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ONLINE LEARNING MODES: SYNCHRONOUS AND ASYNCHRONOUS

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ABSTRACT

The implementation of online learning in the Malaysian higher education landscape has become vital since the outbreak of the COVID-19 pandemic beginning from March 2020 in Malaysia. In line with the Standard Operating Procedure (SOP) set by the government in all sectors including education and maintaining social distancing to prevent the spread of COVID-19, higher education institutions in Malaysia has converted the traditional face-to-face education system to online learning modes which consist of synchronous and asynchronous mode. This article looks into the definition of synchronous and asynchronous e-learning modes, the technologies used and key issues for each mode, the best practices as well as strengths and also weaknesses of synchronous and asynchronous online learning gathered from previous studies. The aim of this article is for the educators to comprehend more clearly about these two modes of online learning and selecting preferable teaching methods, online tools as well as digital educational resources in improving the quality of the educational process. By blending synchronous and asynchronous modes, educators can create an effective online distance learning experience that are favorable by instructors, but most importantly, ideal to the learners.

Keywords: online learning, synchronous, asynchronous

Introduction

In maintaining social distancing, the Covid-19 pandemic has caused the global closure of several activities, including education, and has transformed the traditional face-to-face education system to an online version via two online learning modes: synchronous and asynchronous settings. Not all educational institutions are prepared to face this transformation, which presented educators and students facing a variety of unexpected new teaching and learning obstacles.

In traditional classroom learning mode, the instructor is the focus and the learning process is implemented face to face, but in online learning modes, the educator still acts as an instructor, but both the educator and the students depend on different online sources and there is more collaboration involves between both parties as mentioned by Amiti (2020). There are three online learning modes namely synchronous, asynchronous and hybrid online learning. According to the study by Hadullo et. al. (2018), synchronous learning provides real-time interaction by combining features such as video conferencing and group chat with the simultaneous presence of instructors and students. Asynchronous settings, in contrast, are not time or space restricted, meaning that learning can take place in multiple places at different times, with students using resources like discussion boards, blogs and e-mail at their own

leisure as stated by Hadullo et. al. (2018). Alternatively, a hybrid online environment combines synchronous sessions and asynchronous activities as a method of learning delivery.

Synchronous Online Learning

A synchronous learning environment is a learning mode where the instructors and the students meet online using specific online platforms to deliver lessons. A synchronous learning can consist of various forms of interaction between instructors and students. Instructors can deliver lessons using videoconferencing with a camera, where instructors and students are present simultaneously on the selected online platform. Through this mode, the instructors have the ability to assess the reaction of students, understand their needs, respond to their questions and choose a pace that is convenient for the group as well as monitor the student's involvement in the process as stated by Berestok (2021). Table 1 explains about the synchronous e-Learning technologies and their key issues.

Table 1: Synchronous e-Learning Technology and Key Issues (Adapted: Dada, 2019, p.56)

Technology	**Key Issues**
Video Conferencing	• Allows real-time interaction among students just as in the traditional classroom environment. • Costly and successful implementation depends on the availability of bandwidth.
Web Conferencing	• Allows sharing of documents, PowerPoint presentations and demonstration of application programs. • Costly and successful implementation depends on the availability of bandwidth.
White Boarding	• Demonstration and co-development of ideas. • Costly, its implementation depends on the availability of bandwidth. It is sometimes better used with audio conferencing.
Audio Conferencing	• Allows students to engage in collaborative discussion. • It is likely to be costly when it involves international participants.
Chat	• Allows the sharing of textual and graphical information that is not too complex. • Communication rate is slowed down since it is majorly text-based.
Instant Messaging	• Allows messages to be delivered promptly. • The use of devices such as headset is required. It also allows one to one or one to many interactions.

A study by Amiti (2020) added, a synchronous class should be student-centered environment, with the educator providing instructions first, then giving the students complete attention and students respond based on the activities. Table 2 discusses the benefits and drawbacks of the synchronous online learning mode attained from prior researches.

Table 2: Benefits and Drawbacks of Synchronous Online Learning Mode

Author	Benefits	Drawbacks
Amiti (2020)	• Offers real-time learning and knowledge sharing platform with direct access to the instructor for question and answer session to avoid miscommunication. • Live lessons can be recorded and saved automatically on the Learning Management System (LMS) or any collaborative learning platform chosen by the instructor. Students can view and replay instructor's lectures as many times as they need to comprehend the content at their own pace and time. • Synchronous learning brings students together regardless of their physical location. As a result, introvert learners that are struggling in regular classrooms; feel more comfortable and less worried as they attended online lessons from their home environment.	• Synchronous learning requires a prearranged meeting date and time. • For learners' lacking in auditory skills, the instructor may need to talk more slowly during the video conferencing lecture session. Yet for the more advanced students, they may not feel happy with the following situation. Therefore, the slower learners may require some extra assistance outside of the online class sessions.
Perveen (2016)	• Through collaborative learning, synchronous mode fosters a sense of community. Instructors and students can connect and collaborate in real time in a synchronous virtual classroom. It mimics a traditional classroom setting, with web camera and class discussion elements, except that all participants view it remotely over the Internet. Due to the presence of the instructor and classmates, synchronous sessions might result in high levels of motivation to stay engaged in e-activities. Facial expressions and voice tones can help them have a more human feel across a broader spectrum, resulting in low-cost global communication.	• The requirement for a high-bandwidth Internet connection. Due to technical difficulties, students may feel disappointed and less motivated.
Beresto (2021)	• Educators frequently offer online lessons using webinars and video conferencing. Among the advantages of using these features are the flexibility to have remote lessons, recorded lectures, have an unlimited number of students, and the use of supplementary instructional resources. Presentation, demonstration, video viewing, group discussion with students having microphones, and online boards or whiteboards can be used through video conferencing feature. It is also a one-stop platform for all learners' comments, photos, text chat (both shared and private messages) and can be remotely accessed. It also allows us to display the speaker's screen.	• The availability of students and educator at the scheduled time as well as the dependence on unanticipated technical events.

In a study by Moser and Smith (2015), they suggested best practices in implementing synchronous online courses. Table 3 displays all of the 12 steps that should be taken from the beginning until the finish of a lesson revised from Moser and Smith (2015) article from page 46 to 48. They added that for students to have a better online learning experience, educators must establish a guideline and a curriculum for their classes, as well as integrate software to incorporate all of the abilities.

Table 3: Best Practices for Implementing Synchronous Online Courses

Step	Action
1	Provide a welcome message that is displayed approximately 15 minutes before class.
2	Notify class of your presence and encourage equipment checks.
3	Provide easily accessed methods to connect/enter the virtual classroom
4	Record class meetings.
5	Discourage unnecessary use of video sharing.
6	Maintain virtual office hours.
7	Pre-load software that will be used during class presentation.
8	If possible have more than one monitor/display
9	Equip your teaching/production facility with various video options.
10	Use electronic Textbooks and other reference materials.
11	Encourage (require?) students to participate in virtual study sessions/group meetings.
12	Integrate additional software systems to augment the virtual classroom experience.

Berestok (2021) discussed that the similarities and differences between synchronous learning and traditional classroom learning. Obviously, both teaching formats bring students and instructors together at the same time and in the same place. In addition, the teaching staff will use various teaching aids to deliver teaching materials. On the contrary, both the classroom and synchronous formats require various collaboration tools: the synchronous format emphasizes mobile learning tools such as mobile applications and online chats. Other than that, with synchronous teaching, the teacher usually does not have the opportunity to evaluate whether the pupils are paying attention, therefore the learning's success is heavily dependent on the students' awareness.

Asynchronous Online Learning

Asynchronous learning is self-paced and allows educators as well as learners to deliver ideas or

exchange information without relying on other participants' simultaneous involvement. Perveen (2016) described that students in asynchronous environments have access to information such as audio and video lectures, lectures note and handouts, articles, assignment questions and power point presentations through a Learning Management System (LMS) or other similar channels at any time and from any place. These online learning platforms either using the education institution developed LMS or online collaborative platform such as Microsoft Teams and Google Classrooms houses course content and provides a framework for communication between students and educators.

Materials, lectures, quizzes, and assignments are provided by instructors and can be accessed at any time. Students may be assigned a timeline to connect at least once or twice in a week and they work in their own pace in asynchronous learning. Ogbonna (2019) said that, if they need to re-listen to a lecture repeatedly or reflect over a subject for a while, they can do so without causing the rest of the class to fall behind. Table 4 describes on the asynchronous e-Learning technologies and their key issues.

According to Amiti (2020), when the instructor does not need an immediate reply, students engage in more critical thought, and the more they think about a topic, the more they develop thoughtful answer rather than responding spontaneously. Instead, when there is a space between the teacher and the student, shyness is lessened, and nervousness is moderated, thus there is less pressure. Students, on the other hand, appreciate the freedom and work-at-your-own-pace nature of asynchronous classrooms.

Individual participant interactions in asynchronous courses are incapable of imparting a feeling of shared social presence or involvement in online education, as stated by Friska (2021). Participants in asynchronous online learning are looking for content provided by their instructor or trying to engage themselves in relevant learning tasks. This may be due to many learners who have taken asynchronous online courses are totally unfamiliar with the experience of learning how to comprehend and become active learners. The majority of students will need to change their roles as online learners and their perceptions of educators.

Table 4: Asynchronous e-Learning Technology and Key Issues (Adapted: Dada, 2019, p.57)

Technology	**Key Issues**
Email Messages	• Allows the distribution of course materials to registered students. • Getting instant reply can be difficult especially in a large class.
E-books	• Serves as an additional teaching and learning materials. • It does not encourage an interactive mode of learning. • It is not dynamic.
Web Blogs	• Allows the exchange of ideas through educative posts and comments. • Decisions and conclusions are not easily arrived at.
Discussion Forums	• Encourage collaboration and exchange of ideas over some period of time. • It usually takes time to arrive at decisions and conclusions.
Website Links	• It is usually to redirect users to supplementary materials and references. • Maintenance activities on the web server can make the resources the users are trying to locate not to be available.
Databases	• Serve as the warehouse of teaching and learning materials, and also help in managing them. • Personnel with good managerial skills are needed to make it function optimally.
Streaming Video	• Lectures are delivered through playback of video for students to watch. • It is not dynamic and interactive learning is not supported.
Streaming Audio	• Lectures are done through playback of audio for students to listen to. • It is not dynamic and interactive learning is not supported.
Narrated Slideshow	• Lectures are delivered through playback for students to watch. • It is not dynamic and interactive learning is not supported.
Online Bulletin Boards	• Allow teachers to take advantage of functional wall space. It can save time, keep students informed and serve various purposes. • They are costly and complex to implement. High Maintenance cost is involved. Not the best option in an environment where there is an inadequate power supply. • They can also lead to clutter and confusion in class.

Online learning is a highly adapted process, but in order to be active and effective online learners, students must first understand how to use the technology in the course and be able to search for course materials in order to learn how to communicate with other students. Fortunately, recent online learning platforms designers have been able to comprehend and incorporate the basic nature of social interaction, as well as various factors such as physical, social, emotional, and psychological aspects, and their relationship to learners' participation in online courses. Table 5 explains the benefits and drawbacks of asynchronous learning gathered from previous studies.

Table 5: Benefits and Drawbacks of Asynchronous Online Learning Mode

Author	Benefits	Drawbacks
Perveen (2016)	• Students can employ their higher order learning skills since they can think about the question for a long time and develop divergent thinking when they have the option of delayed response. A prepared answer replaces the prompt reply. As a result, learning in an asynchronous setting is self-paced, independent and student-centred. It also builds on students' prior knowledge by introducing new concepts as well as supporting critical thinking and deep learning. This is due to greater opportunities for peer group conversations in discussion boards and less reliance on lecture notes and materials. • Due to the remote setting, anxiety and shyness is decreased. This allow learners to respond more innovatively and creatively since there have adequate time to try e-activities and less frustrated by technological problem such as low speed and non-connectivity as compared to live lecture sessions.	• Students might encounter difficulties to comprehend a complex subject matter on their own remotely without the assistance of instructors and classmates as compared to face-to-face or synchronous learning mode. • Asynchronous e-learning can be difficult to keep students engaged and attracted unless the instructor developed teaching approaches that support motivation, interest, involvement and critical thinking skills in this learning environment. Furthermore, it is a self-paced system in which students must possess high self-disciplined in order to stay engaged and interactive during the online lessons and activities. • Delayed feedback from instructors can lead to frustration and decrease students' interest to learn the subject. • Asynchronous e-learning causes insufficient possibilities for socialising, so students must find ways to network with their peers on their own.
Beresto (2021)	• The ability to find important learning materials easily at any time and more freedom to communicate thoughts than in face-to-face classroom settings.	-
Dada (2019)	• When discussing difficult subjects that require time to think, it is preferable to use asynchronous e-learning and media such as e-mail and discussion boards. Learners in an asynchronous communication environment can participate in a discussion that allows them to access the recorded lecture or pre-recorded videos at different times. Thus, learners can work at their own time, whenever and whenever they want, at remote location, giving them ample time to reflect on their own ideas and encouraging them to engage in more critical thinking in completing given assignments.	-

Discussion and Conclusion

Synchronous learning is a mode of teaching that involves the delivery of information instantaneously. The learning materials can consist of lectures, webinars, live social media broadcasts and discussions. These are the tools that enable the learners to receive information immediately and to ask a question as well as getting the response promptly from the instructor.

On the other hand, the concept of asynchronous learning is based on the assumption of a delay in obtaining information. Reading textbooks, articles, blogs, websites, interactive presentations, e-courses, online quizzes, assignments, and exercises, viewing a recorded video, and listening to audio recordings are among the examples of asynchronous learning resources.

Educators should be given the latest guidelines and skilled for interactive, innovative teaching techniques and tools that allow them to teach and make assessments in an online teaching mode. This is because regardless of the teaching approach they employ, students frequently request a combination of synchronous and asynchronous techniques as indicated by Amiti (2020). Based on previous studies, each learning mode has its own set of advantages and disadvantages. In this instance, the educator can select how to integrate synchronous and asynchronous learning and create a beneficial impact on the learner's education process based on the setting and conditions.

Furthermore, the use of the suitable teaching mode often depends on the educational objectives of an institution, but in reality, it is only in principle. In practice, the instructors of online learning are most often guided by their experience and habits, rather than by objectives or scientific understanding. As a result, the synchronous mode is more favored by X generation since they are born before the digital age and are not proficient in ICT. In contrast, the digital generation that are less attentive to social contact prefers asynchronous teaching and learning. They find it simpler to write than speak, to read or listen to a recording, to watch a video than to attend a lecture. They have their unique rate of information reception and transmission.

Learners who prefer to study at their own pace such as the digital generation or those who are in the X generation who require live conversation to absorb knowledge, for example, will view the same learning content in relatively different ways. Thus, the ideal solution is to combine or employ both learning modes at the same time. In traditional academic classroom setting, there is frequently a synchronous lecture as well as an asynchronous option.

In addition to clarifying challenging issues, synchronous learning should increase motivation and involvement in the learning process. We can build up online distance learning in synchronous and asynchronous mode and make it flexible, meeting the demands of all learners in the educational process, by using both the learning management system and the video conferencing capability at the same time. Educators' experience has shown that by creating a favorable online learning environment of mutual support from all participants and by choosing convenient online tools, innovative methods as well as digital educational resources will improve the quality of the educational process and provide effective online distance learning experience to learners.

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