STEM Education: Frequency-controlled Car

IMPORTANT DAYS

9 Feb: Meet with Prof. Yeung and Prof. Lee
13 April: Finish the prototype
16 April: First meeting with Robo Workshop
23 April: Rehearsal at Robo Workshop
4 May: Workshop for secondary students

EXPECTED OUTCOMES

1. Understand the basic knowledge of making an electronic product and an mobile App
Evidence: Students made modification according to their own preferences.
2. Cultivate students' creativity, scientific thinking, problem-solving skills and collaborative skills.
Evidence: Students could cooperate to debug when something did not work.

DELIVERABLES

Technological Artefacts:

1. An frequency detector App
2. An Arduino car materials set
3. MIT App inventor platform
4. A notebook + an Android tablet

Workshop plan (90 mins workshop):

5 mins: Greeting + Introduction
50 mins: 3-4 students in a group.
1-2 student(s) focus on programming and
2 students focus on constructing the car
30 mins: Testing and Debugging
5 mins: Wrap-up

Teaching Resources:

Guiding worksheet (Graphical instruction with few words).

REFLECTIONS

1. Get hands-on experiences about making Arduino car and designing Android App
2. Understand more about the difficulties when organizing technology workshops for students

DIFFICULTIES AND RECOMMENDATIONS

1. Students made careless mistakes when assembling the car and writing the Apps
Improvement: Implement check points (Very useful!)
2. Not all students can successfully build the car by themselves
Improvement: Provide video guides on top of graphic guideline and a tutor per group

We wish to hold more workshops with these improvements in the future!

Our students acquired knowledge on sound frequency and tried to measure the frequencies of their voices. They also got hands-on experience in making Arduino frequency-controlled cars and writing Android Apps.