (Kalihi Nature Park). They have planted trees, learned about invasive species, and cleaned up areas that are overgrown with weeds. Part of the field trip is to analyze the stream water. The students learn how to use water probes to find the pH, turbidity, nitrate levels, etc. We have taken this data and started to look at how the stream water has been changing. The use of

technology has extended into their personal lives. We have talked about where stream water comes from, how pollution affects the water quality, and what students can do to help the environment.

I have also had the opportunity to use FabLab Model Maker, which is a three-dimensional drawing program. The math standard that Dole students struggle with is measurement. The students, through use of the program, are able to draw three-dimensional drawings, find the surface area, volume, estimate lengths, view the solids from different views, and see the nets of the solids. When students fight at Dole it is never about math, but I found that a few of my student groups, while using FabLab, were fighting about the answers. It was such a great teaching moment.

This year, we were able to use graphing calculators. These calculators are amazing tools for the students to use. My grade level partner and I are trying to find more ways to incorporate the use of these calculators in our lessons. The students love working with the calculators and continually ask, "When are we using the fancy calculators again?" The students, at times seem to have a better grasp on using the calculators than my partner and I do.

In recent years with all of this added technology, I feel that my students would be able to compete in this technological world we live in. Being apart of STEM has really given me hope that my students have a better chance at a good life. It has given me hope that more of my students will be able to attend college and be successful. It has given me hope that my students will be able to make an imprint in this world we live in. More importantly, for my students, they are more confident and excited about their future.

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

February 04, 2011
1:15 p.m. – Conference Room 016

by

Peter E. Crouch

SB 1120 – RELATED TO THE ECONOMY

Chairs Fukunaga and Tokuda, Vice Chairs Wakai and Kidani and Members of the Committees

I appreciate the opportunity to provide testimony in general support of SB 1120 related to the economy. My name is Peter Crouch, Dean, College of Engineering, University of Hawai'i at Mānoa.

The UH College of Engineering has been an active participant in K-12 outreach in the areas of science, technology, engineering, and mathematics (STEM) in Hawai'i. Our involvement is driven by the critical importance of generating student interest in pursuing courses of study which lead to postsecondary access and STEM careers.

Our faculty, students, alumni, and staff sponsor and support events such as the UH College of Engineering Day, Engineering Expo, High School Research Internship Program, Junior Engineering Expo, various Robotics competitions, and the like.

Of particular interest to this bill is the Fostering Inspiration and Relevance through Science and Technology Pre-Academy which was established through ACT111 by the State of Hawaii 24th Legislature in 2007. The FIRST Pre-Academy is a teacher driven model for advancing science and technology in middle schools. It brings the knowledge of engineering and technological research innovation into middle school classrooms and programs through the active involvement of teachers, faculty, graduate and undergraduate students and industry. The approach is to: 1) capitalize on the creators of leading edge technology at the university, 2) leverage exciting and mutually beneficial partnerships and funding opportunities, and 3) execute rapid dissemination and implementation of teacher resources and opportunities directly into the classrooms.

Since reporting at the end of June 2010, the number of participating schools has increased from 57 to 68 (85% school participation state-wide); teacher participation has increased from 176 to 308; and students impacted increased from 4,512 to 9,063.

We are committed to working together to promote student interest and improve achievement in science, technology, engineering, and mathematics. We believe this in turn will contribute significantly to preparing our students for fuller participation in our society and contribute to our State's growth.

I wish to add that while we continue to strongly support these programs, the current and projected budget restrictions for the University of Hawai'i at Mānoa require us to make difficult and sometimes unwilling choices. While many programs, especially those in SB 1120, are definitely worthy, we realize not all can be funded, and we must make our decisions on the basis of campus priorities. This is defined in the Board of Regents approved budget. In this respect, we are able to support the concept proposed in SB 1120 at this time.

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

February 4, 2011, 1:15 p.m.

Conference Rom 016

By

Peter Yin

SB 1120 RELATED TO THE ECONOMY

Chair Fukunaga, Chair Tokuda, Vice Chair Wakai, Vice Chair Kidani and committee members:

Testimony in support of SB1120

The University of Hawaii College of Engineering's Pre-FIRST Academy Research Experiences for Teachers has changed the way my sixth graders at Kalakaua Middle feel about math. The laptops and 3D modeling software provided by the Academy has produced students who are all engaged in their learning. Reflecting back at my education as a child, I feel I would have been more interested in math if it were presented with such state of the art technology and tools.

In addition to designing and creating 3D models to develop geometry concepts, the students also challenged peers across the globe in online math games through websites such as www.calculationnation.com and www.americanmathchallenge.com. Some students enjoyed challenging others so much they continued to play these math games at home.

Please provide permanent funding to a program that has such a great impact on our students.

Thank you for this opportunity to provide testimony on SB 1120 to appropriate funds for science-, technology-, engineering- and math-related programs.

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

February 4, 2011, 1:15 p.m.

Conference Rm 016

by

Philip Blackman

SB 1120 RELATED TO THE ECONOMY

Chair Fukunaga, Chair Tokuda, Vice Chair Wakai, Vice Chair Kidani and committee members:

Testimony in opposition of SB1120

Thank you for this opportunity to provide testimony on SB 1120 to appropriate funds for science-, technology-, engineering- and math-related programs.

The bill unfortunately is in the form of “earmarks”. This is counter to the intent of the recent organization change within the BOE to consolidate education accountability within the executive branch. The Governor now may appoint members to the Board of Education. The superintendent of schools already has in place a large and experienced staff to establish relationships with entities with valuable skills promoting better and more relevant student achievement in Hawaii and economy needs.

Requests for proposals or contract performance specifications with measurable results ought to be open to the entire community of education innovations. The process of distribution of money should be fair competition, not earmarks. The DOE, not the legislature, should argue within a Department Budget the rationale for money, and be accountable for performance.

During President Obama’s State of the Union Address, the entire Congressional membership stood and applauded as the President declared he would veto any bill presented to him with earmarks. The Hawaii legislative body should heed the rationale of that applause. SB 1120 is not a bill with earmarks; it is a bill of earmarks!

I encourage the legislature instead to generate a Resolution advising the DOE to take a courageous new attitude to develop projects and innovation that ameliorate their defined deficiencies and their openly revealed self assessment. The resolution should demand the use of the strength of our free enterprise system to address this published set of deficiencies. Fair, open, competitive, accountable performance based contract environment should be achieved. Solicitations should be transparent and reach out and include individuals, small businesses, and commercial based existing products. The government bureaucracy should be self disciplined and constrained from swelling.

Written Testimony on SB 1120 by Philip Blackman page 2 of 2, 4 February 2011

For example, if there is no incentive or reward for teachers to work to gain credentials necessary to be a “highly effective teacher”, that is a deficiency. If HPU, or Remington College, or UH have ideas how to eliminate that deficiency, a contract solicitation of fair and open design will tap the most cost efficient source to address the problem.

The earmarked entities have illustrated they can spend money, can involve students and teachers, can show some evidence of impact. But that is not enough to justify money awards. Accountability to the governor is muted by legislative intervention when the legislature acts as a component of the executive branch in picking and choosing their mix of selected projects..

I hope the committees will find authors to introduce a resolution to more fairly and efficiently achieve hoped for improvements embodied in testimony of those supporting the bill. I too am a long time advocate of STEM initiatives, including actions I have taken to sponsor teachers for special training at MIT and in classroom settings, and creating mentoring programs for student teams and individuals participating in science fairs and robotic programs.

But I recommend that the bill not pass as a bill of earmarks.

Thank you for considering these ideas.

**Personal Testimony Presented Before the
Committee on Higher Education
Committee on Education**

February 4, 2011
Conference Room 016

By
Philip Truong
Undergraduate Student
University of Hawai`i at Manoa, College of Engineering

SB1120 – RELATED TO THE ECONOMY

Chair Representatives Fukunaga and Tokuda and Members of the Committees

My name is Philip Truong, Undergraduate Student at the University of Hawaii, College of Engineering.

I appreciate the opportunity to provide testimony **in support of SB1120** and the Legislature's commitment to STEM education and technology workforce development.

And these are the reasons why:

- For a little over half-a-year, I, along other undergraduates, have been working on developing tutorials with the purpose of providing quick reference for teachers and students in the proper usage of electronic measurement probes and PDAs for data collection in lab and field experiments.
- Additionally, in being involved with the RET program, I have been able to further my own understanding of the use of, and the concepts involved in, data collection instruments.
- Through my interactions with teachers, I have been able to observe a genuine interest in participating in the RET program.

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

Jody Nakanelua

From: Sen. Carol Fukunaga
Sent: Tuesday, February 01, 2011 7:59 PM
To: fukunaga3 - Devin; Doris Lam
Subject: FW: support for SB 1120

FYI,
carolf

From: [Rory Ikeda/AIEAI/HIDOE@notes.k12.hi.us](mailto:Rory_Ikeda/AIEAI/HIDOE@notes.k12.hi.us) [mailto:Rory_Ikeda/AIEAI/HIDOE@notes.k12.hi.us]
Sent: Tuesday, February 01, 2011 9:46 AM
To: Sen. Carol Fukunaga; Sen. Michelle Kidani; Sen. Jill Tokuda; Sen. Glenn Wakai
Subject: support for SB 1120

Dear Senators,

Thank you for taking the time to read this message...

At a time when everyone is clamoring for limited resources, SB1120 provides the means for efficient and effective use of funds - specifically, the portion that addresses the continuation of funds for the experimental program to expand the teaching and learning of **Science, Technology, Engineering and Math** (*see page 2, line #11 to page 3, line #7*). By continuing the financial support of the FIRST Pre-Academy RET program, the State will be addressing identified needs in educational reform. Through participation in this program, teachers are provided with training opportunities in relevant STEM fields that are then brought back to our students in rigorous and engaging lessons. Venues for teacher networking have been established which broadens the scope of collegial planning beyond the individual school level. Involvement with the University of Hawaii system and with community partners brings a level of expertise to the classroom that individual teachers and schools would otherwise have to re-create at each site. The FIRST Pre-Academy RET program has served as a "resource clearinghouse" that has facilitated the matching of school needs with possible solutions. It has shown itself to be a tremendous catalyst in moving teaching and learning truly into the 21st century.

However, the work has just begun. I humbly ask that you consider supporting SB 1120 and continue to make an impact on the quality of education for our youngsters.

Respectfully,

Rory Ikeda
Aiea Intermediate School
Curriculum Coordinator

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

February 4, 2011, 1:15 p.m.

Conference Rm 016

by

Scott Miller, Assistant Professor, Mechanical Engineering, UH Manoa

SB 1120 RELATED TO THE ECONOMY

Chair Fukunaga, Chair Tokuda, Vice Chair Wakai, Vice Chair Kidani and committee members:

Thank you for this opportunity to provide testimony on SB 1120 to appropriate funds for science-, technology-, engineering- and math-related programs.

- I have been working with great science teachers in Hawaii including Jeff Lim and Jenny Kuwahara to introduce the concept of engineering and teach the engineering design process to middle school students. We have been refining our approach and made a lot of progress in teaching this concept.
- There is a mounting trend to inform and excite younger students about STEM and engineering design.
- This program will provide teachers with the resources and technical support (working with the College of Engineering at UH Manoa) for new, fun, effective, hands-on projects that engage the students and motivate them toward a STEM related education and career.
- We recently held a workshop to train science teachers in the design process, and they seemed to be sincerely interested. We will put effort into expanding this program with the appropriate funds.
- The figure below shows some of the preliminary efforts at Family Science Night at Kuhio elementary school with the graduate student working on this project.

