2009 Program Curriculum

If students ever wondered what in the world do mechanical or electrical engineers do? Their participation in the Engineering Workshops exposed students to the exciting world of engineering and science fields. Students learned fundamental thermodynamic principals of hot and cold by cooking hot dogs and making ice cream. Students had an opportunity to program LEGO robots, through a graphical interface and program a sequence of commands for the robots to follow. In the electrical engineering class, students used electrical bread boards to create digital circuits that turned LED lights on and off to reveal the truth tables of the digital logic gates and create electronic counters connected to a push button. The engineering modules were led by Jacob Spring, Jhana Gorman and Ken Keahbone.

In partnership with Junior Achievement of New Mexico, Dream Catchers offered a course in Business and Economics where students learned about fixed, periodic and variable expenditures; credit and how to “budget” family expenses based on a fixed monthly income -- an effective way for students to “see” how parents divvy up hard earned dollars towards taxes, bills, mortgage, and unexpected expenses! The business class was led by Deborah Dominguez with the assistance of Martina Padilla & Tricia Toya. Returning for its third year in Dream Catchers, Junior Achievement was again well received by the students and their parents.

A new and exciting class this year was the Math Workshop. If students were intimidated by mathematical concepts, this course utilized a 10-step approach to solving math word problems and provided great insights to students to view math as a “second language.” This course was led by Professor Vadee from the Southwestern Indian Polytechnic Institute definitely assisted students, and parents, to take the mystery out of mathematics.

Back by popular demand and loaded with experiments, hands-on lessons, and interactions with renewable energy researchers, students learned about environmentally clean technologies in the Renewable Energy class. The class also exposed students to current renewable energy technologies that are available to American Indian Tribes so that they can develop their own natural resources. Other topics also included how to conserve energy, generate energy and how to use solar power to bake cookies. Sandra Begay-Campbell served as class lead with the assistance of the following team members: Terry Battiest, Gary Vaughn (NMSEA), & Gepetta Billie.

Other volunteers for the program included Karen McDaniel, Ben Mar, Mike Arviso, Fawn Turner, Marie Brown, Jeannie Bekaye, Gloria Goldtooth, Beverly Manuelito, Linda Daillebouost, Curtis Keliiaa, Laurence Brown, Pete Sholander, Ernie Correa, Nan Butler, Yvonne Batchelor, James Brainard, Beth Richards, Marissa Reno. Volunteers from community businesses and organizations such as DOE, Presbyterian, IHS to also helped with the program. Thank you all for your support.

Photography provided by Curtis Keliiaa & Laurence Brown.
Dream Catcher Science Program
http://dreamcatchers.sandia.gov
2009 Program Summary

Program Demographics
This year we had 114 students enrolled into the program. A 22% increase in the numbers from 2008.

Gender and race representation:
- 50% Female and 50% male
- 70% Self-identified as American Indian
- 30% Non-American Indian (Hispanic, Black, Asian or Other)

Student & school representation:
- 30% High school students
- 68% Middle school students
- 3% Home schooled

Sandia and Community Support
- 27 Sandia Volunteers,
- 23 Community Volunteers

Program Feedback
Each year we poll students, instructors, volunteers and parents for feedback about the science program and solicit suggestions from them to assist us in designing the 2010 curriculum. Our survey showed:

- Participants enjoyed the hands-on activities and guest speakers
- Program time duration was sufficient
- Numerous participants had “fun” in the program
- Retain business and economics courses
- Course suggestions offered for 2010: Robotics, Physics, Computer Discovery, Chemistry, Construction, SAT/ACT, Biology, Solar Energy, How to solve a world problem issue, Cooking, Sports, Medicine Science, and how to conduct research.

1st Annual Student Conference
Dream Catcher held its first annual Student Conference where students and parents could meet with employers, colleges and nonprofit organizations to learn about employment opportunities, what it takes to prepare and plan for college, internship opportunities, scholarship opportunities, and various college programs geared towards minority students. While the parents were busy talking with colleges and employers, the students occupied their time learning about several cool demonstrations on display and provided by American Indian professionals at Sandia. Demonstrations provided by the Super Computing Challenge, the American Vacuum Society and a Water Resource modeling demo from SNL were a few of the hands on demos at the conference. Students were tasked with asking six questions to each exhibitor. The six questions were: 1) what did you learn from the exhibitor? 2) Why was the exhibitor doing what they were doing? 3) What was the fundamental principal of the demo? 4) What type of degree was necessary to do the work? 5) What were the educational requirements for the employer you visited? 6) what was required to be admitted into the various colleges? Each student’s complete and legible written response was entered into a drawing for an iPod shuffle, Hasting gift card, or Cliffs Amusement Park Tickets for two. Networking and seeing the various demonstrations made for engaged and lively discussions between students, parents and American Indian professionals. Conference exhibitors included representatives from: Sandia Labs, New Mexico State University, the American Vacuum Society, Project GUTS—Supercomputing Challenge, Central New Mexico Community College, New Mexico Tech, the American Indian Science and Engineering Society, MATI from Mescalero, NM, and former Dream Catcher student, Rosemary Reano as a special Guest Speaker from New Mexico State University and who is currently studying Environmental Science. Student feedback regarding the Conference was overwhelmingly positive and great enthusiasm to host it again in 2010!

Thank you everyone for your support and contributions to this year’s Science Program—Karen McDaniel (02991) 2009 Program Coordinator.