



South China University of Technology provides training, national contest based on local needs

About the organization

- <http://en.scut.edu.cn>
- Multidisciplinary university focused on engineering, science, management, economics, humanities and law

What they wanted to do

- Encourage teachers to use project-based app development to teach CS concepts
- Educate a cohort of trainers who could then train teachers in their local regions

What they did

- Developed master trainer workshop on App Inventor for trainers from 23 institutions
- Created national App Inventor contest for students that received more than 3,000 submissions from over 300 schools

What they accomplished

- Showed 81 trainers and over 170 teachers the value of project-based CS lessons
- Helped teachers reach over 500 students on common ground, such as creating apps for the mobile devices they use every day
- Gained over 1.6 million users on the App Inventor Guangzhou server, who created more than 573,000 projects

Challenge

Mobile devices are more common in China than desktop computers or laptops. Dr. Yue Li, an instructor at South China University of Technology in Guangzhou, China, is passionate about using mobile apps to teach students the power of CS. “Your mobile phone is more powerful than a supercomputer was 30 years ago,” says Li.

What many high school children were missing in China, Li believed, was an understanding of the link between their phones and computational thinking in daily life. Lectures on CS wouldn’t be enough to give students the skills they needed – the concepts had to be tested and understood through project-based learning.

Li saw the answer in [MIT App Inventor](#), an online tool for creating apps using drag-and-drop building blocks. After establishing a stand-alone server for App Inventor in Guangzhou, so that users in China could access the tool, Li needed to help teachers learn how to use the technology with students and create new lesson plans. “Most teaching material about CS comes from Western countries – but we need Chinese material,” says Weiguang Gao, an information technology teacher at Guangzhou Baiyun Middle School.

“When students learn how to create applications for their own phones, they become more confident in their future.”

– Dr. Yue Li, instructor at South China University of Technology

Solution

To give teachers a deeper understanding of App Inventor, Li applied for funding from Google’s [CS4HS program](#). The funding covered the development of a four-day master training workshop at South China University of Technology, in which teachers would learn to train other teachers to teach CS through App Inventor.

The funding also helped Li and the university co-organize a nationwide App Inventor contest for students with Google China. The contest encourages primary, middle, and high school students to learn computational thinking by developing Android applications using App



Student competitors in the App Inventor contest showcase their submissions.

Google CS4HS

CS4HS funding enables computer science education experts to provide exemplary CS professional development for teachers. The funding focuses on three major growth areas for teacher professional development in computer science:

1. Facilitating the development and delivery of content that increases teachers' knowledge of computer science and computational thinking
2. Allowing educators to customize learning content to meet local needs and share best practices for engaging all students
3. Building of communities of practice that continue to support teacher learning throughout the school year

For more information on CS Professional Development, visit www.cs4hs.com and join our [G+ Community](#).

Inventor. In 2015 and 2016, the competition attracted over 3,000 [entries](#), including apps such as a mobile eye exam chart, a calculator, and a biology study aid.

The workshop was attended by trainers from 23 institutions from across China. Hal Abelson, a professor at Massachusetts Institute of Technology and the creator of App Inventor, consulted with Li. Teaching the basics of app development, Abelson says, can highlight CS concepts more quickly than a standard lecture. “We like to talk about ‘apps that matter,’” Abelson says. “Students can build apps that make a difference, not only for themselves, but for their community and their country.”

Benefits

App development allows teachers to meet students on common ground

Since mobile devices figure prominently in students’ lives, says Li, teachers who build lessons around app development generate greater enthusiasm from students – and at the same time, ensure that students learn CS. “When students learn how to create applications for their own phones, they become more confident in their future,” Li says.

Hands-on teaching helps trainers and students learn more quickly

For time-strapped teachers like Weiguang Gao, getting the chance to create their own apps during the workshop offered a solid grounding in app development and project-based learning. “My students don’t have lessons on information technology every day,” he explains. “With project-based learning, students can see results of their lessons in just one class.”

Master training spreads the benefits of workshops to more teachers

A single master trainer workshop, Abelson explains, can deliver trained instructors to dozens of universities, generating an exponential increase in teacher expertise and student engagement in CS. “Everyone experiences mobile apps from the consumer standpoint – but with these workshops, apps suddenly become a way for teachers and students to become expressive,” Abelson says.



Winning students and their parents, teachers celebrate the end of the App Inventor 2016 contest.