

# Creating Successful Partnerships Between Informal and Formal Science Education



Association of Science-Technology Centers(ASTC)  
Annual Conference  
October 18-21, 2014

# Institutions and Their Programs

## **All Together Now**

Bishop Museum

Honolulu, HI

## **Leaders in Science**

Perot Museum of Nature and Science

Dallas, TX

## **Connecting Higher Ed with K-12 Teachers**

Edventure Children's Museum

Columbia, SC



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BERNICE PAUAHI BISHOP MUSEUM

HONOLULU, HAWAII

# All Together Now: A Model Partnership for Improving Hawaiian Middle School Education

Mike Shanahan

Director of Visitor Experience and Planetarium



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# All Together Now

- Funded by the US Dept. of Education's *Native Hawaiian Education Program*
- \$800 K award
- August 2011 – July 2014
- PI: Mike Shanahan/Bishop Museum



# Goal of *All Together Now*:

*To advance Native Hawaiian middle school education while testing a model collaboration between museums, community organizations, and the formal education community in Hawai'i.*





# BERNICE PAUAHI BISHOP MUSEUM

HONOLULU, HAWAII



PVS

[www.hokulea.org](http://www.hokulea.org)



Bishop Museum

[www.bishopmuseum.org](http://www.bishopmuseum.org)

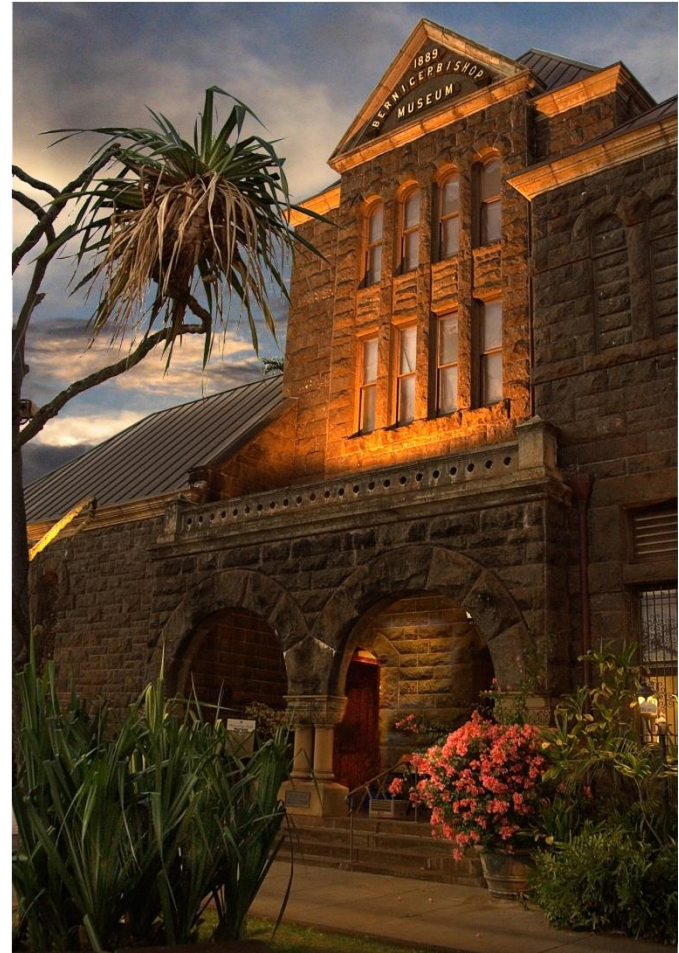
UH College of Education  
12 Member Middle School Teacher Cohort



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# Bernice Pauahi Bishop Museum

- World's leading Museum of Hawaiian cultural and natural history
- 125 years old this year
- 400,000 per year
- 50-50 residents/tourists



# Polynesian Voyaging Society

- Hawaii-based community organization
- Largely volunteer-based
- Spearheaded the creation of the canoe Hokule'a (1973) and the revival of Polynesian navigation





# University of Hawai'i (Honolulu) College of Education and Teacher Cohort

- Dr Pauline Chinn as main partner at College of Education
- 12 current middle school teachers form All Together Now teacher team



# The products



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# 1. Middle school Curricula

Learning Resources (8) ☰



**Canoe Design: Past, Present and Future** Lesson Grade: Learning Time: multi-session

— Students will explore why people sailed across the vast Pacific Ocean, how canoes were built, and how the design of single and double hull canoes evolved.

[Open](#)

[Details](#)

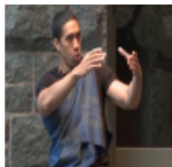


**Picturing the Past** Interactive Grade: 6 7 8 Learning Time: lessthan5minutes

— Scientists reconstruct life in past times using clues uncovered at archaeological sites.

[Open](#)

[Details](#)



**The Legend of Kane'apua** Video Grade: 7 8 Learning Time:

— Kane and Kanaloa, two gods from the mystical land of Kahiki (Tahiti). Many of our stories speak of their travels to Hawai'i creating springs of fresh water to mix into awa, the intoxicating drink of the gods.

[Open](#)

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# 2. Online Learning Center to distribute this curricula and other content

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ONLINE LEARNING CENTER

Filter My Search ↻

Grade ▾ ?

Topic ▾ ?

Resource Type ▾ ?

Learning Time ^ ?

- less than 5 minutes
- 5 - 10 minutes
- 10 - 30 minutes
- 30 - 45 minutes
- 45 - 60 minutes
- 1 - 2 hours
- multi-session

**Hōkūle'a**

Aloha and welcome to the Bishop Museum Online Learning Center.

Are you looking for digital resources in science, technology, engineering, art, math, literacy, or culture? This your one stop shop for all museum educational resources for K-12, higher education and informal education.

Search by keyword or standards below. On your left, filter your search by grade, topic, resource type, learning time, and museum connections. If you have any questions or comments please click on the feedback button on the lower right.



# Integrated middle school field trip program

- Students visit five areas of museum to explore different aspects of voyaging
- Integrates our diverse museum (cultural hall, science center, planetarium, gardens) into coherent experience.



# New immersive planetarium show *The Wayfinders*



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# The Challenges



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# Diversity of interests and priorities: Bishop Museum

- Bishop Museum: not much experience in working in-depth with classroom teachers before this grant
- Museum used to play “Battle of the hunches” for ed programming





# Diversity of interests and priorities: PVS

- **Polynesian Voyaging Society largely a volunteer organization (time constraints, consistency)**
- **Key priority: safely sail a voyaging canoe around the world!**
- **Institutional history**



# Diversity of interests and priorities: Teacher Team

- Teachers scattered across five islands
- Very diverse dozen in terms of technology, STEM comfort, curriculum experience
- Standards uncertainty
- Not used to structure of having specific grant deliverables



# Solutions

- Regular weekend-long meetings of entire team (six in course of grant) including evaluator.
- Regular feedback on all products as they are being developed during these meetings.



# Solutions

- Provide adequate funding for PVS so that, if we ask to film on Hokule'a, we come able to offset the costs of our request
- Contract with one member of PVS to join the grant team



# Solutions

- UH College of Education engaged in more of a leadership role to teachers due to culture/STEM integration skill
- VIP/Museum Affiliate status of teachers; teachers given regular direct access to museum and collections



# Solutions: Evaluation

- “Critical Friend” concept
- Evaluator Doris Ash meets with teachers as a team for feedback, as well as with BM staff, PVS and COE staff; Ash communicates back issues to management team to fine-tune project.



# Solutions: Evaluation

- Feedback from Ash and Meluch, provided as program unfolds, is incorporated into project design.
- Ash's targeting of challenges to website design led to us hiring expert in educational curriculum site development.



# 'Critical Friend' evaluation approach

- Leon Geschwind's hire on contract to design Online Learning Center was a major step, bringing expertise he had honed with NOAA SEA site.
- Doris Ash: "Hire someone to consult on how to best do this before serious design begins. Web presences are notorious time and money sinks."





# Remember that partnerships are hard

Ash: “There are three+ partners in *All Together Now* each of which certain expectations, roles, reward structures, practices, language and core beliefs...



...It is inevitable that there be considerable negotiation of meaning of key ideas. Indeed, one of the intangible deliverables this past year, was operationalizing how these very different organizations can best work together in defining the meaning of key ideas and practices.



# Benefits

- It is invaluable to have teachers providing input into our products every step of their development. End of ‘battle of hunches’
- For telling an important story such as Hokule’a, having buy-in and approval from PVS was vital.
- The Museum does not have curriculum experts; the combination of the teachers and Dr. Chinn was a great solution to this conundrum.



# Institutions

- The vetting of content and usability of online learning center with teachers helps ensure its value to formal education community.
- Constant communication with all partners, one on one and as a full team, is both a challenge and a benefit.





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# Leaders in Science

Funded by:

- United Way Metropolitan Dallas
- ExxonMobil
- Texas Instruments Foundation
- Alliance Data

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# Leaders in Science

Focus of the program:

- Confidence
- Competence
- Consistency
- Creativity

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# History of Leaders in Science

## Year 1

20 campuses

2 intermediate (3-5) teachers on each campus

1 full-time Museum coordinator

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# History of Leaders in Science

## Year 2

Added:

1 primary (K-2) teacher on each campus

1 full-time Museum Coordinator

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# History of Leaders in Science

## Year 3-Present

Moved to a “branched” program

Campus Partnerships - 2

Professional Development Institute

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# History of Leaders in Science

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# Campus Based Partnership

- Summer Institute – 4 days
- 5 Saturday workshops
- Coordinator on campus 3 days/week
- Instructional support
- Observations and feedback
- Kits and resources
- Membership
- Access to online resources
- Access to Museum Education Collections

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# Professional Development Institute

- Attend at least 5 Saturday workshops
- Mentor and share resources on campus
- Access to online resources
- Membership
- Network with fellow LIS teachers

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# Teacher Workshops

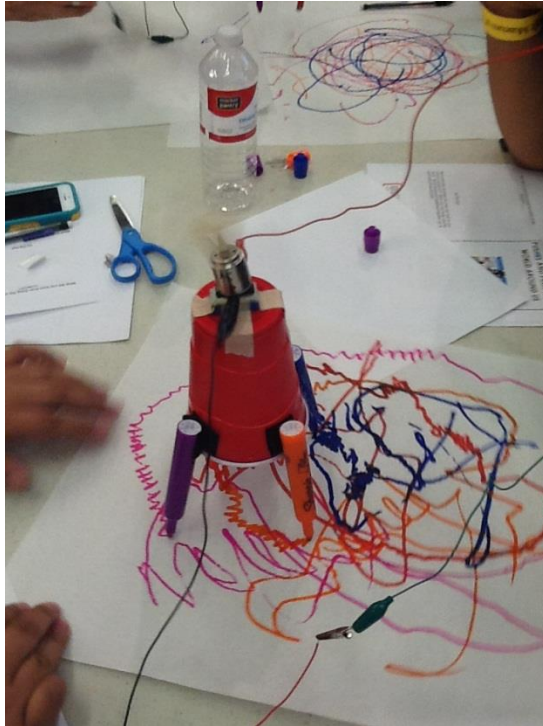
- Workshops aligned to state standards
- Each has a specific theme
- Try to provide teachers with free take away activities
- Allow time for discussion and share outs
- Incorporate Museum exhibits and movies
- Partner with Dallas area Informal Science Centers to provide a wide variety of training

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# Hands On Experiences



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# Informal Science Centers

- Workshops onsite
- Helps to develop a “toolkit” of resources around the DFW area for teachers
- Opens doors to outdoor learning
- Helps build content knowledge and confidence in specific science topics

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# Science Day at the Dallas Zoo



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# Trinity River Audubon Center



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# Coordinators in the Classroom

- TEKS-aligned lessons created by Coordinators
- Model lessons for teachers
- Focus on specific needs of campus and/or teacher
- Hands-on, inquiry focused

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# Classroom Explorations



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# Science Nights

- Coordinators plan and run
- Integrate museum programming
- Focus on campus instructional topic needs
- Increases family involvement
- Helps parents feel more comfortable with science related topics at home

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# Science Nights



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# Evaluation as Learning

LIS exists to advance and support teachers' *competence, confidence, creativity and consistency.*

Tools for measuring progress include:

- Staff reflections and documentation
- Teacher surveys: efficacy, attitudes/mindset, knowledge
- Teacher use of resources (e.g., time, journals and museum)
- Student surveys: knowledge, future aspirations
- Student diagnostic assessment
- Classroom observations and coaching sessions

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# Quality Teaching and Learning

- Climate that supports learning
- Engagement and investment in learning
- Classroom dialogue and sharing
- Skills, techniques, and knowledge of the discipline
- Creative choices
- Expectations, assessment, and recognition

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# The Challenges

- High teacher/administrator turn over
- Campus buy in
- Space
- Student outcomes
- Scalability
- Limited to grades K-6
- Oh...and...we opened a new Museum during the 3<sup>rd</sup> year of the program

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# The Benefits

- Increase in science content specific teacher CPE credit
- Access to materials and resources not available on campus
- Developing mentor teachers
- Teachers interacting with Museum more  
Volunteering  
Development of Museum-wide materials

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# The Future

- STEM Teacher Institute (funded in part by Institute of Museum and Library Services)
  - K-12 grade teachers and pre-service teachers
  - Summer Academies
    - Pre-Service Teachers
    - New Teachers
    - Advanced
    - Mentor

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# Contact Information

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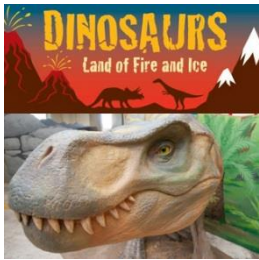
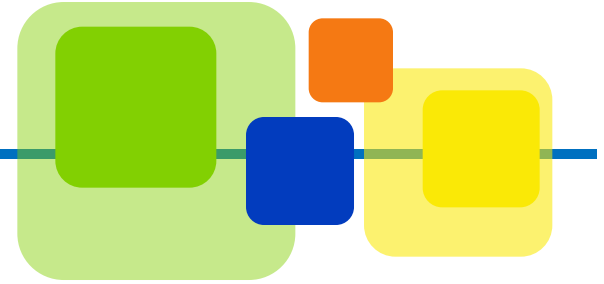




## About our museum

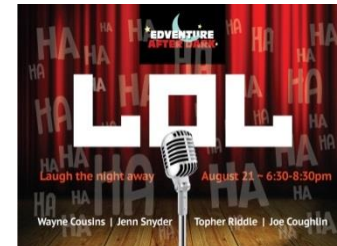
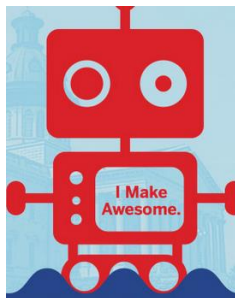
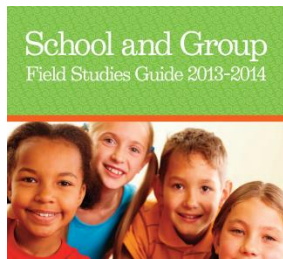
- Since opening in 2003, EdVenture has welcomed more than two million visitors from all 50 states and over twenty countries.
- Our mission is “to inspire children, youth, and the adults who care for them, to experience the joy of learning.”
- We’re more than a destination.



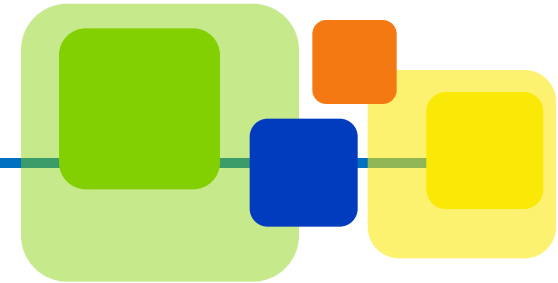


**EARLY CHILDHOOD PROGRAMS**  
For Our Youngest  
Visitors and  
Their Families

**Yes, Every Child!**





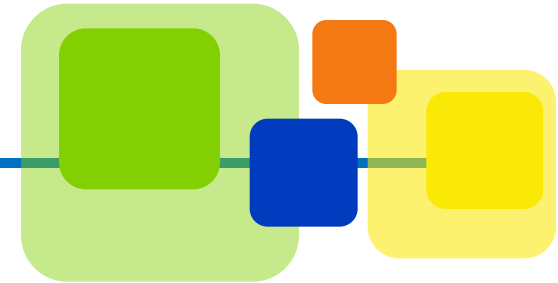


- **Our signature professional development experience for teachers**
- **Support from professors from**
  - **University of South Carolina**
  - **Columbia College**
- **Building content knowledge**
- **Supporting the state academic standards**

*The experiences are designed to build teachers' confidence about science and mathematics and cultivate their students' curiosity*

# STEM Conversations

*Making Connections*



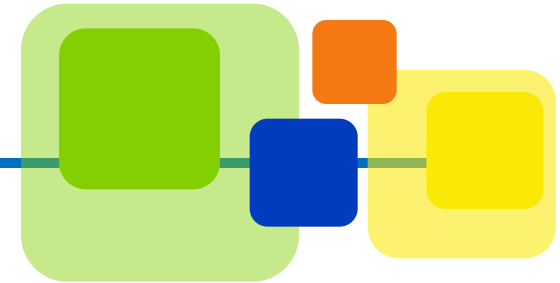
- Evening events that doubled as teacher professional development opportunities
- Support from professors from
  - University of South Carolina' School of Engineering
  - Midlands Technical College





# Family Nights

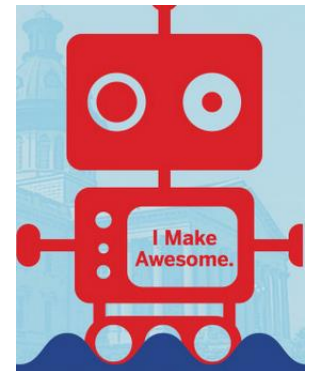
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- **Second Tuesday of each month**
- **Yes, Every Child**
- **Family admission price of \$1/member**

**Support from professors from**

- **University of South Carolina's  
College of Engineering**
- **Maker Education**



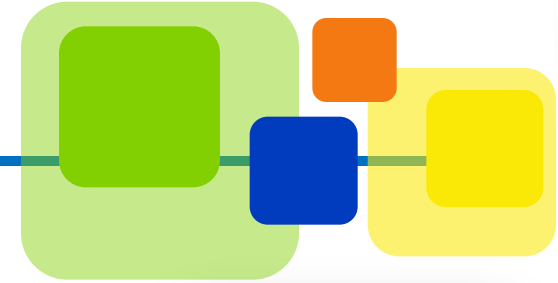
# Growing and Strengthening Higher Education Partnerships



- Support with volunteers, service projects, and internship opportunities
- Arnold School of Public Health
- NASA Grant – exhibit design and fabrication, professional development opportunities for teachers
- Support from professors from
  - Claflin University
  - Columbia College
  - Benedict College



## For More Information



Visit [www.edventure.org](http://www.edventure.org)



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