STEM Education across the APRU Network: Create Inclusive Learning Environments for Students

The Hong Kong University of Science and Technology
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In an embedded system course:

- Peer-discussion on project proposal
- Inspiring stories
- In-class Q&A
- Laboratory experiments

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Q1: You are asked to complete the circuit for measuring the time the length of events. Finally, a timer has two different modes: Timer Mode and Counter Mode. Which of the following setting is correct?

- Option 1: Timer Mode, Timer Mode
- Option 2: Timer Mode, Counter Mode
- Option 3: Counter Mode, Timer Mode
- Option 4: Counter Mode, Counter Mode

Q2: Follow the previous question, the T1_TO2 of Timer 2 is connected to:

- Option 1: Counter Register of Timer 1
- Option 2: TMR of Timer 1
- Option 3: Counter Register of Timer 2
- Option 4: TMR of Timer 2

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- After completing the laboratory experiments, you are able to integrate...
STEAM Tutor Team

Before COVID-19

During COVID-19
Online (STEM@home video)
HKUST Robotics Team

A family of ...
Creativity
Knowledge
Hands-on experience
Problem Solving Skills
Teamwork
Research
Ripples go beyond the competitions

- Presentation competitions
  - Technical
  - Business
  - Entrepreneur

- Capstone Design Projects
  - Final Year Projects
  - Hobbies / Makers
  - Research projects

- Teaching and learning
  - Junior Mentoring scheme
  - Robotics x Community

- Reaching out
  - Friendship-exchange programs
  - Public exhibitions

30 students provide 5200+ volunteering service hours
In Feb 2020, everything online, social distancing…

Robotic Competitions

Presentation competitions
  - Technical
  - Business
  - Entrepreneur

Capstone Design Projects
  - Final Year Projects
  - Hobbies / Makers
  - Research projects

Teaching and Learning
  - Junior Mentoring scheme
  - Robotics x Community

Reaching out
  - Friendship-exchange programs
  - Public exhibitions

Postponed / Cancelled?

First Challenge:
What could they do?
In Feb 2020, they decided to take any opportunities. Started their learning journey with the theme: Unstoppable.

https://www.youtube.com/watch?v=Yly2gx4dafc
In Apr 2020, the COVID-19 pandemic ......

- Another challenge: STEM activities for youth and children.

  Senior members started some new ideas – video streaming and making

Facebook Live
- STEAM learning session: Underwater Robotics

Short Videos
- related to automobile and Engineering
In Jun 2020, the COVID-19 pandemic ..... 

Third challenge: STEM activities for HKUST students, youth and children. 
Another new idea – design STEM Workshops with staff and training other UG students

Online Workshop on Climbing Robots
Online Workshop on Electricity

Apr 2021 
Easy Robotics@Home Workshop
In Sep 2020, the COVID-19 pandemic ......

Fourth challenge: Design remote STEM workshops with technical challenges

Underwater Robot Remote Driving Workshop for Families