Factors Affecting the Acceptance of Asynchronous Video-Based Learning among Malaysian Secondary School Students

Kamilah ABDULLAH[a] & Mas Nida MD KHAMBARI[b*]
[a, b]*Universiti Putra Malaysia, Malaysia*
*khamasnida@upm.edu.my

Abstract: The use of Asynchronous Video-Based Learning (AVBL) has garnered much discussion throughout the years. Several studies have reported the benefits of learning through videos; however, an in-depth understanding of students' intention to adopt AVBL remains unclear. Thus, to better understand secondary school students' intention to adopt AVBL in Malaysia, five predictors are selected for this study. These predictors, namely performance expectancy, effort expectancy, social influence, viewing attitude, and facilitating condition, are based on the Unified Theory of Technology Acceptance and Use of Technology (UTAUT) and Active Viewing Framework (AVF). Many studies have used UTAUT in research on the usage of videos in the classroom (Wijaya et al., 2022); however, research that includes students' viewing attitudes to study their acceptance of AVBL is still scarce. This nationwide study adopts the correlational research design involving 401 secondary school students. Samples will be selected based on the stratified cluster sampling method, and data will be collected through a structured online questionnaire. Descriptive and inferential statistical analyses such as Pearson correlation and Multiple Linear Regression will be used to understand the variables' relationships and the variables' proportion of variance in students' use of AVBL to support their learning. The results of this study may shed light on potential future plans for AVBL deployment in the classroom.

Keywords: Asynchronous online learning, technology acceptance, video-based learning, active viewing

1. Introduction

The ever-changing field of technology has connected like never before, and the use of AVBL to conduct and supplement content delivery in education is rising in popularity. The sudden transformation to online instruction (MCMC, 2021) to curb virus transmission during the COVID-19 pandemic raised critical concerns as a large population has limited electronic devices and unstable internet access (Mondal et al., 2021). Adopting AVBL in remote online classrooms is an alternative to the problem.

Learning is a continuous process, regardless of age; thus, understanding and developing new ideas can be very challenging. To address this matter, AVBL is applied in various fields of education such as cognitive behaviour therapy, physical education, English language, Science and Mathematics, and many more (Bordes et al., 2021; Lapitan et al., 2021; Lee et al., 2021; Mondal et al., 2021; Prasad et al., 2018). These studies are conducted at primary and secondary levels and in higher education. Evidently, the adoption of AVBL can promote a positive learning environment because students feel more involved and responsible for their learning (Lee et al., 2021; Mondal et al., 2021; Prasad et al., 2018).

Its main feature, which allows students to watch the pre-recorded videos when they have access to devices and a stable Internet connection, makes it preferable among learners (Lapitan et al., 2021, Mondal et al., 2021). AVBL also allows students to progress at their own pace (Lapitan et al., 2021;

Mondal et al., 2021), as they can watch the pre-recorded videos at a time and place that is convenient to them. Another issue AVBL address due to unstable internet connectivity is remote online assessment management. It provides a larger time frame for students to have more comprehensive access, especially for learners with limited internet connectivity (Lapitan et al., 2021).

However, students' viewing attitudes can be affected if the content of the pre-recorded videos is dull and uninteresting (Lee et al., 2021). Students might be less motivated and feel disconnected from their instructors because they cannot get instant feedback from the instructor and vice-versa (Lapitan et al., 2021; Mondal et al., 2021; Prasad et al., 2018). Although it is possible to communicate and give feedback asynchronously, it is very challenging to establish student-teacher relationships in courses where face-to-face exposure is limited (Thomas et al., 2021; Lee et al., 2021).

Moreover, it is worth noting that AVBL can be a hassle to its adopters. It requires teachers to transform the old teaching paradigm to new methods in line with the technology (Lapitan et al., 2021). Preparing materials to produce a high-quality video can cost time and money. Teachers must ensure that the content of the pre-recorded videos is well-organised and exciting enough to garner students' engagement (Bordes et al., 2021). Producing a video is not easy, especially if the teacher is technologically challenged. If the teachers fail to develop outstanding AVBL materials for each lesson, it could risk students' understanding and engagement with the targeted content (Bordes et al., 2021, Lin et al., 2019).

This study uses the Unified Theory of Technology Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003) because this model can explain 70% of the variance in user intention. Thus, it is the most effective model for analysing technology acceptance. According to UTAUT, Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions are the factors that can influence users' Behavioural Intention to use a system. Another theory that drives this study is the Active Viewing Framework by Dodson et al. (2018) as a method for enhancing students' learning results and engagement in video-based learning.

Treating video as a non-linear medium, active viewing includes interactive, constructive, and active behaviours. The interactive category is based on a socio-constructive understanding of learning and emphasises learning as a socially-driven process. The constructive behaviours category refers to learners constructing their meaning and making connections between concepts. The active behaviours include, but are not limited to, Interactive Behaviours, Constructive Behaviours, Active Behaviours, and Passive Behaviours (Table 1). Meanwhile, passive behaviours are the opposite of these three categories, which involve watching the video without any interaction.

Table 1. *Active and Passive Viewing Attitude (Dodson et al., 2018)*

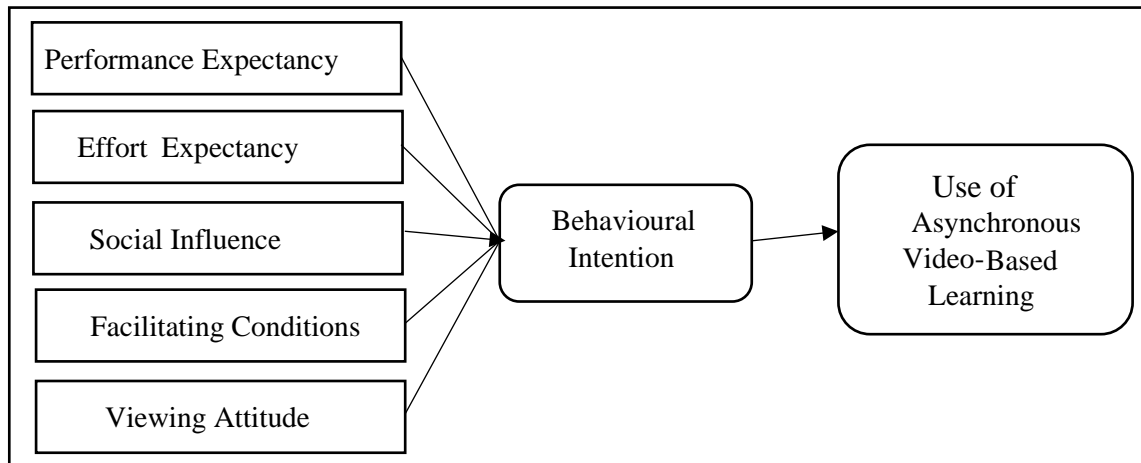|	**Actions**
Interactive Behaviours	Communicating with others
	Cooperating with others
	Collaborating with others
Constructive Behaviours	Making connections between learning objects
	Taking notes to record sense making
	Highlighting video content for future use
	Tagging video content for future use
Active Behaviours	Browsing for general information
	Searching for specific information
	Triaging between learning objects, such as a video and a textbook
	Re-watching specific video content
	Pausing video content to reflect on the video content or engage in another viewing behaviour
Passive Behaviours	Playing video content

Figure 1. Proposed Active-UTAUT Conceptual Framework

UTAUT and AVF will be able to provide in-depth insights on how videos can be included in a variety of active learning situations to increase student engagement and motivation while also fostering a fun, friendly, and welcoming learning atmosphere.

2. Research Objective

The main research objective of this study is to investigate factors affecting the students' acceptance of AVBL to support their learning. Several research questions have been identified to address the research objective:

   i. What is the extent of students' use of AVBL to support their learning?
  ii. What are the relationships between performance expectancy, effort expectancy, social influence, viewing attitude, and facilitating conditions and the use of AVBL among students? iii. What is the proportion of variance in students' use of AVBL to support their learning that can be explained by performance expectancy, effort expectancy, social influence, viewing attitude, and facilitating conditions and the significance of each in explaining AVBL use?

3. Research Methodology

3.1 Research Design

The study follows a quantitative research approach with a correlational research design. A survey research design will be employed since it is advantageous given the size of the study's target population (Cresswell, 2014).

3.2 Population, Sample Size and Sampling Technique

It is estimated that there are 1,988,331 registered secondary school students nationwide (Department of Statistics Malaysia Official Portal, 2020). In this study, video is defined as any videos teachers share with their students. Asynchronous learning is when students are required to study the online materials provided by the teachers on their own time within the time stipulated. Thus, this study defined AVBL as online asynchronous learning using related videos provided by the teachers. Based on this premise, this study assumes that every secondary school student in Malaysia has at least one experience of using AVBL (especially during the COVID-19 Movement Control Order). This study proposes to employ the cluster sampling technique. Students will be clustered based on the five main regions in Malaysia, namely, Northern, Southern, Eastern, Central and East Malaysia, to ensure the data collected can represent the secondary school student's population in Malaysia. The researcher will identify two

schools from each region using AVBL in their teaching and learning sessions. Table 2 illustrates the number of secondary school students in the five zones of the country, with samples drawn in equal proportional representation. Cochran's (1977) was employed to calculate the study's sample size, and the oversampling procedure (Salkind, 2012) was also used to take account of uncooperative subjects and overcome sampling error.

Table 2. *Clustered Sample Size Distribution Based on Five Main Regions in Malaysia*

Zone	Number of Secondary school students	Number of Samples	Number of Samples (50% added)	Percentage Representation
Central (Kuala Lumpur, Selangor, Putrajaya)	459,716	62	93	23.1
North (Perlis, Kedah, Penang, Perak)	428,172	57	86	21.5
South (Johor, Negeri Sembilan, Malacca)	391,094	53	79	19.7
East Coast (Kelantan, Terengganu, Pahang)	310,680	41	62	15.6
East Malaysia (Sabah, Sarawak, Labuan)	398,669	54	81	20.1
Total	1,988,331	267	401	100

3.3 Data Collection and Analysis

An online structured questionnaire will be used to collect the data for this research. The whole process of data collection is planned to last six weeks, taking into consideration the schools' annual calendar to ensure a smooth data collection process.

Data will be analysed using the SPSS statistical tool. To answer the aforementioned research questions, descriptive and inferential statistical analyses will be carried out. Students' level of AVBL use will be analysed descriptively to understand the extent of their usage, providing a platform for teachers to create a positive learning environment. Then, a Pearson correlation will be conducted to determine the relationship between performance expectancy, effort expectancy, social influence, viewing attitude, facilitating conditions, and the use of AVBL among students. This is specifically intended to assist teachers in producing excellent AVBL materials that will improve students' comprehension. Meanwhile, Multiple Linear Regression will be conducted to determine the proportion of variance in students' use of AVBL to support their learning and to understand the significance of each variable in explaining AVBL use which will aid teachers in developing more successful AVBL lesson plans.

4. Concluding Remarks

This study's primary purpose is to identify the factors affecting the students' acceptance of AVBL to support their learning. Understanding the extent of students' use of AVBL will help teachers create engaging teaching and learning activities to foster a good learning environment that is crucial for students to feel more invested in and in charge of their education. Additionally, by providing teachers with knowledge and guidance on how to create excellent AVBL materials for every session, it will minimise the teachers' burden and reduce the likelihood that the students will not comprehend or be engaged with the provided information. Furthermore, knowing the percentage of the variance in students' use of AVBL to support their learning and the significance of each variable in explaining

AVBL use can give teachers a thorough understanding of how to conduct lessons using AVBL effectively. This is to ensure students are motivated and do not feel distant from their teachers due to the nature of AVBL that prevents students from receiving immediate feedback from their teachers.

In short, students and teachers must swiftly adopt the usage of AVBL to learn because there is no assurance that physical teaching and learning activities will not continue to be disrupted, especially after the disastrous effect of the Covid-19 pandemic interrupting teaching and learning activities around the world. Learning through AVBL cannot be separated from distant online learning since it is crucial to prevent any disruptions to maintain students' learning, particularly with the rapid worldwide technological advancement. Thus, it is essential to understand in more depth the factors affecting students' acceptance of AVBL to provide insight into potential future plans for using AVBL in classrooms.

References

Bordes, S. J., Walker, D., Modica, L. J., Buckland, J., & Sobering, A. K. (2021). Towards the optimal use of video recordings to support the flipped classroom in medical school basic sciences education. *Medical Education Online*, *26*(1). https://doi.org/10.1080/10872981.2020.1841406

Cochran, W. G. (1977). Sampling techniques (3rd ed.). New York: John Wiley & Sons.

Creswell, J. W. (2014). *A concise introduction to mixed methods research*. SAGE publications.

Department of Statistics Malaysia Official Portal. (2020). Education Statistics. Retrieved June 20, 2022, from https://www.dosm.gov.my/

Dodson, S., Roll, I., Fong, M., Yoon, D., Harandi, N. M., & Fels, S. (2018). An active viewing framework for video-based learning. *Proceedings of the 5th Annual ACM Conference on Learning at Scale, L at S 2018*. https://doi.org/10.1145/3231644.3231682

Lapitan, L. D., Tiangco, C. E., Sumalinog, D. A. G., Sabarillo, N. S., & Diaz, J. M. (2021). An effective blended online teaching and learning strategy during the COVID-19 pandemic. *Education for Chemical Engineers*, *35*, 116–131. https://doi.org/10.1016/j.ece.2021.01.012

Lee, J., So, H. J., Ha, S., Kim, E., & Park, K. (2021). Unpacking Academic Emotions in Asynchronous Videobased Learning: Focusing on Korean Learners' Affective Experiences. *Asia-Pacific Education Researcher*, *30*(3), 247–261. https://doi.org/10.1007/s40299-021-00565-x *of Environmental Research and Public Health*, *18*(19). https://doi.org/10.3390/ijerph181910305

Mondal, H., Mondal, S., & Swain, S. M. (2021). A nationwide online survey on the comparative preference of face-to-face lecture, online synchronous, and asynchronous learning in Indian undergraduate medical students. *Journal of Nature and Science of Medicine*, *4*(3), 288–295. https://doi.org/10.4103/jnsm.jnsm_158_20

Prasad, P. W. C., Maag, A., Redestowicz, M., & Hoe, L. S. (2018). Unfamiliar technology: Reaction of international students to blended learning. *Computers and Education*, *122*, 92–103. https://doi.org/10.1016/j.compedu.2018.03.016

Salkind, N. J. (2012). Statistics for People Who (Think They) Hate Statistics: Excel 2010 Edition: SAGE Publications, Incorporated.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly: Management Information Systems*, *27*(3). https://doi.org/10.2307/30036540

Wijaya, T. T., Cao, Y., Weinhandl, R., Yusron, E., & Lavicza, Z. (2022). Applying the UTAUT model to understand factors affecting micro-lecture usage by mathematics teachers in China. *Mathematics*, *10*(7), 1008.