

Flipped Online Laboratory for Making the Students' First Robot

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How can we conduct Hands-on training under COVID 19?

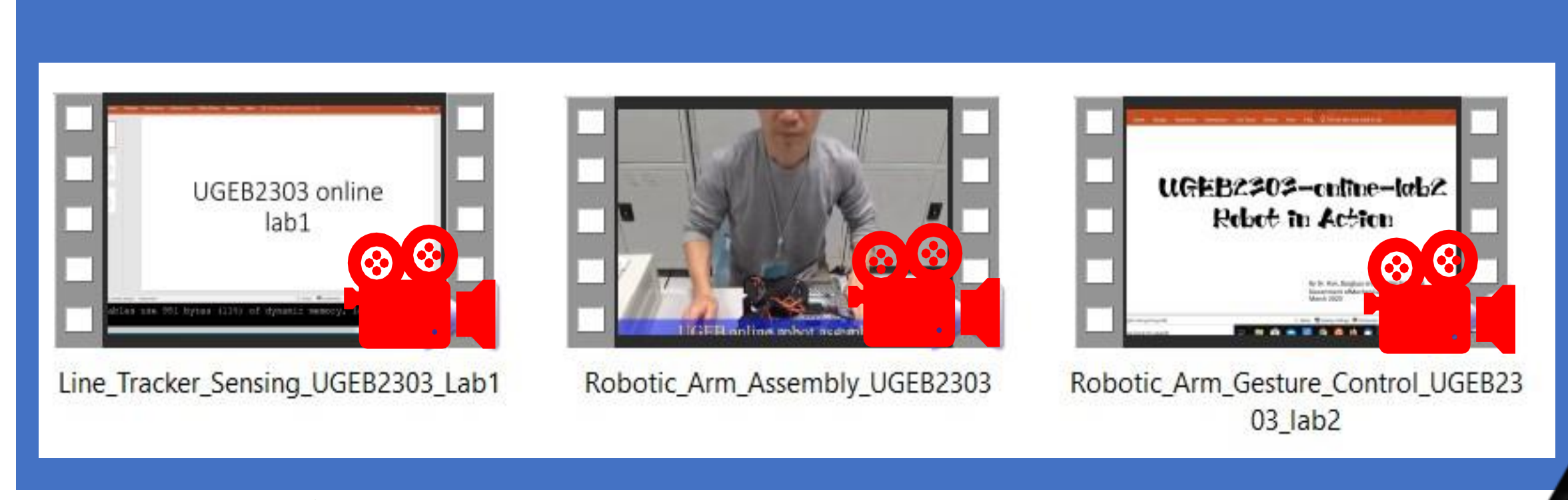
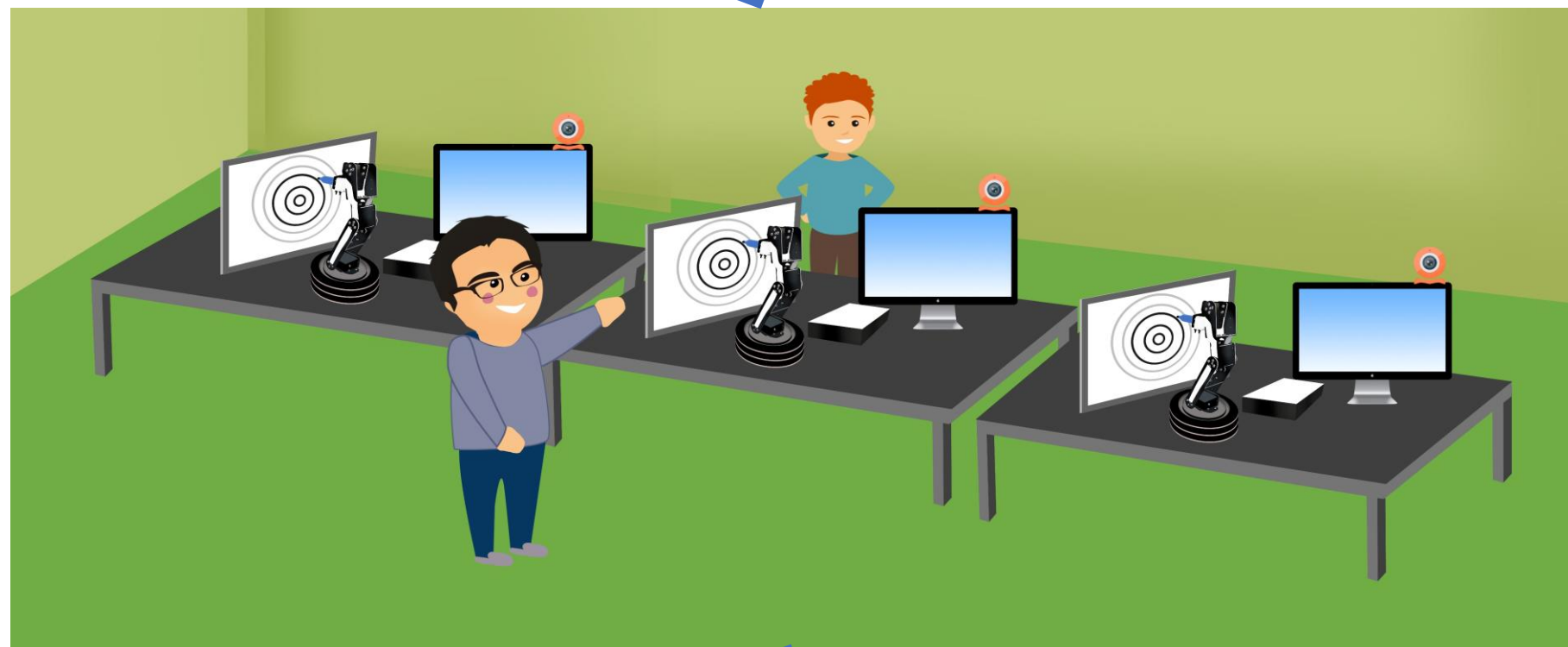
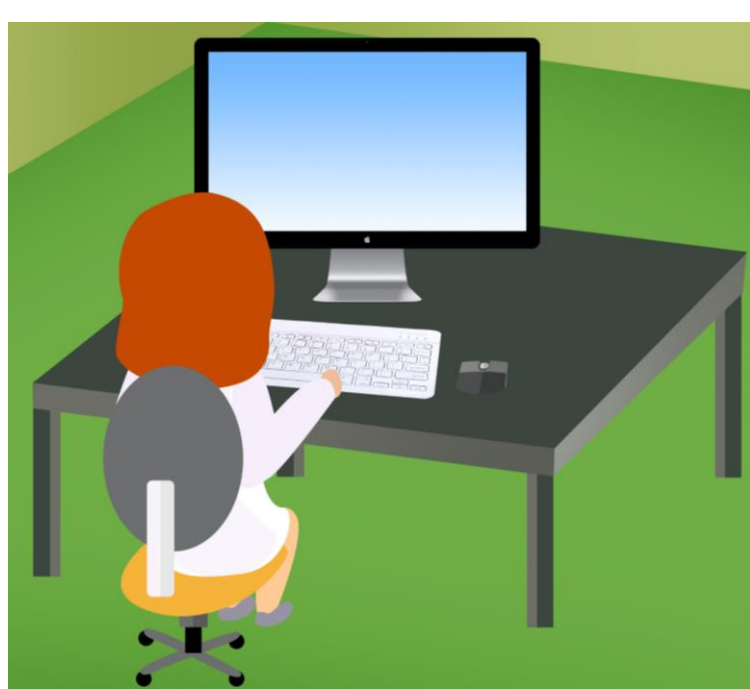
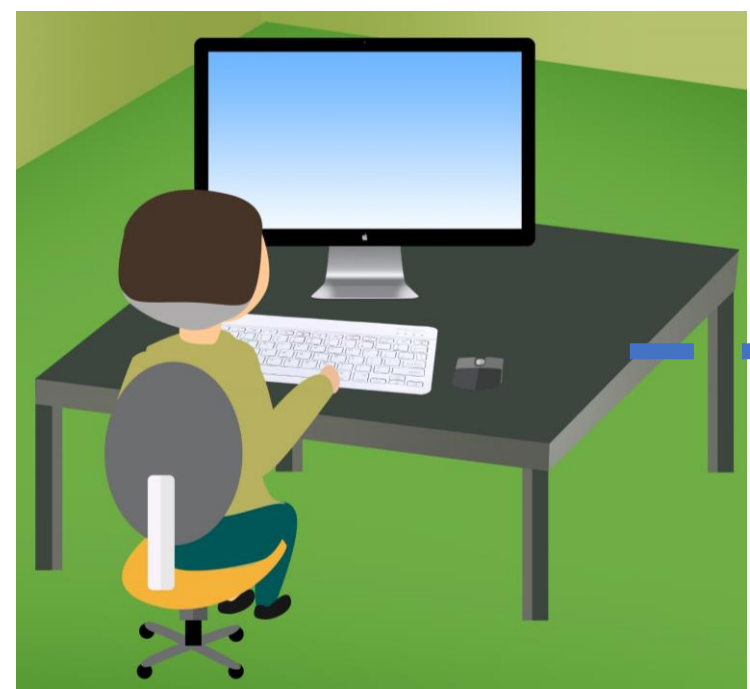
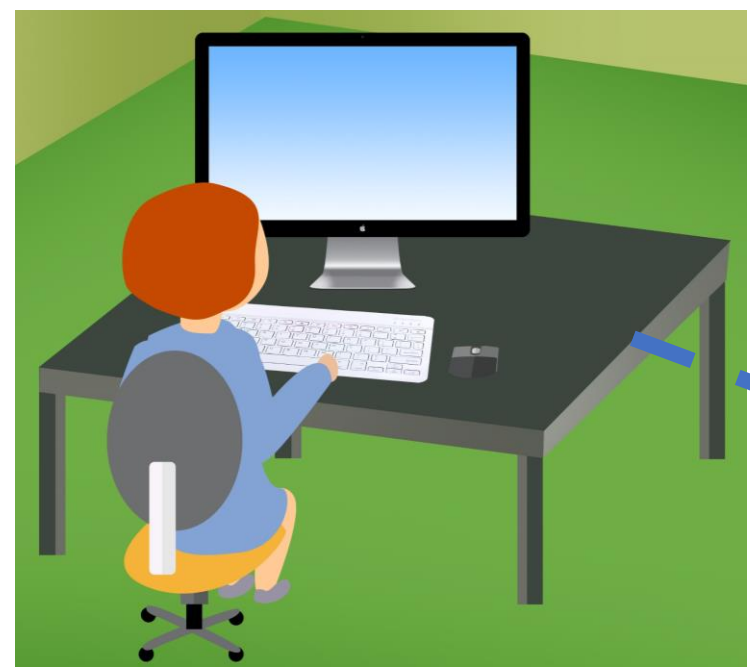


- Hands-on skills are essential learning outcomes of engineering courses.
- Students used to gaining their hands-on skills in the real lab with kinds of facilities and lab kits.



- COVID 19 prevents students from labs.
- Online demonstration cannot provide an effective way for hands-on training.

Key Features of Flipped Online Laboratory

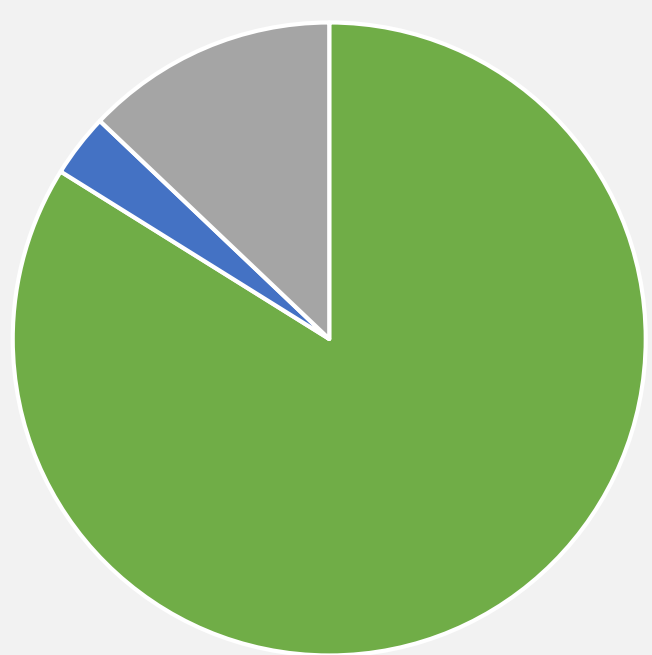


- Key feature 1: Use remote control technique and Arduino-based programming for robot developing.
- Key feature 2: Generate micro-modules and implement flipped lab.

Online lab (synchronous) + Flipped lab (asynchronous)

Feedback from students

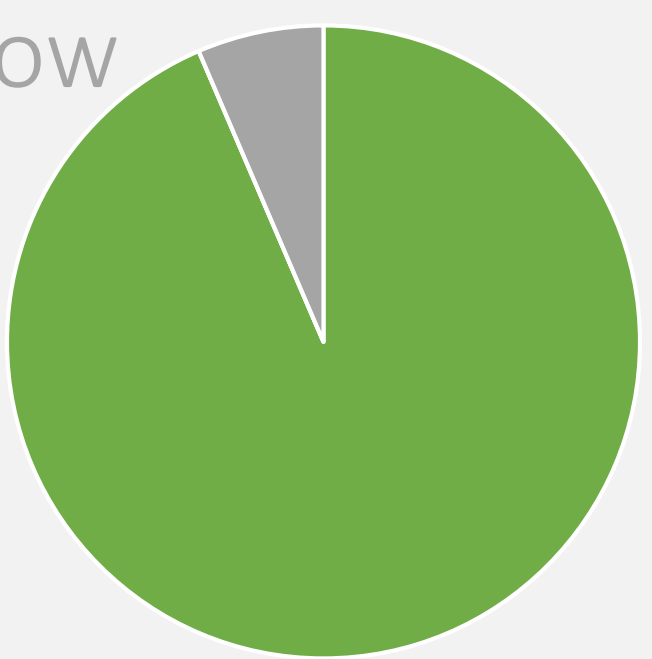
Disagree
Agree



The micro-modules provide me useful information before my experiments.

Do not know

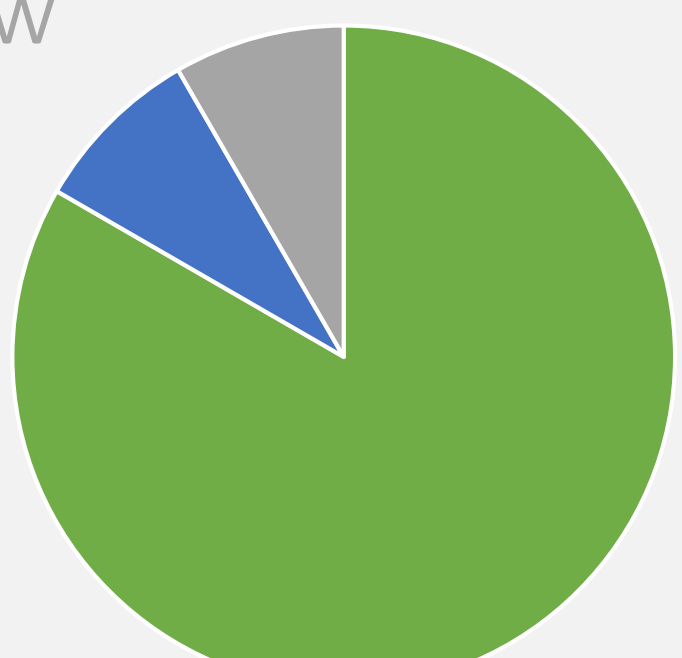
Disagree
Agree



Overall, I like the teaching pedagogy of flipped online laboratory.

Do not know

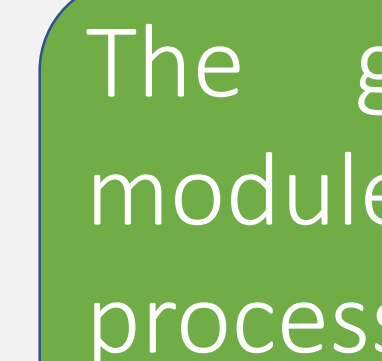
Disagree
Agree



The flipped online lab helps me to understand the basic concepts of robots.



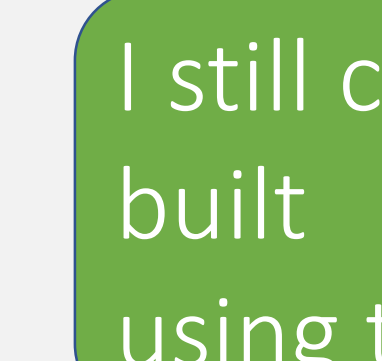
Thanks to the online lab, I can enjoy the process of controlling a robotic arm online effectively.



The generated micro-modules make the process of building robotic arm very easy.



I found it is really interesting to control a robotic arm online.



I still cannot believe that I built a robotic arm by using the online lab.

Acknowledgement

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