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CONTENTS

Remote Learning in the Time of Covid-19: An Interactive Learning Calculus II for Engineers (Mat235) By Using Microsoft Teams Digital Platform

Aslina Omar & Samsiah Abdul Razak*

Faculty of Computer and Mathematical Sciences
Universiti Teknologi MARA, Cawangan Johor, Kampus Pasir Gudang
Masai, Malaysia
Faculty of Computer and Mathematical Sciences Universiti Teknologi MARA, Cawangan Perak, Kampus Tapah
Tapah, Malaysia
samsiah179@uitm.edu.my

Abstract

While schools and many higher education institutions have been forced to shut down around the globe due to pandemic Covid-19, the demand for digital transformation in education has reached new heights. Many educators are struggling to move classes online as quickly and painlessly as possible. Universiti Teknologi MARA (UiTM) is also no exception and had to transform their learning and teaching process from face-to-face courses to Open and Distance Learning (ODL) mode. To overcome the potential effects of the pandemic, UiTM has been looking for ways to provide access to education by using ODL. Open and Distance Learning (ODL) is a general term for the use of telecommunication to provide or enhance learning. Using ODL, it makes about quality e-learning and e-content more accessible to both facilitators and learners. Various online teaching platforms can be used in implementing ODL, but the lecturers need to consider the Internet speed of their students. ODL activities conducted are a blend of asynchronous (without real-time interaction) and synchronous (real-time interaction) online learning. There are various ODL platforms for teaching and learning activities such as Google Meet, Google Classroom, WebEx, and Zoom. The key idea in this paper is to use the Microsoft Teams platform in order to implement ODL in teaching Calculus II for Engineers (MAT 235). By using Microsoft Teams, the lecturers can set up a team for the class, with different lectures and class dates assigned to different channels. Each channel would have a series of tabs that would, in effect, constitute the class. There would be no textbook. Instead, real-time digital inking and problem solving with in-class chat streams and collaboration from the learning community would serve as the course material. As a result, everything in the educational experience works together, and they can make sure all the students have the best learning experience because Microsoft Teams can offer a lot of benefits for both students and lecturers.

Introduction

While schools and many higher education institutions have been forced to shut down around the globe due to pandemic Covid-19, the demand for digital transformation in education has reached new heights. Many educators are struggling to move classes online as quickly and painlessly as possible. University Technology MARA (UiTM) is also no exception and had to transform their learning and teaching process from face-to-face courses to Open and Distance Learning (ODL) mode. To overcome the potential effects of the pandemic, UiTM has been looking for ways to provide access to education by using ODL.

The concept of open learning and distance (ODL) education system is a general term for the use of telecommunication to provide or enhance learning. It focuses on open access to education and training to make the learners free from the constraints of time and place and offers flexible learning opportunities to individuals and groups of learners (Saima Ghosh, Joyshree Nath, Shalabh Agarwal, 2012; Fodzar 2015). ODL has the potential to produce a new design of teaching and learning. At the same time, studies about various issues in ODL and how it can improve the traditional education system have been

done. (Dock & Helwig,2001;1999). ODL system has the role within the field of technical and vocational education to respond viably to the developing requests of working adults or any others who have challenges in getting training in conventional instruction since lack of flexibility within the timing and area of courses. The other research shows that ODL is the solution for overcoming the hole between those who had access to science education and those who did not because now ODL has been utilized at all levels of education (Bharat, 2015).

Using ODL, it makes quality e-learning and e-content more accessible to both students and lecturers. ODL activities conducted are a blend of asynchronous (without real-time interaction) and synchronous (real-time interaction) online learning.

There are various ODL platforms for teaching and learning activities such as Google Meet, Google Classroom, WebEx, and Zoom. Zoom and Google Meet apps allow both hosts and participants to record the sessions if they wish. Zoom can only last 40 minutes per session for the basic features, and the users need to pay to have an unlimited session. UiTM also has an online platform, which is i-Learn, and now rebranded as UFuture. This platform provides free access for lecturers and students for their teaching and learning process.

By using these delivery platforms, lecturers need to consider the Internet speed of their students. Communication through live recordings are used to get authentic students' interaction, and this can be an unavoidable portion of separate educations courses (Smyth, 2011).

Other than the ODL term, another term that is used universally and rapidly during the Covid-19 outbreak is remote learning. Remote learning refers to educational activities with various formats and methods, most of which take place online. Remote learning provides an opportunity for students and lecturers to remain connected and engaged with the content while working from their homes, opportunities for remote learning naturally connected to emergencies that pose a threat to students' safety.

As some universities look to continue learning remotely for the safety of their students and faculty, Microsoft Teams for Education provides an online classroom so students and lecturers can find new ways to continue to focus on learning. Free for schools and universities, Teams provides an online classroom that brings together virtual face-to-face connections, assignments, files and conversations into a single place accessible on either mobile, tablet, PC or browser. Microsoft Teams is an excellent platform since it works with the features as follows:

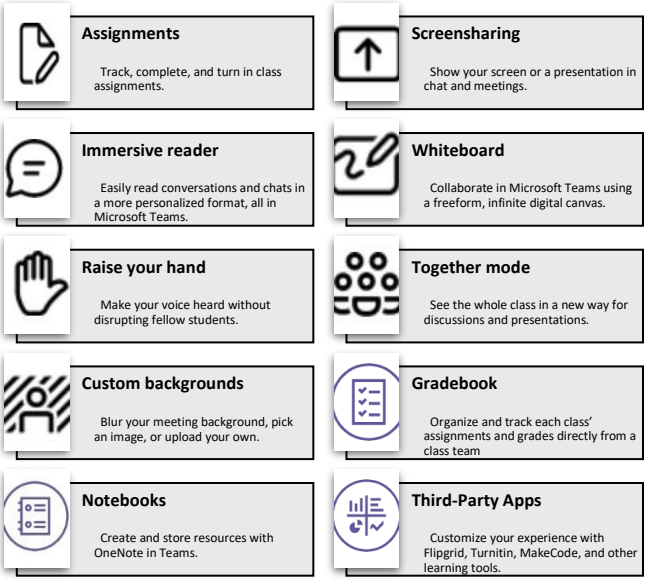

Fig. 1 Microsoft Teams remote learning features

The key idea of this paper is to describe an innovative method on the implementation of the Microsoft Teams platform to implement remote learning in teaching Calculus II for Engineers (MAT 235) in UiTM. This course is taken by diploma engineering students. The pre-requisite courses for this course is Calculus I. This course consists of four chapters: methods of integration, indeterminate form and improper integral, functions of two and three variables, and differential equations. Applications in engineering and sciences will be covered in this course.

Implementation of MAT235 Remote Learning in Microsoft Teams

The paper now turns to the steps in the implementation of the MAT235 remote learning using Microsoft Teams. The steps of the innovative method outlined, as shown in Fig. 2.

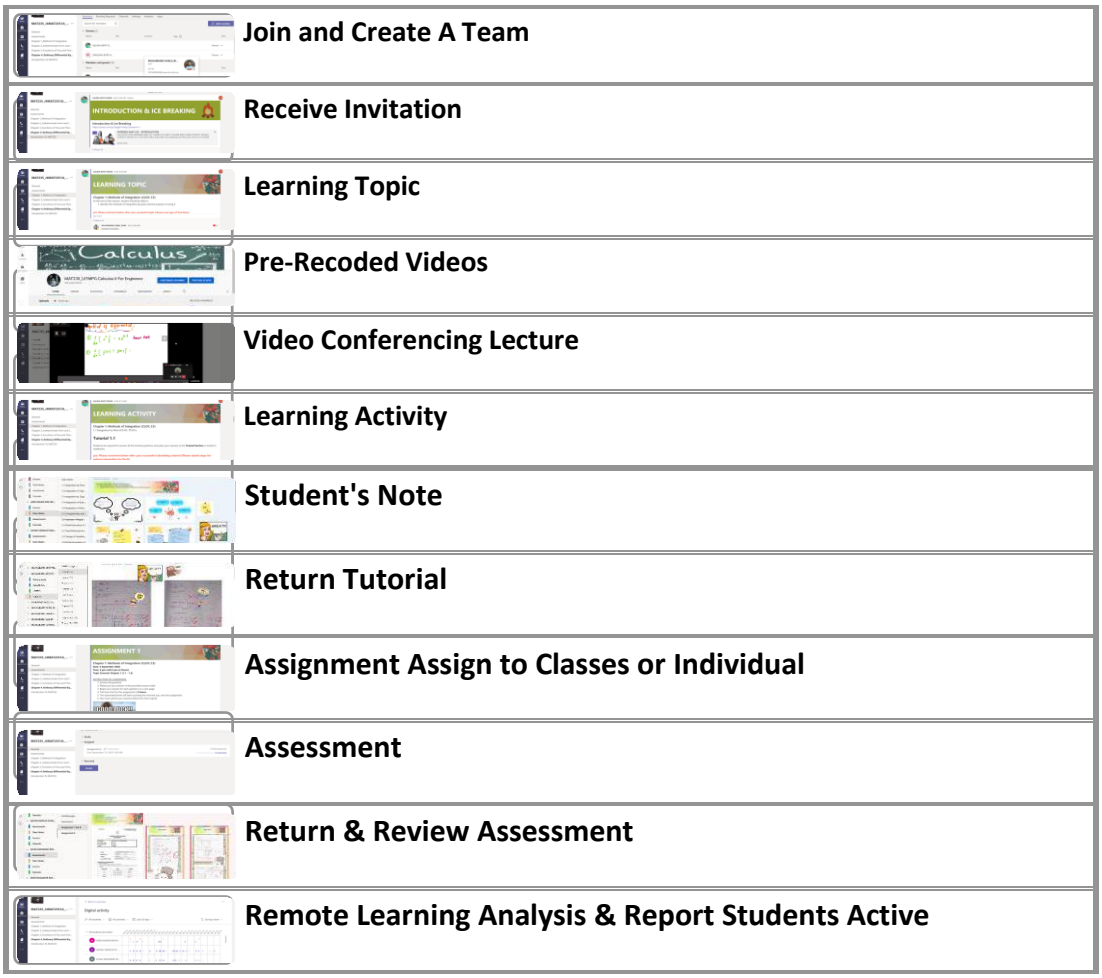

Fig. 2 The steps in the implementation of the MAT235 remote learning using Microsoft Team

This figure provides an overview of the steps involved in the implementation of the MAT235 remote learning using Microsoft Teams. These steps begin with the lecturer creating the team in Microsoft Teams and inviting students to join with a code or make a registration for their students on their own.

Next, the students will receive an invitation through students' email "isiswa" and enter Microsoft Team. After that, the notification of Learning Outcome will be created before class begins and students need to give comments as proof of their attendance. The pre-recorded video on YouTube will be given to students before classes start. On the day of the lecture, the lecturer will click "Meet now" under the message box in Teams to start 1hour live meeting session lecture with students. After finishing the lecture session, students will have one hour to finish their tutorial using OneNote in Teams. The students will have a personal workspace in OneNote Class notebooks. For assessment purposes, using Teams, lecturers can customise their assessment with content from OneDrive, own device, link, and others. Teams also has remote learning analysis and report of students' active participation for documentation purposes.

Conclusion

Covid-19 has impacted the lives of people worldwide, including lecturers and students, who have most been impacted. Consequently, all schools and universities struggle to move classes online as quickly and painlessly as possible. Thanks to the Microsoft Education team since they are committed to helping lecturers and students to stay connected and engaged by introducing the Microsoft Teams. By using Microsoft Teams, the lecturers can set up a team for the class, with different lectures and class dates assigned to different channels. Each channel would have a series of tabs that would, in effect, constitute the class. There would be no textbook. Instead, real-time digital inking and problem solving with in-class chat streams and collaboration from the learning community would serve as the course materials. As a result, everything in the educational experience works together, and they can make sure all the students have the best learning experience because Microsoft Teams can offer a lot of incentives for both students and lecturers.

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