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“Optimizing Innovation in Knowledge, Education and Design”

EXTENDED ABSTRACT



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Assalamualaikum warahmatullahi wabarakatuh,



First and foremost, I would like to express my gratitude to the organizing committee of i-Spike 2023 for their tremendous efforts in bringing this online competition a reality. I must extend my congratulations to the committee for successfully delivering on their promise to make i-Spike 2023 a meaningful event for academics worldwide.

The theme for this event, 'Optimizing Innovation in Knowledge, Education, and Design,' is both timely and highly relevant in today's world, especially at the tertiary level. Innovation plays a central role in our daily lives, offering new solutions for products, processes, and services. By adopting a strategic approach to 'Optimizing Innovation in Knowledge, Education, and Design,' we have the potential to enhance support for learners and educators, while also expanding opportunities for learner engagement, interactivity, and access to education.

I am awed by the magnitude and multitude of participants in this competition. I am also confident that all the innovations presented have provided valuable insights into the significance of innovative and advanced teaching materials in promoting sustainable development for the betterment of teaching and learning. Hopefully, this will mark the beginning of a long series of i-Spike events in the future.

It is also my hope that you find i-Spike 2023 to be an excellent platform for learning, sharing, and collaboration. Once again, I want to thank all the committee members of i-Spike 2023 for their hard work in making this event a reality. I would also like to extend my congratulations to all the winners, and I hope that each of you will successfully achieve your intended goals through your participation in this competition.

Professor Dr. Roshima Haji Said
RECTOR
UiTM KEDAH BRANCH



WELCOME MESSAGE (i-SPIKE 2023 CHAIR)



We are looking forward to welcoming you to the 3rd International Exhibition & Symposium on Productivity, Innovation, Knowledge, and Education 2023 (i-SPIKE 2023). Your presence here is a clear, crystal-clear testimony to the importance you place on the research and innovation arena. The theme of this year's Innovation is "*Optimizing Innovation in Knowledge, Education, & Design*". We believe that the presentations by the distinguished innovators will contribute immensely to a deeper understanding of the current issues in relation to the theme.

i-SPIKE 2023 offers a platform for nurturing the next generation of innovators and fostering cutting-edge innovations at the crossroads of collaboration, creativity, and enthusiasm. We enthusiastically welcome junior and young inventors from schools and universities, as well as local and foreign academicians and industry professionals, to showcase their innovative products and engage in knowledge sharing. All submissions have been rigorously evaluated by expert juries comprising professionals from both industry and academia.

On behalf of the conference organisers, I would like to extend our sincere thanks for your participation, and we hope you enjoy the event. A special note of appreciation goes out to all the committee members of i-SPIKE 2023; your dedication and hard work are greatly appreciated.

Dr. Junaida Ismail

Chair

3rd International Exhibition & Symposium Productivity, Innovation, Knowledge, and Education 2023 (i-SPIKE 2023)

INTEGRATED TEACHING AND LEARNING APPROACH FOR ESD COURSE

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ABSTRACT

This article highlights the integrated teaching and learning approach used in learning Education for Sustainable (ESD) courses. The integrated teaching and learning approach by combining online and physical learning tools gives a new and different perspectives of learning process for students through participating in created activities such as synchronize and asynchronized classes, educational gamification, online test, outdoor class reflection, live presentation and many more.

Keywords: integrated, synchronize and asynchronized, outdoor class reflection, online learning.

INTRODUCTION

Physical learning is very synonym with schools or even in higher education institutions in Malaysia. But since the Covid-19 pandemic situation, teaching and learning approaches have shifted from physical to online (using technology) to fulfil the needs of education. Since that, the usage of various technological approaches has been explored and many successful stories have been shared. As an example, e-learning has become an important part of the education system and has changed the view of teaching and learning processes. 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). Besides the successful story of online learning, conventional physical learning cannot be left behind. Therefore, the integrated approach by combining physical and online teaching and learning methods will help to enhance students' better understanding and performance.

CONTENT

Description

In Education for Sustainable Development (ESD) Courses, students will be introduced to environmental concepts in education for sustainable development via conventional and online lectures. To combine physical and online learning approach in teaching and learning ESD

course, the approach has been divided into six parts consisting of 1) synchronize or asynchronized lecture, 2) online attendance, 3) online quizzes, 4) physical discussion and reflections, 5) project monitoring and 6) assignments.

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

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

Quiz is also created as one of the activities that will help to evaluate the students' understanding of the topics in the courses. Besides that, quizzes are 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 game will assist the students to have better understanding and familiarize themselves with the law and regulations related to the course learned.

In ESD course the students need to share and engage the knowledge that they have learnt with community. Therefore, community engagement via physical approach and 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. Figure 1 shows the integrated and interactive approach tools that have been used in teaching and learning for ESD course.



Figure 1: Utilizing e-campus platform for Teaching and Learning activities.

The importance and advantages

Based on the conservative methods applied in ESD courses conventional lectures, learners had difficulty in visualizing and applying knowledge practically. Hence, to sustain the learning process of this course some enhancement is required. In this paper, it is proposed to

incorporate virtual objects when blended with the real world. It is aimed to amalgamate entertainment and study by providing immersive learning experience to learners. The expectation with this enhancement is to impart a great deal of knowledge and better learning outcomes for ESD Courses. By integrating physical and e-learning tools, students will have the experience to explore and discover virtually the contents of the courses. The better visualization of the content keeps learners active during the learning process as it enhances human ability to understand and process information (Serio et.al., 2013).

Integrating physical and online learning in teaching ESD course had proved to enhance student understanding by comparing the results between semesters. It is proved that the total numbers of students score A in the subjects are increasing as shown in Figure 2.

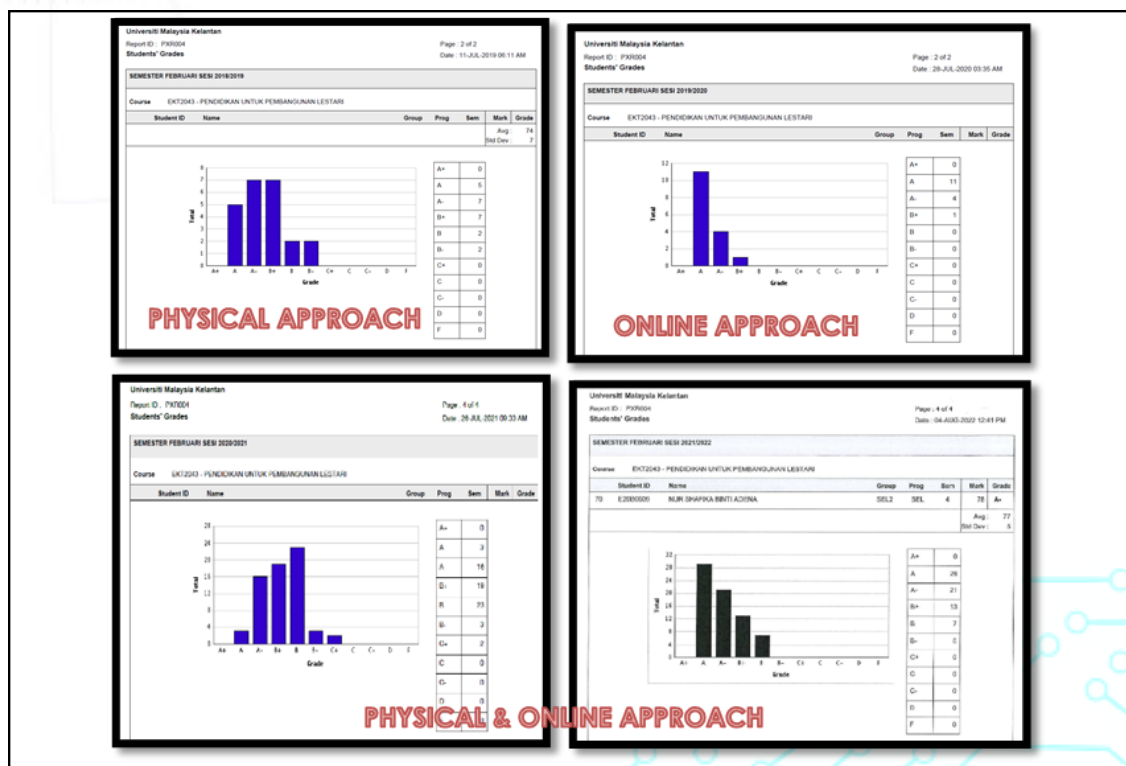


Figure2: Difference between students' result in two difference semesters

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