i-SPiKE 2023

INTERNATIONAL EXHIBITION & SYMPOSIUM ON PRODUCTIVITY, INNOVATION, KNOWLEDGE & EDUCATION

"Optimizing Innovation in Knowledge, Education and Design"

EXTENDED ABSTRACT

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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
3rdInternational Exhibition & Symposium Productivity, Innovation, Knowledge, and Education 2023 (i-SPiKE 2023)

MASTERING ENVIRONMENTAL ECONOMICS THROUGH AN INTERACTIVE MASSIVE OPEN ONLINE COURSE (MOOC) FOR OPTIMAL ONLINE LEARNING

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ABSTRACT

In today's world, environmental challenges are at the forefront of global concerns. Understanding the link between economics and the environment is crucial for sustainable development. Therefore, to address this critical need, this project is being developed to offer an interactive and engaging Massive Open Online Course (MOOC) aimed at empowering learners to grasp the principles of environmental economics. The primary objectives of this MOOC are threefold. Firstly, it seeks to explain key concepts and theories of environmental economics, wherein learners will delve into the core principles governing the relationship between economic activities and environmental impacts, gaininginsights intothe balance between growth and environmental goals. Secondly, the course aims to integrate social responsibility with elements of environmental economics for the wellness of the community. By emphasizing the importance of social and environmental welfare, learners will explore how economicdecisions can be shaped to foster equitable and sustainable outcomes for society and the environment. Thirdly, the MOOC aims to analyze environmental issues and problems using relevant theories and concepts of environmental economics. The content, developed based on the Gagne 9 event theory, is beneficial for enhancing online learning and promoting active participation among learners, contributing to a more informed and environmentally conscious global community.

Keywords: environmental economics, MOOC, online learning, interactive videos, real world problems

INTRODUCTION

In today's technological driven era, Massive Online Open Courses (MOOCs) have gained huge importance in the education sector. MOOCs aim to provide quality higher education accessible to more people (Kay, Reiman, Diebold, Kummerfeld, 2013). It becomes a popular learning tool due to their ability to offer large-scale online learning without geographical limits (Tao, Wang, Zhang, & Qu, 2022; Jung & Lee, 2018). Moreover, following the outbreak of Covid-19, online teaching and learning have become even more important.Research on MOOCs has been going on for years with the year 2009 to 2012 referred to the starting phase, followed by a high growth phase from 2013 to 2015, a plateau phase from 2016 to 2018, and followed by peak phase from 2019 to 2021 (Zhang, Che, Nan & Kim, 2022).

The field of environmental economics can benefit greatly from the use of MOOCs. As worldwide environmental challenges become more complex, it's crucial to equip individuals with the understanding and skills to address them. Hence, the development of MOOCs for environmental economics courses can empower learners all over the world to learn about these important topics and actively contribute to creating a more sustainable environment.

OBJECTIVES

1. To enhanced learners understanding of environmental economic concepts and theories.
2. To promote socially responsible decision-making through environmental economics subject.
3. To apply environmental economic theories in analyzing real-world environmental challenges.

METHODOLOGY

The development of the MOOC for Environmental Economics courses involved a few steps, as illustrated in Figure 1. First, the planning phase involved defining the objectives and outcomes for each chapter and dividing the tasks for each instructor to develop the content. Second, the content creation phase involves developing the course content for each topic, which includes preparing the video lessons and additional materials. Additionally, to evaluate learners' understanding, the content integrates practical exercises and assessments for each topic. The development of the MOOC content is designed using the Gagne 9 event theory to ensure structured, engaging, and effective learning. This will enhance the online learning experience and encourage learners to be more engaged and actively participate in the learning process. Third, as a quality check, the completed MOOC is carefully reviewed by content and language editors to ensure its accuracy and coherence. Fourth, to enhance learners' engagement, the MOOC is monitored by instructors who are in charge of providing support and feedback to learners. Finally, continuous improvements are made based on feedback received from learners, as well as the addition of new information related to the topic.

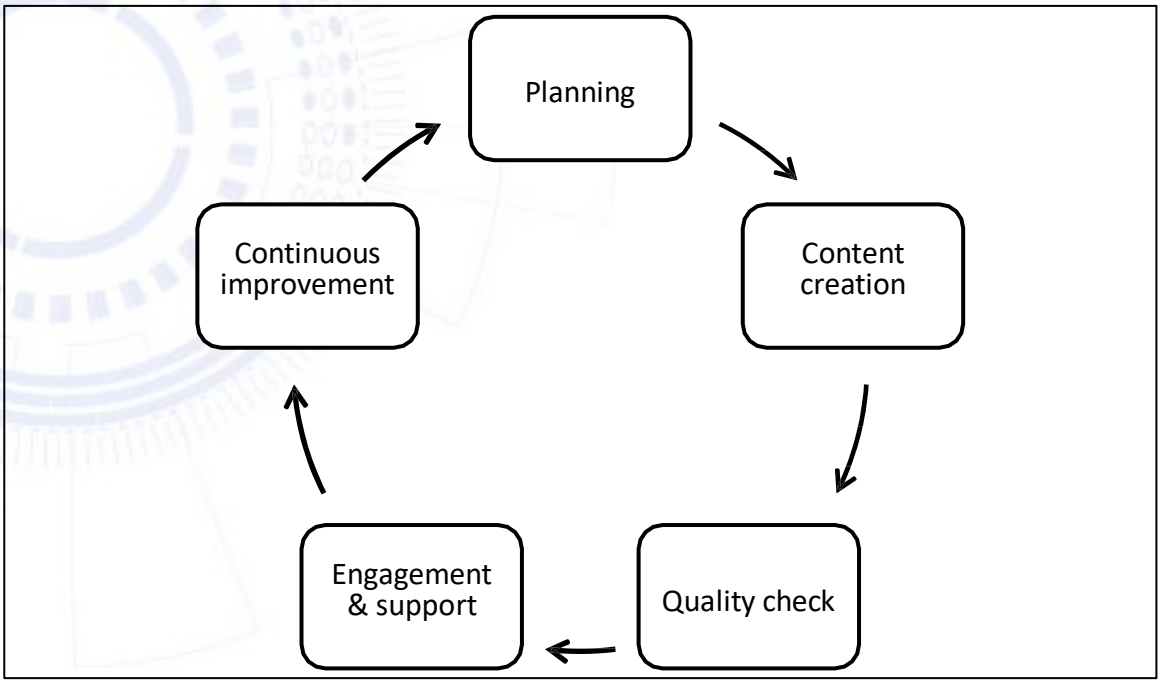

Figure 1. MOOC Development Process

RESULTS

In order to make this Environmental Economics course accessible online, the developer utilized UiTM's learning management system known as UFuture. This platform provides an avenue for individuals to enroll in online courses without any restrictions and attendance constraints.

As shown in Figure 2, this MOOC covers 14 important topics related to Environmental Economics. It begins with a welcome page that outlines the syllabus and provides an introductory video related to the course. This is followed by the content for each topic as follows: 1) Introduction and overview 2) GDP growth and quality of life 3) Competitive model and social welfare 4) Environmental externalities 5) Response to environmental externalities I 6) Response to environmental externalities II 7) Benefit-cost analysis 8) Economic development, poverty, population growth and the environment 9) Air pollution 10) Water pollution 11) Solid waste 12) Deforestation and specie decimation 13) Global issues 14) Environmental conservation.

Besides the video lessons, each chapter also includes practical exercises and assessments to evaluate students' understanding related to the topic. All instructors will also play their roles in providing support and feedback to the learner. Examples of the topic outlines and content developed are shown in Figure 3 and Figure 4.

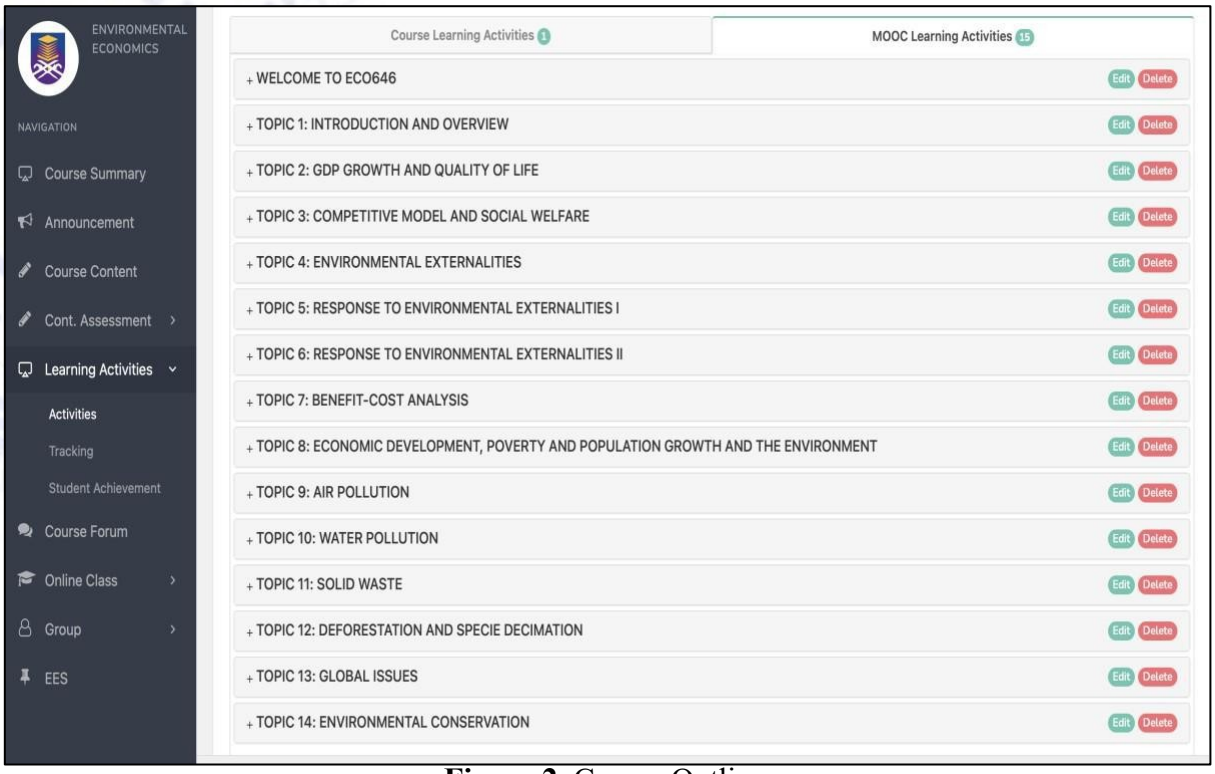

Figure 2. Course Outline

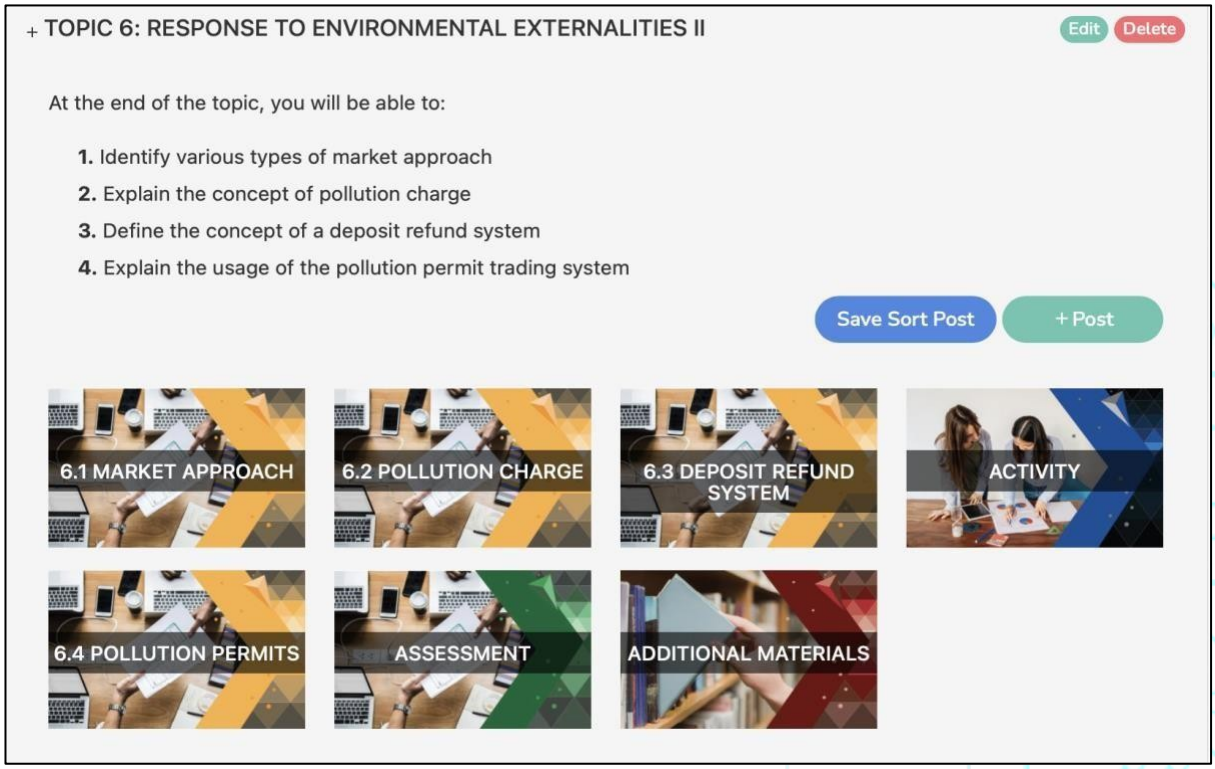

Figure 3. Example of topic outline

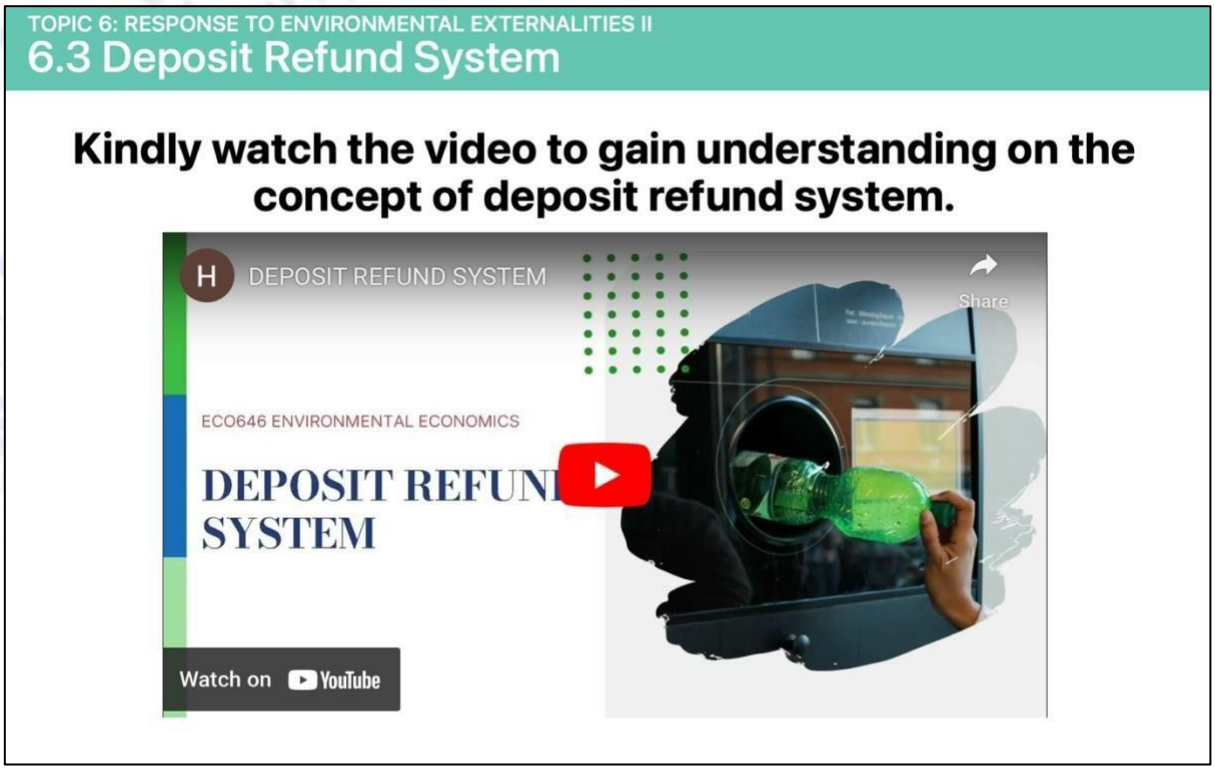

Figure 4. Example of content

CONCLUSION

In conclusion, the development of the MOOC for the Environmental Economics course has been a collaborative effort aimed at empowering learners to understand the link between economics and the environment. Employing the Gagne 9 event theory for this MOOC is an innovative strategy to enhance online learning and foster active participation among learners. The content, which is accessible to learners around the world, sets the stage for continuous learning and promotes a global community that cares for the environment.

ACKNOWLEDGEMENTS

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