YAN CHAI HOSPITAL LAW CHAN CHOR SI COLLEGE

Promoting Coding through Rasperry Pi Smart Home System

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Raspberry Pi is a credit-card sized, highly functional, single-board computer which can be used in electronics projects. We organised an after-school programme about Rasperry Pi smart home system in 2016-2017. In the workshops, students learnt how to configure a Rasperry Pi computer, set up a web server, Python and PHP programming, connect sensors, motors and etc. After learning these skills, students applied the knowledge to build a smart home system in which owners can monitor their home settings through webpage anytime, anywhere.

Apart from learning how to create a smart home system, students were given a scenario and asked to apply what they had previously learnt and solve problems. For instance, during debugging, they learnt to identify the problems of the scenario, find resources, work with their peers and solve the problems step by step. It not only developed students' problem solving skills, but it also develop their communication and co-operation skills.

Thanks to the funding granted by OGCIO IT Enriched Programme, it covered most of the cost of the hardware, software and the fee of training materials. Besides, since our school had jointed Pullout Program for gifted secondary school students organized by EDB Gifted Education Section in 2015-2016, our school was equipped with the teaching materials and some trained students. Through the scheme, teaching materials and helpers are employed to teach App Inventor and Arduino in interest classes. These have built a group of students with solid foundation of coding and STEM for this Rasperry Pi smart home course.

As a computer teacher in this school, I can feel the excitement and interest of students in these programmes. Instead of simply writing programs for some created scenarios, students were so excited to build their own systems with the use of Rasperry Pi and Arduino to solve real-life problems. They were so eager to test it out and make the system practical in our daily life. I can feel their passion and enthusiasm in their eyes.

Rasperry Pi and Arduino are advanced, affordable tools for students to learn coding and STEM. As they are compatible to a lot of of sensors and motors, students can create their inventions without the constraints of flexibility. However, it might be a little bit difficult for teachers to pick up and create training materials, so I recommend teachers interested to join some schemes beforehand, to get extra funding and teaching materials to help the kick off.

Completed Smart Home System

Installing heat radiator

Fire detector

Student assembling his Rasperry Pi Computer

Installing the Operating System

Testing the camera

EDB Gifted Education Interflow and Exhibition

Students just finished their presentation

Testing their app and car

Students introducing their works in EDB Gifted Education Interflow and Exhibition

Students learning Arduino

EDB Gifted Education Interflow and Exhibition

Testing rainfall

School Website:

E-learning facebook: