Ka Hana ‘Imi Na‘auao: A Science Curriculum Project
University of Hawai‘i – Center on Disability Studies

Ka Hana ‘Imi Na‘auao is a science curriculum project designed to create a culturally responsive curriculum for Hawaiian students in grades 11-12 by integrating the scientific knowledge of ancient Hawaiians and technological advances of today.

Hana: To work, labor, do, prepare, develop
Hana is such an important part of Hawaiian culture. This importance is demonstrated time and time again in the ‘ōlelo no‘eau or wise sayings of Hawaiians. One such saying is, “Aia ke ola i ka hana,” which means “There is life in work/doing.” Work, in old Hawaiian life, is how you fed and took care of your family. If you did not go out into the gardens to tend your crops or go to the ocean to fish, you did not eat. Another saying, “Ma ka hana ka ‘ike” – which means “In the work/doing is knowledge”– shows that work is not only a source for subsistence, but a source of knowledge as well.

‘Imi: To look, hunt, search, seek
‘Imi is so much more than looking or searching with your eyes. It is the searching with your heart and spirit that makes it so important to Hawaiians. In this case the process is as important as the end result or the ideal for which you seek.

Na‘auao: Learning, knowledge, wisdom, science
“Na‘auao combines na‘au, mind (which in Hawaiian symbolism also means intestines, or better, “guts,” and represents the pit from which emerges human emotion and thoughts), and ao, or daylight. Literally, it means the daylight mind, or more appropriately, the enlightened mind.”
- Dr. George Kanahele

These three powerful words put together – hana ‘imi na‘auao – is one of the Hawaiian words for “science.” Science, to Hawaiians, was a way of life. It’s no wonder they were great scientists. Long before the Western world ventured beyond the horizon, Hawaiians skillfully traversed the Pacific Ocean, built aqueduct systems that continue to amaze modern engineers, and had preventative health systems, as well as comprehensive knowledge of medicinal plants (including antivirals) which only now are working their way through trials for use in modern pharmacopeia. But, for some reason, our children today have become disconnected from this “science” and way of life and it is our hope to reconnect our children through this curriculum project.
What is it?

"Ka Hana 'Imi Na'auao" (pronounced: kah HAH-nah EEmee NAH-ow-WOW) is a science curriculum project designed to create a culturally responsive curriculum for Hawaiian students in grades 11-12 by integrating the scientific knowledge of ancient Hawaiians and technological advances of today.

The curriculum will look at different science specializations and try to capture the interests of Hawaiian students and enable them to pursue careers in science related fields.

"Hana" is a very important part of Hawaiian life and it will also be a very important part of this project. "Ma ka hana ka 'ike" means knowledge is in the doing. This curriculum will be very hands-on, where students gain knowledge through doing the things that are important within each specialized field.

"'Imi" is another important part of Hawaiian life and will for this curriculum as well. The curriculum will be inquiry based where students start to explore their interests in the different fields.

"Na'auao" is knowledge or enlightenment, which is what we want our students to obtain through this project. Our hope is that our students will become more enlightened and see science as a natural part of life.

Who gives input?

Kūpuna (respected elders), Hawaiian cultural experts and families …will serve as the guiding light for the curriculum. Their knowledge of traditions will help to keep the curriculum grounded in culture and Hawaiian ways. Some questions kūpuna, Hawaiian cultural experts and families will help address are:

- What types of skills or knowledge had to be obtained for one to be considered an expert in a particular field?
- How was the knowledge or skills obtained? Who taught these skills or provided the means to gain this knowledge?
- What kind of teaching style was used so that apprentices were able to gain this knowledge?
- Who might be considered an expert who we may be able to contact? Who are the renowned experts whose knowledge can be incorporated into the curriculum?
- Besides the necessary knowledge, what other things are important for students to know about Hawaiians as scientists?
- What content is important for our students to learn?
Researchers and academic experts … will be involved with gathering the data and developing the curriculum. Some questions researchers and academic experts will help to address are:

- What types of sciences are offered for 11th and 12th grade students?
- Why are Hawaiian students underrepresented in the science, math, technology and engineering fields?
- How do we make science interesting for Hawaiian students?
- What kinds of skills or knowledge will these students need in order to excel in college level science courses?
- How do we bridge the gap between traditional and modern science?
- What content is important for our students to learn?

Employers … will help to provide information about the skills they look for when hiring people in different fields. They will also be a network source for future employment, internships, or career shadowing. Some questions employers will help to address are:

- What kinds of skills, knowledge, or experiences are sought when hiring?
- What are some tips for students who are thinking about pursuing a career in a specific science field?
- Are there any science career resources you think are important for students to know about?
- What content is important for our students to learn?

Native Hawaiian role models … will help to provide their thoughts about their experiences in pursuing careers in a science related fields. They will also serve as mentors. Some questions Native Hawaiian role models will help to address are:

- How did you become interested in pursuing a career in a science related field?
- What are some tips you have for others who are interested in pursuing a career in a science related field?
- What kinds of things do you do in your field?
- What’s a typical day for you?
- What’s not so typical, but is a guaranteed occurrence that you have to deal with in your field?
- What content is important for our students to learn?

What is the goal of the curriculum?

The ultimate goal of the Ka Hana ‘Imi Na‘auao Project is to increase the number of Native Hawaiian adults in science-related postsecondary education and employment fields. This will be accomplished through development and implementation of a culturally responsive high school science curriculum and resource package. The curriculum will be infused with math, literacy and technology readiness skills. The purpose is to link Native Hawaiian students’ high school experiences with their entrance into college science-related programs of study. In addition, participating grade 12 students will be assisted in the transition from secondary to postsecondary education by
planned project activities. It is anticipated that project participants will enroll in science-related college courses in greater numbers than non-participants. The proposed researchers believe that through the provision of a culturally responsive science curriculum, which addresses math, literacy, and technology, student skills will improve to the point where they can enter postsecondary education without having to take science remedial courses in college. It is also believed that student participants will enter science fields in college and ultimately careers at a higher rate than non-participants.

**When is it happening?**
This US DOE project is funded from October 1, 2005 to September 30, 2008. Development begins in July, 2006 in select Hawai‘i state public and charter schools and Field-Testing will be conducted no earlier than January, 2007 and run to the end of the school year in June of 2008. Dissemination of the curriculum products and results of project research is expected in 2008, also.

**Who to contact to take part in this new project:**

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