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## Kids get a left-brain workout

Camps use Lego robots to teach youths science and engineering skills

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Naomi Oki, 10, builds a boat out of Legos. She later timed the boat's movements in a tub of water and observed where any improvements were needed. More than 100 kids are taking part in the Kids on Campus program at the University of Hawai'i-Manoa

More than 100 kids ages 10 to 13 are taking part in a new summer program at the University of Hawai'i intended to interest them in science, technology, engineering and mathematics, or STEM subjects.

The Kids on Campus program is part of Gov. Linda Lingle's initiative to expand STEM education in Hawai'i, said Kari Nettel, an education specialist at the Hawaii Center for Advanced Communications, part of the UH College of Engineering.

Two one-week sessions with 50 students each from more than 15 elementary and middle schools on O'ahu are led by mentors from the three sponsoring programs. Students are taught scientific methods and engineering skills as well as programming, hydrodynamics and robotics.

By catching students at the right time — when they're not too young or too old —they will be more likely to continue their learning, said Magdy Iskander, director of the Hawaii Center for Advanced Communications.

Yesterday, students were paired up and engaged in hands-on activities, programming robots, testing them in a tank of water and making adjustments to their vehicles. Classes are taught in two rooms in Campus Center at UH-Manoa.

Students said they were having fun building with Legos and completing problem-solving tasks.

"We've been learning how to put robots together and make them do certain tasks," said Starr Rivera, 11, who plans to attend UH when she graduates from high school. "Today, we made boats and learned about buoyancy and density."

After some initial introduction to concepts, the kids began by making cars or land robots. Yesterday, they moved to designing boats using Lego Mind Storm kits and micro-computers, said Ryan Smith, co-director of Kids on Campus and a doctoral candidate in the mathematics and ocean and resources engineering departments at UH.

Students had to time how long it took their robot to go across a glass tank of water and calculate the velocity to understand how long it takes for it to turn around and do simple maneuvers.

Today, students will transform their boats into submarines programmed to perform tasks such as going into a box and picking up rings. As a final task, students will race land vehicles in a competition and have an award ceremony tomorrow.

To program their robots, students have access to two laptops with a program included in the kits that they share with their partner.

"It's all with drag-and-drop pictures connected by these little wires, so it's very easy," said Smith, who works side-by-side with students.

Instead of using complex codes, students pick pictures like a green light, red light or stop sign to represent the action they want their robot to do.

Tchevette Martinez, 10, said he likes building with Legos, while Samuel Arcalas, 11, said he enjoys the challenges of the tasks.

Kids on Campus is part of the Research Experience for Teachers program at HCAC. The program strives to "enable and empower" teachers by finding out what they need to stimulate interest, Iskander said.

After finding out that teachers had the curriculum — but not enough money — for a STEM camp, HCAC stepped in and took several months to coordinate Kids on Campus. The program hopes to boost economic development in Hawai'i by educating the future of the labor force.

Students paid \$25 to enroll in the camps, a cost that was kept low to ensure that no child was excluded from the program, organizers said.

Organizers and mentors were pleased with the results and response from students and parents of the first Kids on Campus.

"This event has had such a great result," Nettel said. "I imagine we will want to provide more camps in the future if funding is available."

## ABOUT THE PROGRAM

Future Kids on Campus programs have not been planned yet. Anyone interested can contact Kari Nettel at 956-4026 or e-mail [nettel@hawaii.edu](mailto:nettel@hawaii.edu) to be placed on a mailing list for updates.

## LEARN MORE

The camps were offered through a collaborative effort of three organizations:

**HCAC:** Hawaii Center for Advanced Communications, a part of the UH College of Engineering, specializes in multi-disciplinary research in telecommunications technology. [www.hcac.hawaii.edu](http://www.hcac.hawaii.edu).

**STOMP:** Student Teacher Outreach Mentor Program, under the UH department of mathematics, was created to give children a hands-on learning opportunity in underwater autonomous robotics. [www.stomphawaii.com](http://www.stomphawaii.com).

**PID:** Partners in Development Foundation, an independent founder and implementer of outreach programs to assist residents and communities with education, economic development, environmental issues and community health. [www.pidfoundation.org](http://www.pidfoundation.org).