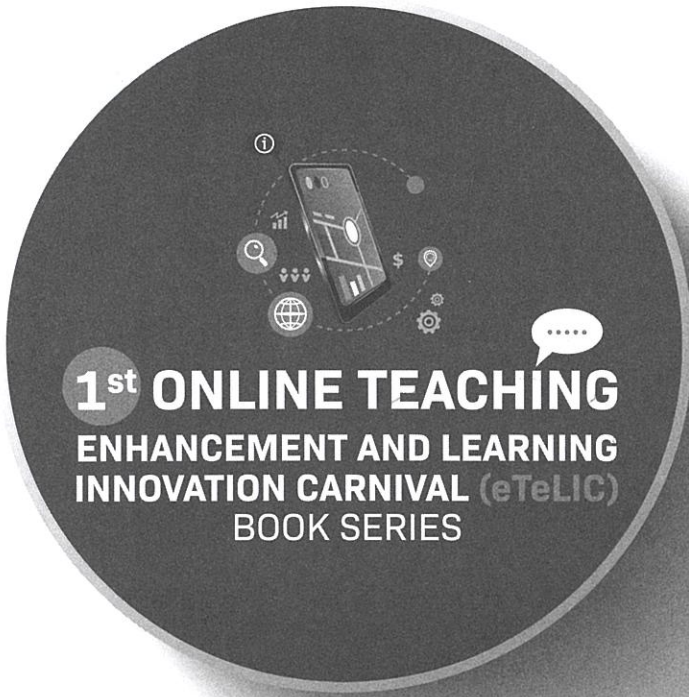




1st ONLINE TEACHING
ENHANCEMENT AND LEARNING
INNOVATION CARNIVAL (eTeLIC)
BOOK SERIES

SYNCHRONOUS@REAL-TIME
ONLINE INTERACTION

Editors:
TAN TSE GUAN
FAIRULADILAN HAMADUN
SURIA BABA



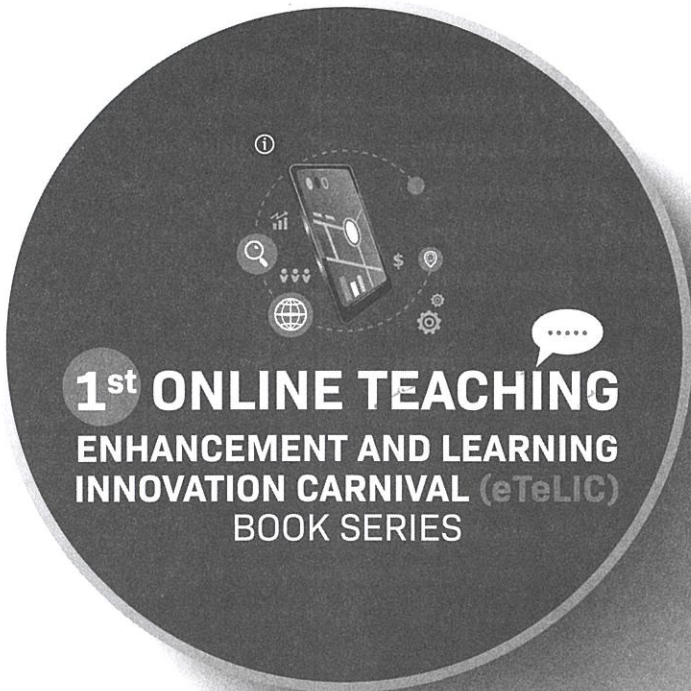
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CHRONOUS@REAL-TIME ONLINE INTERACTION

Abstract: This paper discusses the challenges of designing online interaction systems that support both synchronous and asynchronous communication. It explores the implications of real-time constraints on user experience and system architecture. The authors propose a framework for designing hybrid systems that can adapt to different interaction modes. Key considerations include latency, bandwidth, and the design of user interfaces that facilitate both immediate and delayed responses. The paper concludes with a discussion on the future of online interaction and the role of real-time systems in supporting collaborative learning and work.



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LIST OF ABBREVIATIONS

ADDIE	Analysis; Design; Development; Implementation; and Evaluation
AR	Augmented Reality
ASSURE	Analyze Learners; State Objectives; Select Methods, Media and Materials; Utilize Methods, Media and Materials; Require Learner Participation; and Evaluate and Revise Bipolar Junction Transistor
BJT	Enhancement Metal Oxide Semiconductor Field Effect Transistor
E-MOSFET	Enhancement Metal Oxide Semiconductor Field Effect Transistor
CAED	Centre for Academic Excellence and Development
CALM	Centre for Applied Learning and Multimedia
CIReL	Centre of Modern Language collaboration with Centre of Instructional Resources & e-Learning
CLOs	Course Learning Outcomes
CLT	Communicative Language Teaching
CPS	Complex Problem Solving
CT	Critical Thinking
EAC	Engineering Accreditation Council
eLEAP	e-Learning Enrichment and Advancement Platform
ESP	English for Specific Purposes
F2F	Face-to-Face
IDP	Integrated Design Project
IHLs	Institutes of Higher Learning
ILOs	Intended Learning Outcomes
IR 4.0	Fourth Industrial Revolution
IUCEL	International University Carnival on e-Learning
KEMGERLY	Kemp Model; and The Gerlach and Ely Model
LMS	Learning Management System
MCO	Movement Restriction Order

MOOC	Massive Open Online Course
MQF	Malaysian Qualifications Framework
NGOs	Non-Government Organizations
PdPc	Learning and Coaching
PoPBL	Project Problem-Based Learning
ME	Read & Write
Q&A	Question and Answer
SBL	Service/Community Based Learning
SULAM	Service Learning Malaysia University For Society
TeLIC	Teaching Enhancement & Learning Innovation Carnival
UMK	Universiti Malaysia Kelantan
UMP	Universiti Malaysia Pahang
UNIMAS	Universiti Malaysia Sarawak
UTeM	Universiti Teknikal Malaysia Melaka
VE	Vaginal Examination
WHO	World Health Organization

PREFACE

This book is a serial collection of teaching and learning (TnL) innovation from the competition of Teaching Enhancement & Learning Innovation Carnival 2020 (eTeLIC'20). It is the first-ever virtual carnival organised by the Centre for Academic Excellence and Development (CAED), Deputy Vice-Chancellor (Academic & International) Office, Universiti Malaysia Kelantan (UMK) on 21 September 2020 through an online platform, Google Meet. 114 entries from higher educational institutions and schools all over Malaysia had participated in the carnival. The carnival fits with the current situation that encourages remote teaching due to the COVID-19 crisis with the theme of *New Norm: Cultivating Online Learning*. Educators are massively affected and they critically need to learn, unlearn, and relearn to remain sustained and relevant in the inevitable paradigm shift to online learning. This book has 16 innovations that focuses on synchronous Teaching and Learning (TnL) approaches that a group of educator and students are engaging live at the same time either face-to-face or digital interactions. The contributors of the book share their current TnL innovations, ideas, as well as the best practices that are critically needed to be adopted and adapted especially in the midst of the COVID-19 pandemic. The uniqueness of each approach is that integrating synchronous video conference tools such as Microsoft Teams, Google Meet, Zoom Meetings, Cisco Webex and others to create real-time shared environments with interactive collaboration technologies. Furthermore, some educators are exploring and use various low-bandwidth social media or live mobile messaging applications such as WhatsApp and WeChat to engage their students synchronously and effectively. This book perhaps can be a guidebook not limited to only lecturers but also to other educators such as schools, matriculations, polytechnics, and other institutions.

Editors

Tan Tse Guan

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The new norm is witnessing many positive vibes in teaching and learning (TnL) approaches, especially in higher education. This sparks new ideas and innovation in TnL, and among the most popular highlights are technology-based TnL and online learning. The book introduces synchronous approaches presented creatively and interactively by lecturers in various fields. The diversity of TnL innovations through these chapters is suitable for the latest TnL reference of current new norms. Among the uniqueness highlighted in this book is the mapping of each innovation to five groups of significant learning outcomes according to MQF 2.0. At the same time, the results of sharing by many experienced contributors make this book more interesting and appropriate to the current situation. Therefore, this book is recommended to be a companion for lecturers and other educators at any level of study in various educational institutions.



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CHAPTER 4:

ENHANCING SYNCHRONOUS ONLINE TEACHING THROUGH STUDENT-CENTERED LEARNING APPROACH

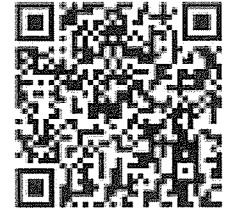
Chong Chee Jiun

Learning Outcome(s)

Cluster 1 and 3C.

Course Area(s)

Physics



INTRODUCTION

Students have been depending on instructors to provide solution and explanation for every tutorial questions. Most of them are not motivated to self-study. Tutorial session is typically a one-way communication and students seldom asked question during sessions with instructors. Such situation is even more obvious when learning is forced to be conducted online. Without proper classroom management and good learning environment, instructors are not able to reflect upon their teaching method and react appropriately when the level of understanding of students remain low.

INNOVATION/INTERVENTION

This innovation was applied in an online learning environment which was a one-hour synchronous session using Microsoft Teams involving 60 – 70 students. Generally, the approach aims to reduce instructor talking time and increase students talking time. To achieve this, the class was broke into smaller purposed-discussion-groups (each group has its own breakout room) with individual roles assigned to students. The students were divided into three smaller groups (each group around 20 – 25 students) with one of them assigned as chairperson and the rest of them were either a solution provider or a solution checker. Each smaller group was to critically discuss the solution of their peers. The discussion normally took up the whole duration of tutorial session (one hour). During the active discussion, I will go back and forth into different breakout rooms to monitor the discussion flow and intervene the discussion when necessary. After the session, the recorded discussions would be reviewed to identified misconceptions or good explanations which deserved to be highlighted. These extracted content would be compiled in the form of video presentation and shared with the students in YouTube.

DESCRIPTION OF APPROACH

During the whole of August 2020, due to the increase in the number of COVID-19 cases detected in Sarawak, our students were forced to participate their classes from home in order to reduce their risk of being exposed to COVID-19 virus. Students were forced to learn new knowledge using online platforms. Lecture sessions were replaced by video recordings of lecture. Students were poured with plenty of lecture videos to watch before attempting tutorial questions. Most of them only managed to replicate the procedures of solving questions without going through much thinking effort. Both instructors and students find it hard to know their current level of understanding about each new knowledge learned until a summative assessment is given. By then, it would be too

late for the students to improve themselves. If the new norm of learning environment is going to be prolonged for a longer duration, the students will need to continuously join online classes without being able to meet their lecturers.

Therefore, it has become even more important for us to empower the students with the ability to express their problems in science subject using accurate terms. Such skill is recognized by MQA council and is highlighted in Malaysian Qualifications Framework (MQF) (Malaysian Qualifications Agency, 2019). Using English to express scientific situation and using English to express daily situation is different (Haag et al., 2013). Students need to spend quality time to express themselves in order to gain the ability to express their problems in science subject verbally. A good classroom management is needed in order to create an online session that is engaging and meaningful (Korpershoek et al., 2016). The reason for choosing a student-centered learning approach is because it promotes active learning among students and such environment has proven to improve students learning effectively (Reuell, 2019). The flow of implementing the innovation is shown in Figure 4.1.

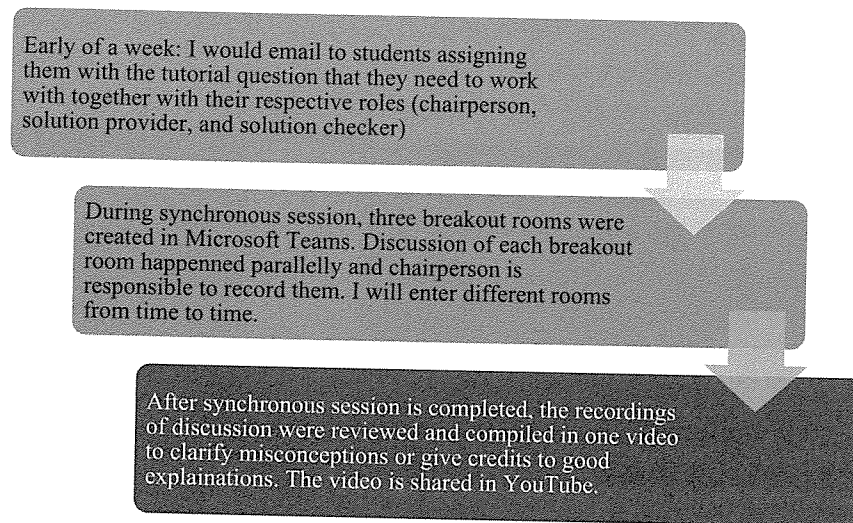


Figure 4.1: Flow of Implementing the Innovation

The tutorial sessions for the course physics I (PRF1016) were conducted using Microsoft Teams since middle of August in year 2020. The duration for each online tutorial session was one hour and consisted of 60-70 students. Instead of employing typical teacher-centered learning that emphasizes teaching from instructor, a student-centered learning approach was designed. I broke the class into smaller purposed-discussion-groups (breakout groups) with individual roles assigned to students. In each breakout groups, one of the students were assigned as chairperson and the rest of them were either a solution provider or a solution checker. In each breakout group, the students need to complete the discussion of tutorial questions assigned to them critically. Solution provider is responsible in providing their solution while solution checker would verify the solutions provided by their peers. Share screen feature will be used if possible. During the session, my role as instructor was to facilitate and monitor the discussion progress. I would intervene the discussion when necessary. The process during the session is shown in Figure 4.2. The discussion normally took up the whole duration of tutorial session.

After the session was over, I went through the recordings of the session and quoted as many good discussion sessions as possible. These selected discussions were compiled in a video and uploaded to YouTube.

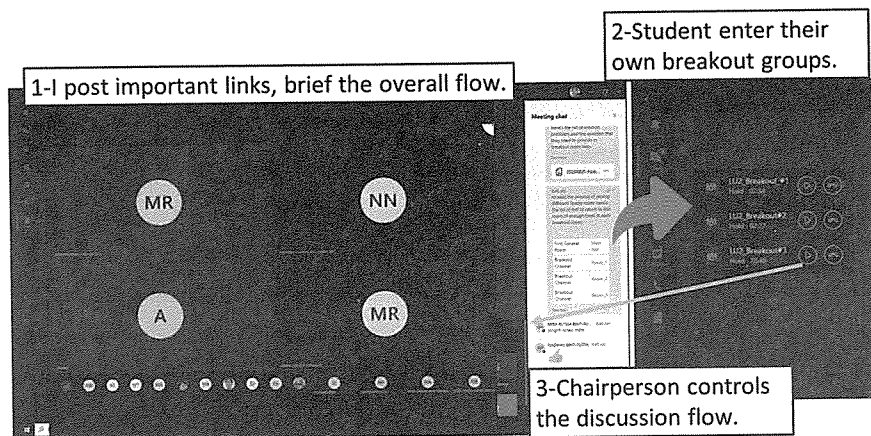


Figure 4.2: The Flow of Process that Took Place During the Synchronous Session

In order to gain feedback from students who participated in this teaching method, questionnaire items were adapted from Salfi (2014) with modification. Based on the feedback from them, they are positive about such method with some enhancement. The students suggested that this method could be enhanced by prolonging the session and instructor providing immediate explanation for questions that were relatively harder to be tackled.

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CHAPTER 5:

NEW-NORM OF MATERIALS TECHNOLOGY'S ONLINE LIVE LECTURE ASSISTED WITH STRUCTURED MIND-MAPPING

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Learning Outcome(s)

Cluster 2.

Course Area(s)

Materials Technology



INTRODUCTION

Materials Technology is one of the science courses and massively loaded with facts, and theoretical knowledge. Traditionally, lecturers would highly prefer to deliver the lectures via conventional face-to-face (F2F) physical class, as to ease and smoothen the explanation as well as delivery of the contents. Nevertheless, the recent COVID-19 outbreak has unlocked the traditional norms. We must switch into the new norms, i.e. Online Live Lecture despite of the difficulty to deliver the lecture. Therefore, in this invention, we have embedded and assisted the online live lecture of with structured mind-mapping to smoothly deliver the lecture. As for beginning stage, we have selected 'Composite Materials in Manufacturing' subject for the invention.