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# Collaborative Learning and Social Media Acceptance for Student Engagement

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**Abstract** - This study examines the influence of collaborative learning dimensions and social media usage on tertiary students' engagement via e-learning mode in the time of COVID-19 pandemic situations. The dimensions of collaborative learning are interaction with peers, interaction with lecturers, and knowledge sharing; the social media or technology acceptance dimensions are mainly on the ease of use and the perceived usefulness of this new media platform. Collaborative learning and social media usage are predicted to have influenced students' learning engagement in the online and e-learning mode. 201 Malaysian tertiary students from public and private universities have completed the survey forms via purposive and snowball sampling methods. Descriptive analysis was executed in SPSS, whereas model validation and structural model were analyzed using Smart-PLS 3.3. The results revealed that collaborative learning positively influences the interaction with peers and lecturers and knowledge-sharing behavior. Technology acceptance elements positively affect social media usage. Interaction with peers, social media usage, and knowledge sharing increases tertiary student engagement in e-learning. The only insignificant predictor is interaction with lecturers. This study revealed positive findings that social media usage is the most dominant and high-performance factor impacting tertiary student engagement in e-learning.

**Keywords** – Collaborative learning, e-learning, knowledge sharing, social media usage, student engagement

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## I. Introduction

Although e-learning is the future trend in education, it is not common in Malaysia, especially before the Covid-19 pandemic. Its effectiveness and feasibility have yet to be fully understood. The pandemic of Covid-19 has forced Malaysia Universities to temporarily suspend physical classes. With the new norm of social distancing and lockdown, e-learning becomes the only alternative approach for Malaysia higher education. Although e-learning has addressed the need for a continuous education system, there are still many challenges that need to be confronted. Gadget issues, internet connection, computer literacy, lack of interaction issues negatively impact e-learning, especially on students' engagement (Lisa, 2020). Most of the universities in Malaysia conduct e-learning in a synchronous environment during the movement control period. E-learning in the synchronous environment provides direct interaction between the lecturers and students via computer-mediated communication tools such

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as video conferencing systems or chatrooms. However, students are either restricted or reluctant to use webcams and microphones during online classes. In such an e-learning setting, it is difficult for lecturers to interact with students, observe their reactions and monitor their participation in class. Students experience difficulty interacting with their lectures and peers in e-learning, consequently affecting their studies (Selvanathan et al., 2020).

Instant and timely feedback is an essential element in e-learning as it fosters the interaction between lecturers and students and encourages student's participation and engagement. Student engagement is highly related to student retention in their study; students with high engagement are less likely to drop out of higher education (Tight, 2020; Putit, Siti Hljjah, Maliza, Anadaleeb & Serajul, 2021). Furthermore, an engaged student is likely to be an asset to an institution (Tight 2020). Social media is believed to be a learning medium to encourage learners' participation, engagement, reflection, and collaboration in e-learning (Manca & Ranieri, 2016). The previous studies on social media usage in education are mainly associated with students' performance or behaviour of use of social media by students in higher education in a physical learning environment (Alshuaibi et al., 2018; Athukorala, 2018; Balakrishnan & Gan, 2015). There are limited comprehensive studies conducted to investigate how social media impacts student engagement in the e-learning context during movement control in Malaysia.

This study is an attempt to examine how social media for collaborative learning influences interactions with peers and lecturers, and knowledge sharing behaviour. This study also explores the impact of the Technology Acceptance Model (TAM) on social media usage, consequently explaining the relationship between interaction with peers and lecturers, social media usage, and online knowledge sharing for tertiary students' engagement in e-learning.

## **II. Literature Review**

### **Impact of Social Media in Education**

With the advancement of technology, social media has become a crucial part of human society to change our social norms, values, and culture (Chukwuere & Chukwuere, 2017). Social media provides an online platform that eases the communication and exchange of information among people regardless of their living place; across diverse geographic areas. Social media creates a highly interactive online platform in which individuals or a group of students can share thoughts and jointly generate, edit and discuss the latest topics (Birim, 2016). Undergraduate students have a new way to socialize, communicate and interact with others via social media in the learning process of educational institutions (Terzi et al., 2019). Hence, social media improves collaboration among students and fosters students' engagement in e-learning.

### **Collaborative learning, Interactions and knowledge Sharing**

Collaborative learning is a small group of learners co-operating and supporting each other interactively in a learning process to overcome problems towards achieving a targeted goal (Alavi et al., 1995; Jacobsen et al., 2002). The principle design of collaborative learning is an intentional connection of the learning environment that everyone can participate, learn by doing, continue to challenge, and everything is interconnected (Ito et al., 2013). In contrast to traditional learning, social media used in education motivates individuals for personal participation and collaborative learning (Korucu & Atun, 2017).

Chiu et al. (2006) prescribed knowledge sharing as the willingness of individuals to share their acquired knowledge with others in a network. Social networks facilitate collaboration in e-learning and ease interaction with counterparts (Alzain, 2019). The extensive use of social media tools results in better collaborative learning with peers and other experts in the field (Junco, Heiberger and & Loken, 2011). Social media provides opportunities for collaborative learning and motivates learners to interact with and share resource materials with peers (Gikas & Grant, 2013). In his research in the context of one renowned University in Malaysia, Al-Rahmi et al. (2015) concluded that collaborative learning with social media boosts interaction and knowledge sharing among learners and instructors. Ansari and Khan's (2020) research in a public school in Eastern India revealed that integrating social media in collaborative learning increases students' interaction with instructors and classmates; and fosters knowledge-sharing behaviour. Hence, the hypotheses developed as follows:

**H1a:** Collaborative learning positively influences the interaction with peers.

**H1b:** Collaborative learning positively influences the interaction with lecturers.

**H1c:** Collaborative learning positively influences knowledge-sharing behaviour

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### **Social Media Usage and Technology Acceptance Model**

Davis (1989) believes that simple to use and the functionality of the innovative technology are the main determinants of user acceptance, so he proposed Technology Acceptance Model (TAM) with perceived usefulness and perceived ease-of-use as two principal elements. The user's belief in the innovation of a new technology illustrates the users' view on its usefulness. Users with a favorable feeling of using social media networking sites tend to participate in social interactions. Azmi et al. (2018) researched student satisfaction on e-learning revealed that perceived usefulness and perceived ease-of-use significantly influence the intention to use e-learning. Social media users increase worldwide as people like its convenience and universal use (Sarwar et al., 2019). Hence, the following hypotheses are derived:

**H2a:** Perceived usefulness has a positive impact on social media usage.

**H2b:** Perceived ease-of-use has a positive impact on social media usage.

### **Student Engagement in e-learning**

Many scholars have a diverse view on student engagement and it is a lack of consensus to its definition. For instance, Bowden et al. (2019) studied engagement in four-dimension measures (affective, social, cognitive, and behavioral) and Vayre & Vonthron (2017) consider engagement as a three-dimensional concept (enthusiasm, perseverance, reconciliation). Recently, Bond et al. (2020) attempted to give a holistic definition of student engagement. "Student engagement is the energy and effort that students employ within their learning community, observable via any number of behavioural, cognitive, or affective indicators across a continuum. It is shaped by a range of structural and internal influences, including the complex interplay of relationships, learning activities, and the learning environment. The more students are engaged and empowered within their learning community, the more likely they are to channel that energy back into their learning, leading to a range of short- and long-term outcomes that can likewise further fuel engagement." (Bond et al., 2020, p3). In this study, student engagement is considered as a single dimension.

Vayre and Vonthron (2017) divulged that student engagement in online learning directly influences their satisfaction, achievement, self-advancement; and is adversely related to student retention. In their study that focused on dental undergraduates in Indonesia, Amir et al. (2020) concluded that students who face an obstacle in communicating with instructors or peers are likely to have lower satisfaction in e-learning. Besides, Selvanathan et al. (2020) claimed that Malaysian students were unsatisfied with the contactable and accessibility of their instructors in e-learning; and limited e-resources in the digital library during the covid-19 pandemic. Social media tools have great features of outstanding educational technology in terms of peer feedback, student guidance, and adapted with the learning in the social environment (Al-Rahmi & Othman, 2013). Ansari and Khan (2020) reported that interactions with lecturers and peers have a positive association with student engagement. Therefore, we propose the following hypotheses:

**H3 :** Interaction with peers positively influences student engagement in e-learning.

**H4 :** Interaction with lecturers positively influences student engagement in e-learning.

Eid and Al-Jabri (2016) testified use of online discussion and knowledge sharing in distance learning leads to a better learning environment, eventually improving learners' performance. Akçayır (2017) stated that the main motivational factor that stimulates educators for adopting social media in learning activities is its effective and instant communication. Arifin et al. (2018) claimed that most social media users spent their time seeking information, and finding social support. Enhancement in student engagement in higher education is achievable via integrating social media in learning activities (Alshuaibi et al., 2018). Hence, we put forward the following hypotheses:

**H5 :** Knowledge sharing behaviour positively influences student engagement in e-learning.

**H6 :** Social media usage positively influences student engagement in e-learning

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### III. Methodology

#### Research Framework

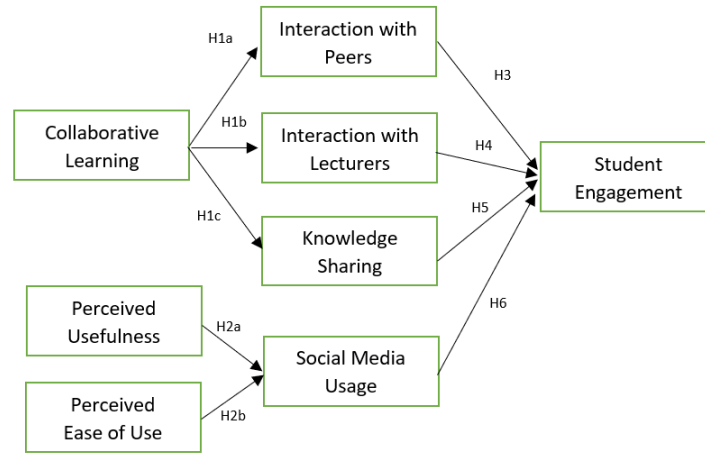


Figure 1: Proposed Research Framework adapted from Ansari & Khan (2020) & Sarwar et al. (2019)

This study developed a framework by integrating and adapting the research of Ansari and Khan (2020) and Sarwar et al. (2019); Ansari and Khan (2020)'s, and Sarwar et al. (2019) 's study was conducted in India and China, respectively. The current study adapted their framework and conduct in Malaysia. Fig. 1 depicts the conceptual framework of this study.

#### Questionnaire design and Sampling method

This study applied the primary data collection method. Questionnaires created in google form have disseminated via social media platforms like Facebook, WhatsApp, and WeChat using purposive and snowballing sampling methods. This study was conducted from Nov 2020 to January 2021 when most public and private tertiary institutions were suspending their face-to-face classes and moving to online and e-learning modes in which Malaysia was in the condition of restricted movements. The questionnaire of the study comprises two sections. The first section gathered respondents' demographic background including gender, ethnicity, year and field of studies, communities, and internal connection options. The second part of the questionnaire focused on the measurement constructs. The measurement constructs seven exploratory variables (with three dimensions of collaborative learning and two dimensions of social media usage) and student learning engagement adapted from previous studies listed in Table 1. This study used a 6-point Likert scale (1-strongly disagree, 2-disagree, 3-slightly disagree, 4-slightly agree, 5-agree, 6-strongly disagree) to avoid respondents from selecting neutral opinion to the statements related to these dimensions. According to G-Power, the minimum sample size is 166; nevertheless, 201 Malaysian tertiary students from fifteen public and private universities have completed the survey forms.

Table 1: Measurement Constructs of the study

Measurement Construct	Number of items	Adapted from
Collaborative learning	3	Sarwar et al. (2019)
Interaction with Peers	3	Al-Rahmi & Othman (2013)
Interaction with Lecturers	3	Al-Rahmi & Othman (2013)
Knowledge sharing	5	Kwahk & Park (2016)
Perceived usefulness	3	Sarwar et al. (2019)
Perceived ease of use	4	Sarwar et al. (2019)
Social media usage	3	Sarwar et al. (2019)
Student Engagement in e-learning	3	Al-Rahmi & Othman (2013)

Descriptive analysis was conducted via SPSS to tabulate demographic profiles of the respondents (see Table 2) and to measure the central tendency of measurement constructs (as shown in Table 3). This study followed

Hair et al. (2011) guidelines to conduct a two-stage assessment via Smart-PLS 3.3 for data analysis: the validation of measurement constructs and evaluation of the structural model. The first stage comprised convergent validity and discriminant validity, whereas the second stage examined the proposed hypotheses and measured the prediction relevance of the proposed model.

#### IV. Results and Discussion

##### Descriptive Analysis

Among the 201 respondents, female respondents constitute 55%. The majority of respondents are Chinese (60%), pursuing a degree program (88%) in Management/Arts/Law/Education (69%), and spending 4-6 hours per day using social media (82%). Besides, half of the respondents are from urban communities (48%) with Wi-Fi connections (53%).

Table 2: Respondents' Demographic Profile

Demographics		Frequency	Percentage
Gender	Male	90	44.8
	Female	111	55.2
Ethnic	Malay	49	24.4
	Chinese	120	59.7
	Indian	32	15.9
Education Level	Diploma/Foundation/A Level	25	12.4
	Degree/Bachelor	176	87.6
Field of Study	Technical Science (Architecture/ Engineering/ IT/ Science)	62	30.8
	Social Science (Laws/ Management/ Language/ Arts/ Education)	139	69.2
Years of Study	First year	37	18.4
	Second year	77	38.3
	Third year	70	34.8
	Forth year	15	7.5
	Other	2	1
Hours spend in using social media	1 to 2 hours	4	2
	2 to 4 hours	32	15.9
	4 to 6 hours	165	82.1
Community	Urban	97	48.3
	Suburban	64	31.8
	Rural	40	19.9
Internet Connection	Mobile data	29	14.4
	Hotspot	4	2
	Wi-Fi	106	52.7
	Cable	26	12.9
	Fibre	36	17.9

Table 3: Overall Mean and standard deviation for Variables

Variables	Mean	Std. Deviation
Collaborative Learning	4.1423	1.20940
Interaction with Peers	4.1891	1.40383
Interaction with Lecturers	5.1824	1.32786
Knowledge Sharing	4.2251	1.35762
Perceived Usefulness	4.0779	1.34206
Perceived Ease of Use	4.0896	1.40663
Social Media Usage	4.2172	1.41885
Student Engagement in e-learning	4.1526	1.41301

As summarized in Table 3, the overall mean scores for all variables are above 4 (based on 6-point Likert scale), this indicates that the respondents were towards agreement to all the statements. Interaction with lecturers scored the highest mean (5.18) whereas perceived usefulness scored the lowest mean (4.08).

### Measurement Model

Measurement constructs' validation involved convergent validity (as shown in Table 4) and discriminant validity (see Table 5). Table 4 shows the measurement model's convergent validity. The factor loading in this study ranged from 0.841 to 0.939, with composite reliability (CR) values ranging from 0.909 to 0.944. The lowest average variance extracted (AVE) value is 0.758. The analysis on CR and AVE satisfied the threshold of 0.7 (Henseler et al., 2009) and 0.5 (Hair et al., 2013), respectively; hence, the convergence of the measurement model is validated. Besides, the validity of the discriminant confirmed as the HTMT0.95 values and confidence interval of all constructs in Table 5 are free from the value of 1

Table 4: Convergent Validity for the Measurement Model

Construct	Indicator	Factor Loading	CR	AVE
Collaborative Learning (CL)	CL1	0.907	0.929	0.813
	CL2	0.910		
	CL3	0.889		
Interaction with Peers (IWP)	IWP1	0.921	0.944	0.850
	IWP2	0.929		
	IWP3	0.916		
Interaction with Lecturers (IWL)	IWL1	0.910	0.937	0.831
	IWL2	0.920		
	IWL3	0.904		
Knowledge Sharing (KS)	KS1	0.879	0.940	0.758
	KS2	0.854		
	KS3	0.891		
	KS4	0.862		
	KS5	0.867		
Perceived Usefulness (PU)	PU1	0.853	0.909	0.769
	PU2	0.873		
	PU3	0.903		
Perceived Ease of Use	PEOU1	0.910	0.942	0.801
	PEOU2	0.894		
	PEOU3	0.886		
	PEOU4	0.891		
Social Media Usage (SMU)	SMU1	0.914	0.927	0.808
	SMU2	0.939		
	SMU3	0.841		
Student Engagement (SE)	SE1	0.889	0.932	0.821
	SE2	0.914		
	SE3	0.916		

Table 5: Heterotrait-Monotrait (HTMT) criterion for Discriminant Validity

	CL	IWP	IWL	KS	PU	PEOU	SMU
IWP	0.825 (0.736,0.899)						
IWL	0.886 (0.812,0.938)	0.849 (0.76,0.922)					
KS	0.927 (0.885,0.963)	0.749 (0.649,0.834)	0.814 (0.726,0.886)				
PU	0.772 (0.685,0.852)	0.669 (0.552,0.769)	0.735 (0.628,0.826)	0.751 (0.664,0.828)			
PEOU	0.828 (0.744,0.899)	0.764 (0.661,0.848)	0.801 (0.7,0.879)	0.795 (0.707,0.866)	0.798 (0.703,0.874)		
SMU	0.716 (0.603,0.806)	0.716 (0.605,0.812)	0.716 (0.604,0.811)	0.727 (0.619,0.81)	0.815 (0.716,0.898)	0.769 (0.673,0.85)	
SE	0.701 (0.59,0.795)	0.720 (0.619,0.811)	0.741 (0.631,0.838)	0.739 (0.646,0.818)	0.823 (0.734,0.898)	0.779 (0.683,0.857)	0.811 (0.724,0.886)

*Note:* The values in the brackets represent the 95% bias-corrected and accelerated confidence derived from bootstrapping with 5000 samples. CL=Collaborative Learning, IWL = Interactions with Lecturers, IWP = Interactions with Peers, KS = Knowledge Sharing, PU = Perceived Usefulness, PEOU = Perceived Ease of Use, SMU = Social Media Usage, SE = Student Engagement.

### Structural Model

The structural model was performed in Smart-PLS using bootstrapping with subsamples of 5000, a significant level of 0.05, and a one-tailed test. As shown in Table 6, all hypotheses except for H4 are supported. H3 (t-value >1.545) supported at a 5% significant value, and the rest of the hypotheses (t-values > 2.33) supported at a 1% significance. In addition, the results indicate 55% of the explained variance in interaction with peers, 62% of explained variance in interaction with lecturers, 70% of explained variance in knowledge sharing behaviours, 57% of explained variance in social media usage, and 61% of explained variance in students' engagement. Collaborative learning has significant influences on interaction with peers ( $\beta = .742$ ), interaction with lecturers ( $\beta = .792$ ), and knowledge sharing behaviours ( $\beta = .84$ ) with a p-value <0.01. In addition, collaborative learning has  $f^2$  values above 0.35 toward interaction with peers, interaction with lecturers, and knowledge sharing. Cohen (1988) defined an effect size of 0.02 for small, 0.15 for medium, and 0.35 for large effect. These show that collaborative learning has a substantial effect on these three dependent constructs. Next, perceived usefulness ( $\beta = .437$ ) and perceived ease of use ( $\beta = .381$ ) significantly influence dependent construct (social media usage) with a p-value <0.01.

Table 6: Assessment summary for the structural model

HP	Path	Std. Beta	Std. Error	T-value	R <sup>2</sup>	Q <sup>2</sup>	f <sup>2</sup>	VIF
H1a	CL -> IWP	0.742	0.045	16.596**	0.550	0.462	1.223	1.0
H1b	CL-> IWL	0.792	0.035	22.874**	0.627	0.515	1.678	1.0
H1c	CL->KS	0.84	0.023	36.338**	0.706	0.528	2.404	1.0
H2a	PU-> SMU	0.437	0.091	4.825**	0.573	0.453	0.224	2.005
H2b	PEOU> SMU	0.381	0.085	4.49**			0.170	2.005
H3	IWP-> SE	0.139	0.08	1.74*	0.615	0.493	0.018	2.810
H4	IWL->SE	0.152	0.104	1.454			0.019	3.180
H5	KS ->SE	0.199	0.076	2.609**			0.039	2.648
H6	SMU->SE	0.402	0.097	4.16**			0.205	2.047

*Notes:* \*p<0.05, \*\*p<0.01

Interaction with peers, social media usage, and knowledge sharing has a positive influence on the endogenous construct of student engagement. Interaction with lecturers is the only insignificant predictor of student engagement in e-learning. Social media usage ( $f^2 = 0.205$ ) has a medium effect in producing the  $R^2$  in student engagement in e-learning. All the four exogenous variables have a  $Q^2$  greater than 0.35, which indicates that the model has high predictive relevance.

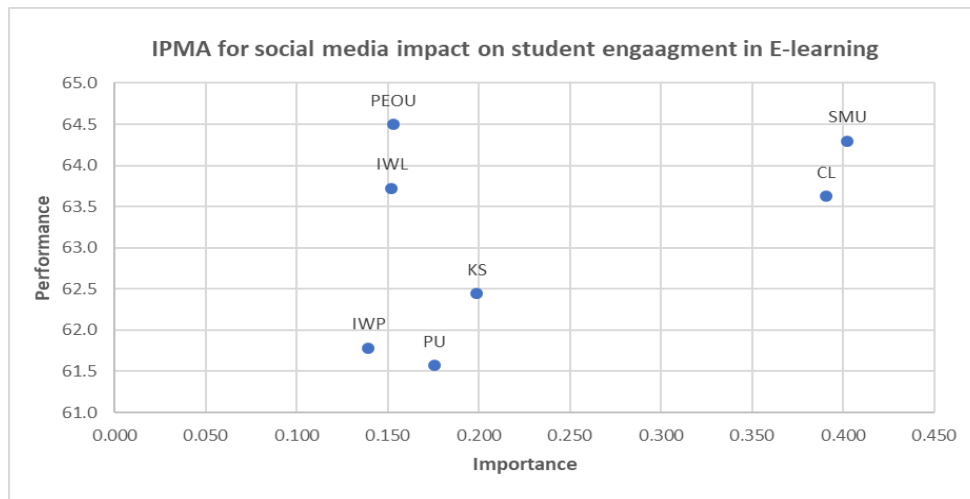


Figure 2: Importance-performance map analysis

Importance-performance map analysis (IPMA) in Smart-PLS as shown in Fig. 2 reveals that social media usage and collaborative learning play a crucial role in student engagement as high total effects. Nonetheless, the performance of perceived usefulness, and interaction with peers, are much lower than other factors and need to improve.

## V. Conclusion and Recommendations

Student engagement is predictable by the model established in this study. The results revealed that collaborative learning positively influences the interaction with peers and lecturers and knowledge-sharing behavior. Technology acceptance elements positively affect social media usage. Interaction with peers, social media usage, and knowledge sharing increases tertiary student engagement in e-learning. The only insignificant predictor is interaction with lecturers.

Social media usage in any platform enables students to socialize and interact instantly; for instance, WhatsApp, Instagram, Messenger, or even a simple tool such as Discussion Boards are promising tools to create engagement. Social media tools and platforms are prevalent and easy to use tools. In a pandemic situation, where social distancing is a new normal, students use social media tools to get connected. This study revealed that 82% of respondents spent 4-6 hours using social media. Hence, perceived usefulness and perceived ease of use have a positive relationship with social media usage. Nowadays, video conferencing tools such as Google Meet, Zoom, Microsoft Team, and Cisco WebEx engage students more with sound and visuals in the meeting. These tools have furthered innovation recently with interactive and engaging features for collaborative and virtual meeting engagements. The pandemic has accelerated the use of these tools in an education setting (and all other remote usages for work and social functions) as reported by the Malaysian Digital Association (MDA) (2020) that there was an enormous spike in the traffic of use of these tools. The traffic to use Zoom, Google Meet, and WebEx has increased tremendously; Zoom has the highest surge of its usage (Malaysian Digital Association (MDA, 2020). However, the overall directions of research on the use of social media in higher education are still new, which shows high potentials but requires further investigations on its use for higher learning purposes (Luo, Freeman & Stefaniak, 2020; Voon & Kommers, 2013).

Collaborative learning is an effective learning strategy to foster learning and sharing knowledge among students. Collaborative learning among students and peers of learning in a technological environment has been studied by many researchers (Manca & Ranieri, 2016; Terzi et al., 2019; Alzain, 2019). The current finding of this study has also shown the same results. Collaborative learning and knowledge sharing among peers is a proper



pedagogy for students to engage in their learning or discussions. The platforms and tools such as social media and its various techniques and applications are the enablers. These platforms are becoming prominent at all education levels.

Students interact for their learning; they prefer to interact with their peers comparatively with their lecturers. The current study shows the interaction with lecturers is the only insignificant predictor of student engagement in e-learning, as interacting with lecturers involves power and authority. The delicate relationships between learners and their lecturers within the formal higher learning institutions should be understood by the existence of power relations (Contu & Willmott, 2003), even in normal or social media-enabled learning situations. According to Contu and Willmott (2003) that “learning practices are understood to be enabled and constrained by their embeddedness in relations of power” (p. 283). In the Malaysian higher education system, the lecturers still hold an authority role by providing summative or overall assessments to students and endorsing students' results (O'Brien et al., 2020). Lectures have enough ethical power where students usually follow instructions given by their lecturers (Safori & Abd Rahman, 2019). The interaction with lecturers and students is more formal embedded in the learning situations and environments. Lecturer's power remains dominant in the classroom, although deployed problem-based learning as a pedagogical approach in a higher education classroom (O'Brien et al., 2020). Another factor is the high student-lecturer ratio, especially in those general courses with a large class setting. The large class setting has been a negative factor to influence students' assessment of the subjects (Monks & Schmidt, 2011). It is also affecting the engagement with their lectures or tutors. The chances for students to interact with lecturers is reduced, and much reduced if the learning situation is via social media or technology platforms. Mainly is the reduction of communication clues which is lacking via online based interactions.

The study explores the impacts of social media on student engagement in e-learning across Malaysian universities. It shows an acceptable explanation of the predictive factors such as social media usage, collaborative learning, and its elements such as interaction with peers and knowledge sharing among learners can create engagement among students during their learning in higher education. The authors conducted the study during the new norm of social distancing and MCO period, the beginning of online learning norms and requirements during the pandemic. This situation affects the findings of the study. This study revealed that social media is an effective and interactive communication tool that should be incorporated in e-learning for educators to grasp its benefit in enhancing student engagement. The results revealed that social media usage is the most dominant and high-performance factor impacting student engagement in e-learning. In contrast, the performance of perceived usefulness and interaction with peers have rooms for improvement. Because of this, educators should put more efforts on improving or innovating learning activities to boost the sense of usefulness of the social media tool and foster interaction with their peers and instructors. The proper use of social media could help student engagement in their study and reduce the attrition rate among students in online learning platforms.

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