Big Potential for Small Satellite Students

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University of Hawaii

Small Satellite Conference, August 2009
Today’s College Students

- The World Wide Web has been an online tool since they were born
- GPS navigation systems have always been in existence
- Electronic filing of tax returns has always been an option
- FOX has always been a major network
- Coke and Pepsi have always been in recyclable plastic bottles
- They have always grown up with bottled water
- They rarely, if ever, “rolled down” a window

From Beloit College Mindset List
Yesterday’s Teaching Styles Don’t Work

Today’s Learning Styles Must be:

- Interactive
- Open-Ended and Discovery-Based
- Group-Oriented
- Purposeful

The Small Sat Community is Leading the Way!
Student Outcomes

Transforming Good Students Into Excellent Engineers

• ~200 students trained since 2001
• 9 entered PhD programs, > 20 entered MS programs
• Two stints in the University Nanosat Program
• Four generations of CubeSats
• > 25 publications, 2 patents, start-up company
• > $0.5 million in student-written proposals
Success Stories

Aaron Ohta
- UH BS 2003, UCLA MS 2004, Berkeley PhD 2008
- *Most Outstanding EE Student in the Nation*, 2003
- Joined UH engineering faculty in 2009

Blaine Murakami
- UH BS 2005
- *Most Outstanding EE Student in the Nation*, 2005
- Co-founder, Pipeline Communications and Tech.

Justin Akagi
- UH BS 2005, UH MS 2008
- Secured over $500K in funding for UH
- Industry/Government Liaison for UH College of Engineering

Jason Akagi
- UH BS 2003
- NovaSol, Archinoetics, RCUH
- Started UH BalloonSat Program
- Developed ORS payload in 45 days
Surviving the Crash

Guinness…the only way to survive a crash
An 8th-Grader CubeSat

The Future is in Good Hands

• Bryan Fewell – 8th Grader at Hanalani Schools
• Seven awards at the Hawaii State Science Fair
Reaching Out to Students

• Guide them with a loose leash, and watch them unleash their own potential
• Give them significant responsibility
  – e.g., the University Nanosat Program
• My best kept secret: Students themselves do the mentoring!
A Different Kind of Engineer

“Engineering thinking needs to be able to deal with complex interrelationships that include not only traditional engineering problems but also encompass human environmental factors as major components . . .

Companies want engineers with passion, some systems thinking, an ability to innovate, an ability to work in multicultural environments, an ability to understand the business context of engineering, interdisciplinary skills, communication skills, leadership skills, an ability to adapt to changing conditions, and an eagerness for lifelong learning.

This is a different kind of engineer from the norm that is being produced now.”

From National Science Board, Nov. 2007
UH Students – in Their Own Words

Nicholas Fisher
- Hometown: Kona, HI
- Junior in electrical engineering
- Former video game aficionado

Shantel Hunt
- Hometown: Ewa Beach, HI
- Junior in electrical engineering
- Student Program Manager, University Nanosat Program
Mahalo!