ELECTRONICS: BACK TO BASIC WITH FLIP WORKSHOP APPROACH

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ABSTRACT

This outlines the development and implementation of a flipped workshop model supported by constructivism theory to promote student-skill enhancement as part of an electronics undergraduate degree. This model redesigns the traditional lecture-style classroom into a blended learning model that combines discovery learning pedagogy with programmed instruction (or learning) technology. The Embedded System, Internet of Things (IoT) and Mobile Application skills set delivery are the ultimate focus of this workshop sequence in training IoT skilled engineers.

INTRODUCTION

- **Survey of the electronics-engineering course in UKM identified a gap in the curriculum where students have limited exposure in the system-level design and printed circuit board (PCB) fabrication.**
- **Proposed a gap-closing term-break curriculum to prepare and engage students in blended learning activities, thus helping to prepare themselves before entering the industry as well as meet their potential employers' expectations.**
- **Developed a new electronics design and fabrication workshop, an introduction to Internet of Things (IoT), and incorporating a scalable solution to blended learning.**

FLIP WORKSHOP MODEL

PRE-WORKSHOP

Online Participant Application	Participant Personality Test	Participant Selection Interview (Entry Interview)

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WORKSHOP FACILITATION

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POST-WORKSHOP

Pre and Post Workshop Assessment	Post Workshop Interview (Exit Interview)

OBJECTIVE

- **To engage the electronics engineering students in a gap-closing program that serve the needs of present IoT industry.**
- **Students are expected to produce a working prototype by the end of the two-days workshop.**

METHODOLOGY

FIRST WORKSHOP SESSION

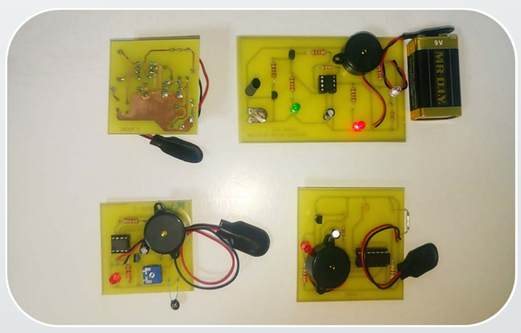
- Introduction to the learning scheme and tools
- Self-learning using online resources to learn and complete the assigned task
- Verify the result / design with the technical team

SECOND WORKSHOP SESSION

- Guided hands-on fabrication experience with their designs

ONE-MONTH PERIOD

RESULTS



Prototype Sensor Circuits for PCB Workshop

Participants during Circuit Assembling

CONCLUSION

- **The development of PCB Circuit Design and Fabrication learning module for gap-closing program will introduce the students to the current electronic manufacturing technology, and allow them to design electronic systems using PCB technology.**
- **The proposed PCB Circuit Design and Fabrication Flip-Workshop aims to be one of the gap-closing module among the engineering and computing undergraduate students in preparing them for IoT industries.**