UNIVERSITI TEKNOLOGI MALAYSIA

INDUSTRIAL TALK 2 - NALI

Date: 25th September 2018

Location: Dewan Sultan Iskandar, UTM

Time: 10a.m - 12p.m

**Introduction**

New Academia Learning Innovation (NALI) is an exhibiton that held at Universiti Teknologi Malaysia sepecifically at Sultan Ismail Hall, on 25th and 26th of september 2018. These exhibition is brought by Universiti Teknologi Malaysia Academic Leadership (UTM lead) in collaboration with School of Education, Faculty of Social Sciences & Humanities UTM and Asia Technology University Network (ATU-NET). There were 86 varoius booths in total. In this case we are going to discuss three of them in this report. The objective of NALI 2018 is to platform for sharing of research and innovation product that an indivual had already done to be published for public, so the public will be motivated to make a lot of inventions too.

Besides of that, this event also helps educator to improve competency in learning process for the future education with their inventions. An event is officially opened when Prof DR. Mushtak Al-Atabi, CEO and Provost, Herriot-Watt University Malaysia give a speech about Education 4.0: New Paradigm of Education at 11 am.

**Discussion**

Booth 1 - Pico Hydro Turbine Kit

Hydroelectricity is electricity using the energy from moving water. Hydroelectric power is a technology for generating electricity from the movement of water through rivers, streams, and tides. Water is passed through a conduit to the turbine where it strikes the turbine blades and causes the shaft to rotate. To generate electricity, the shaft is connected to a generator that converts the mechanical energy into electrical energy. Pico-hydro is a hydroelectric power which is capable of producing a maximum output of up to 5kW. Pico-hydro electricity is useful in small remote communities that require only a small amount of electricity such as for one or two fluorescent light bulbs and television or radio.

There is using 5 kinds of elements they are:

1. Penstock Pipe

2. Pelton turbine

3. Generator

4. Pully system

Main Features:

* With a little modification, it can be made from recycling items such as pipes, food container and water hose thus cheap electricity.
* very light weight compared with other commercially available turbines thus applicable anywhere.
* Able to produce high electrical power for daily consumption of small electrical devices.

Advantages:

* Student will be exposed to interactive teaching and learning environment through hands-on application.
* Pico Hydro Turbine Module for teaching references and assessments in evaluating stem values.
* Interactive exposure towards alternative and renewable energy.
* Beneficial to other off-grid communities by providing enough energy for everyday activities.

Disadvantages:

Hydropower generation also has disadvantages and losses. The main problem is about 30% losses of the total hydropower coming out of the nozzle that usually occurs when the power in the water is converted into rotating mechanical power by hitting the turbine blades. Then, another 20% to 30% will be lost in the generator when the power is converted to mechanical energy [6]. Therefore, this pico-hydro project is developed to minimize the losses in turbine rotation and generator output. This project involves improving the green technology by using renewable energy such as water. It is also to help the remote communities to get their electricity with low cost of installation using green technology.

Booth 2- Coolverter

Conversion is a change in the form a measurement, different unit, without a change in the size or an amount. Converting units of length is one of the Mathematics skills learned in primary school. This essential skill is needed to understand more complex and challenging concept in the higher level in Mathematics. The teachers should be creative and innovative to help the students understand the mathematics concept and the necessary skill needed. Coolverter is an innovative learning aid which aims to help students understanding in the concept of converting units in length. Coolverter is specially designed to show and demonstrated a process of converting units of length to the student. This model to teach students how to convert the units of length such as meter to centimeter (m=cm), and meter to the kilometer (m=km). This is an alternative way to use how to change the units. The student easy to understand and can see how the question had been solved if they use this model.

The model which is made of plastic bottle,paper and cellophane tape is the definiton of simplicity. One will have to rotate the top forward if the unit is larger and backward if the unit is smaller. User will have to set the value first then adjust the unit to attain the answer. The steps are simple and easy to follow. Therefore,being user friendly for a large group of people.

Booth 3- Biorobotic

On our visit to MyBioRobotic Kit booth at Nali Exhibition, we have heard about the project. The project is an implementation of new teaching technology. Models and prototype are made by students to understand more about the mechanism of something. For example, students are thought on how to build a prototype of earth worm. Through this prototype, students can understand more about the hydrostatic pressure in earth worm for its locomotion. Not only that, a model of major and minor pectoralis muscle of a bird is made to observe and justify the mechanism the bird wing.

This technique of teaching can improvise the understanding of students as it is a personalized learning. Next, it is also cost effective as it uses low cost items such as straws, yarn, cellophane tapes and scissors. Due to the cost effective, this new learning project can also be done in rural areas school. Lastly, this project focuses on the STEM learning which focus on science, technology, engineering and mathematics curriculum. Hence, this project would be more than useful as it does not only teach the students the mechanism, it also shows how the mechanism works. Thus, students will have a clearer picture of their learning. Also, it does not acquire big amount of money as it is cost effective. Because of it, more teachers can use this technique and more students will benefit from it. It is truly a very good technology for teacher and students.

**Conclusion**

NALI in general is an event to increase people motivation to inspired to think out of the box from material that you see around you for making a tools or an invention that can be use to solve a problem that we face in this era. This program also held to find effectiveness of learning approach towards the 4th Industrial Revolution where human and machine work together to enable new possibilities.

The event has thought us to think creatively and analyze problem detailedly before taking into hand. There always simpler ways to solve problems. We are keen to apply the knowledge gained in solving future problems from as small as day-to-day basis.