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ENVIRONMENT CHANGES IN TEACHING AND LEARNING MATHEMATICS

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Mathematics is a science that has an important role to resolve problems in daily life such as estimating the profit and loss, calculating loans for cars, and figuring out distance, time, and cost for travel. The importance of learning mathematics cannot be separated from its role in various aspects of life. By studying mathematics, someone is accustomed to thinking systematically, scientifically, using logic, critical thinking, and can increase the power of creativity.

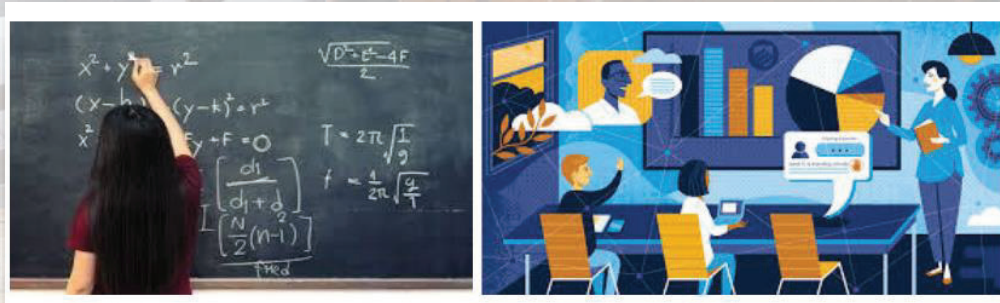


Figure 1: Traditional teaching method vs blended learning

In UiTM, blended learning has long been introduced with the hope that it can maximize the advantage of teaching and learning delivery methods both traditionally and virtually. In general, instruction or teaching sessions take place mostly in a traditional classroom but are reinforced by online activities that replace some face-to-face classes as depicted in Figure 1. However, it is less popular at the beginning, especially for those who teach mathematics subjects because it is more comfortable interacting with students in the face-to-face learning mode.

This is due to the perception that it is less effective and difficult to implement. The lecturer wonders if the students will understand each topic taught and how to create assessments via online platforms. Moreover, at that time most of them lacked technology skills and tools to conduct teaching and learning activities online.

However, when the Covid-19 pandemic hits the world, lecturers or educators have no other choice as teaching and learning activities must continue regardless of the school or tertiary level where learning activities must be done completely virtual and require technology skills from educators and students. Online learning then gains popularity and various platforms, or tools are explored to ensure the teaching and learning process runs smoothly (As in Figure 2). The lecturers need to get some training with the software and hardware related to the subject taught and know technical support that can be effective during classes.

The most recognized advantage of online learning is convenience especially in terms of time, flexibility, and accessibility. In addition, an online learning environment allows more interaction in a virtual learning environment between students themselves and students and lecturers. Hence, students are found to be more collaborative and are better able to apply the acquired knowledge.

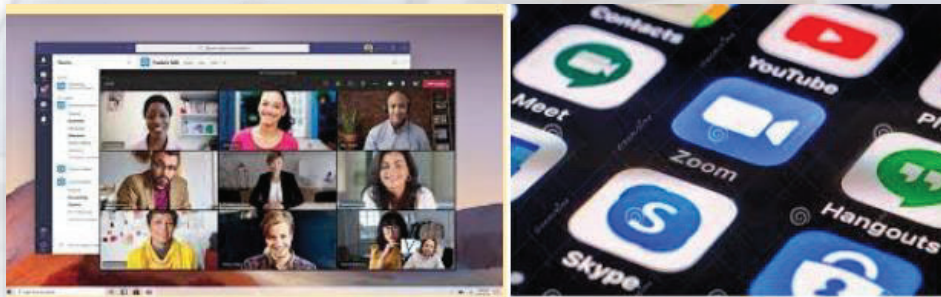


Figure 2: Example of online learning platforms and tools

The subject of mathematics requires students to do a lot of revision and exercises to get a better understanding. There are too many mathematical formulas and concepts to be remembered. Therefore, the use of teaching videos by the lecturers does give students an advantage for self-learning. They can watch the recorded video repeatedly at any time and have some discussion with their friends.

Be aware that the face-to-face learning mode sometimes makes students feel ashamed to be actively involved, for example asking questions or answering questions. However, through online classes, students can give a positive response as they are more confident and not ashamed to state that they do not understand the lesson on that day.

Naturally, the advantages of online learning are very clear in terms of flexibility and convenience. Even so, we cannot rule out the weaknesses that go hand in hand with the development of this technology. Lack of ICT skills and technical problems are some of the disadvantages of online learning. The technical problem related to unsatisfactory internet access will cause lagging and lesson delivery will be disrupted. Besides, the monitoring system of an online learning environment needs to be carefully thought out to manage technical problems, lack of interaction and lack of ICT skills among the students.

In conclusion, teaching and learning mathematics in an online learning mode provides precious experience to both lecturers and students. If online learning is not being structured properly, then it will cause many problems especially in students' achievement and dissatisfaction.

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