

DIGITALIZED SUSTAINABLE SCIENCE COURSES THROUGH E-LEARNING INTERACTIVE APPROACH

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Highlights: This article highlights on the interactive approached used in learning Sustainable Science courses. The interactive approach using online tools as one of the e-learning platforms gives a fresh and different style of learning process for students through participating in created activities such as synchronize and asynchronized classes, educational games, animation videos, online test and many more.

Key words: *interactive, e-learning, synchronize and asynchronized, animation videos.*

Introduction

In this pandemic situation, technology has become a very crucial part of our daily life. The use of technology is not only for entertainment and communication, it is also has become one of the important platforms in teaching and learning. Nowadays, e-learning has become an important part of the education system and has changed the view of teaching and learning process as a whole. Advancement in internet and multimedia technology is the basic enable for e-learning.

E-learning is the process of extending learning or delivering instructional resource sharing opportunities, to locations away from a classroom, building or site, to another classroom, building or site by using video, audio, computer, multimedia communications, or some combination of these with other traditional delivery methods (Wani, H. 2013). E learning can be divided into two basic types, which are 1) consisting of computer-based and 2) the internet-based e-learning (Algahtani, 2011). The interactive approach used in e-learning by using many internet based and multimedia tools will help to enhance students' better understanding and performance.

Description

In Sustainable Science Courses, students from year one till year four will be introduced with environmental concepts in via conventional and online lectures. Apart from that, lab conducts are taught for in order to give skills and experience for students in the field. But during this pandemic situation, all teaching and learning process have to be done online. This situation has given a new challenge to all teachers and educators to perform online teaching and learning in a fresh and fun way. In order to digitalized the teaching and learning in sustainable science courses, the approach have been divided into six parts consisting of 1) synchronize or asynchronized lecture, 2) online attendance, 3) discussion and reflections, 4) project monitoring, 5) online quizzes and 6) assignments.

As an introduction for the course, a short animation of audio-visual is created to build an excitement among students and increase their engagement. It promotes a better understanding in a fun way and encourages students to learn more about the course. Besides that, a synchronize lecture will also be performed to have two-way communications with the students through different types of tools.

Activities such as interactive discussion through padlet platform give real time interaction between students and instructor. Students are given task in terms of projects in the field and required to report their progress through this platform. Discussions and reflections on each topic for each lecture will be also done through this platform.

Quiz is also created as one of the activities that will help to evaluate the students' understanding on the topics in the courses. Besides that, quiz is also used in this course as one of the educational games and activities to help students learn and understand topics related to law and regulations. This kind of educational games will assist the students to have better understanding and familiar with the law and regulations related with the course learned.

Most of the sustainable science courses need the students to share and engage the knowledge that they have learnt with community. Therefore, community engagement approach using social media has given a new way for the students to share their knowledge with the community not only around their family and friends but to all over the world. The Figure 1 shows the interactive approach tools that have been used in teaching and learning sustainable science course.