

## The power of partnerships

Nov. 12, 2014

### Laura Dillon helps bring technology skills to young Rwandan women

Laura Dillon envisions a workforce with more women in information technology and engineering careers. Her work with Women in Computing as well as other outreach programs both on campus and nationally has influenced many young women now working in technology fields. This summer Dillon, a computer science and engineering professor, was presented with an opportunity to expand that vision to Rwanda, an African country where many young women have

“One of our CSE alumni, Louise Hemond-Wilson (Computer Science, 1986), a Distinguished Engineer with IBM, was consulting in Rwanda when she came up with the idea of a computer technology camp for young Rwandan women,” explained Dillon. “Louise has always been supportive of my work, especially with Women in Computing, so she got me and a second executive consultant at IBM, Celest Metuassalol, involved in this project. Although it was hard work, it also was a fulfilling and enlightening experience, and I think we made an impact on more than 50 young female students and 12 teachers.”

The project, called Camp Techkobwa, was made possible by a four-way collaboration: MSU had the expertise to design and deliver the robotics and computing curriculum; Hemond-Wilson and Metuassalol helped build and teach IT and teaming modules; the U. S. Peace Corps in Rwanda had on-the-ground experience; and the Ministry of Youth and Information Technology in Rwanda cooperated and helped with transportation. Personnel at the U.S. Embassy in Kigali, the capitol of Rwanda, also assisted with the project.

“Having this broad-based partnership was what made it all possible—we certainly could not have done it without the Peace Corps doing the legwork on the ground to contact the right people to set up and run the camp,” said Dillon.

The camp was specifically for teachers and female high school students. Fifty-seven girls, ranging in age from 11 to 20, and 12 teachers, all from remote areas of Rwanda, were brought to the camp, which was held at St. Jerome School in Janja, the country's top boarding school. little or no exposure to technology.

The 12 teachers spent five days prior to the start of the camp in training sessions with Dillon and her partners learning the curriculum. Then the girls arrived for six days of activities and learning sessions. The program included lessons on the fundamentals of robotics, basic algorithms, programming in Scratch, logical reasoning and visualization skills, internet and internet safety, oral and written communications, and experience in working in teams.

“The robotics unit was, of course, one of the most popular units,” Dillon said. “We brought robotics kits with us, which we left with the Peace Corps in Rwanda for ‘road shows’ and demonstrations as examples of what can be done with technology.”

There were many obstacles in teaching the curriculum. The first thing the group discovered is that many teachers could not use the provided Power Point presentations at their respective schools because their schools did not own LCD projectors. In addition, Internet conductivity at the camp was limited and completely absent from many of the teachers' schools.

“So we improvised,” said Dillon. “We used blackboards and flip charts for ‘CS Unplugged’ activities that teach computer concepts—like how a computer represents information in binary and what is an algorithm—without a computer or overhead projector. These were all new topics for the students.”

An important part of the project, according to Dillon, was working with the teachers. She hopes that there will be a long-

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term impact, because the teachers not only learned the various parts of the curriculum, but also practiced delivering it to students with help from camp organizers. All the materials used were sent home with the teachers, so they could

Two College of Engineering students with experience in outreach also went with the group to Rwanda. Blair Fleet, a doctoral student in electrical engineering, and James Holly Jr., who graduated in May with a BS in computer science and engineering and is now a graduate student at Purdue, primarily taught the robotics units, but their skills in reaching out to American students helped with the work in Rwanda. Two other volunteers from the U. S., Emily Wilson, a 2014 MSU professional writing graduate and recycling coordinator with MSU's Office of Sustainability, and Anna Jarman, a 2014 Carlton College graduate with a degree in African women's empowerment, created and taught the modules on building self-esteem focused on improving oral and written communication skills.

Some students knew English, but some were challenged. Materials were in English and Kinyarwanda, the official language of Rwanda. "The teachers served as translators, when needed, but the government wanted us to teach in English, because English is the official language of instruction in Rwanda, a recent switch from French," said Dillon.

In addition to the computer technology skills, the program encouraged the students to find their voice and be more assertive and confident in expressing their own opinions through a life skills module, consisting of a series of lessons designed by Wilson and Jarman. Jarman used her undergraduate research and capstone experiences focused on African women in Sierra Leone and Rwanda to guide development of the module. Students were challenged to think about world problems and then met in groups and picked topics to discuss, research, propose how technology could help address the problem and present their findings and ideas.

"Rwanda is putting a lot of national resources into building technology infrastructure across the country, even in remote areas," said Dillon. "So programs like ours could be very useful in getting people, especially young people, to use the technology."



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